



Take notice that the City of Ashland Common Council will meet at 6:00 PM in the City Hall Council Chambers, 601 Main Street W. Ashland, WI to consider and act upon the following agenda.

To attend virtually, the meeting from your computer, tablet or smartphone:

<https://global.gotomeeting.com/join/500263957>

Or dial in using your phone. United States (Toll Free): 1-877-309-2073 Access Code: 500-263-957

Please contact the Clerk's office if you require accommodations to attend the meeting.

Tuesday, May 27, 2025 Ashland City Council Meeting Agenda

1. CALL TO ORDER

A. Roll Call, Moment of Silence and Pledge of Allegiance

2. APPROVAL OF AGENDA

3. APPROVAL OF THE MINUTES

A. May 13, 2025 City Council and Committee of the Whole Meeting Minutes

4. CITIZEN PARTICIPATION PERIOD

5. MAYOR'S REPORT

A. Announcements

B. Appointments

6. ADMINISTRATOR'S REPORT

7. PRESENTATION BY DAN GRADY, ASHLAND COUNTY ADMINISTRATOR

8. CONSENT AGENDA

A. Miscellaneous Minutes

B. Planning and Development Permit and Property Maintenance Reports

9. OLD BUSINESS

- A. **Approve an Agreement for Construction and Naming Rights for Amenities at the City of Ashland Railyard Park for the Splashpad Project** *(Public Works)* Roll

10. NEW BUSINESS

- A. **Public Hearing Regarding the Proposed Resolution Petitioning the Secretary of Transportation for Airport Improvement Aid** (Roll)
- B. **Approve a Resolution Petitioning the Secretary of Transportation for Airport Improvement Aid for JFK Memorial Airport** *(Airport)* Roll
- C. **Consider a Resolution by the Common Council for the City of Ashland, Wisconsin Adopting the Ashland County Hazard Mitigation Plan** *(Fire Chief)* Roll
- D. **Approve Change Order No. 2 to Dreamland Contracting, LLC for the 2025 Kreher Park Campground Upgrades Project-Bathhouse Replacement** *(Public Works)* Roll

11. CLOSED SESSION - Council may return to open session to take action on any matter discussed during closed session.

- A. **PURSUANT WI STATUTE 19.85(1)(c) "Considering employment, promotion, compensation, or performance evaluation data on any public employee over which the governmental body has jurisdiction or exercise of responsibility."** *City Attorney Contract (City Administrator)* Roll
- B. **Pursuant to WI Stat. 19.85(1)(e): "Deliberating or negotiating the purchasing of public properties whenever competitive or bargaining reasons require a closed session."** *(Administration - Potential Real Estate Transaction)* Roll
- C. **Pursuant to WI Stat. 19.85(1)(g): "Conferring with legal counsel who either orally or in writing will advise governmental body of strategy to be adopted with the respect to current or likely litigation."** *(Jablonski V. City of Ashland 2023-CV000008)*
- D. **Return to Open Session** *(Voice)*
- E. **Report of Action Taken during Closed Session**

12. ADJOURNMENT

The City of Ashland does not discriminate on the basis of sex, race, creed, color, national origin, sexual orientation, age or disability in employment or provision of services, programs or activities.

Upon reasonable notice, the City of Ashland will accommodate the needs of disabled individuals or individuals with limited English proficiency through auxiliary aids or services. For additional

information or to request this service, contact the City Clerk's Office at 715-682-7071 (not a TDD telephone number) or FAX: 715-682-7048

Tuesday, May 13, 2025



MEETING MINUTES

ASHLAND CITY COUNCIL Tuesday, May 13, 2025 – 6:00 PM Ashland City Hall Council Chambers

1. CALL TO ORDER

The Tuesday, May 13, 2025 Ashland City Council meeting was called to order by Mayor Matt MacKenzie at 6:00 p.m.

A. **Roll Call, Moment of Silence and Pledge of Allegiance**

PRESENT: Kevin Seefeldt, Shawn Brede, Peter Levi, Andrew Goyke, James Gregoire, Charlie Ortman, Nancy Sztynдор

ABSENT: None

ALSO PRESENT: Mayor Matthew MacKenzie, City Administrator Brant Kucera, City Clerk Denise Oliphant, City Attorney Tyler Wickman, Public Works Director John Butler, Police Chief Willis Hagstrom, and other interested citizens.

2. APPROVAL OF AGENDA

A motion by Ortman and seconded by Goyke to approve was passed unanimously by voice vote.

3. APPROVAL OF MINUTES

A. **April 15, 2025 City Council and Committee of the Whole Meeting Minutes**

A motion by Ortman and seconded by Goyke to approve the minutes, carried unanimously by voice vote.

4. CITIZEN PARTICIPATION PERIOD

The Clerk read the Rules for Citizen Participation, and the following offered their comments to the Council:

Larry Lee, 3050 City Heights Road, submitted a letter to Council and spoke regarding paving the road in front of his property.

Murray Riddel, 923 Chapple Avenue, spoke regarding replacement of sidewalks and functioning fire hydrants on Chapple Avenue.

Zygmund Jablonski, 916 6th Avenue West, spoke to the recommended bid for the Turner Sewer Lift Station Project and the proposed special assessments for Chapple Avenue's reconstruction project.

5. MAYOR'S REPORT

A. **Announcements**

Mac Kenzie noted that staff and Council recently attended a productive retreat session, and completed the baseline for the Strategic Plan for the City for the next five years. He also reminded all that the City is fully into construction season and to take care while driving in these areas. The Board of Review is scheduled for May 21, 2025 in the City Hall Chambers beginning at 1:00 PM.

B. **Appointments**

A motion by Ortman and seconded by Seefeldt to approve the following appointments/reappointments, passed unanimously by voice vote: Ed Monroe was reappointed to the Police and Fire Commission for a term to expire May 6, 2030; Nancy Sztynodor was reappointed to the Parks and Recreation Committee as a citizen member for a term to expire April 30, 2028; and Betty Braunstein was appointed to the Beautification Council for a term to expire February 15, 2028.

6. ADMINISTRATOR'S REPORT

Kucera thanked Council and staff for their time and input on the City's next five-year Strategic Plan.

7. CONSENT AGENDA

A. **Miscellaneous Minutes**

A motion by Ortman and seconded by Seefeldt to approve passed unanimously by voice vote.

8. OLD BUSINESS

A. **Approve to Accept a Bid and Award a Contract for the 2025 Turner Lift Stations Improvements Project to Ritola, Inc. (Public Works) Roll**

A motion by Ortman and seconded by Seefeldt to approve the base bid from Ritola, Inc. for \$334,312.00, resulted in a 3-3-1 roll call vote; Goyke, Ortman and Sztynodor objected; Brede abstained. Mac Kenzie voted yes to break the tie vote and approve.

B. **Approve a City of Ashland Resolution to Repeal and Replace City of Ashland Resolution No. 17829 to Amend the Commitment of Matching Funds for Community Development Block Grant (CDBG) Application for the 2026 13th Avenue East Reconstruction Project (Public Works) Roll**

A motion by Ortman and seconded by Goyke to approve the resolution passed unanimously by roll call vote.

File #17832

- C. **Approve a Preliminary Resolution Declaring Intent to Levy Special Assessments under Municipal Police Power Pursuant to Sec. 66.0703, WI State Statute for the 2025 Chapple Avenue Reconstruction Project** (*Public Works*) Roll

A motion by Goyke and seconded by Seefeldt to approve the resolution. Z. Jablonski was warned by the Mayor to silence his comments during Council's discussion, and at 6:30 PM was asked to be removed from the Chambers due to his disruption. The motion passed 6-1 by roll call vote; Ortman opposed.

File #17833

- D. **Approve a Preliminary Resolution Declaring Intent to Levy Special Assessments under Municipal Police Power Pursuant to Sec. 66.0703, WI State Statute for the 2025 Ellis Avenue Pavement Replacement Project** (*Public Works*) Roll

A motion by Ortman and seconded by Seefeldt to approve the resolution passed 6-1 by roll call vote; Ortman opposed.

File #17834

9. NEW BUSINESS

- A. **Consider an Ordinance to Repeal Chapter 50 (2020-1934) Main Street Board, Ashland City Ordinances** (*Clerk*) Roll

A motion by Ortman and seconded by Seefeldt to approve the ordinance passed unanimously by roll call vote.

File #2025-2015

- B. **Consider an Ordinance to Amend Chapter 806 (201-1884) Ordinance to Approve a Planned Unit Development-General Development Plan (PUD-GDP), Ashland City Ordinances, to Allow a Multi-Family Use in the Mixed Residential/Commercial (MRC) with Gateway Overlay (MRC-GTWY) Zoning District, Parcel No. 201-00356-0000, Located in the 400 Block of Beaser Avenue between Beaser Avenue and 11th Avenue West; Applicant: Vision, Inc, Superior, Wisconsin** (*Planning and Development*) Roll

Ortman moved, seconded by Szyndor, to approve the ordinance. Wickman recommended corrections to the proposed ordinance for readability and reference of the attachment. Council approved the changes to the ordinance unanimously by voice vote. The motion to approve the amended ordinance was approved 6-0-1 by roll call vote; Seefeldt abstained.

10. ADJOURNMENT

A motion by Goyke and seconded by Gregoire to adjourn passed unanimously by voice vote.

Respectfully Submitted,

Denise Oliphant,
City Clerk

MEETING MINUTES
COMMITTEE OF THE WHOLE MEETING
Tuesday, May 13, 2025 – 6:00 PM
Ashland City Hall Council Chambers

1. **Roll Call**

The Tuesday, May 13, 2025 City of Ashland Committee of the Whole Meeting was called to order by Council President Charlie Ortman at 7:05 PM.

PRESENT: Kevin Seefeldt, Shawn Brede, Peter Levi, Andrew Goyke, James Gregoire, Charlie Ortman, Nancy Sztynдор

ABSENT: None.

ALSO PRESENT: Mayor Matthew MacKenzie, City Administrator Brant Kucera, City Clerk Denise Oliphant, Public Works Director John Butler, and other interested citizens.

2. **Approval of Agenda**

A motion by Goyke, seconded by Seefeldt to approve, passed unanimously by voice vote.

3. **Council President's Report**

Ortman noted he was pleased with the process and results of the Strategic Plan for the next five years.

4. **DISCUSSION & POSSIBLE ACTION REGARDING:**

A. **Presentation from Charmaine Swan, a Specialist for Public Policy and Advocacy at the American Lung Association**

Charmaine Swan did a presentation for Council in support of creating an ordinance regulating vape shops. Council agreed to discuss at a future meeting.

B. **Memorandum of Understanding (MOU) between the City of Ashland and Ashland Rotary Regarding the Splashpad Project (*Public Works*)**

The item was introduced by Butler, and Denise Kontny of Ashland Rotary was available for questions from Council. Seefeldt moved, seconded by Levi to forward the MOU to Council for formal approval. The motion carried 5-2 by voice vote; Goyke and Gregoire opposed.

C. **Development of an Ordinance for Vacant Homes in the City of Ashland (*Administrator*)**

Kucera requested to move this item to the next Committee of the Whole agenda to better present examples to Council.

D. **Development of a Municipal Court System (*Administrator*)**

The item was introduced by Kucera who offered pros and cons for proceeding with an ordinance. Council determined to return this item to a future Committee of the Whole meeting with more information for discussion.

5. **Items for Future Discussion**

Council agreed to continue conversation regarding a proposed vape shop ordinance. It was determined that this item be discussed at the Plan Commission level before coming back to the Committee of the Whole.

Sztyndor requested that the City Heights Road comment made during the Council Citizen Participation Period, be addressed by the Public Works Committee.

6. **Adjournment**

A motion by Goyke and seconded by Seefeldt to adjourn passed unanimously by voice vote.

Respectfully Submitted,

Denise Oliphant,
City Clerk

Ref: 2025-114

COUNCIL AGENDA: 5.B.
(5/27/2025)

SUBJECT: Appointments

RECOMMENDATION: Approval

DEPARTMENT OF ORIGIN: Administrator

CLEARANCES: Mayor

EXHIBITS:

EXPENDITURES REQUIRED: NA

AMOUNT BUDGETED:

APPROPRIATION REQUIRED:

TREASURER'S CERTIFICATE: NA

COMPLIANCE WITH CHAPTER 51: Section 51.26 (b) of Chapter 51, Ashland City Ordinances, permit the Mayor and/or Clerk to schedule items directly for Council action when a timely decision is needed by the City. The Mayor and/or City Clerk has chosen to direct this item directly to Council pursuant to the authority granted to them in Chapter 51, Ashland City Ordinances.

STATEMENT OF CONFORMANCE WITH COMPREHENSIVE PLAN: NA

SUMMARY STATEMENT:

The Mayor requests approval of the following appointments/reappointments:

Historical Preservation Commission

Stephen Schraufnagel, reappointment, term to expire May 2028

Parks & Recreation Committee

Mike Amman, reappointment, term to expire April 30, 2028

HARBOR COMMISSION MEETING MINUTES: **Thursday, December 12, 2024**

1. CALL TO ORDER

a. Roll Call

PRESENT: Smiles, Leino, Lewis, Yankee

ABSENT: Mathias (Excused)

ALSO PRESENT: Scott Stegmann (Marina Manager)

2. APPROVAL OF AGENDA

Motion to approve agenda: Leino
Second: Yankee
Vote: Passes Unanimously (Voice)

3. APPROVAL OF MINUTES

a. Approve August 13, 2024 Harbor Commission Minutes

Motion to approve the minutes: Leino
Second: Lewis
Vote: Passes Unanimously (Voice)

4. CITIZEN PARTICIPATION PERIOD

No members of the public present.

5. FINANCIAL STATEMENT REVIEW

a. Review Financial Statement

Stegmann reviewed the statement with the Commission. Report showed about \$73,000 in a net profit on the year, a few more bills are expected to come in, but nothing that should close the gap significantly. Lewis asked about the Professional Services and what that was. Stegmann explained that a majority of that cost was for the fuel system and to remove the "red tag" from the state inspectors. A firm was hired to clear that up. Stegmann also reported on the cash flow statement that expected work on the fuel tanks is still coming in the new year.

Motion to approve the financial statement: Yankee

Second: Lewis
Vote: Passes Unanimously (Voice)

6. OLD BUSINESS

- a. Approve Change Order: #0077361 Fuel System; Additional Concrete Adjacent to Building.

Stegmann stated the change order was to pour additional concrete to replace asphalt between the new pad and the marina building that was torn up and would not drain properly, so the contractor poured the area since the crew was there.

Motion to approve the change order: Smiles
Second: Lewis
Vote: Passes Unanimously (Voice)

A question was asked about the specifics of the tank. Stegmann explained the tank is above ground, and is about 30 feet long x 6-8 ft in diameter, two chambers for gas and diesel.

- b. Boat Launch Update

Stegmann reported that the City has received a grant from the Wisconsin Waterways Commission and the Joint Finance Committee for just over \$1 Million for the boat launch. The Engineer the city had done the engineering of the initial plans is now engaged in a lawsuit with the City regarding the Bay View Pier design, and Stegmann said they would not be continuing on this project. The City put out a request for qualified engineers and received two responses; one from Smith Group in Madison, and Barr in Duluth. Smith Group already has experience with the site as they assisted with the SuperFund Site, and they were selected for the project.

No action taken.

7. NEW BUSINESS

- a. Manager's Report

- Reported about the City Administrator's desire to have all departments set goals to achieve in the next year.
- Start a weekly marina newsletter, goal is to improve communication with customers in the marina. Accessed through a QR code. Also using it to take payments for the boat launch.
- The Wifi upgrade was well received by the customers at the marina. There were only two outages that were out of our control.
- West side of the Marina building roof was replaced with a steel roof.
- Boat Launch maintenance completed by volunteers and staff
- New concrete pad for the launch lift.

- Fuel system upgrades nearing the finish line.
- Security system was updated, four new cameras outside, new cameras inside, and software. Customers asking for a live feed for the marina.
- Grounds maintenance is an issue that requires improvement. Stegmann is working with Public Works to make those improvements.

Leino asked if Stegmann sees room for additional growth? The city is looking at utilizing the basin of the SuperFund site, potentially put in a floating dock to bring more people to the marina. Stegmann said the last two years has been at about 90% occupancy. About 50% of the regular occupants are from the Twin Cities. Stegmann is going to attend the Duluth Boat Show and the other partnerships they have engaged with to get the Marina's name and image out there. He's optimistic that more and more people will be using the facilities, especially when the boat launch is completed.

8. ADJOURNMENT

Motion to Adjourn: Smiles
Second: Yankee
Vote: Passes Unanimously (Voice)

Case Activity Report

04/01/2025 - 04/30/2025

Case #	Case Date	Assigned To	Main Status	Description	Closed Date	Parcel #	Parcel Address
20250119	4/22/2025	Raymond Kallio	Closed	vehicles in yard	4/30/2025	201027470000	1007 5TH AVE E
20250137	4/30/2025	Raymond Kallio	Closed	car in yard	5/9/2025	201021280000	614 7TH AVE E
20250138	4/30/2025	Raymond Kallio	Closed	misc storage	5/13/2025	201021610000	613 5TH AVE E
20250132	4/29/2025	Raymond Kallio	Open	tires		201025120000	811 2ND AVE E
20250133	4/29/2025	Raymond Kallio	Open	Tires		201045290000	1120 6TH AVE W
20250134	4/29/2025	Raymond Kallio	Open	tires and debris		201001790000	1005 3RD ST W
20250135	4/29/2025	Raymond Kallio	Closed	debris	5/5/2025	201003840000	501 11TH AVE W
20250136	4/29/2025	Raymond Kallio	Open	debris		201003830000	505 11TH AVE W
20250121	4/23/2025	Raymond Kallio	Closed	Tires	5/14/2025	201044620000	916 8TH ST W
20250111	4/15/2025	Raymond Kallio	Closed	garbage		201005880000	703 16TH AVE W
20240502	12/2/2024	Raymond Kallio	Open	furniture in front yard		201017560000	309 7TH AVE E
20250078	3/13/2025	Raymond Kallio	Closed	tires	4/28/2025	201027530000	1023 PRENTICE AVE
20250089	3/20/2025	Raymond Kallio	Closed	messy yard	4/28/2025	201031140000	1115 12TH AVE W
20250093	3/27/2025	Raymond Kallio	Closed	debris	5/2/2025	201011580000	1415 FRONT ST E
20250102	4/8/2025	Raymond Kallio	Closed	debris	4/28/2025	201017980000	1409 4TH ST E

20250103	4/9/2025	Raymond Kallio	Closed	misc storage	4/28/2025	201006040000	803 14TH AVE W
20250104	4/10/2025	Raymond Kallio	Closed	tires	5/14/2025	201030170000	919 9TH AVE W
20250106	4/10/2025	Raymond Kallio	Closed	tire	4/28/2025	201043850000	715 10TH AVE W
20250126	4/25/2025	Raymond Kallio	Open	debris and tires		201014460000	114 13TH AVE E
20250127	4/25/2025	Raymond Kallio	Closed	misc storage	5/6/2025	201013950000	108 7TH AVE E
20250128	4/25/2025	Raymond Kallio	Open	toilet in yard		201021690000	612 3RD AVE E
20250130	4/25/2025	Raymond Kallio	Open	furniture in yard		201034320000	2020 MAIN ST E
20250131	4/25/2025	Raymond Kallio	Open	misc storage		201030330000	1019 10TH ST W
20250124	4/24/2025	Raymond Kallio	Open	debris		201045320000	1100 6TH AVE W
20250125	4/24/2025	Raymond Kallio	Closed	garbage	5/5/2025	201002420000	320 12TH AVE W
20250088	3/18/2025	Raymond Kallio	Closed	dog feces		201047320000	WHISPERING PINES COMMUNITY 8th Ave W and 17th Ave W
20250122	4/23/2025	Raymond Kallio	Open	tires and debris		201019170000	417 5TH AVE E
20250123	4/23/2025	Raymond Kallio	Open	vehicles in yard		201019230000	409 PRENTICE AVE
20250121	4/23/2025	Raymond Kallio	Closed	Tires	5/14/2025	201044620000	916 8TH ST W
20250119	4/22/2025	Raymond Kallio	Closed	vehicles in yard	4/30/2025	201027470000	1007 5TH AVE E
20250120	4/22/2025	Raymond Kallio	Closed	debris	5/5/2025	201044570000	817 9TH AVE W

20250118	4/22/2025	Raymond Kallio	Open	couch in yard		201027210000	1022 7TH AVE E
20250085	3/17/2025	Raymond Kallio	Closed	debris	4/22/2025	201017780000	321 12TH AVE E
20250077	3/13/2025	Raymond Kallio	Closed	mattress	4/22/2025	201023780000	409 8TH ST E
20240450	10/16/2024	Raymond Kallio	Closed	debri	11/13/2024	201025660000	800 6TH AVE W
20250054	2/19/2025	Raymond Kallio	Closed	debris	4/22/2025	201012610000	407 LAKE SHORE DR E
20250058	2/25/2025	Raymond Kallio	Closed	misc storage and garbage	4/22/2025	201027910000	1013 4TH AVE W
20250066	3/4/2025	Raymond Kallio	Closed	misc storage	4/22/2025	201015720000	712 MAIN ST E
20250105	4/10/2025	Raymond Kallio	Closed	misc storage	4/22/2025	201005410000	621 11TH AVE W
20250098	3/31/2025	Raymond Kallio	Closed	tires	4/22/2025	201012580000	502 ST CLAIRE ST
20250114	4/21/2025	Raymond Kallio	Open	No permit		201027580000	1020 2ND AVE W
20250116	4/21/2025	Raymond Kallio	Closed	misc storage	5/5/2025	201003230000	413 14TH AVE W
20240484	11/5/2024	Raymond Kallio	Closed	appliance	4/21/2025	201002840000	308 16TH AVE W
20250092	3/25/2025	Raymond Kallio	Closed	garbage and microwave		201002420000	320 12TH AVE W
20250094	3/27/2025	Raymond Kallio	Closed	tires	4/15/2025	201012500000	511 LAKE SHORE DR E
20250099	4/1/2025	Raymond Kallio	Closed	tires	4/15/2025	201025280000	822 3RD AVE W
20250090	3/24/2025	Raymond Kallio	Closed	garbage	4/14/2025	201023910000	716 5TH AVE E
20250072	3/10/2025	Raymond Kallio	Closed	dresser	4/14/2025	201025030000	801 3RD AVE E
20250108	4/14/2025	Raymond Kallio	Open	Tires		201021800000	205 7TH ST E

20250109	4/14/2025	Raymond Kallio	Open	Misc storage and appliance		201043790000	610 10TH AVE W
20250110	4/14/2025	Raymond Kallio	Closed	vehicle	5/1/2025	201030400000	901 11TH AVE W
20250032	1/31/2025	Raymond Kallio	Closed	junk and garbage	4/11/2025	201022990000	711 3RD AVE W
20250095	3/28/2025	Raymond Kallio	Closed	messy yard	4/11/2025	201015070000	201 14TH AVE E
20250105	4/10/2025	Raymond Kallio	Closed	misc storage	4/22/2025	201005410000	621 11TH AVE W
20250106	4/10/2025	Raymond Kallio	Closed	tire	4/28/2025	201043850000	715 10TH AVE W
20250104	4/10/2025	Raymond Kallio	Closed	tires	5/14/2025	201030170000	919 9TH AVE W
20250103	4/9/2025	Raymond Kallio	Closed	misc storage	4/28/2025	201006040000	803 14TH AVE W
20250102	4/8/2025	Raymond Kallio	Closed	debris	4/28/2025	201017980000	1409 4TH ST E
20250101	4/2/2025	Raymond Kallio	Closed	rubbish	4/7/2025	201047450000	2300 LAKE SHORE DR W
20250035	2/4/2025	Raymond Kallio	Closed	bruch	4/7/2025	201005920000	
20240368	9/4/2024	Raymond Kallio	Open	graveled yard		201025250000	807 ELLIS AVE
20250087	3/18/2025	Raymond Kallio	Closed	mattresses		201034240000	KENWOOD TERRACE COMMUNITY 18th Ave E and Main St E
20250101	4/2/2025	Raymond Kallio	Closed	rubbish	4/7/2025	201047450000	2300 LAKE SHORE DR W
20250101	4/2/2025	Raymond Kallio	Closed	rubbish	4/7/2025	201047450000	2300 LAKE SHORE DR W
20250100	4/2/2025	Raymond Kallio	Closed	rubbish	5/1/2025	201002510000	300 BEASER AVE
20250099	4/1/2025	Raymond Kallio	Closed	tires	4/15/2025	201025280000	822 3RD AVE W

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Total Records: 66

5/16/2025

Permit Detail Report

04/01/2025 - 04/30/2025

Permit #	Permit Date	Building Type	Applicant Name	Applicant Address	City, State, Zip	Description	Project Cost	Square Feet	Issued Date	Type of Work	Work Location	Total Fees	Parcel #	Parcel Address
20250069	4/30/2025	Residential - Parking Lot/Driveway	David Harries	2405 Lake Shore Dr	Ashland, WI 54806	Remove existing 514 SF walkway between house and garage and replace. Remove existing 2,900 SF blacktop driveway and re-pave blacktop. Increase driveway entrance on right-of-way with permitted ten (10) foot radius on East side. This permit is contingent upon: 1) A Right-of-Way permit needs to be obtained from the city or state as	24,000	0	5/7/2025	Driveway	2405 Lakeshore Dr	\$120.00	201033080000	2405 LAKE SHORE DR E
20250068	4/30/2025	Residential - Fence	Eugene Rich	602 2nd Ave W	Ashland, WI 54806	Maximum six (6) foot high chain link fence in side-yard. Approximately 80 Linear Feet. Note: structural posts to be located on inside of fence panels (house side)	800	80	4/30/2025	Other	602 2nd Ave W	\$75.00	201021970000	602 2ND AVE W

20250067	4/29/2025	Commercial - Miscellaneous Repair of a Commercial Structure	Scott L Bretting	66758 Bayfront Road	Ashland	Replace 20 foot of basement wall on south side damaged by broken sewer pipe and rotted floor joist. Work/excavation to be contained on property.	20,000	100	4/30/2025	Primary Structure	1215 West Main Street	\$100.00	201000590000	1215 MAIN ST W
20250066	4/29/2025	Residential - Remodel/Repair/Additions (over 5,000)	Bjorn Butz	5360 County Highway B	Iron River, WI 49935	Replacing wall behind deck on house and exterior water proofing a with drain tile by the footing going to a 3'x3' clean stone cube in the ground by the fire pit. Projected Timeline: May 20 - July 20	18,500	1	4/30/2025	Primary Structure	722 3rd Ave W	\$92.50	201023040000	722 3RD AVE W
20250065	4/28/2025	Zoning Approval - Erosion Control	Trierweiler Construction - Nick Petit	2916 S Cherry Ave	Marshfield, WI 54449	The batch plant will be located on 1 acre with the aggregate piles located on 2 acres. This permit is approved based on the following contingencies: 1. A construction work schedule is to be submitted to our office, before work begins. 2. All required WDNR/WDOT Soil Erosion reports are to be forwarded to our office.	50,000	0	5/9/2025	Accessory Structure	1721 3rd St W	\$250.00	201001200000	1721 3RD ST W

20250064	4/28/2025	Commercial - Electrical	Lake Superior Energy Company - Kris Johnson/Ann Johnson	931 Lyndhurst Bay Drive	Cloquet	Electrical Permit for relocation of electrical panel, new/relocated casework and HVAC installation.	55,000	25,000	4/28/2025	Primary Structure	401 Ellis Ave	\$275.00	201019360000	401 ELLIS AVE
20250063	4/25/2025	Residential - Roofing (Material cost over 1,000)	Rudy Listing (Father of owner)	1022 14th St W	Ashland, WI 54806	Replacing a metal roof with new metal on an existing addition.	2,500	380	4/25/2025	Primary Structure	1022 14th St W	\$30.00	201031760000	1022 14TH ST W
20250062	4/24/2025	Residential - Detached Accessory Building	Anastassia Tapsieva	516 5th Ave E	Ashland, WI 54806	Install a 4.5-foot wide by 8-foot high trellis in side-yard with concrete footing. Build and install an approx. 9-ft x 7-ft x 11-ft triangular pergola structure attached to existing slab with metal brackets/anchors.	1,000	0	4/24/2025	Accessory Structure	516 5th Ave E	\$50.00	201020100000	516 5TH AVE E
20250061	4/16/2025	Residential - Detached Accessory Building	Tina Brown	210 7th Ave E	Ashland, WI 54806	Pre-fab 10 x 20 shed from Old Hickory Sheds on graded gravel pad. Wood sided. Structure must be a minimum of three (3) feet from the property line and six (6) feet from any element of the house.	6,300	120	5/1/2025	Accessory Structure	210 7th Ave E	\$50.00	201015610000	210 7TH AVE E

20250060	4/23/2025	Residential - Roofing (Material cost over 1,000)	TM ROOFING LLC	426 TAINTER AVENUE	RICE LAKE WI 54868	TEAR OFF SHINGLES, INSTALL SHINGLES WITH ALL ACCESSORIES, WITH HAUL AWAY. REPLACE CHIMNEY FLASHINGS AND INSTALL NEW GUTTER. Note: Permit approval contingent upon the owner/contractor providing our office with a construction work schedule before work begins.	31,700	4,000	4/24/2025	Primary Structure	200 MAPLE RIDGE, ASHLAND WI	\$30.00	201049151600	200 MAPLE RIDGE
20250059	4/22/2025	Residential - Remodel/Repair/Additions (over 5,000)	Xochitl Galvan	5116 Jean Duluth Rd	Duluth	Installing 104 feet of garage foundation exterior waterproofing and 20 feet of exterior discharge. Permit contingent upon 1) The owner/contractor providing us with a construction work schedule. 2) An agreement is set up between the northern neighbor, if the contractor is going to be working on	14,170	1	4/28/2025	Accessory Structure	Detached garage	\$70.85	201031880000	1415 12TH AVE W

20250058	4/22/2025	Residential - Detached Accessory Building	Brooke White	1814 6th Street West	Ashland WI 54806	New Pre-fab storage shed replacing existing smaller shed. Structure (including eaves) must be a minimum of three (3) feet away from the interior side and rear parcel lines. Note: No metal siding allowed. The existing shed will be moved off-site at the time the new one is	7,000	192	4/23/2025	Accessory Structure	1814 6th St W	\$50.00	201004830000	1814 6TH ST W
20250057	4/21/2025	Commercial - Miscellaneous Repair of a Commercial Structure	H Window	401 17th Ave W	Ashland	Interior renovation of existing offices including dividing existing rooms into smaller offices, adding enclosed offices to larger existing open room, relocating interior doors, etc. A portion of the existing restrooms will be divided off for a new unisex restroom and separate shower room. Permit approved upon the condition that a construction work schedule	100,000	4,451	4/29/2025	Primary Structure	800 Sum Road, Ashland WI	\$500.00	201050630000	800 SUM RD
20250056	4/21/2025	Residential - Detached Accessory Building	Brooke White	1814 6th Street West	Ashland, WI, 54806	Premade Shed	12,672	336			1814 6th Street West Ashland WI 54806		201004830000	1814 6TH ST W

20250055	4/17/2025	Commercial - Fence	The C. Reiss Co.	111 West Mason Street	Green Bay	822 linear feet of fence with (1) 30-foot double swinging gate.	32,800	822		Other	601 1/2 Lake Shore Drive	\$100.00	201007170000	
20250054	4/16/2025	Commercial - New/Replacement HVAC System	Adam Caldwell	616 Glenwood St	Duluth	Replace two RTU's, install two new RTU's, install new hood, make up air, and exhaust system	400,000	35,000	4/25/2025	Primary Structure	401 Ellis Ave S	\$2,000.00	201019360000	401 ELLIS AVE
20250053	4/16/2025	Residential - Siding (material cost over 1,000)	Tim Pavlish	908 9th Ave W	Ashland, WI 54806	Replace siding on two sides of the residence - south and west sides. Cedar Shakes. 1,100 SF of area	25,000	0	4/16/2025	Primary Structure	908 9th Ave W	\$30.00	201030130000	908 9TH AVE W
20250052	4/15/2025	Residential - Roofing (Material cost over 1,000)	Local Roofing- LLC, dba Hayward Roofing	77 Downtown Plaza	Fairmont, MN 56031	Full tear off of roofing system, replace any rotten board if found, install new roofing system-GAF UHZ asphalt shingles, tear off chimney, install new fascia on house. New flashing on garage chimney. Permit is contingent on providing our office with a construction schedule and timeline.	15,028	1,500	4/17/2025	Primary Structure	1214 10th St W	\$30.00	201006460000	1214 10TH ST W
20250051	4/14/2025	Commercial - Accessory Structure	Jarrod Dahl	1400 3rd St W	Ashland, WI 54806	12 x 16 shed with single sloped roof behind existing building.	6,000	192	4/23/2025	Accessory Structure	1400 3rd St W	\$50.00	201002740000	1400 3RD ST W

20250050	4/10/2025	Commercial - Structural Addition/Alteration	Shane Hillen - Northwest Builders, Inc.	2063 17-1/2 Ave	Rice Lake, WI, 54868	Interior Office Remodel. This is approved contingent upon the following: 1. The General Contractor to provide us with a detailed construction work schedule. 2. A final set of HVAC plans sent to our office. No work (except for demolition) is to start on the HVAC system until such plans are received and reviewed.	145,000	1,104	4/14/2025	Primary Structure	300 W Main St., Ashland, WI 54806	\$725.00	201042750000	300 MAIN ST W
20250049	4/9/2025	Commercial - Electrical	Northern States Power Company	1414 W Hamilton Ave	Eau Claire, WI 54702	Removing existing wood pedestals and installing concrete foundations for equipment. All work to be completed inside the substation fence, within the owner's property boundaries.	3,000	127		Accessory Structure	2111 E Second St	\$25.00	201034100000	2111 E Second St

20250048	4/9/2025	Residential - Deck	Patrick Nelson	1101 Maple Ridge	ASHLAND, WI 54806	Replace old deck with new - approx. same size and layout. New footings to be installed. This permit is contingent upon: 1. All new patio deck construction work must be in compliance with the State of Wisconsin's Uniform Dwelling Code (UDC). 2. Provide our office with a detailed construction work schedule.	21,000	0	4/9/2025	Other	1101 Maple Ridge	\$50.00	201049151300	1101 MAPLE RIDGE
20250047	4/8/2025	Residential - Raze/Demolition	City of Ashland	601 Main St W	Ashland, WI 54806	Razing the house at 118 10th Ave E in accordance with Raze Order issued on 01/16/2025	0	0	4/8/2025	Primary Structure	118 10th Ave E			

20250046	4/7/2025	Commercial - Miscellaneous Repair of a Commercial Structure	Karl Faber	412 1/2 Main ST W	Ashland, WI 54806	Existing wood windows and metal storms to be replaced with vinyl double hung units. Five (5) total units. Location: second floor at south end of building along alley. A Certificate Of Appropriateness was approved on May 2, 2025 by the city planning staff. Approval is contingent upon the following: 1) The new units will replace the complete existing opening with	11,000	0	5/9/2025	Primary Structure	412 1/2 W Main St	\$55.00	201042890000	412 MAIN ST W
20250045	4/4/2025	Zoning Approval - Keeping of Animals	James H Hintze	308 11th Ave W	ASHLAND, WI 54806	Looking to put a portable chicken coop in yard. As per the UDO the coop must be located inside the required setback of 10 feet from all parcel lines and a minimum of 20 feet from any primary structures on adjacent properties. Two (2) SF of indoor protected space must be provided per chicken. A maximum limit of 6 hens (Roosters not allowed).	0	0		Accessory Structure	308 11th Ave W	\$50.00	201002290000	308 11TH AVE W

20250044	4/3/2025	Zoning Approval - Keeping of Animals	KINLER, ZACH	2900 JUNCTION RD	ASHLAND, WI 54806	Prefab Chicken Coop for up to 6 chickens. Coop must be a minimum of 10 feet away from parcel line. Roosters prohibited.	0	12	4/3/2025	Accessory Structure	2900 Junction Rd	\$50.00	201047810000	2900 JUNCTION RD
20250043	4/3/2025	Commercial - Electrical	Our Lady of the Lake Catholic Community	215 Lake Shore Drive East	Ashland	Electrical Panel Replacement/ Upgrade. This permit is contingent upon the following: 1. Provide our office with a construction work schedule when it becomes available. 2. Provide our office with equipment specification sheets for this project.	65,000	10,000	4/4/2025	Primary Structure	215 Lake Shore Drive East	\$325.00	201013310000	215 LAKE SHORE DR E
20250042	4/2/2025	Residential - Deck	Megan Sandberg	3919 Lake Park Road	Ashland, WI, 54806	Decking addition, window box stairs on east side of property, around 10 in total, each stair <3x2 feet, railing as necessary. Contractor: Adam Valanski	4,500	0	4/22/2025	Other	3919 Lake Park Road	\$50.00	201050230000	3919 LAKE PARK RD
20250041	4/2/2025	Commercial - Raze/Demolition	City of Ashland/Dan Homola	2020 6th St E	ASHLAND, WI 54806	Demo of existing warming house.	0	0		Primary Structure	East End Skating Rink		201036410000	
20250040	4/2/2025	Commercial - Construction of a new Commercial Structure	City of Ashland/Dan Homola	2020 6th St E	ASHLAND, WI 54806	New 24x24 warming house with toilets and skate rental at the East end skating rink.	0	576		Primary Structure	East End Skating Rink		201036410000	

20250039	4/1/2025	Residential - Detached Accessory Building	Richard Noennig	200 Maple Ridge	Ashland, WI	New Detached Accessory Building by Lucky Strike, LLC - Prefab. 10x16. Wood siding with metal roof on a concrete slab (to be verified). This permit is contingent upon the following: 1. All construction work on this accessory building must comply with the Uniform Dwelling Code (UDC). 2. Provide our office with a drawing showing us graphically	5,000	0	4/2/2025	Accessory Structure	200 Maple Ridge	\$50.00	201049151600	200 MAPLE RIDGE
												\$5,283.35		

Total Records: 31

5/16/2025

Ref: 2025-115

COUNCIL AGENDA: 9.A.
(5/27/2025)

SUBJECT: Approve an Agreement for Construction and Naming Rights for Amenities at the City of Ashland Railyard Park for the Splashpad Project (*Public Works*) Roll

RECOMMENDATION: Approval

DEPARTMENT OF ORIGIN: Public Works

CLEARANCES: Public Works

EXHIBITS: 1. Agreement for Construction and Naming Rights for Amenities at the City of Ashland Railyard Park

EXPENDITURES REQUIRED: \$316,679 - Ashland Rotary

AMOUNT BUDGETED: \$316,679 Ashland Rotary

APPROPRIATION REQUIRED: N/A

TREASURER'S CERTIFICATE: N/A

COMPLIANCE WITH CHAPTER 51: The Council as Committee of the Whole previously discussed and approved for this item to move forward to the Council for formal approval.

STATEMENT OF CONFORMANCE WITH COMPREHENSIVE PLAN: N/A

SUMMARY STATEMENT:

The Council as Committee of the Whole discussed a Memorandum of Understanding (MOU) at their April 15, 2025 and May 13, 2025 meetings with members of the Ashland Rotary present.

The proposed agreement presents the construction of a splash pad by Ashland Rotary with

support from City staff at Central Railyard Park. The water for the splash pad would be supplied by a groundwater well to reduce the cost of water supply. The proposed location, as shown on the attached location map, would require removal of a small playground structure.

Staff recommends Council's approval of the agreement to allow Ashland Rotary and the City to proceed with construction of the splash pad.

Agreement for Construction and Naming Rights for Amenities at the City of Ashland Railyard Park

This agreement is between the following parties; The Rotary Club of Ashland, WI. Inc., a civic corporation organized under the laws of the State of Wisconsin, (referred to as the ROTARY) and the City of Ashland (referred to as CITY) (collectively the PARTIES) is entered into for the purpose of executing a redevelopment project to upgrade and provide new amenities at Railyard Park, (referred to as the PROJECT), 316 6th Street West, in the City of Ashland, Ashland County, WI.

WITNESSETH:

WHEREAS the CITY, whose address is City of Ashland, 601 Main St W, Ashland WI 54806 has proposed improvements to Railyard Park per the Comprehensive Outdoor Recreation Plan (CORP) and is interested in actively working with ROTARY in further developing a portion of the CORP as described herein;

WHEREAS the ROTARY, whose address is PO Box 671 Ashland, WI 54806, has expressed a desire to make a donation to the CITY for to fund the PROJECT;

WHEREAS the PARTIES intend to promote and facilitate the implementation of such PROJECT;

WHEREAS the PARTIES agree to name John Butler or designee for the City and Dale Kelm or designee on behalf of Rotary;

NOW, THEREFORE, in consideration of the above premises and the mutual covenants of the PARTIES hereinafter set forth, the receipt and sufficiency of which is acknowledged by each party for itself, CITY and ROTARY do agree as follows:

1. PROJECT to include the construction of a splash pad and optional accessories including but not limited to a groundwater well, benches, shade structure and picnic tables with City approval.

Design and construction cost of the PROJECT, including the well, are estimated to be \$316,679.

2. Design & Construction Document Development:

CITY shall solicit proposals for design and construction documents for the ROTARY. The CITY shall, using 100% private funding, in concert with ROTARY and within budget constraints obtain professional services to prepare design and construction documents and perform construction administration for the PROJECT. Design and construction documents shall meet CITY standards and specifications. The CITY shall obtain a quote from the vendor providing said professional services for construction administration and shall provide proper notice to the vendor and Rotary that CITY may rely on said quote to contract with the vendor for construction administration services during construction if the project proceeds. ROTARY commits to well construction for the water source and/or modified engineering at ROTARY'S cost.

3. Bidding: Estimated Spring/Summer, 2025

The ROTARY will solicit bids for the PROJECT based on design documents developed by CITY. The ROTARY intends to solicit bids in 2025 and shall retain full control over the bid let date and the bid process. After the bids are open, and prior to entering into a contract(s), the PARTIES will meet to review the bid results and the Project Costs. In the event that the Project Costs exceed the funds available, the PARTIES will work cooperatively to identify a strategy for completing the PROJECT.

4. Construction: Estimated Summer 2025

The ROTARY will enter into a contract with the successful bidder for the construction of the PROJECT and shall oversee the construction process with assistance from the CITY. The ROTARY will pay vendor invoices for construction work completed for the PROJECT, including any change orders. The ROTARY will not approve any change orders that would make the total construction cost for the PROJECT exceed \$316,629 without the consent of the CITY.

5. ROTARY shall donate the completed PROJECT to CITY. Rotary shall also provide a gift to the City totaling \$10,000 within the first five years of establishment to assist with site maintenance.
6. ROTARY shall receive and manage the donated funds until donated to the CITY.
7. Naming Rights and Signage: The PROJECT will be named in honor of the Ashland Rotary and Vivian Family as further described below. The naming rights shall endure for twenty-five (25) years after construction completion. After 25 years the PARTIES will discuss and come to a mutual agreement with details to be determined at that time. Further description of the recognition of the naming rights is as follows:

- Hanging recognition sign in Railyard Park.
- Name on splash pad

- City of Ashland webpage with sub-header and text highlighting family history and gift
 - Ashland Rotary Club webpage highlighting family history and gift
 - City of Ashland and Ashland Rotary Club Facebook posts highlighting donation
 - ROTARY press event announcing donation
 - City of Ashland press event/ribbon cutting upon construction completion
8. Monitoring Progress: At least once a month, and more often if needed, the parties will meet either in person or thru teleconference to discuss PROJECT progress until project completion.
 9. Publicity: All publicity shall recognize the ROTARY and CITY.
 10. Termination: The PARTIES may cancel this Agreement upon written notice at any time prior to ROTARY or CITY signing any contracts for professional services or construction.
 11. ROTARY shall indemnify, hold harmless and defend CITY, its boards, commissions, agencies, officers, employees and representatives against any and all liability, loss, damages, costs or expenses which CITY, its officers, employees, agencies, boards, commissions and representatives may sustain, incur or be required to pay by reason of implementing the project under this agreement, provided, however, that the provisions of this paragraph shall not apply to liabilities, losses, charges, costs, or expenses caused by or resulting from the acts or omissions of CITY, its agencies, boards, commissions, officers or employees. The obligations of the parties under this paragraph shall survive the expiration or termination of this agreement.
- Post construction this project will be owned, maintained and overseen by the City of Ashland.
- Nothing contained within this agreement is intended to be a waiver by the contracting municipality or its insurer to rely upon the limitations, defenses, and immunities contained within Wisconsin law, including those contained within Wisconsin Statutes §§ 893.80, 895.52, and 345.05.
12. Non Discrimination: Parties agree not to discriminate on the basis of age, race, ethnicity, religion, color, gender, disability, marital status, sexual orientation, national origin, cultural differences, ancestry, physical appearance, arrest record or conviction record, military participation or membership in the national guard, state defense force or any other reserve component of the military forces of the United States, or political beliefs against any person, whether a recipient of services (actual or potential) or an employee or applicant for employment for the entirety of the PROJECT.

13. Enforcement: This agreement is entered into with goodwill and expectation of completion. Any concerns of any party shall be discussed in the meetings per section 9 or at other meetings to be set. If unable to come to agreement the Termination may occur per section 11.

IN WITNESS WHEREOF, CITY and ROTARY by their respective authorized agents, have caused this agreement and its appendices to be executed, effective as of the date by which all parties hereto have affixed their respective signatures, as indicated below.

FOR ASHLAND ROTARY CLUB:

Date Signed:	_____	_____
		Dale, Kelm, Club Co-President
	_____	_____
		Mark Abeles-Allison, Club Co-President
	_____	_____
		Denise Kontny, Past President

FOR THE CITY OF ASHLAND

Date Signed:	_____	_____
		Ashland Mayor
Date Signed:	_____	_____
		City Clerk

Ref: 2025-116

**COUNCIL AGENDA:
10.A. (5/27/2025)**

SUBJECT: Public Hearing Regarding the Proposed Resolution Petitioning the Secretary of Transportation for Airport Improvement Aid (Roll)

RECOMMENDATION: Approval

DEPARTMENT OF ORIGIN: Airport

CLEARANCES: The Council as Committee of the Whole previously discussed and approved for this item to move forward to the Council for formal approval.

EXHIBITS: 1. Public Hearing Notice - Published May 1, 2025

EXPENDITURES REQUIRED: NA

AMOUNT BUDGETED:

APPROPRIATION REQUIRED:

TREASURER'S CERTIFICATE: NA

COMPLIANCE WITH CHAPTER 51: Section 51.26 (b) of Chapter 51, Ashland City Ordinances, permit the Mayor and/or Clerk to schedule items directly for Council action. The Mayor and/or City Clerk has chosen to direct this item directly to Council pursuant to the authority granted to them in Chapter 51, Ashland City Ordinances.

STATEMENT OF CONFORMANCE WITH COMPREHENSIVE PLAN:

SUMMARY STATEMENT:

According to [WI Statutes 114.33](#), a public hearing notice must be made not less than ten (10) days prior to the approval of the proposed resolution:

114.33

(1) Any county, city, village or town, either singly or jointly with one or more counties, cities, villages or towns, or any owner of a public-use airport desiring to sponsor an airport development project to be constructed with federal aid and state aid or with the state aid alone as provided by this chapter, may initiate such project in the manner provided by this section. The department may initiate and sponsor an airport project in the same manner as a local governing body. If the department initiates and sponsors an airport project, it shall hold a hearing in the area affected by the project. Notice of the hearing shall be given as provided in sub. (2). The department may install, operate and maintain air navigation facilities with or without federal aid and may enter into agreements with sponsors to share the maintenance and operation costs of such facilities.

(2) Such initiation shall be by a petition filed with the secretary by the governing body or bodies of the counties, cities, villages or towns or by the governing body of a public-use airport not owned by a county, city, village or town desiring to sponsor the project, or if the project is initiated and sponsored by the department by a statement by the secretary setting forth among other things that the airport project is necessary and the reason therefor; the class of the airport that it is desired to develop, the location of the project in general, and the proposed site tentatively selected; the character, extent and kind of improvement desired under the project, evidence, in the form of a transcript, that the project has received a public hearing in the area affected before adoption by the petitioners, and any other statements that the petitioners or the department may desire to make. At least 10 days' notice of the public hearing shall be given by publication of a class 1 notice, under ch. 985, in the area affected.

The Clerk's office confirms that proper notice has been made. The public hearing notice was published as a Class I notice on May 1, 2025 in the Ashland Daily Press, as well as posted at three public places, including City Hall, the Vaughn Library, and Ashland County, and posted to the City's website and social media pages. This public notice was originally published on January 23, 2025 but according to the Department of Transportation, not enough notice was allotted at that time.



NOTICE OF PUBLIC HEARING REGARDING A
RESOLUTION PETITIONING THE WISCONSIN
SECRETARY OF TRANSPORTATION FOR
AIRPORT IMPROVEMENT AID BY THE COMMON
COUNCIL OF THE CITY OF ASHLAND, ASHLAND
AND BAYFIELD COUNTIES, WISCONSIN

PLEASE TAKE NOTICE that the governing body of the City of Ashland, Wisconsin, will consider a resolution for approval to petition for aid for improvements at the John F. Kennedy Memorial Airport, 50511 State Highway 112, Ashland, Wisconsin, on Tuesday, May 27, 2025.

The character, extent, and kind of improvements desired under the project are as follows:

Rehabilitate/Reconstruct Runway 13/31, including lighting and signs; Rehabilitate/Reconstruct Runway 2/20, including lighting and signs; Install Precision Approach Path Indicators (PAPI) for Runway 13; Convert Runway 20 PAPI to LED; Install Runway End Identifier Lights (REIL) for Runway 13/31; Rehabilitate/Reconstruct/Widen/Construct entrance road; Reconstruct/Rehabilitate/Construct Taxiways/Taxilanes, including lighting and signs; Reconstruct/Rehabilitate/Expand apron; Pavement maintenance and markings; Land acquisition for runway approaches; Land acquisition for entrance road widening; Construct/Rehabilitate/Reconstruct/Purchase snow removal equipment storage building, including drainage improvements; Replace/enhance/improve/expand/purchase fuel system, including containment; Construct Drainage improvements; Purchase mowing equipment; Purchase snow removal equipment; Conduct wildlife site visit update; Rehabilitate/Expand/Construct/Purchase terminal building; Prepare airport master plan; Update Airport Layout Plan, including bringing Exhibit A Property Map to standards; Conduct airport boundary survey; Wind Cone and segmented circle improvements; Rehabilitate/Reconstruct parking lot(s); Rehabilitate/Reconstruct/Construct/Purchase hangar(s); Rehabilitate/Reconstruct/Construct fencing/gates; Construct/expand hangar development area; Automated Weather Observation System (AWOS) improvements; Reimburse Development of Airport Overlay Land Use Ordinance; Clear and maintain runway approaches as stated in Wis. Admin. Code Trans §55, and any necessary related work.

You are further notified that the governing body of the City of Ashland, Wisconsin, will hear all interested persons, or their agents of attorneys, concerning the matter contained in the resolution above described report on **May 27, 2025 at 6:00 PM at City Hall Council Chambers, 601 Main Street West, Ashland, WI**. All objections will be considered at this hearing. To attend virtually, the meeting from your computer, tablet or smartphone: <https://global.gotomeeting.com/join/500263957> or dial in using your phone (Toll Free): 1-877-309-2073 Access Code: 500-263-957. Please contact the Clerk's office at 715-682-7071 if you require accommodations to attend the meeting.

The City of Ashland does not discriminate on the basis of race, sexual orientation, color, national origin, sex, religion, age or disability in employment or provisions of services programs or activities.

Denise Oliphant,
Ashland City Clerk

Noticed: May 1, 2025

Ref: 2025-117

**COUNCIL AGENDA:
10.B. (5/27/2025)**

SUBJECT: Approve a Resolution Petitioning the Secretary of Transportation for Airport Improvement Aid for JFK Memorial Airport (*Airport*) Roll

RECOMMENDATION: Approval

DEPARTMENT OF ORIGIN: Airport

CLEARANCES: The Council as Committee of the Whole previously discussed and approved this item to move forward to the Council for formal approval.

EXHIBITS:

1. Proposed Resolution No. 17835
2. Proposed Improvements for JFK Memorial Airport
3. Letter RE John F. Kennedy Memorial Airport Petition Package
4. John F. Kennedy Memorial Airport Ashland, WI - Land Map

EXPENDITURES REQUIRED: NA

AMOUNT BUDGETED:

APPROPRIATION REQUIRED:

TREASURER'S CERTIFICATE: NA

COMPLIANCE WITH CHAPTER 51: Section 51.26 (b) of Chapter 51, Ashland City Ordinances, permit the Mayor and/or Clerk to schedule items directly for Council action when a timely decision is needed by the City. The Mayor and/or City Clerk has chosen to direct this item directly to Council pursuant to the authority granted to them in Chapter 51, Ashland City Ordinances.

STATEMENT OF CONFORMANCE WITH COMPREHENSIVE PLAN:

SUMMARY STATEMENT:

An approved petition resolution is submitted for continued annual funding from the FAA and the Wisconsin Bureau of Aeronautics. As described within the resolution, the requested improvement description includes the runway reconstruction including lighting and signs which is slated for 2025. The petition resolution authorizes representatives of the governing body to execute the agency agreement and owner assurances.

This item was discussed at multiple Airport Commission, Committee of the Whole, and City Council meetings and was recommended for formal approval. Due to the untimely publication of the public hearing notice in January 2025, the Department of Transportation recommended holding another public hearing. The Clerk's office has confirmed that proper notice has been made as a Class I notice on May 1, 2025 in the Ashland Daily Press, as well as posted at three public places, and posted to the City's website and social media pages.

RESOLUTION No. 17835

RESOLUTION PETITIONING THE SECRETARY OF TRANSPORTATION FOR AIRPORT IMPROVEMENT AID

BY

Common Council of the City of Ashland
Ashland County, Wisconsin

WHEREAS, the City of Ashland, Ashland County, Wisconsin, Wisconsin hereinafter referred to as the sponsor, being a municipal body corporate of the State of Wisconsin, is authorized by Wis. Stat. §114.11, to acquire, establish, construct, own, control, lease, equip, improve, maintain, and operate an airport, and

WHEREAS, the sponsor desires to develop or improve the John F. Kennedy Memorial Airport, Ashland County, Wisconsin,

"PETITION FOR AIRPORT PROJECT"

WHEREAS, the foregoing proposal for airport improvements has been referred to the city plan commission for its consideration and report prior to council action as required by Wis. Stat. §62.23(5), and

WHEREAS, airport users have been consulted in formulation of the improvements included in this resolution, and

WHEREAS, a public hearing was held prior to the adoption of this petition in accordance with Wis. Stat. §114.33(2) as amended, and a transcript of the hearing is transmitted with this petition.

THEREFORE, BE IT RESOLVED, by the sponsor that a petition for federal and (or) state aid in the following form is hereby approved:

The petitioner, desiring to sponsor an airport development project with federal and state aid or state aid only, in accordance with the applicable state and federal laws, respectfully represents and states:

1. That the airport, which it is desired to develop, should generally conform to the requirements for a general aviation type airport as defined by the Federal Aviation Administration.
2. The character, extent, and kind of improvements desired under the project are as follows:

Rehabilitate/Reconstruct Runway 13/31, including lighting and signs; Rehabilitate/Reconstruct Runway 2/20, including lighting and signs; Install Precision Approach Path Indicators (PAPI) for Runway 13; Convert Runway 20 PAPI to LED; Install Runway End Identifier Lights (REIL) for Runway 13/31; Rehabilitate/Reconstruct/~~Widen~~/Construct entrance road; Reconstruct/Rehabilitate/Construct Taxiways/Taxilanes, including lighting and signs; Reconstruct/Rehabilitate/Expand apron; Pavement maintenance and markings; ~~Land acquisition for runway approaches~~; ~~Land acquisition for entrance road widening~~; Construct/Rehabilitate/Reconstruct/Purchase snow removal equipment storage building, including drainage improvements; Replace/enhance/improve/expand/purchase fuel system, including containment; Construct Drainage improvements; Purchase mowing equipment; Purchase snow removal equipment; Conduct wildlife site visit update; Rehabilitate/Expand/Construct/Purchase terminal building;

Prepare airport master plan; Update Airport Layout Plan, including bringing Exhibit A Property Map to standards; Conduct airport boundary survey; Wind Cone and segmented circle improvements; Rehabilitate/Reconstruct parking lot(s); Rehabilitate/Reconstruct/Construct/~~Purchase~~ hangar(s); Rehabilitate/Reconstruct/Construct fencing/gates; Construct/expand hangar development area; Automated Weather Observation System (AWOS) improvements; ~~Reimburse Development of Airport Overlay Land Use Ordinance~~; Clear and maintain runway approaches as stated in Wis. Admin. Code Trans §55, and any necessary related work.

3. That the airport project, which your petitioner desires to sponsor, is necessary for the following reasons: to meet the existing and future needs of the airport.

WHEREAS, it is recognized that the improvements petitioned for as listed will be funded individually or collectively as funds are available, with specific project costs to be approved as work is authorized, the proportionate cost of the airport development projects described above which are to be paid by the sponsor to the Secretary of the Wisconsin Department of Transportation (hereinafter referred to as the Secretary) to be held in trust for the purposes of the project; any unneeded and unspent balance after the project is completed is to be returned to the sponsor by the Secretary; the sponsor will make available any additional monies that may be found necessary, upon request of the Secretary, to complete the project as described above; the Secretary shall have the right to suspend or discontinue the project at any time additional monies are found to be necessary by the Secretary, and the sponsor does not provide the same; in the event the sponsor unilaterally terminates the project, all reasonable federal and state expenditures related to the project shall be paid by the sponsor; and

WHEREAS, the sponsor is required by Wis. Stat. §114.32(5) to designate the Secretary as its agent to accept, receive, receipt for and disburse any funds granted by the United States under the Federal Airport and Airway Improvement Act, and is authorized by law to designate the Secretary as its agent for other purposes.

"DESIGNATION OF SECRETARY OF TRANSPORTATION AS SPONSOR'S AGENT"

THEREFORE, BE IT RESOLVED, by the sponsor that the Secretary is hereby designated as its agent and is requested to agree to act as such, in matters relating to the airport development project described above, and is hereby authorized as its agent to make all arrangements for the development and final acceptance of the completed project whether by contract, agreement, force account or otherwise; and particularly, to accept, receive, receipt for and disburse federal monies or other monies, either public or private, for the acquisition, construction, improvement, maintenance and operation of the airport; and, to acquire property or interests in property by purchase, gift, lease, or eminent domain under Wis. Stat. §32.02; and, to supervise the work of any engineer, appraiser, negotiator, contractor or other person employed by the Secretary; and, to execute any assurances or other documents required or requested by any agency of the federal government and to comply with all federal and state laws, rules, and regulations relating to airport development projects.

FURTHER, the sponsor requests that the Secretary provide, per Wis. Stat. §114.33(8)(a), that the sponsor may acquire certain parts of the required land or interests in land that the Secretary shall find necessary to complete the aforesaid project.

"AIRPORT OWNER ASSURANCES"

AND BE IT FURTHER RESOLVED that the sponsor agrees to maintain and operate the airport in accordance with certain conditions established in Wis. Admin. Code Trans §55, or in accordance with sponsor assurances enumerated in a federal grant agreement.

AND BE IT FURTHER RESOLVED THAT THE MAYOR AND CITY CLERK be authorized to sign and execute the agency agreement and federal block grant owner assurances authorized by this resolution.

PASSED: May 27, 2025

Councilperson

ATTEST:

Denise Oliphant, City Clerk

Matthew Mac Kenzie, Mayor

APPROVED AS TO FORM:

Tyler W. Wickman, City Attorney

**AGENCY AGREEMENT AND
FEDERAL BLOCK GRANT OWNER ASSURANCES**

**Department of Transportation
Bureau of Aeronautics
Madison, Wisconsin**

WHEREAS, the City of Ashland, Ashland County, Wisconsin, hereinafter referred to as the sponsor, desires to sponsor an airport development project to be constructed with federal aid and/or state aid, specifically, the John F Kennedy Memorial Airport project to:

Rehabilitate/Reconstruct Runway 13/31, including lighting and signs; Rehabilitate/Reconstruct Runway 2/20, including lighting and signs; Install Precision Approach Path Indicators (PAPI) for Runway 13; Convert Runway 20 PAPI to LED; Install Runway End Identifier Lights (REIL) for Runway 13/31; Rehabilitate/Reconstruct/~~Widen~~/Construct entrance road; Reconstruct/Rehabilitate/Construct Taxiways/Taxilanes, including lighting and signs; Reconstruct/Rehabilitate/Expand apron; Pavement maintenance and markings; ~~Land acquisition for runway approaches; Land acquisition for entrance road widening~~; Construct/Rehabilitate/Reconstruct/Purchase snow removal equipment storage building, including drainage improvements; Replace/enhance/improve/expand/purchase fuel system, including containment; Construct Drainage improvements; Purchase mowing equipment; Purchase snow removal equipment; Conduct wildlife site visit update; Rehabilitate/Expand/Construct/Purchase terminal building; Prepare airport master plan; Update Airport Layout Plan, including bringing Exhibit A Property Map to standards; Conduct airport boundary survey; Wind Cone and segmented circle improvements; Rehabilitate/Reconstruct parking lot(s); Rehabilitate/Reconstruct/Construct/~~Purchase~~ hangar(s); Rehabilitate/Reconstruct/Construct fencing/gates; Construct/expand hangar development area; Automated Weather Observation System (AWOS) improvements; ~~Reimburse Development of Airport Overlay Land Use Ordinance~~; Clear and maintain runway approaches as stated in Wis. Admin. Code Trans §55, and any necessary related work.

WHEREAS, the sponsor adopted a resolution on January 28, 2025, a copy of which is attached and the prescribed terms and conditions of which are fully incorporated into this agreement, designating the Secretary as its agent and requesting the Secretary to act as such as set forth in the resolution, and agreeing to maintain and operate the airport in accordance with certain conditions; and

AGENCY AGREEMENT.....

WHEREAS, upon such request, the Secretary is authorized by law to act as agent for the sponsor until financial closing of this project;

NOW THEREFORE, the sponsor and the Secretary do mutually agree that the Secretary shall act as the sponsor's agent in the matter of the airport development as provided by law and as set forth in the referenced resolution; provided, however, that the Secretary is not required to provide legal services to the sponsor.

By: SECRETARY OF TRANSPORTATION

David M. Greene, Director
Bureau of Aeronautics

(Date)

FEDERAL BLOCK GRANT OWNER ASSURANCES.....

WHEREAS, the sponsor does agree to the conditions established in Wis. Admin. Code Trans §55, and for projects receiving federal aid, to the attached federal sponsor assurances, which are a condition of a federal grant of funds.

The federal block grant owner assurances shall remain in full force and effect throughout the useful life of the facilities developed under this project, but in any event not to exceed twenty (20) years from the date of the finding (except for land projects, which shall run in perpetuity);

Acceptance: The sponsor does hereby accept the agency agreement and the federal block grant owner assurances.

Sponsor: The City of Ashland, Ashland County, Wisconsin

Matthew Mac Kenzie, Mayor

Denise Oliphant, City Clerk

Date

Date

Proposed Improvements for JFK Memorial Airport

- Rehabilitate/Reconstruct Runway 2/20, including lighting and signs (Beginning May 2025);
- Rehabilitate/Reconstruct Runway 13/31, including lighting and signs;
- Install Precision Approach Path Indicators (PAPI) for Runway 13;
- Convert Runway 20 PAPI to LED;
- Install Runway End Identifier Lights (REIL) for Runway 13/31;
- Rehabilitate/Reconstruct/Widen/Construct entrance road;
- Reconstruct/Rehabilitate/Construct Taxiways/Taxilanes, including lighting and signs;
- Reconstruct/Rehabilitate/Expand apron;
- Pavement maintenance and markings;
- Land acquisition for runway approaches;
- Land acquisition for entrance road widening;
- Construct/Rehabilitate/Reconstruct/Purchase snow removal equipment storage building, including drainage improvements;
- Replace/enhance/improve/expand/purchase fuel system, including containment;
- Construct Drainage improvements;
- Purchase mowing equipment;
- Purchase snow removal equipment;
- Conduct wildlife site visit update;
- Rehabilitate/Expand/Construct/Purchase terminal building;
- Prepare airport master plan;
- Update Airport Layout Plan, including bringing Exhibit A Property Map to standards;
- Conduct airport boundary survey;
- Wind Cone and segmented circle improvements;
- Rehabilitate/Reconstruct parking lot(s);
- Rehabilitate/Reconstruct/Construct/Purchase hangar(s);
- Rehabilitate/Reconstruct/Construct fencing/gates;
- Construct/expand hangar development area;
- Automated Weather Observation System (AWOS) improvements;
- Reimburse Development of Airport Overlay Land Use Ordinance;
- Clear and maintain runway approaches as stated in Wis. Admin. Code Trans §55, and any necessary related work

The purpose of a petition is to allow the DOT to act as agent for an airport in regard to a list of projects contained in the petition. Because Wisconsin is a channeling act state, airports are not allowed to seek any funds from the FAA without the request coming through the state. Projects are listed on a petition to limit the scope of the agency agreement (contained in the resolution and the section that allows DOT to act as agent). This petition process also satisfies a requirement to have a public involvement component of each project. Sponsors are not obligated to start or complete projects listed in the petition; it is simply a list of projects that the airport is interested in exploring over the next six years (the lifespan of a petition). The petition process can be a little confusing, but the obligations apply to “facilities developed under [a] project”; not the petitioned list of proposed projects. - WI BOA



Division of Transportation
Investment Management
PO Box 7914
Madison, WI 53707-7914

Scott Walker, Governor
Dave Ross, Secretary
Internet: <http://wisconsindot.gov>

Telephone: 608-266-3351
Facsimile (FAX): 608-267-6748

December 16, 2024

KARL KEMPER
JOHN F. KENNEDY MEMORIAL AIRPORT
ASHLAND, WISCONSIN

John F. Kennedy Memorial Airport Petition Package

Dear Karl:

As we discussed, here is a petition package to match the items covered in the July hearing notice. It covers all the items coming up in the airport's improvement program, including a refreshing of some of the items in the last petition. I have made up separate documents for the city and the county to sign. I think this is the way John has done these in the past—that is, having the city and county sign their own petition resolutions rather than having the airport commission sign and then get validation resolutions from the city and county.

I have enclosed the following to get you started on your airport's petition for federal and state aid for an airport development project:

1. Airport Aid Petition Resolution Checklist.
2. Resolution petitioning the Secretary for Airport Improvement Aid (one for the City and one for the County)
3. Agency and Assurances Agreement (one for the City and one for the County)
4. Chapter Trans 55, Wisconsin Administrative Code.
5. Federal Owner Assurances
6. Sample of the Notice of Public Hearing.
7. Sample of the Affidavit of Publication of the hearing notice.
8. Information on the airport development hearing process.
9. Information to be submitted in support of airport aid petitions.

It may be helpful for you to call Evan Krueger, the bureau's project manager for your airport, to discuss your request, to be ensure all needed work items are included. This will help assure no step in the process is missed and avoid the need for a new resolution.

The public hearing is the first step in the petition process. Wisconsin Statutes require at least **ten (10)** days notice of the public hearing is provided by publication of a Class I notice in the local legal paper. It is also imperative that **all** the work items you wish to petition for are listed in the notice and addressed in the public hearing. An affidavit of publication signed by the publisher and notarized is also required. An exhibit showing the location of the proposed work (including land to be acquired) should be made available for inspection at the public hearing. Please include a copy of this exhibit in your petition package to clarify the intent of your request.

The sample hearing notice includes suggested wording for meeting the requirements of the Americans with Disabilities Act (ADA).

After the public hearing, the airport's governing body can pass the petition resolution. The petition resolution authorizes representatives of the governing body to execute the agency agreement and owner assurances. Please return one original copy of the petition resolution and two copies of the agency agreement and owner assurances. A copy of the agency and assurances agreement will be returned to you after it is signed by the bureau director.

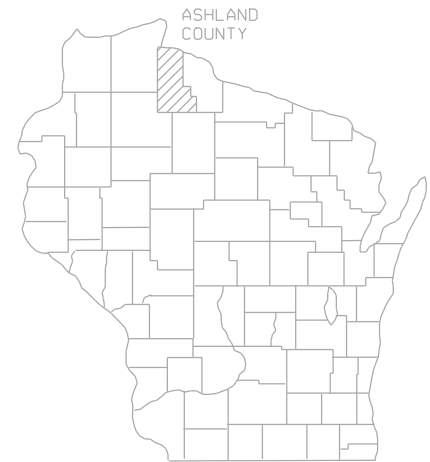
The Bureau of Aeronautics recommends that general aviation airport sponsors budget 20% of the project costs as their share of all projects.

Please contact me at brandon.benjamin@dot.wi.gov with any questions.

Sincerely,
Brandon Benjamin
Airport System Planner

W:\Airports\JFK Memorial Airport\Petition\12-24ASXltr.doc
Enclosures

102dev.dot/r.01/09/2017

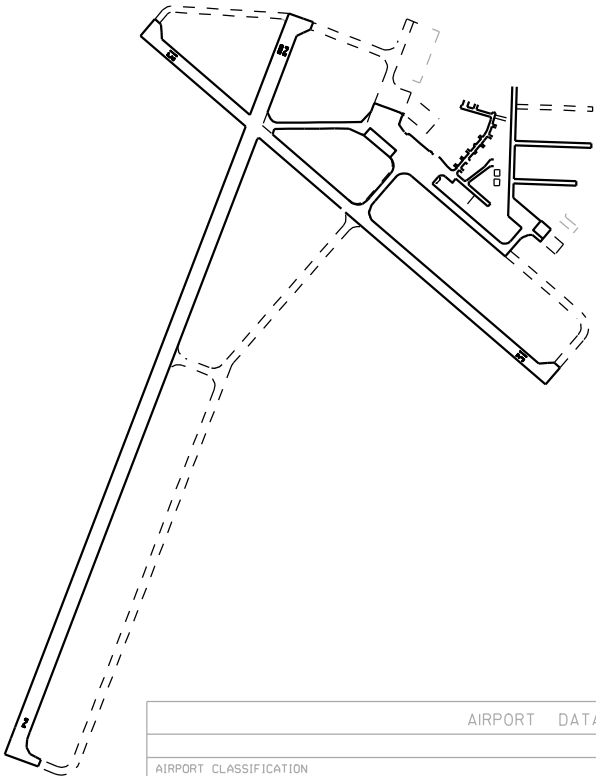
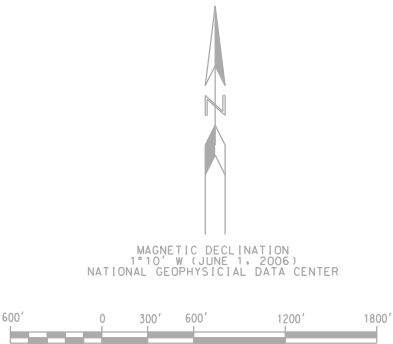
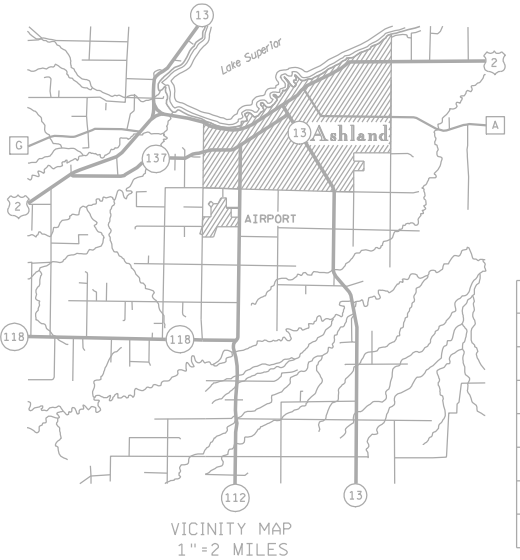
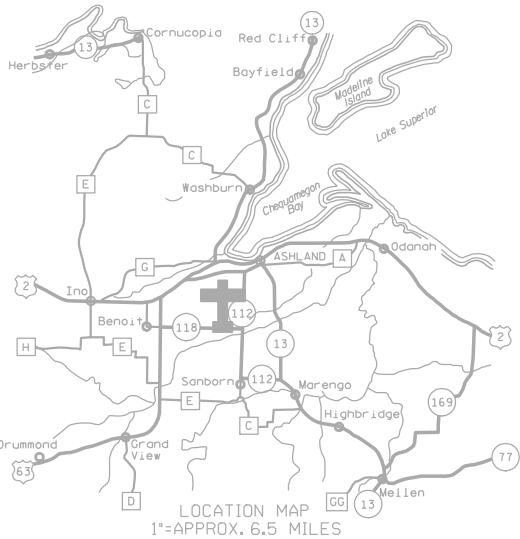


STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
BUREAU OF AERONAUTICS

AIRPORT LAYOUT PLAN

JOHN F. KENNEDY
MEMORIAL AIRPORT
ASHLAND, WISCONSIN

INDEX TO SHEETS	
SHEET	TITLE
1	TITLE, APPROVAL, INDEX, AND LOCATION
2	EXISTING AIRPORT LAYOUT PLAN
3	ULTIMATE AIRPORT LAYOUT PLAN
4	TERMINAL AREA PLAN
5	EXISTING RWY. 2 APPROACH
6	ULTIMATE RWY. 2 APPROACH
7	EXISTING & ULTIMATE 2/20 APPROACH
8	EXISTING RWY. 20 APPROACH
9	ULTIMATE RWY. 20 APPROACH
10	EXISTING RWY. 13 APPROACH
11	ULTIMATE RWY. 13 APPROACH
12	EXISTING RWY. 31 APPROACH
13	ULTIMATE RWY. 31 APPROACH
14	LAND INVENTORY MAP
15	EXIST. UNDERGROUND UTILITIES PLAN
16	HEIGHT LIMITATION ZONING MAP

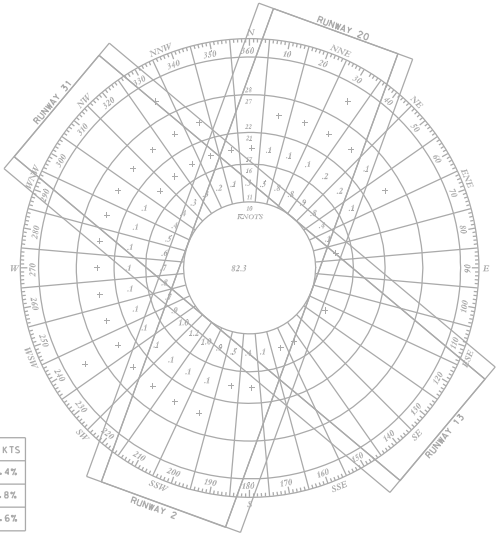


DESIGN CRITICAL AIRCRAFT DATA				
	EXISTING		ULTIMATE	
	2-20	13-31	2-20	13-31
RUNWAY				
AIRCRAFT WEIGHT	30,000 LBS.	12,500 LBS.	60,000 LBS.	30,000 LBS.
APPROACH SPEED	< 121 KNOTS		< 121 KNOTS	
WING SPAN	< 79'		< 79'	
TAIL HEIGHT	24.5'		24.5'	
AIRPORT REFERENCE CODE	B-II		B-II	

AIRPORT DATA		
	EXISTING	ULTIMATE
AIRPORT CLASSIFICATION	T/C	T/C
AIRPORT REFERENCE POINT COORDINATES	46°-32'-53.81" N 98°-55'-07.83" W	
AIRPORT ELEVATION (MSL)	826.5'	826.5'
MEAN MAXIMUM TEMPERATURE OF HOTTEST MONTH	79.3°F JULY	79.3°F JULY
AIRPORT AND TERMINAL NAVIGATION AIDS	ILS (2), GPS, NDB, DME, TVOR	ILS (2), DME, GPS, LPVG
VISUAL AIDS	REIL (2), MIRL, PAPI (2, 208 & 31)	REIL, MIRL, HIRL (2), ALS, PAPI (2, 208 & 31)
MISCELLANEOUS FACILITIES:	LIGHTED WIND CONE, ROTATING BEACON	LIGHTED WIND CONE, ROTATING BEACON, SEGMENTED CIRCLE

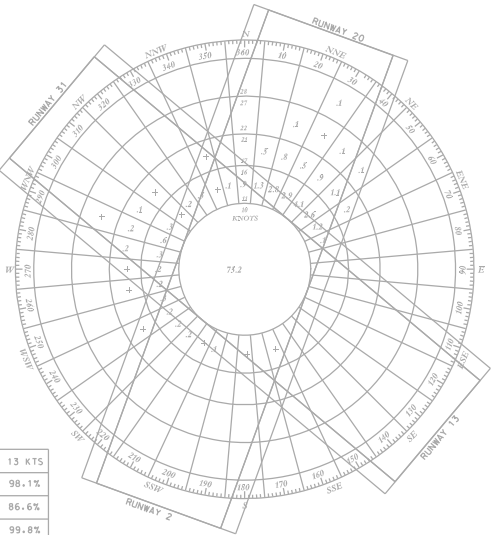
WIND COVERAGE		10.5 KTS	13 KTS
PRIMARY RUNWAY	2 - 20	94.9%	97.4%
SECONDARY RUNWAY	13 - 31	87.8%	92.8%
COMBINED		98.4%	99.6%

ALL WEATHER WIND ROSE (% DISTRIBUTION)
ASHLAND, WI 2001-2005
WIND DATA COMPILED BY THE NATIONAL CLIMATIC DATA CENTER, ASHEVILLE, N.C.



WIND COVERAGE		10.5 KTS	13 KTS
PRIMARY RUNWAY	2 - 20	96.3%	98.1%
SECONDARY RUNWAY	13 - 31	79.6%	86.6%
COMBINED		98.8%	99.8%

IFR WIND ROSE (% DISTRIBUTION)
ASHLAND, WI 2001-2005
WIND DATA COMPILED BY THE NATIONAL CLIMATIC DATA CENTER, ASHEVILLE, N.C.



DESCRIPTION OF REVISION	NO	DATE	FIRM OR AGENCY
	1		
	2		
	3		
	4		
	5		
	6		
	7		

FEDERAL AVIATION ADMINISTRATION
THE WISCONSIN DEPARTMENT OF TRANSPORTATION, BUREAU OF AERONAUTICS, CONDITIONALLY APPROVES THE AIRPORT LAYOUT PLAN IN ACCORDANCE WITH THE FEDERAL AVIATION ADMINISTRATION BLOCK GRANT AGREEMENT AND SUBJECT TO LETTER DATED 10/2/07 AND AIRSPACE CASE # 2007-WGL-769-NRA
APPROVED: *Mark Arnold*
MARK D. ARNOLD, AIRPORT ENGINEERING CHIEF
DATE: 10/2/07

WISCONSIN DEPARTMENT OF TRANSPORTATION
BUREAU OF AERONAUTICS
REVIEWED BY: *Robert Horn*
DATE: 9/24/07
AIRPORT DEVELOPMENT ENGINEER
PROPOSED RUNWAYS

CITY OF ASHLAND
APPROVED BY: *Robert Horn*
TITLE: *Airport Manager*
DATE: 7-31-07

TITLE & APPROVAL SHEET

JOHN F. KENNEDY MEMORIAL AIRPORT
ASHLAND, WISCONSIN



BECHER-HOPPE ASSOCIATES, INC.
ENGINEERS ARCHITECTS SCIENTISTS
330 Fourth Street P.O. Box 8000 Wausau, WI 54402-8000
Tel: 715-845-8000 Fax: 715-845-8008 www.becherhoppe.com

SCALE: N/A
DATE: 6-26-07
DRAWN BY: NRG
CHK'D BY: RWV

SHEET
NUMBER 1 OF 16
PROJECT NO. 06017

[View/Update NRA Case Data](#)

Page 1 of 2

[illegible]

https://iocaaa.faa.gov/iocaaa/NRACaseView.jsp?NRA_Case_ID=5363&Mode=View

31/Aug/09

Division Responses

Div Responses

[Case Data](#)
[Part 77](#)
[POS](#)
[Design Surfaces](#)
[Generate Letters](#)
 [Documents](#)
[Corresp Archive](#)

ASN: 2007-AGL-769-NRA [Click on the division icon for response details.](#)

Division: AT-OSG	AT	FP	ADO	FS	FM	USAF	USN	USA	AT-OSG	ATCT
Status: No Objection	No Objection w/Provision	No IFR Effect	Not Responded	Not Responded	Not Responded	Auto Screen	Auto Screen	Auto Screen	Auto Screen	Auto Screen

Division	User	Response Date	Response Type	Response
AT - ATCT/Facilities	SYSTEM OBAAA	10/30/2008	Auto Screen	See AT-OSG Response
AT-OSG	SYSTEM OBAAA	10/30/2008	Auto Screen	OSG response not enabled at the time of study
Air Force	SYSTEM OBAAA	08/22/2007	Auto Screen	No Conflict with USAF Conflit Program
Air Traffic	Earl Newsham	08/22/2007	No Objection	

Each proposed construction activity identified on the ALP shall be submitted as a separate airspace case study. The following plan shall be included as part of the construction activity submission:

- a. A detailed description of each proposed construction activity identified on the ALP, and must be approved by Tech Ops before any construction activity can begin. Also, each proposed construction activity must be approved by the FAA.
- b. A detailed description of how the facility or cables due to new ALP construction will have to be coordinated through the FAA Planning and Requirements (& R) office in order to establish reimbursable funding for the engineering and construction work.
- c. A detailed description of how the proposed construction activity will be funded. If the airport does not intend to fund anything in particular, it is supposed to match the ARP shown on ALP Sheet 3-7.2. The proposed MALS shown on ALP Sheet 3 is missing a MAJSTADT station (200 feet). The "1000' Bar" (SLR) located at the end of the runway is also missing. It is unclear if the "1000' Bar" effect; it pushes the last flacker 200' further than what is shown. Also, the land requirements, road relocation, and MALS/RAL profile are missing from the drawing. This information is needed to determine the line-of-sight criteria used to clear the roadway for any RAIL profile. 3. The AWSOS shows an asterisk type symbol on ALP Sheet 2. Should be labeled on other drawings where it is shown.
- d. Show a 500' radius restricted zone around the intersection of the runway and taxiway. This is required by FAA Order 8530.2A, Chapter 5, Paragraph 502.

SITTING PAID ON A RUNWAY WITH AN ELECTRONIC SLIDE SLOPE THE PAPI AND glide slope must be "within a tolerance of +30' and -60'". The distance between the PAPI and glide slope must be different. The difference in distance on Sheet 3 is approximately 370 feet. The ALP drawing shows the PAPI (610') (scaled) from the

https://ioeaaa.faa.gov/oceaaa/nra/NraDivisionResponseSummary.jsp?NRA_Case_Id=58653

21/Apr/09

Page 2 of 3

Division Responses

Army SYSTEM OEAAA 08/22/2007 Auto Screen

Flight Procedures Dale Karns 09/23/2007 No IFR Effect

Navy SYSTEM OEAAA 08/22/2007 Auto Screen

[illegible]

No Conflict with USA Conflux Program

1. JFR EFFECT. This ALP supports all current Instrument Procedures. 2. Letter Required. This review does not constitute an automatic request for amended procedures. A letter must be submitted, to CSA FPO, by the Airport Manager or ADO, requesting

3. Submit Proposed Equipment Relocation Data. Proponent must provide proposed location information of any equipment that will be relocated or added to the project.

AJW-332 (Janice Lehman / Ph 405-954-5930) and ATA-110 (Patrick Kelly / Ph 202-267-5917). NOTE: Electronic PAPI Datasheet required to be filled out completely when submitting PAPI and/or VASI information. This sheet available electronically from http://www.faa.gov/air_traffic/flight_info/aeronav/datasheets/papi/

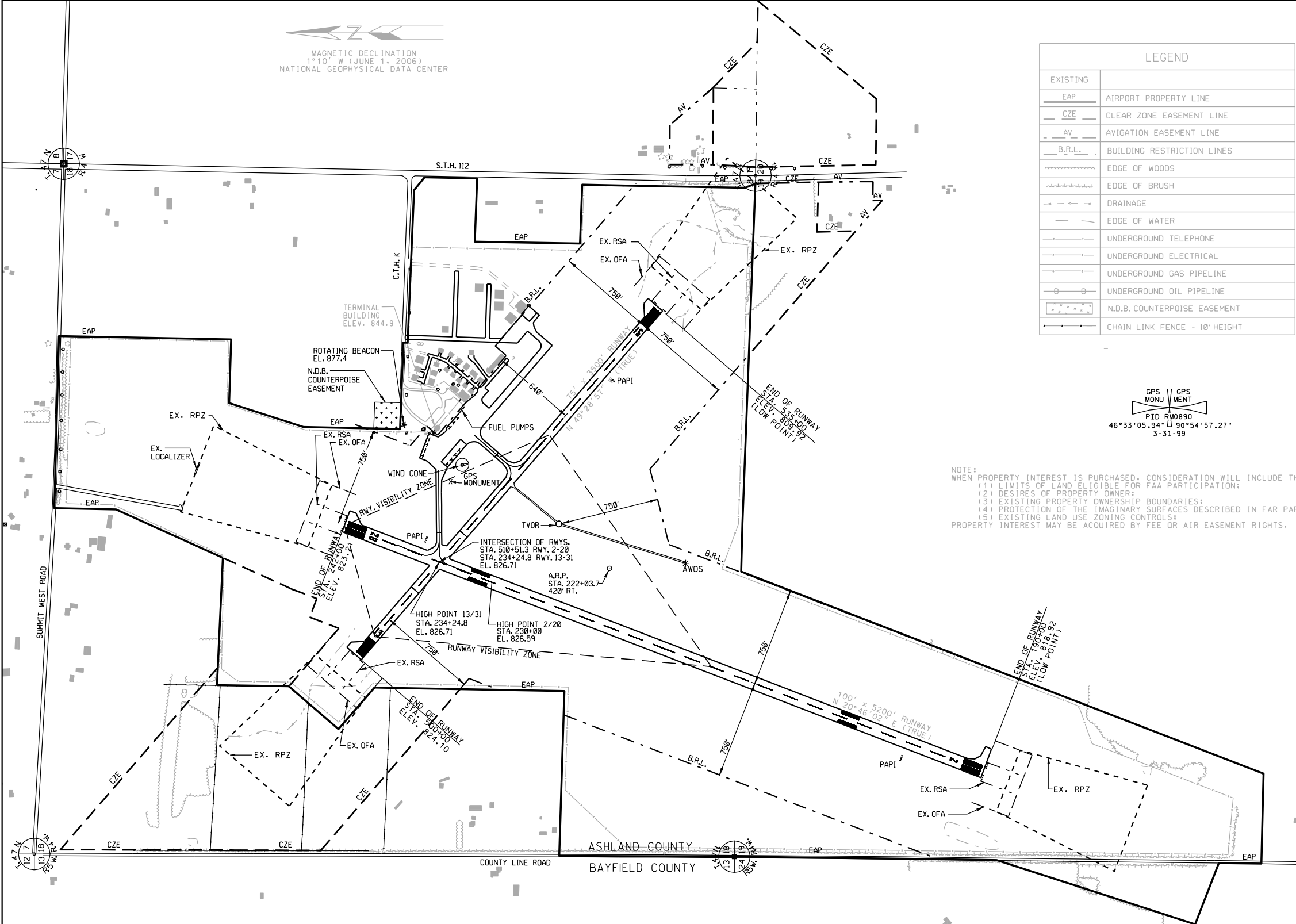
CSA FPO, 4. Adding Obstruction Data. This review does not result in newly identified obstructions being added or removed from the obstruction database. Obstructions must be surveyed IAW FAA No. 405 specifications and submitted through the CSA FPO for inclusion in the obstruction database. **Removing obstruction Data.** Removal of

obstructions from the database require a letter be submitted to CSA FPO by the airport manager or designated ADO, identifying the obstruction (lat/lon/hgt, state code if known, etc), and state what action was taken (i.e. tree cut, tower dismantled, etc). In

turn, this information will be forwarded

https://ocean.faa.gov/ocean/nra/NraDivisionResponseSummary.jsp?NRA_Case_Id=58653

21/APR/09



LEGEND	
EXISTING	
EAP	AIRPORT PROPERTY LINE
CZE	CLEAR ZONE EASEMENT LINE
AV	AVIGATION EASEMENT LINE
B.R.L.	BUILDING RESTRICTION LINES
~~~~~	EDGE OF WOODS
~~~~~	EDGE OF BRUSH
---	DRAINAGE
---	EDGE OF WATER
---	UNDERGROUND TELEPHONE
---	UNDERGROUND ELECTRICAL
---	UNDERGROUND GAS PIPELINE
---	UNDERGROUND OIL PIPELINE
---	N.D.B. COUNTERPOISE EASEMENT
---	CHAIN LINK FENCE - 10' HEIGHT

GPS MONU GPS MENT
PID RW0890
46°33'05.94" N 90°54'57.27" W
3-31-99

NOTE:
WHEN PROPERTY INTEREST IS PURCHASED, CONSIDERATION WILL INCLUDE THE FOLLOWING:
(1) LIMITS OF LAND ELIGIBLE FOR FAA PARTICIPATION;
(2) DESIRES OF PROPERTY OWNER;
(3) EXISTING PROPERTY OWNERSHIP BOUNDARIES;
(4) PROTECTION OF THE IMAGINARY SURFACES DESCRIBED IN FAR PART 77.25;
(5) EXISTING LAND USE ZONING CONTROLS;
PROPERTY INTEREST MAY BE ACQUIRED BY FEE OR AIR EASEMENT RIGHTS.

RUNWAY DATA		
	RUNWAY 2/20	RUNWAY 13/31
RUNWAY DIMENSIONS	5200' X 100'	3500' X 75'
EFFECTIVE GRADIENT (%)	0.086%	0.490%
PAVEMENT STRENGTH (LBS.) GROSS WEIGHT	42 S 52 D	40 S 50 D
RUNWAY LIGHTING	MIRL	MIRL
RUNWAY MARKING	N.P.I.	N.P.I.
RUNWAY CATEGORY	NP/V	V/NP
RUNWAY VISIBILITY MINIMUMS	1 MI.	1 MI.
RUNWAY PAVEMENT TYPE	BIT. CONC.	BIT. CONC.
VISUAL & NAVIGATION AIDS	NDB, DME, TVOR, GPS REIL(2), PAPI(2 & 20)	TVOR, GPS DME, PAPI (31)
APPROACH SLOPE (DESIGN)	34:1	20:1
APPROACH SLOPE (ACTUAL)	36:1	30.7:1
WIND COVERAGE	10.5 MPH 13 MPH	94.9% 97.4%
		87.8% 92.8%

* VALUES GIVEN ARE GROSS AIRCRAFT WEIGHT IN 1000# SINGLE (S), DUAL (D) & DUAL TANDEM (DT) GEAR AIRCRAFT.

RUNWAY APPROACH SURFACE				
APPROACH SURFACE DIMENSIONS				
RUNWAY	BASE	LENGTH	OUTER WIDTH	SLOPE
EXISTING	2	500'	3400'	1520'
	20	500'	2000'	900'
	13	500'	2000'	800'
	31	500'	2000'	1100'

RUNWAY SAFETY AREA (RSA)		
RUNWAY SAFETY AREA DIMENSIONS		
RUNWAY	WIDTH	LENGTH BEYOND RUNWAY END
2-20	150'	300'
13-31	150'	300'

RUNWAY OBJECT FREE AREA (OFA)		
RUNWAY OBJECT FREE AREA DIMENSIONS		
RUNWAY	WIDTH	LENGTH BEYOND RUNWAY END
2-20	500'	300'
13-31	500'	300'

RUNWAY END COORDINATES (NAD 83)		
EXISTING		
RUNWAY	LAT.	LONG.
2	46° 32' 25.99" N	90° 55' 28.75" W
20	46° 33' 13.96" N	90° 55' 02.39" W
13	46° 33' 12.94" N	90° 55' 16.61" W
31	46° 32' 50.51" N	90° 54' 38.57" W

RUNWAY PROTECTION ZONE DATA (RPZ)			
DIMENSIONS			
RUNWAY	INNER WIDTH	OUTER WIDTH	LENGTH
2	500'	700'	1,000'
20	500'	700'	1,000'
13	500'	700'	1,000'
31	500'	700'	1,000'

DESCRIPTION OF REVISION	NO	DATE	FIRM OR AGENCY
	1		
	2		
	3		
	4		
	5		
	6		
	7		

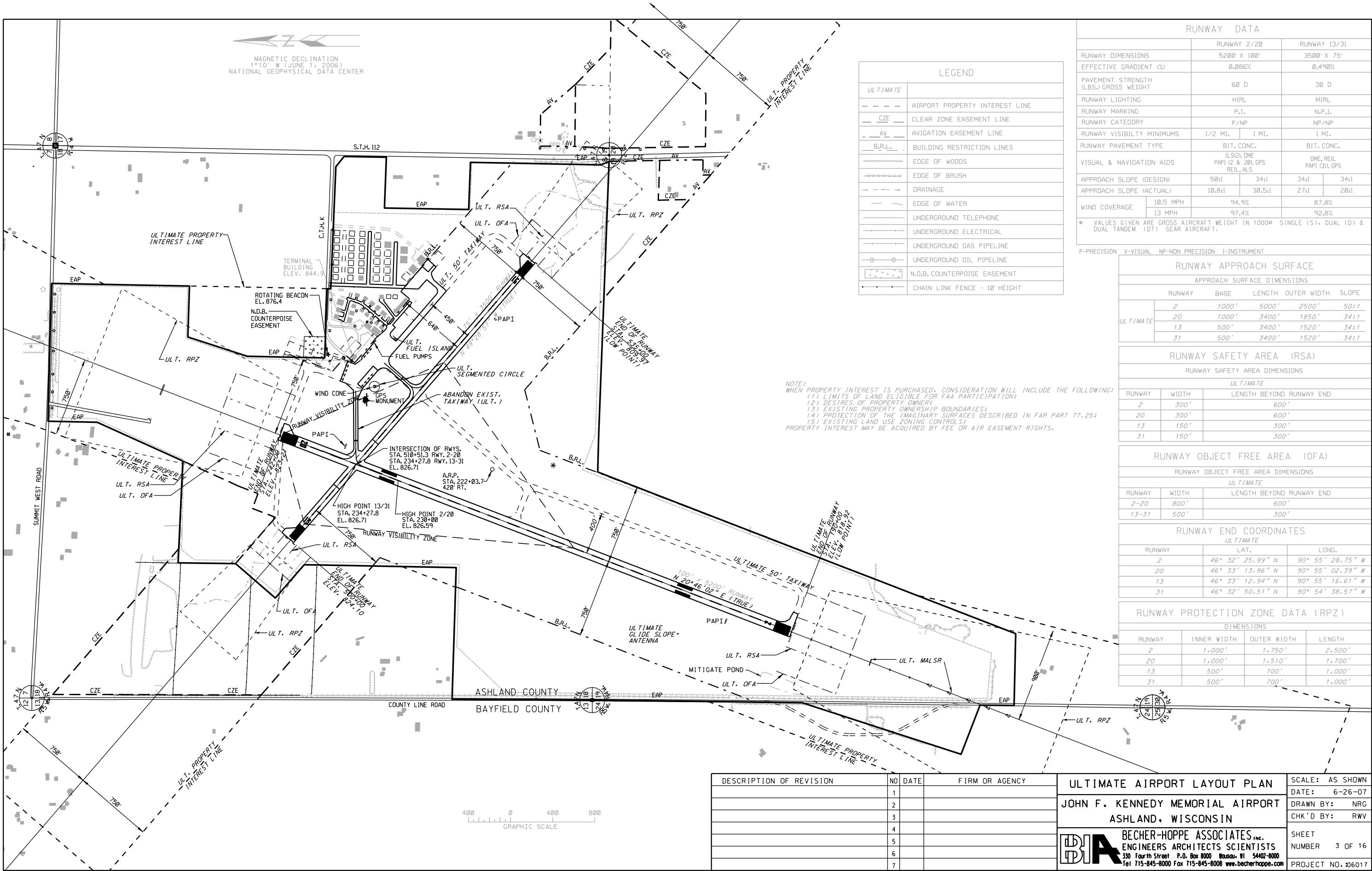
EXISTING AIRPORT LAYOUT PLAN

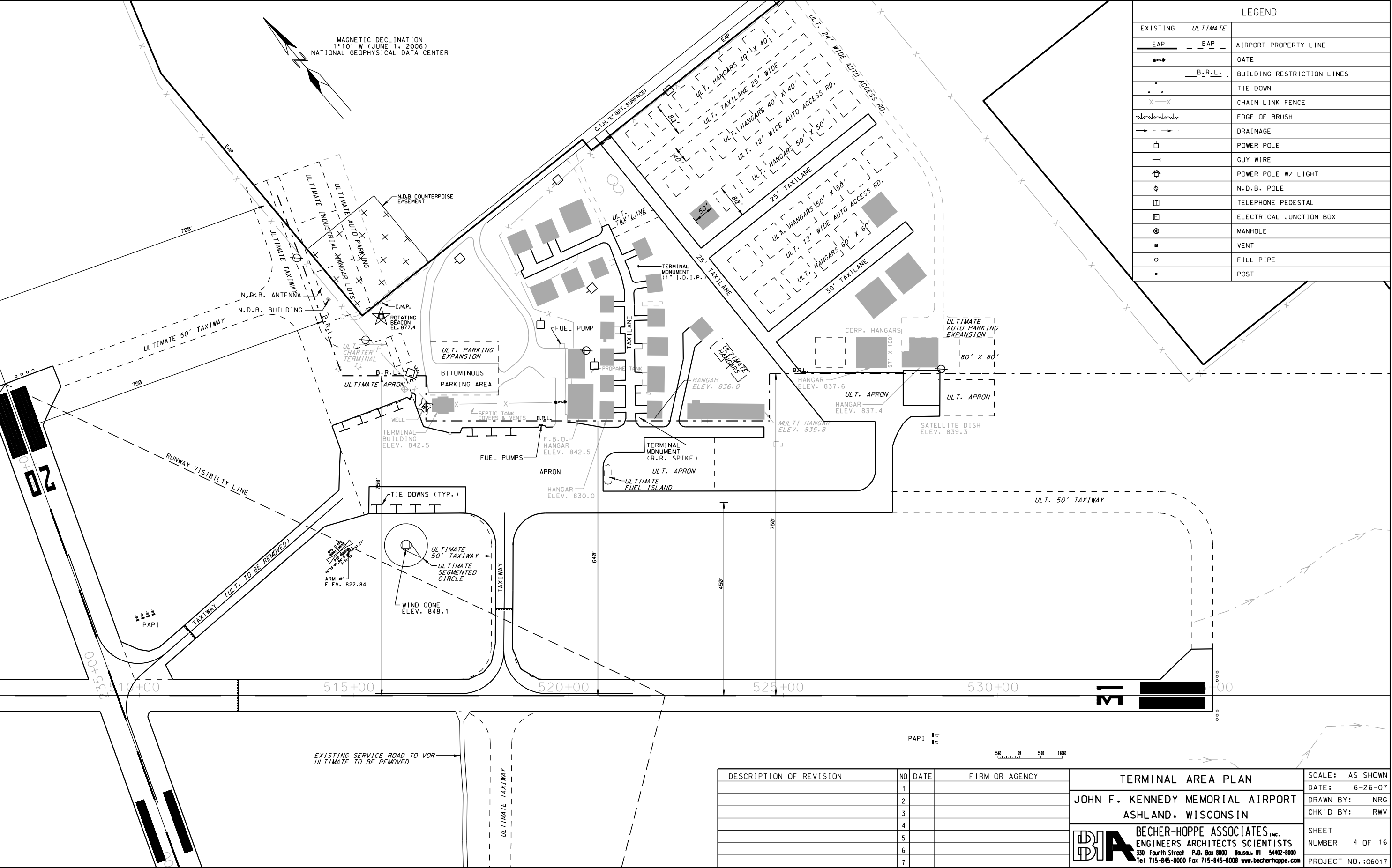
JOHN F. KENNEDY MEMORIAL AIRPORT
ASHLAND, WISCONSIN

BIA BECHER-HOPPE ASSOCIATES, INC.
ENGINEERS ARCHITECTS SCIENTISTS
330 Fourth Street P.O. Box 8000 Wausau, WI 54402-8000
Tel 715-845-8000 Fax 715-845-8008 www.becherhoppe.com

SCALE: AS SHOWN
DATE: 6-26-07
DRAWN BY: NRG
CHK'D BY: RWV
SHEET NUMBER 2 OF 16
PROJECT NO.: 06017
AE JFK:SH2EA07.DGN







DESCRIPTION OF REVISION	NO	DATE	FIRM OR AGENCY
	1		
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	3		
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	5		
	6		
	7		

TERMINAL AREA PLAN

JOHN F. KENNEDY MEMORIAL AIRPORT
ASHLAND, WISCONSIN

 **BECHER-HOPPE ASSOCIATES, INC.**
ENGINEERS ARCHITECTS SCIENTISTS
330 Fourth Street P.O. Box 8000 Wausau, WI 54402-8000
Tel 715-845-8000 Fax 715-845-8008 www.becherhoppe.com

SCALE: AS SHOWN

DATE: 6-26-07

DRAWN BY: NRG

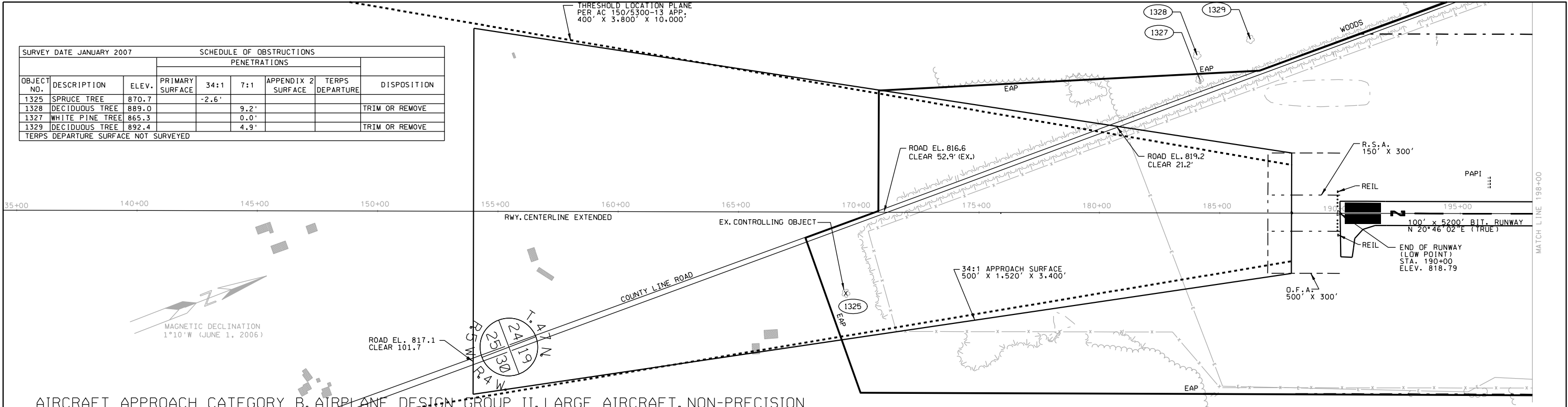
CHK'D BY: RWV

SHEET NUMBER 4 OF 16

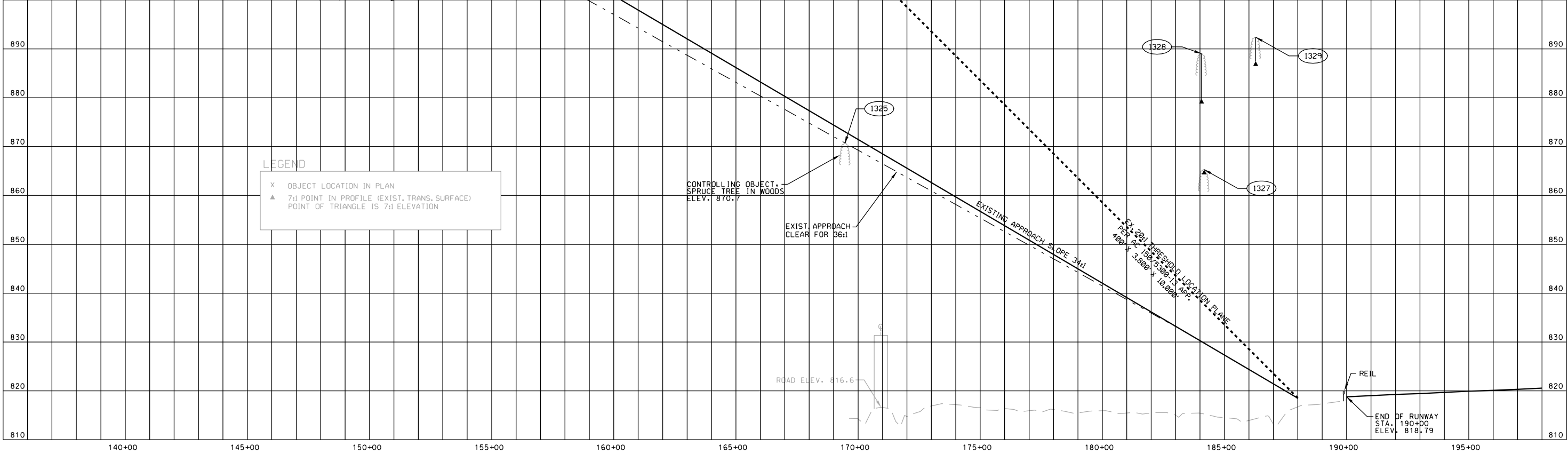
PROJECT NO.: 06017

AE JFK:SH4TM07.DGN

SURVEY DATE JANUARY 2007			SCHEDULE OF OBSTRUCTIONS				
			PENETRATIONS				
OBJECT NO.	DESCRIPTION	ELEV.	PRIMARY SURFACE	34:1	7:1	APPENDIX 2 SURFACE	TERPS DEPARTURE
1325	SPRUCE TREE	870.7		-2.6'			
1328	DECIDUOUS TREE	889.0			9.2'		
1327	WHITE PINE TREE	865.3			0.0'		
1329	DECIDUOUS TREE	892.4			4.9'		
TERPS DEPARTURE SURFACE NOT SURVEYED							
			DISPOSITION				
			TRIM OR REMOVE				
			TRIM OR REMOVE				



AIRCRAFT APPROACH CATEGORY B, AIRPLANE DESIGN GROUP II, LARGE AIRCRAFT, NON-PRECISION



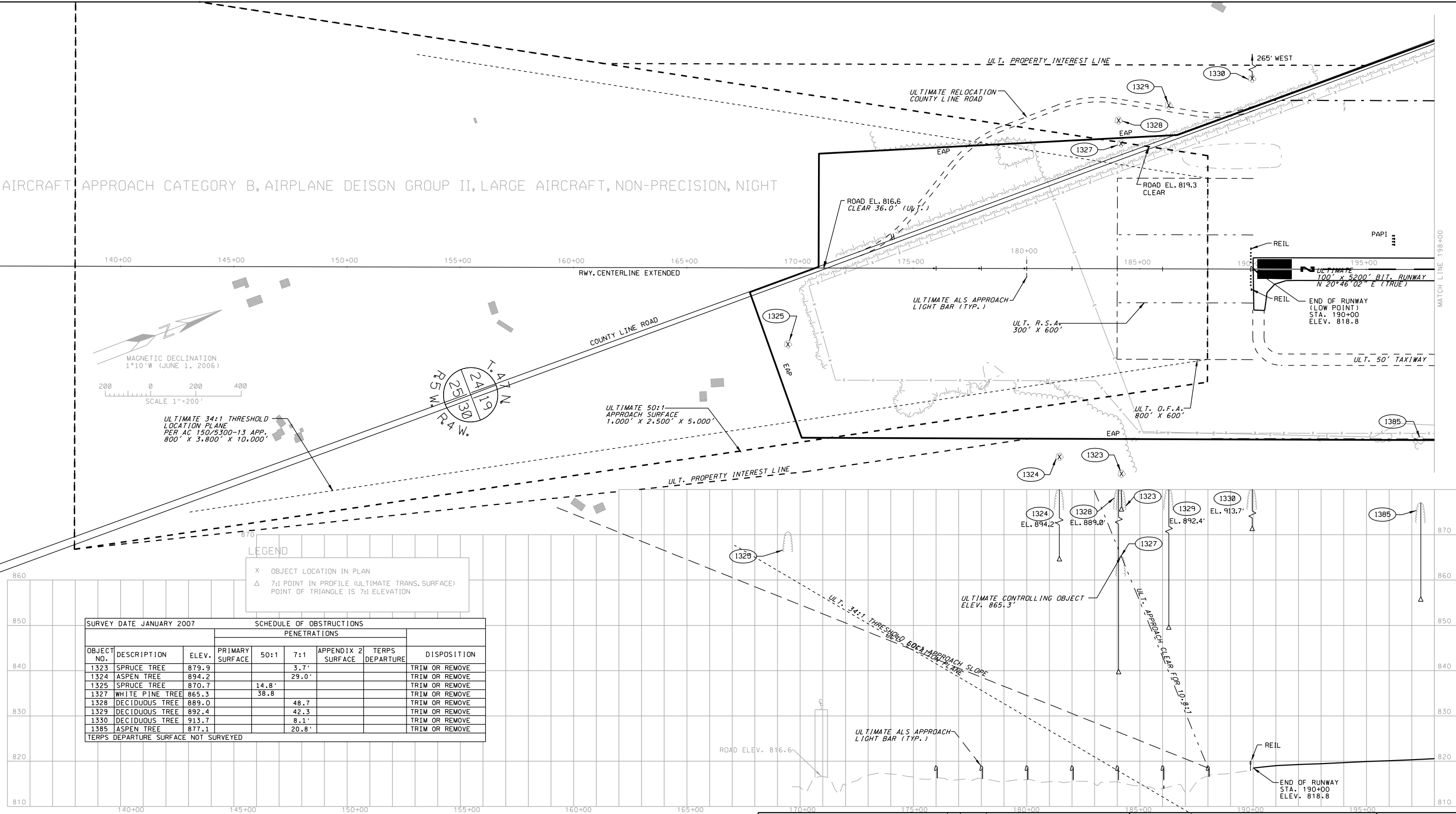
LEGEND	
X	OBJECT LOCATION IN PLAN
▲	7:1 POINT IN PROFILE (EXIST. TRANS. SURFACE) POINT OF TRIANGLE IS 7:1 ELEVATION



DESCRIPTION OF REVISION	NO	DATE	FIRM OR AGENCY
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	7		

EXISTING RUNWAY 2 APPROACH		SCALE: AS SHOWN
JOHN F. KENNEDY MEMORIAL AIRPORT ASHLAND, WISCONSIN		DATE: 6-26-07
BECHER-HOPPE ASSOCIATES, INC. ENGINEERS ARCHITECTS SCIENTISTS 330 Fourth Street P.O. Box 8000 Wausau, WI 54402-8000 Tel 715-845-8000 Fax 715-845-8008 www.becherhoppe.com		DRAWN BY: NRG
		CHK'D BY: RWV
		SHEET NUMBER 5 OF 16
		PROJECT NO.: 06017
		AE JFK:SH5EA207.DGN

AIRCRAFT APPROACH CATEGORY B, AIRPLANE DEISGN GROUP II, LARGE AIRCRAFT, NON-PRECISION, NIGHT

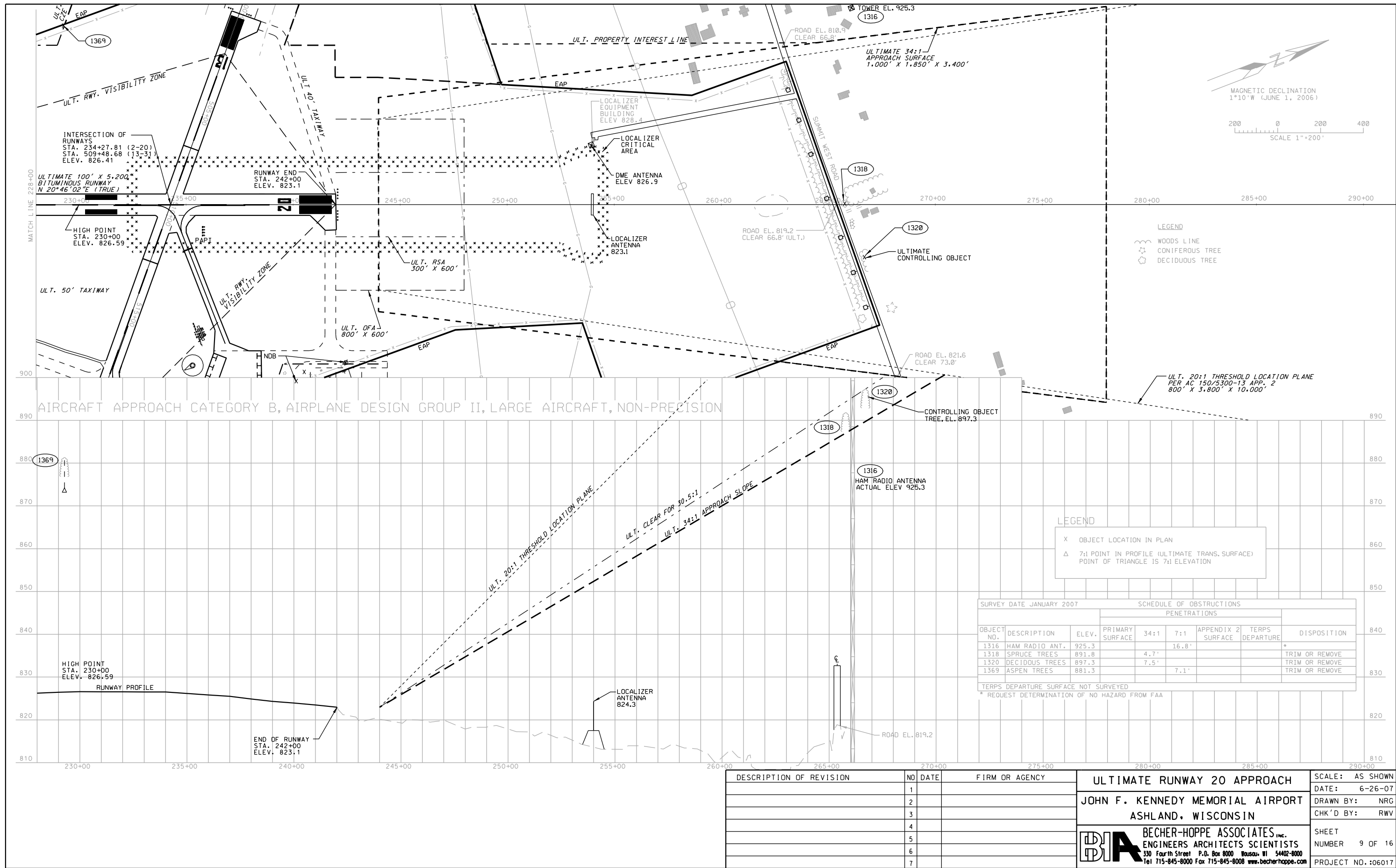


SURVEY DATE JANUARY 2007		SCHEDULE OF OBSTRUCTIONS					
		PENETRATIONS					
OBJECT NO.	DESCRIPTION	ELEV.	PRIMARY SURFACE	50:1	7:1	APPENDIX 2 SURFACE	TERPS DEPARTURE
1323	SPRUCE TREE	879.9			3.7'		TRIM OR REMOVE
1324	ASPEN TREE	894.2			29.0'		TRIM OR REMOVE
1325	SPRUCE TREE	870.7		14.8'			TRIM OR REMOVE
1327	WHITE PINE TREE	865.3		38.8'			TRIM OR REMOVE
1328	DECIDUOUS TREE	889.0			48.7'		TRIM OR REMOVE
1329	DECIDUOUS TREE	892.4			42.3'		TRIM OR REMOVE
1330	DECIDUOUS TREE	913.7			8.1'		TRIM OR REMOVE
1385	ASPEN TREE	877.1			20.8'		TRIM OR REMOVE
TERPS DEPARTURE SURFACE NOT SURVEYED							

DESCRIPTION OF REVISION	NO	DATE	FIRM OR AGENCY
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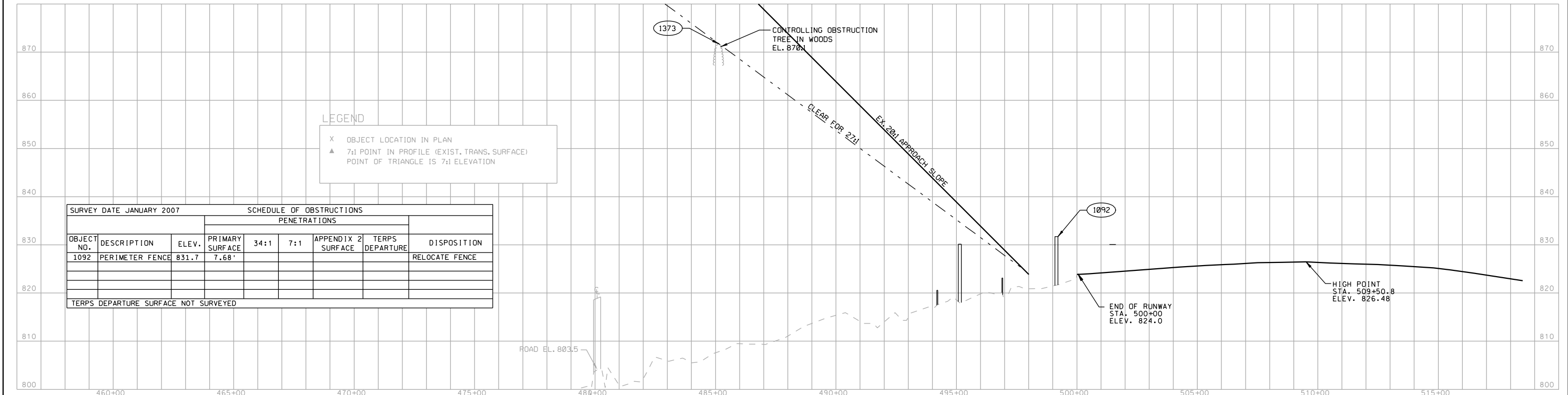
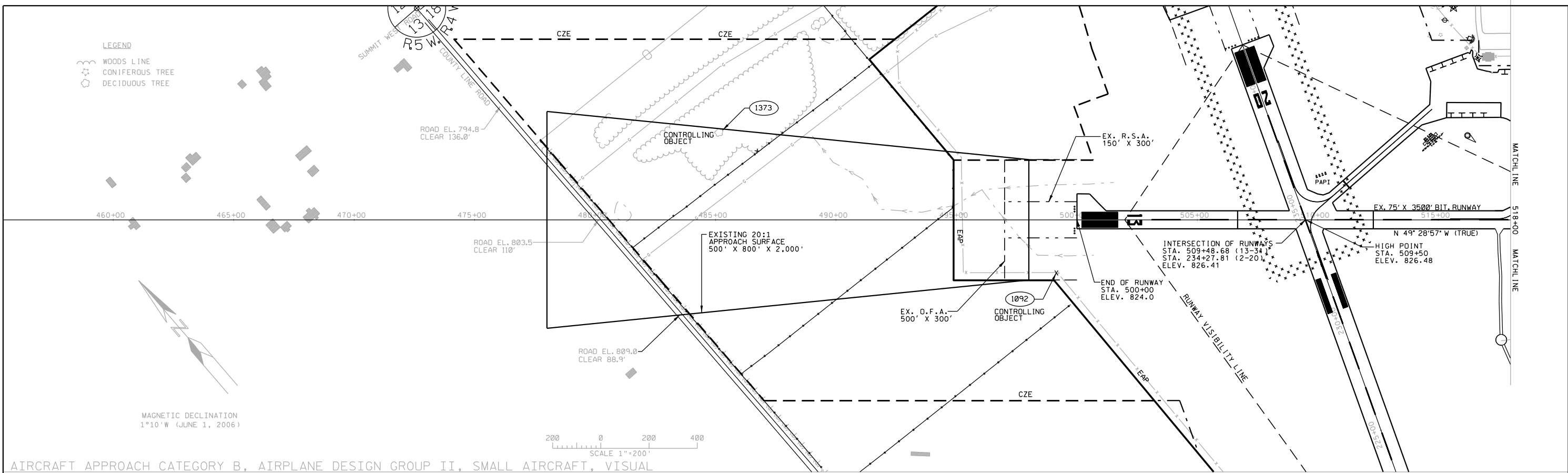
ULTIMATE RUNWAY 2 APPROACH		SCALE: AS SHOWN
JOHN F. KENNEDY MEMORIAL AIRPORT		DATE: 2-28-07
ASHLAND, WISCONSIN		DRAWN BY: NRG
BECHER-HOPPE ASSOCIATES, INC.		CHK'D BY: RWV
ENGINEERS ARCHITECTS SCIENTISTS		SHEET
330 Fourth Street P.O. Box 8000 Wausau, WI 54402-8000		NUMBER 6 OF 16
Tel 715-845-8000 Fax 715-845-8008 www.becherhoppe.com		PROJECT NO. :06017

AE JFK:SH6UA207.DGN



DESCRIPTION OF REVISION			NO	DATE	FIRM OR AGENCY
			1		
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			4		
			5		
			6		
			7		

ULTIMATE RUNWAY 20 APPROACH			SCALE: AS SHOWN
JOHN F. KENNEDY MEMORIAL AIRPORT			DATE: 6-26-07
ASHLAND, WISCONSIN			DRAWN BY: NRG
			CHK'D BY: RWV
			SHEET
			NUMBER 9 OF 16
			PROJECT NO. 06017
			AE JFK:SH9UA2007.DGN

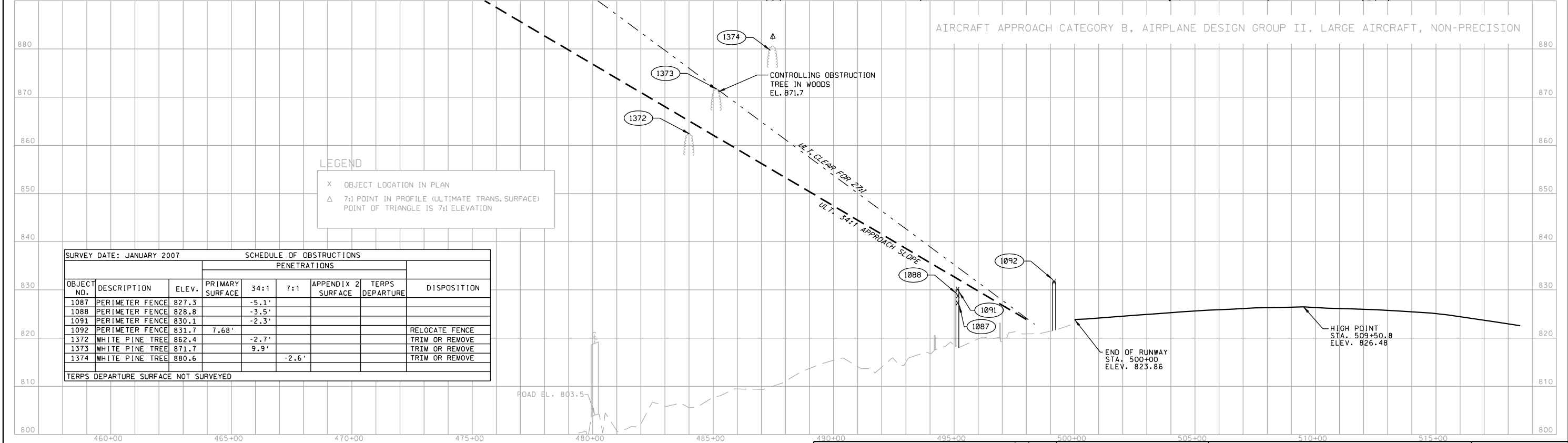
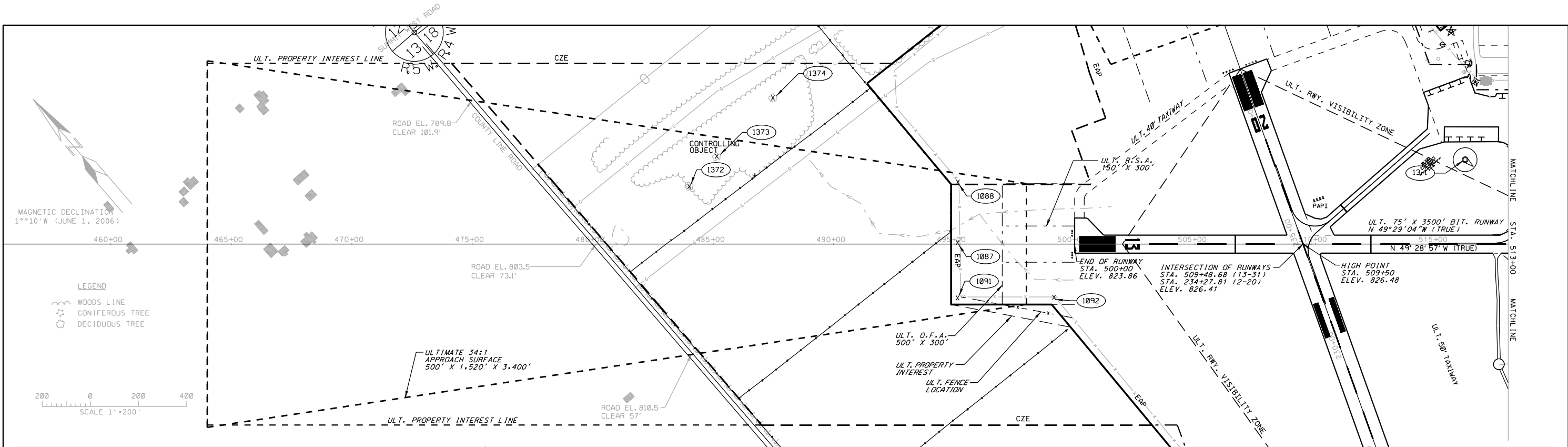


SURVEY DATE JANUARY 2007		SCHEDULE OF OBSTRUCTIONS						
		PENETRATIONS						
OBJECT NO.	DESCRIPTION	ELEV.	PRIMARY SURFACE	34:1	7:1	APPENDIX 2 SURFACE	TERPS DEPARTURE	DISPOSITION
1092	PERIMETER FENCE	831.7	7.68'					RELOCATE FENCE
TERPS DEPARTURE SURFACE NOT SURVEYED								

DESCRIPTION OF REVISION	NO	DATE	FIRM OR AGENCY
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EXISTING RUNWAY 13 APPROACH		SCALE: AS SHOWN
JOHN F. KENNEDY MEMORIAL AIRPORT		DATE: 6-26-07
ASHLAND, WISCONSIN		DRAWN BY: NRG
		CHK'D BY: RWV
BECHER-HOPPE ASSOCIATES, INC.		SHEET
ENGINEERS ARCHITECTS SCIENTISTS		NUMBER 10 OF 16
330 Fourth Street P.O. Box 8000 Wausau, WI 54402-8000		PROJECT NO. :06017
Tel 715-845-8000 Fax 715-845-8008 www.becherhoppe.com		

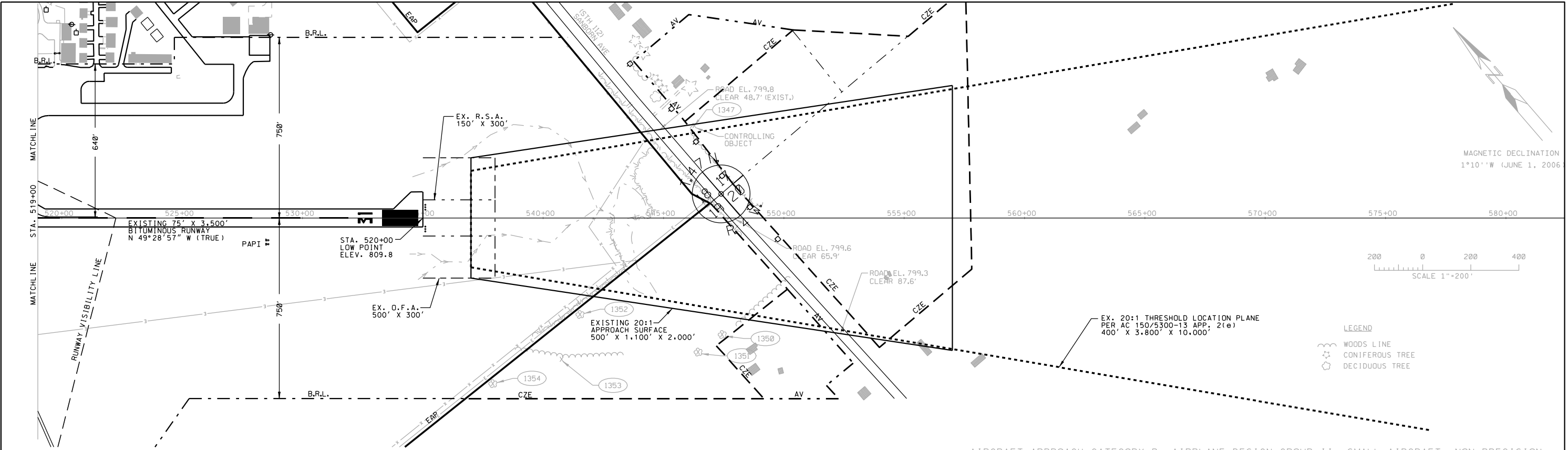
AE JFK:SH10E1307.DGN



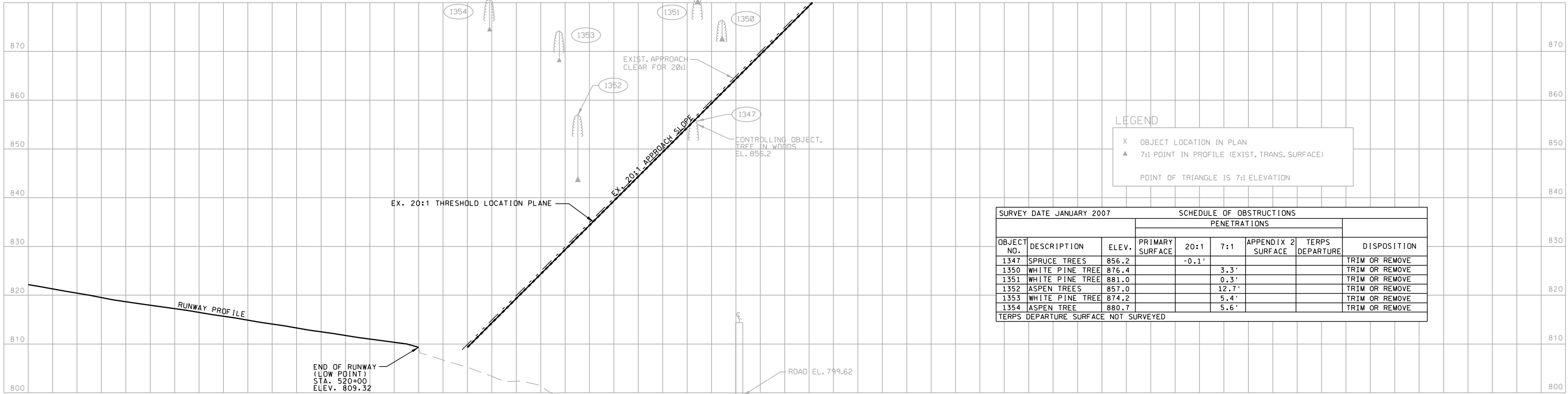
LEGEND
X OBJECT LOCATION IN PLAN
△ 7:1 POINT IN PROFILE (ULTIMATE TRANS. SURFACE)
POINT OF TRIANGLE IS 7:1 ELEVATION

SURVEY DATE: JANUARY 2007		SCHEDULE OF OBSTRUCTIONS						
		PENETRATIONS						
OBJECT NO.	DESCRIPTION	ELEV.	PRIMARY SURFACE	34:1	7:1	APPENDIX 2 SURFACE	TERPS DEPARTURE	DISPOSITION
1087	PERIMETER FENCE	827.3		-5.1'				
1088	PERIMETER FENCE	828.8		-3.5'				
1091	PERIMETER FENCE	830.1		-2.3'				
1092	PERIMETER FENCE	831.7	7.68'					RELOCATE FENCE
1372	WHITE PINE TREE	862.4		-2.7'				TRIM OR REMOVE
1373	WHITE PINE TREE	871.7		9.9'				TRIM OR REMOVE
1374	WHITE PINE TREE	880.6			-2.6'			TRIM OR REMOVE
TERPS DEPARTURE SURFACE NOT SURVEYED								

DESCRIPTION OF REVISION	NO	DATE	FIRM OR AGENCY	ULTIMATE RUNWAY 13 APPROACH	SCALE: AS SHOWN
	1			DATE: 6-26-07	
	2			JOHN F. KENNEDY MEMORIAL AIRPORT	DRAWN BY: NRG
	3			ASHLAND, WISCONSIN	CHK'D BY: RWV
	4			BIA BECHER-HOPPE ASSOCIATES, INC. ENGINEERS ARCHITECTS SCIENTISTS 330 Fourth Street P.O. Box 8000 Wausau, WI 54402-8000 Tel 715-845-8000 Fax 715-845-8008 www.becherhoppe.com	SHEET
	5				NUMBER 11 OF 16
	6				PROJECT NO.: 06017
	7				AE JFK:SH11U1307.DGN



AIRCRAFT APPROACH CATEGORY B, AIRPLANE DESIGN GROUP II, SMALL AIRCRAFT, NON-PRECISION



LEGEND

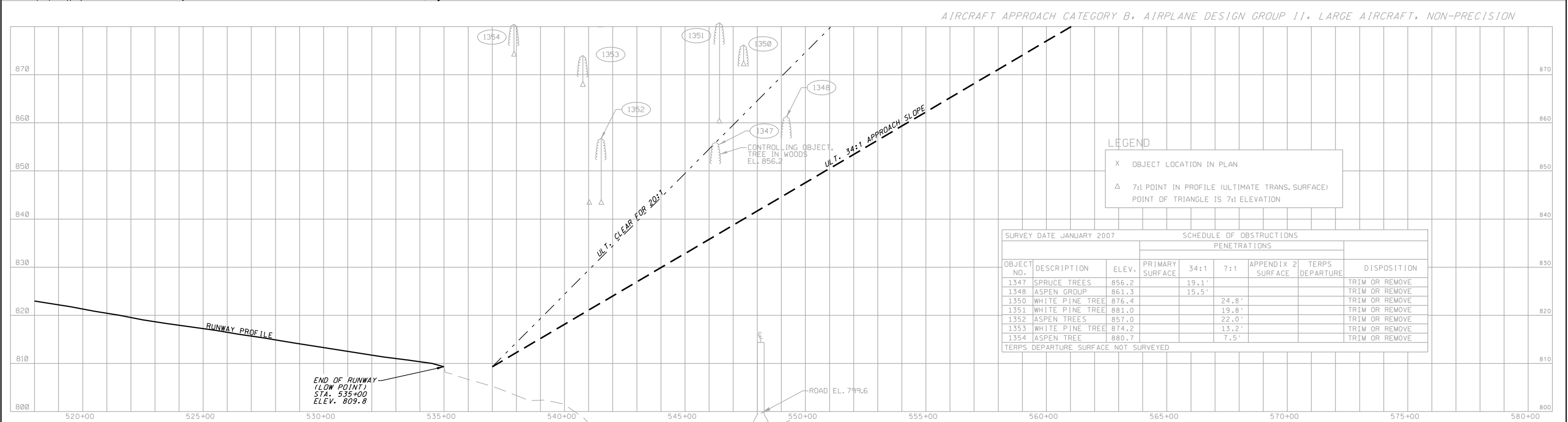
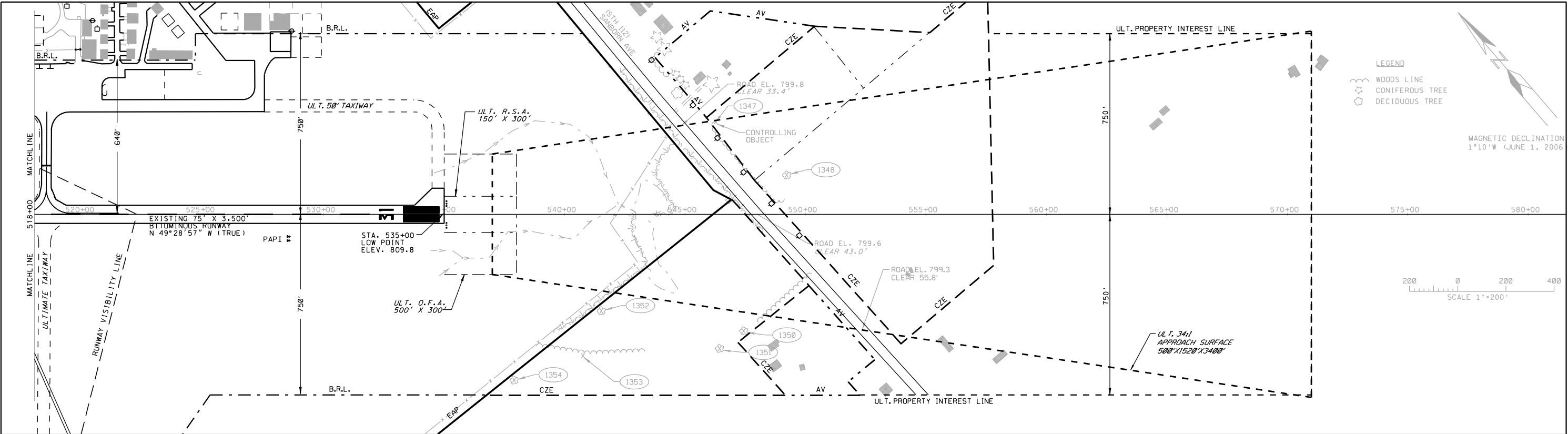
X OBJECT LOCATION IN PLAN

▲ 7:1 POINT IN PROFILE (EXIST. TRANS. SURFACE)

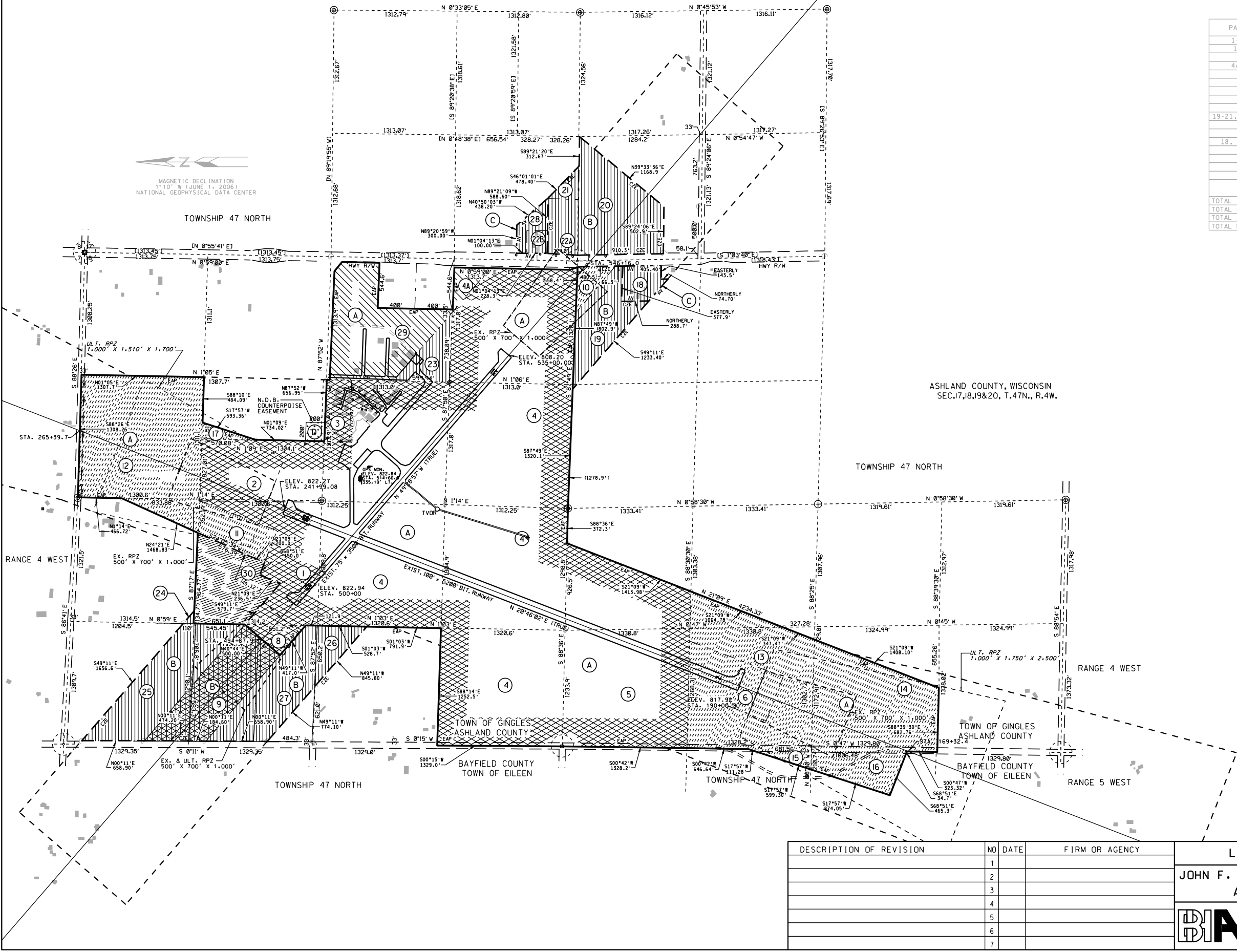
POINT OF TRIANGLE IS 7:1 ELEVATION

SURVEY DATE JANUARY 2007			SCHEDULE OF OBSTRUCTIONS				
OBJECT NO.	DESCRIPTION	ELEV.	PENETRATIONS				DISPOSITION
			PRIMARY SURFACE	20:1	7:1	APPENDIX 2 SURFACE	
1347	SPRUCE TREES	856.2		-0.1'			TRIM OR REMOVE
1350	WHITE PINE TREE	876.4			3.3'		TRIM OR REMOVE
1351	WHITE PINE TREE	881.0			0.3'		TRIM OR REMOVE
1352	ASPEN TREES	857.0			12.7'		TRIM OR REMOVE
1353	WHITE PINE TREE	874.2			5.4'		TRIM OR REMOVE
1354	ASPEN TREE	880.7			5.6'		TRIM OR REMOVE
TERPS DEPARTURE SURFACE NOT SURVEYED							

DESCRIPTION OF REVISION		NO	DATE	FIRM OR AGENCY	EXISTING RUNWAY 31 APPROACH	SCALE: AS SHOWN
		1			JOHN F. KENNEDY MEMORIAL AIRPORT ASHLAND, WISCONSIN	DATE: 6-26-07
		2				DRAWN BY: NRG
		3				CHK'D BY: RWV
		4				
		5				
		6			 BECHER-HOPPE ASSOCIATES, INC. ENGINEERS ARCHITECTS SCIENTISTS 330 Fourth Street P.O. Box 8000 Wausau, WI 54402-8000 Tel 715-845-8000 Fax 715-845-8008 www.becherhoppe.com	SHEET NUMBER 12 OF 16
		7				PROJECT NO. :06017



DESCRIPTION OF REVISION	NO	DATE	FIRM OR AGENCY	ULTIMATE RUNWAY 31 APPROACH	SCALE: AS SHOWN
	1			DATE: 6-26-07	
	2			JOHN F. KENNEDY MEMORIAL AIRPORT	DRAWN BY: NRG
	3			ASHLAND, WISCONSIN	CHK'D BY: RWV
	4			BECHER-HOPPE ASSOCIATES, INC. ENGINEERS ARCHITECTS SCIENTISTS 330 Fourth Street P.O. Box 8000 Wausau, WI 54402-8000 Tel 715-845-8000 Fax 715-845-8008 www.becherhoppe.com	SHEET
	5				NUMBER 13 OF 16
	6				PROJECT NO.: 06017
	7				AE JFK:SH13U3107.DGN



PARCELS	AREA	ACREAGE	PARCEL TYPE/ FAA ACQUISITION PROGRAM
1-5, 8		339.38	FAAP 9-47-028-5701/5702
11-17		124.90	ADAP 7-55-0003-01
23		5.09	ADAP 5-55-0003-01
4A, 29		28.15	AIP 3-55-0003-01
30		13.57	SPONSOR ONLY
	TOTAL	511.09	FEE SIMPLE
9		16.47	FAAP 9-47-028-5701/5702
10		2.70	ADAP 7-55-0003-01
19-21,22A,24-27		71.92	ADAP 5-55-0003-03
	TOTAL	91.09	CLEAR ZONE EASEMENT
18, 22B, 28		6.75	ADAP 5-55-0003-03
	TOTAL	6.75	AVIGATION EASEMENT
D		0.92	NDB COUNTERPOISE EASEMENT (FROM CITY OF ASHLAND-- NO PURCHASE)
TOTAL FEE SIMPLE		511.09	
TOTAL CLEAR ZONE EASEMENT		91.09	
TOTAL AVIGATION EASEMENT		6.75	
TOTAL NDB COUNTERPOISE EASEMENT		0.92	

LEGEND	
	EXIST. AIRPORT PAVEMENT
	ULTIMATE AIRPORT PAVEMENT
	STONE MONUMENT
	IRON PIPE
	IRON ROD
	P.K. NAIL
	IRON PIPE FOUND BY OTHERS
	IRON PIPE SET BY OTHERS
	CLEAR ZONE EASEMENT
	AVIGATION EASEMENT
	AIRPORT PROPERTY
	ULTIMATE PROPERTY INTEREST LINE
	N.D.B. COUNTERPOISE EASEMENT

DESCRIPTION OF REVISION	NO	DATE	FIRM OR AGENCY
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LAND INVENTORY MAP		SCALE: AS SHOWN
JOHN F. KENNEDY MEMORIAL AIRPORT		DATE: 6-26-07
ASHLAND, WISCONSIN		DRAWN BY: NRG
		CHK'D BY: RWV
		SHEET
		NUMBER 14 OF 16
		PROJECT NO.: 06017
		AE JFK:SH14P07.DGN

MAGNETIC DECLINATION
1°10' W (JUNE 1, 2006)
NATIONAL GEOPHYSICAL DATA CENTER

LEGEND	
EXISTING	
	AIRPORT PAVEMENT
	AIRPORT PROPERTY LINE
	CLEAR ZONE EASEMENT
	AVIGATION EASEMENT
	TELEPHONE PEDESTAL
	ELECTRICAL JUNCTION BOX
	UNDERGROUND TELEPHONE
	UNDERGROUND ELECTRICAL
	UNDERGROUND GAS PIPELINE
	UNDERGROUND OIL PIPELINE
	CHAIN LINK FENCE

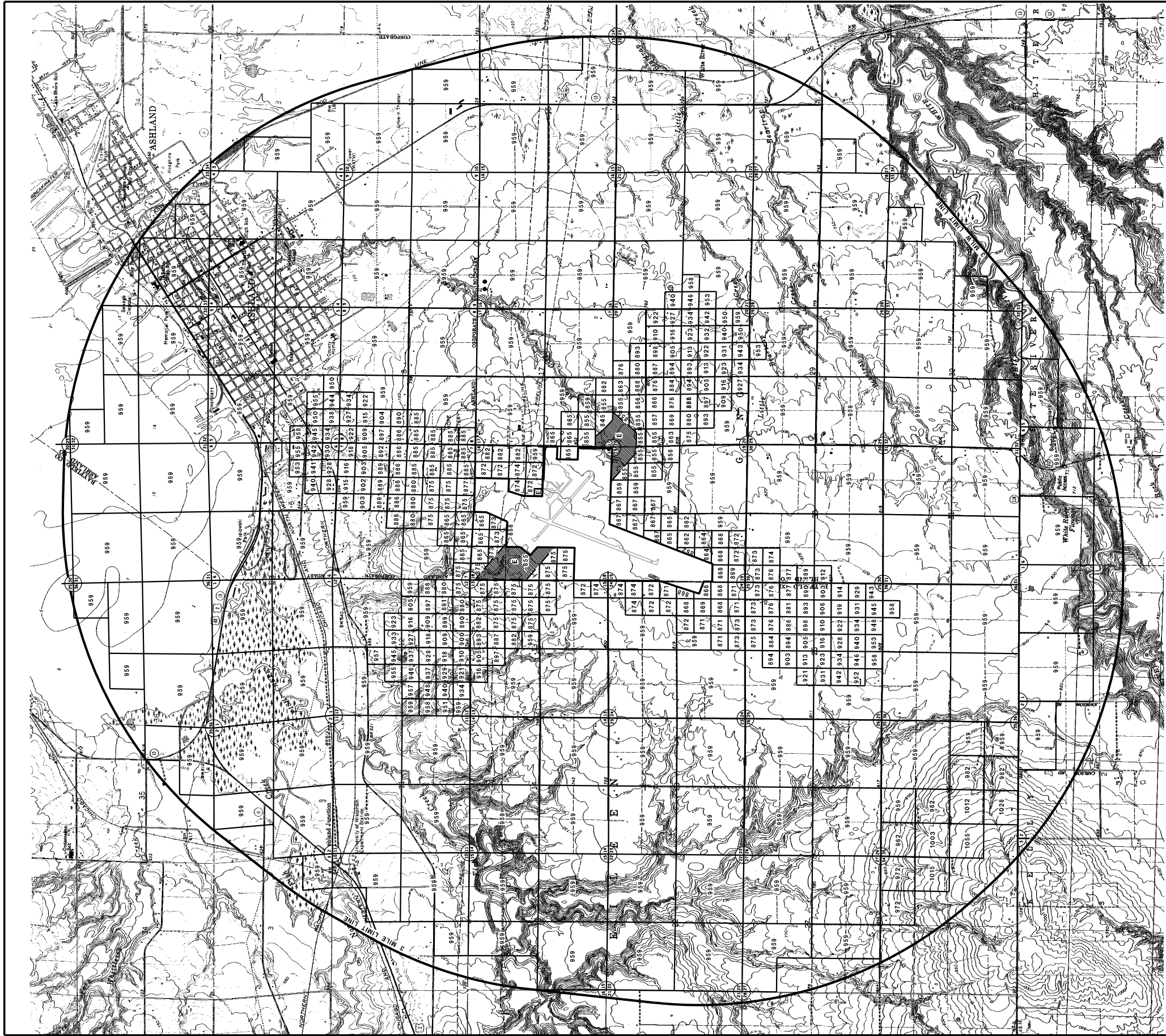
NOTE: THE LOCATIONS OF EXISTING UTILITY INSTALLATIONS AS SHOWN ON THE PLANS ARE APPROXIMATE. THERE MAY BE OTHER UTILITY INSTALLATIONS WITHIN THE PROJECT AREA THAT ARE NOT SHOWN.

DESCRIPTION OF REVISION			FIRM OR AGENCY	EXISTING UNDERGROUND UTILITIES	SCALE: AS SHOWN DATE: 6-26-07 DRAWN BY: NRG CHK'D BY: RWV SHEET NUMBER 15 OF 16 PROJECT NO. :06017 AE JFK:SH15UUT07.DGN
	NO	DATE			
	1				
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JOHN F. KENNEDY MEMORIAL AIRPORT
ASHLAND, WISCONSIN

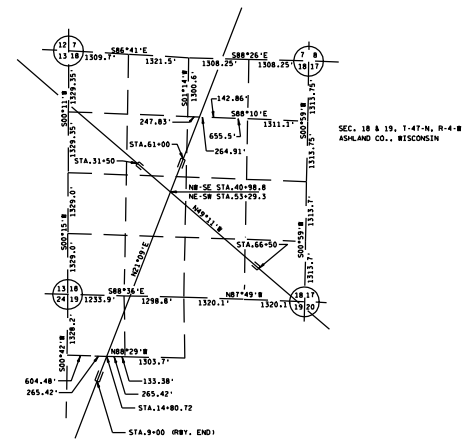
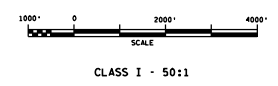
BECHER-HOPPE ASSOCIATES, INC.
ENGINEERS ARCHITECTS SCIENTISTS
330 Fourth Street P.O. Box 8000 Wausau, WI 54402-8000
Tel 715-845-8000 Fax 715-845-8008 www.becherhoppe.com





- LEGEND-
- AIRPORT PROPERTY LINE
 - ZONED ELEVATIONS
 - PAVED RUNWAY
 - FUTURE PAVED RUNWAYS OR EXTENSIONS
 - SECTION CORNERS
 - EASEMENT AREAS

- NOTES:
1. ZONE BOUNDARIES ARE SECTION AND SUBDIVISIONAL LINES EXCEPT THOSE WHERE STREET CENTER LINES ARE USED FOR BOUNDARIES.
 2. HEIGHT LIMITATIONS SHOWN REPRESENT ELEVATIONS PERMISSIBLE ABOVE MEAN SEA LEVEL IN FEET.
 3. ZONING MAP DEVELOPED IN ACCORDANCE WITH WISCONSIN STATE STATUTES CHAPTER 114.135.



HEIGHT LIMITATION ZONING MAP

JOHN F. KENNEDY MEMORIAL AIRPORT
ASHLAND, WISCONSIN

SCALE 1"=2000' DATE 4-21-87 DWG. BY: J.W.J. CHK. BY: K.J.S. SHEET 16 OF 16

WISCONSIN BUREAU OF AERONAUTICS

AE JFAS1612067.DGN

Ref: 2025-118

**COUNCIL AGENDA:
10.C. (5/27/2025)**

SUBJECT: Consider a Resolution by the Common Council for the City of Ashland, Wisconsin Adopting the Ashland County Hazard Mitigation Plan (*Fire Chief*) Roll

RECOMMENDATION: Approval

DEPARTMENT OF ORIGIN: Fire & EMS Department

CLEARANCES: Mayor

EXHIBITS:

1. Proposed Resolution No. 17836
2. City of Ashland Adoption Cover Letter - May 12, 2025
3. DRAFT - Ashland County Hazard Mitigation Plan

EXPENDITURES REQUIRED: NA

AMOUNT BUDGETED:

APPROPRIATION REQUIRED:

TREASURER'S CERTIFICATE: NA

COMPLIANCE WITH CHAPTER 51: Section 51.26 (b) of Chapter 51, Ashland City Ordinances, permit the Mayor and/or Clerk to schedule items directly for Council action when a timely decision is needed by the City. The Mayor and/or City Clerk has chosen to direct this item directly to Council pursuant to the authority granted to them in Chapter 51, Ashland City Ordinances.

STATEMENT OF CONFORMANCE WITH COMPREHENSIVE PLAN: This item conforms to the Ashland Comprehensive Plan in that it is "...in accordance with existing and future needs, best promote public health, safety, morals, and the general welfare..." for the City's residents and community.

SUMMARY STATEMENT:

In an effort to better mitigate Ashland County's vulnerability to disaster, Ashland County Emergency Management applied for, received, and has now updated the Ashland County Hazard Mitigation Plan through a Pre-Disaster Mitigation (PDM) planning grant. The updated plan serves as a roadmap that outlines potential cost-effective hazard mitigation activities, some of which might be available for future grant funding. The plan highlights the risks and vulnerabilities that Ashland County faces from natural disasters and highlights mitigation strategies that may reduce future losses.

As this project nears completion, we are sending copies of the final updated plan and a draft resolution template for you to use for the re-adoption of the Ashland County Hazard Mitigation Plan. Please note:

1. Adoption of this plan will not cost your community anything. You will not be committing to completing any of the projects listed; instead it is a list of triaged ideas that could be accomplished should the funding and will to complete them become available.
2. If you do not adopt this plan, your community will not be eligible to apply for and receive mitigation project funding in the future.

We are asking that you please include adoption of this resolution on your next meeting agenda and provide a copy of the final resolution as soon as it is passed, to the Ashland County Emergency Management department.

RESOLUTION NO. 17836

RESOLUTION BY THE COMMON COUNCIL FOR THE CITY OF ASHLAND, WISCONSIN ADOPTING THE ASHLAND COUNTY ALL HAZARDS MITIGATION PLAN

WHEREAS, the Common Council for the City of Ashland recognized the threat that natural hazards pose to people and property within the community; and

WHEREAS, the State of Wisconsin has endured billions of dollars in damages over the past three decades, as a result of various disasters including severe weather and flooding events, major snowstorms, and powerful tornados; and

WHEREAS, hazard mitigation breaks the cycle of damage and repair by reducing or eliminating the long-term risk to human life and property caused by the potential hazards; and

WHEREAS, this updated plan serves as a roadmap that outlines potential cost-effective hazard mitigation activities, some of which might be available for future grant funding; and

WHEREAS, an adopted All Hazards Mitigation Plan is required by FEMA as a condition of future grant funding for mitigation projects; and

WHEREAS, the All Hazards Mitigation Plan which will reside permanently in the Ashland County Emergency Management office and copies of which will be made available at the City's Administrative offices.

NOW, THEREFORE BE IT RESOLVED, that the Common Council for the City of Ashland adopts the Ashland County All Hazards Mitigation Plan as an official plan for the City; and

BE IT FURTHER RESOLVED, that the Ashland County Emergency Management Department will submit, on behalf of the City of Ashland, the adopted All Hazards Mitigation Plan to Wisconsin Emergency Management and Federal Emergency Management Agency officials for final review and approval and minor changes made to the plan upon the advice of the Office of Wisconsin Emergency Management and the Federal Emergency Management Agency will not require re-adopting this resolution.

PASSED: May 27, 2027

Alderperson

Denise Oliphant, City Clerk

Matthew Mac Kenzie, Mayor

Approved as to Form:

Tyler W. Wickman, City Attorney

May 12, 2025

Dear City of Ashland Community Leaders

The State of Wisconsin has endured billions of dollars in damages over the past three decades, as a result of various disasters including severe weather and flooding events, major snowstorms, and powerful tornados. While the costs of each disaster may vary greatly, the impact is always the hardest at the local level, impacting our communities the most.

The State of Wisconsin, in partnership with FEMA, has identified opportunities to assist communities in reducing future losses through several mitigation activities. Mitigation efforts may result in a significant decline in the cost of a disaster's impact down the road. In fact, for every dollar spent on mitigation activities, approximately \$6.00 in future damages are avoided.

Hazard mitigation breaks the cycle of damage and repair by reducing or eliminating the long-term risk to human life and property caused by the potential hazards. These preventative actions may be as simple as elevating a furnace in a basement, in an effort to prevent water damage. Mitigation efforts may also take a more comprehensive approach such as relocating buildings out of the floodplain or strengthening critical facilities to prevent wind damage and provide stronger shelter.

In an effort to better mitigate Ashland County's vulnerability to disaster, Ashland County Emergency Management, applied for, received, and has now updated the Ashland County Hazard Mitigation Plan through a Pre-Disaster Mitigation (PDM) planning grant. The updated plan serves as a roadmap that outlines potential cost-effective hazard mitigation activities, some of which might be available for future grant funding. The plan highlights the risks and vulnerabilities that Ashland County faces from natural disasters and highlights mitigation strategies that may reduce future losses.

As this project nears completion, we are sending copies of the final updated plan and a draft resolution template for you to use for the re-adoption of the Ashland County Hazard Mitigation Plan. Please note:

1. **Adoption of this plan will not cost your community anything.** You will not be committing to completing any of the projects listed; instead it is a list of triaged ideas that could be accomplished should the funding and will to complete them become available.
2. **If you do not adopt this plan, your community will not be eligible to apply for and receive mitigation project funding in the future.**

We are asking that you please include adoption of this resolution on your next meeting agenda and provide a copy of the final resolution as soon as it is passed, to the Ashland County Emergency Management department. If you have any questions or comments regarding this plan update, please feel free to contact me at (715) 685-7640 ext. 856 or by email @ christina.dzwonkowski@ashlandcountywi.gov

We thank you in advance for your assistance with completing the Ashland County Hazard Mitigation Plan update. This small investment of your time will help make our community a safer, healthier and more disaster-resistant community for years to come.

Respectfully,

Christina Dzwonkowski
Emergency Management Director,
Ashland County



Hazard Mitigation Plan

Ashland County, Wisconsin

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1. Introduction and Background

Plan Purpose

This Hazard Mitigation Plan is intended to provide strategies for reducing susceptibility to future damage to public and private infrastructure in the county. The Ashland County Emergency Management Office applied for and received a hazard mitigation plan update grant in 2022 through the Building Resilient Infrastructure and Communities (BRIC) Grant Program.

The procedures utilized in preparing this plan are based on guidance provided by the Federal Emergency Management Agency (FEMA) and Wisconsin Emergency Management (WEM) and should therefore be considered consistent with the requirements and procedures in the Disaster Mitigation Act of 2000.

Section 409 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (P.L. 93-228, as amended) is the impetus for involvement of state and local governments in evaluating and mitigating natural hazards as a condition of receiving federal disaster assistance. The Federal Emergency Management Agency (FEMA) rules for implementing Section 409 are in 44 CFR Part 206 Subpart M.

Section 409 states that Ashland County is obligated to try to reduce damage susceptibility to any hazard that has received relief funding in the past. Developing a hazard mitigation plan provides an opportunity for communities to meet this requirement by developing strategies for reduction of potential losses from future natural disasters. Hazard mitigation planning is the process of developing a set of actions designed to reduce or eliminate long-term risk to people and property from hazards and their effects.

Completion of this plan puts Ashland County in an advantageous position when competing for pre- and post-disaster mitigation project dollars because projects have been pre-identified. The cooperation of government, private and volunteer agencies is essential in mitigation efforts and over the long term it is hoped that implementation of this plan will save taxpayer dollars because less money is needed for post-disaster recovery activities. Furthermore, mitigation planning measures incorporated in economic or community development goals support more comprehensive and effective government. This plan evaluates the risks that all hazards pose to the citizens and property of Ashland County and is organized by the following sections:

1. Introduction and Background
 2. Community Profile
 3. Risk Assessment
 4. Mitigation Strategy
 5. Plan Maintenance
- Appendix A: Planning Process Documentation
Appendix B: Capability Assessment
Appendix C: Report on Previous Mitigation Actions
Appendix D: Northwest Wisconsin Flood Impact Study
Appendix E: Natural Flood Management and Climate Resilient Infrastructure

Planning Process

Introduction

Development of the Ashland County Hazard Mitigation Plan was based on FEMA and WEM guidance to meet the requirements of the Disaster Mitigation Act of 2000. The planning area encompasses all of Ashland County, including all towns. The jurisdictions participating in this plan update include:

- Ashland County
- City of Ashland
- City of Mellen
- Mellen School District

Plan development was guided by the Ashland County Hazard Mitigation Committee, which was re-established as part of this plan update process. The committee was comprised of county, local, and tribal officials, emergency management personnel, and individuals representing community lifelines. Planning support was provided by the Northwest Regional Planning Commission. There was a total of six planning meetings held between November 2023 and June 2024. All meetings included the option to attend in-person or virtually. Hazard Mitigation Committee meeting documentation is provided in Appendix A.

The Hazard Mitigation Committee reviewed each section of the previous Hazard Mitigation Plan to determine which information needed to be updated. Statistical background data was revised to reflect demographic, land use, and development changes that have occurred since completion of the previous plan. The layout of this plan was changed from the previous plan in order to address new FEMA planning guidance, including an emphasis placed on climate change, underserved communities, and socially vulnerable populations. A new Ashland County Emergency Management Coordinator also provided an opportunity for the incorporation of new and innovative ideas into this plan. In addition, this plan includes an addendum adopted in May 2023 that is focused on strategies for natural flood management called, *A Strategy for Natural Flood Management and Climate Resilient Infrastructure in Ashland County* (Appendix E).

Hazard Identification and Prioritization Review

In the hazard identification and prioritization process, relevant natural and technological/human-caused hazards were identified by the Hazard Mitigation Committee and ranked based upon current information relative to occurrences and perceived risk. Based on current information and perceived risk, the Hazard Mitigation Committee removed the natural hazard of earthquakes. As stated in the previous plan, mitigation planning for this hazard is not necessary because Ashland County is not likely to suffer directly from a severe earthquake and the community impacts are not considered significant. As part of this update, the Hazard Mitigation Committee added the natural hazards of pandemic and solar storms. Hail, lightning, and thunderstorms were incorporated into a single hazard profile, and coastal erosion and landslide were incorporated into a single hazard profile. The committee also added the technological/human-caused hazards of cyberattack and hazardous materials incident.

Participating jurisdictions (Cities of Ashland and Mellen, and Mellen School District) engaged in a similar process with their respective communities. Once a hazard priority ranking was established, statistical information about hazard occurrences and damages was researched and updated for each hazard profile. Upon review of the updated hazard profiles, various risk factors were analyzed to develop updated risk and loss assessments for each of the profiled hazards.

Visioning and Implementation Review

The plan's goals were reviewed by the Hazard Mitigation Committee and were determined to be relevant for this update. All participating jurisdictions conducted a capability assessment to help inform a comprehensive mitigation strategy and to identify potential opportunities for establishing or enhancing mitigation policies, programs, or projects. The Hazard Mitigation Committee, City of Ashland, City of Mellen, and Village of Butternut then reviewed the status of each of the previous mitigation actions to identify progress toward completion (Appendix C). This is the first time that the Mellen School District is a participant in this plan. The committee and each participating jurisdiction conducted a review of the cost, responsible management, timetable, priority, and relevance of each mitigation action. The committee and each participating jurisdiction then identified new actions to incorporate into the mitigation action plan.

Public Participation

All Hazard Mitigation Committee meetings were open to members of the public. The draft plan was distributed to the stakeholders listed on pages 4-5 and to emergency managers of adjoining jurisdictions (Iron County, Price County, Sawyer County, Bayfield County, and the Bad River Band) along with a solicitation for comments. A public open house was held to unveil the draft plan on MONTH DAY, 2024 at the LOCATION. The updated draft plan, mapping, and an overview of the process were presented to the public.

Copies of the draft plan were posted on the Ashland County website, along with solicitation for comment. The draft plan was submitted to Wisconsin Emergency Management (WEM), for review and comment in MONTH 2024, with WEM comments received in MONTH 2024. For documentation of the planning process, please refer to Appendix A.

Hazard Mitigation Committee

The Ashland County Emergency Management Coordinator contracted with Northwest Regional Planning Commission (NWRPC) to update this plan. A Hazard Mitigation Committee was organized to oversee the completion of this plan. The Committee carried out most of the planning duties, with assistance provided by NWRPC.

- Christina Dzwonkowski, Emergency Management Coordinator, Ashland County
- Bruce Blakeman, Zoning Administrator, Ashland County
- Nathan Deegan, Chief Deputy, Ashland County
- Matt Erickson, Highway Commissioner, Ashland County
- MaryJo Gingras, Land Conservationist, Ashland County
- Mark Hill, Communications Director, Ashland County
- Chris Hoffman, Forest Administrator, Ashland County
- Jennifer Solberg, Land Description/Tax Lister, Ashland County
- Nathan Kilger, Air Quality Specialist, Bad River Band of Lake Superior Chippewa
- Lissa Radke, Community Development Educator, UW-Madison Extension
- Brant Kucera, City Administrator, City of Ashland
- Stuart Matthias, Fire Chief, City of Ashland
- Terry Van Buren, Mayor, City of Mellen
- Becky Mesko, Deputy Clerk/Treasurer, City of Mellen
- Cindy Pritzl, Clerk/Treasurer, Village of Butternut
- Rhonda Elmhurst-Friemoth, Superintendent, Mellen School District
- Michael Kuchta, Town Administrator, Town of La Pointe
- Greg Bortz, Information Technology & Member Services Manager, Price Electric Cooperative
- Chris Kopel, Chief Executive Officer, Bayfield Electric Cooperative

Participating Jurisdictions

Local jurisdictions were invited to participate in the planning process and were advised of their obligations to receive credit for participation. This plan update for Ashland County includes several local units of government within the planning area (13 towns, 2 cities, 1 village, and 1 school district). Participating jurisdictions and how each representative was involved in the plan update process is summarized in the following table.

Jurisdiction, Title	Name	How Participated?
Emergency Management Coordinator, Ashland County	Christina Dzwonkowski	Organized meetings, facilitated discussion, collected background data and information, and reviewed draft plan materials.
City of Ashland, City Administrator	Brant Kucera	Attended meetings, collected local data and information, and reviewed draft plan materials.
City of Mellen, Mayor	Terry Van Buren	Attended meetings, collected local data and information, and reviewed draft plan materials.
Village of Butternut, Clerk/Treasurer	Cindy Pritzl	Attended meetings, collected local data and information, and reviewed draft plan materials.
Mellen School District, Superintendent	Rhonda Elmhurst-Friemoth	Attended meetings, collected local data and information, and reviewed draft plan materials.

Stakeholders

The Ashland County Hazard Mitigation Committee recognized the need for broad support in the planning process. In order to facilitate departmental, agency, and organizational involvement, representatives from the following entities were invited to participate in the planning process by being made aware of all planning activities through an email group. Stakeholders contributed by attending and providing input at Hazard Mitigation Committee meetings, providing information to support the plan update, and by reviewing the draft plan.

Local and Regional Agencies Involved in Hazard Mitigation Activities

- Ashland County Emergency Communications Division
- Ashland County Emergency Management
- Ashland County Forestry and Recreation Department
- Ashland County Land and Water Conservation Department
- Ashland County Land Office
- Ashland County Sheriff's Office
- Ashland County Zoning
- Ashland County Highway Department
- Ashland City Planner
- Ashland City Administrator
- Ashland County GIS
- Ashland County Health Department
- Northwest Regional Planning Commission
- Town Chairs
- Wisconsin DNR Floodplain Zoning
- Wisconsin Wetlands Association
- US Forest Service Chequamegon-Nicolet National Forest Great Divide
- Wisconsin Department of Natural Resources State Parks – Copper Falls, Big Bay James Yach

Agencies that have the Authority to Regulate Development

- Ashland County Zoning
- City of Ashland Mayor
- City of Mellen Mayor
- Village of Butternut

Neighboring Communities

- Bayfield County
- Iron County
- Price County
- Sawyer County
- Bad River Band of Lake Superior Chippewa

Representatives of Businesses, Academia, and Other Private Organizations

- Bayfield Electric Cooperative
- Price Electric Cooperative
- Ashland School District
- Butternut School District
- Chequamegon School District
- Mellen School District
- UW-Madison Extension
- Northland College Facilities Management/Sustainability Coordinator
- Xcel Energy
- Enbridge
- Northwood Technical College
- Tamarack Health
- Ashland Fire
- Superior Fire

Representative of Nonprofit Organizations

- Aging and Disability Resource Center of the North
- Ashland Aging Unit
- Ashland County Housing Authority
- Bad River Social Services
- Ashland County Social Services
- Faith in Action

Coordinating with Existing Plans, Studies, and Reports

Several existing plans, studies, reports, and technical information were reviewed and incorporated into the hazard mitigation plan. These were used to provide background information relative to the identified hazards and to provide policy and strategic guidance in the mitigation strategy. The following existing plans, studies, reports, and technical information were reviewed and incorporated where relevant:

- Ashland County Comprehensive Plan (2025)
- Town of Agenda Comprehensive Plan (2005)
- Ashland County Comprehensive Plan (2016)
- Town of Ashland Comprehensive Plan (2005)
- City of Ashland Comprehensive Plan (2017)
- City of Ashland Outdoor Recreation Plan (2024)
- City of Ashland Strategic Plan (2022)
- Village of Butternut Comprehensive Plan (2006)
- Town of Chippewa Comprehensive Plan (2006)
- Town of Gingles Comprehensive Plan (2006)
- Town of Gordon Comprehensive Plan (2006)
- Town of Jacobs Comprehensive Plan (2006)
- Town of La Pointe Comprehensive Plan (2014)
- Town of Marengo Comprehensive Plan (2006)
- City of Mellen Comprehensive Plan (2006)
- Town of Morse Comprehensive Plan (2005)
- Town of Peeksville Comprehensive Plan (2006)
- Town of Sanborn Comprehensive Plan (2007)
- Town of Shanagolden Comprehensive Plan (2006)
- Town of White River Comprehensive Plan (2006)
- Ashland County Land & Water Resource Management Plan (2020)
- Ashland County Emergency Operations Plan
- Northwest Wisconsin Regional Comprehensive Plan (2015)
- Northwest Wisconsin Regional Pandemic Response and Resiliency Plan (2023)
- State of Wisconsin Hazard Mitigation Plan (2021)
- Managing Coastal Hazard Risks on Wisconsin's Dynamic Great Lakes Shoreline (2016)
- Multi-County Commodity Flow Study (2014)
- Lake Superior Lakewide Action and Management Plan (2020)
- Lake Superior South Shore Bluff Recession Rate Study (2012)
- A Strategy for Natural Flood Management and Climate Resilient Infrastructure in Ashland County (2023)
- Northwest Wisconsin Flood Impact Study (2018)
- Northwest Wisconsin Road-Stream Crossing Inventory (2023)
- Chequamegon Bay Area Climate Change Adaptation Planning Guide (2019)
- Clam Lake Area Wildfire Protection Plan (2013)
- Wisconsin Aquatic Invasive Species Management Plan (2018)
- Apostle Islands National Lakeshore General Management Plan (2011)

2. Community Profile

Geography

According to the U.S. Census Bureau, Ashland County has a total area of 2,292 square miles, of which 1,045 square miles is land (46%) and 1,247 square miles (54%) is water. It is the eleventh largest county in Wisconsin by total area. Ashland County contains the majority of the Apostle Islands as well as a small group of islands in Lake Superior off the Bayfield Peninsula – only Sand, York, and Raspberry Islands are in Bayfield County.

Ashland County is bordered on the east by Iron County, on the south by Price County and Sawyer County, on the west by Bayfield County, and on the north by Lake Superior (Map 1). In Wisconsin, there are three types of sub-county, full-service local government units: towns, which are unincorporated, and villages and cities, which are incorporated. Ashland County contains the Bad River Tribe; the Cities of Ashland and Mellen; the Village of Butternut and the Towns of Agenda, Ashland, Gingles, Gordon, Jacobs, Marengo, Morse, Peeksville, and Shanagolden.

Geology

The present physiography of Ashland County is due largely to the glaciers that originated in northern Canada near Hudson Bay. The county is divided into two distinct drainage basins at the St. Lawrence Seaway Continental Divide. The Bad River and its tributaries drain most of the northern half of the county to Lake Superior. The Chippewa River and its tributaries drain to the Mississippi River and the Gulf of Mexico.

The Lake Superior Lowlands contain glacial lacustrine red clays or clay till (till is an unstratified glacial drift consisting of clay, sand, gravel, and boulders intermingled). These clays can be found on the historic lake plain adjoining present day Lake Superior. These clays were laid down under the waters of a much larger glacial lake that once occupied the Lake Superior Basin and surrounding areas. This calcareous red clay till soil is finely textured, resulting in very poor drainage. Streams cut very deep v-shaped valleys into the clay; some ranging anywhere from 40 to 100 or more feet below the level of the plain.

Just south of the Lake Superior Lowland, the land surface is hilly and rough. Some of the hills are ridge-like accumulations of glacial sand, gravel, boulders, clay, and silt, known as moraines. Kettle shaped depressions can be found along the hills and ridges. Some of the hills are comprised of trap rock (hardened lava flows) and are narrow ridges with very steep rock walls. Waterfalls can occur where streams leave the lava formations and enter the clay plains. Copper Falls is a good example.

The Penokee Iron Range extends 80 miles beginning in Ashland County, through Iron County, and into Michigan. The Iron Range is about one-half to one mile-wide and rises to 1,872 feet above sea level at Mt. Whittlesey near Mellen. Extending south from the Penokee Range is a rolling area of generally low relief with glacial deposits forming the greatest irregularities. Glacial outwash soils, well sorted sand or sand and gravel deposited by water melting from the glacier exist in the area and loose rock is common.

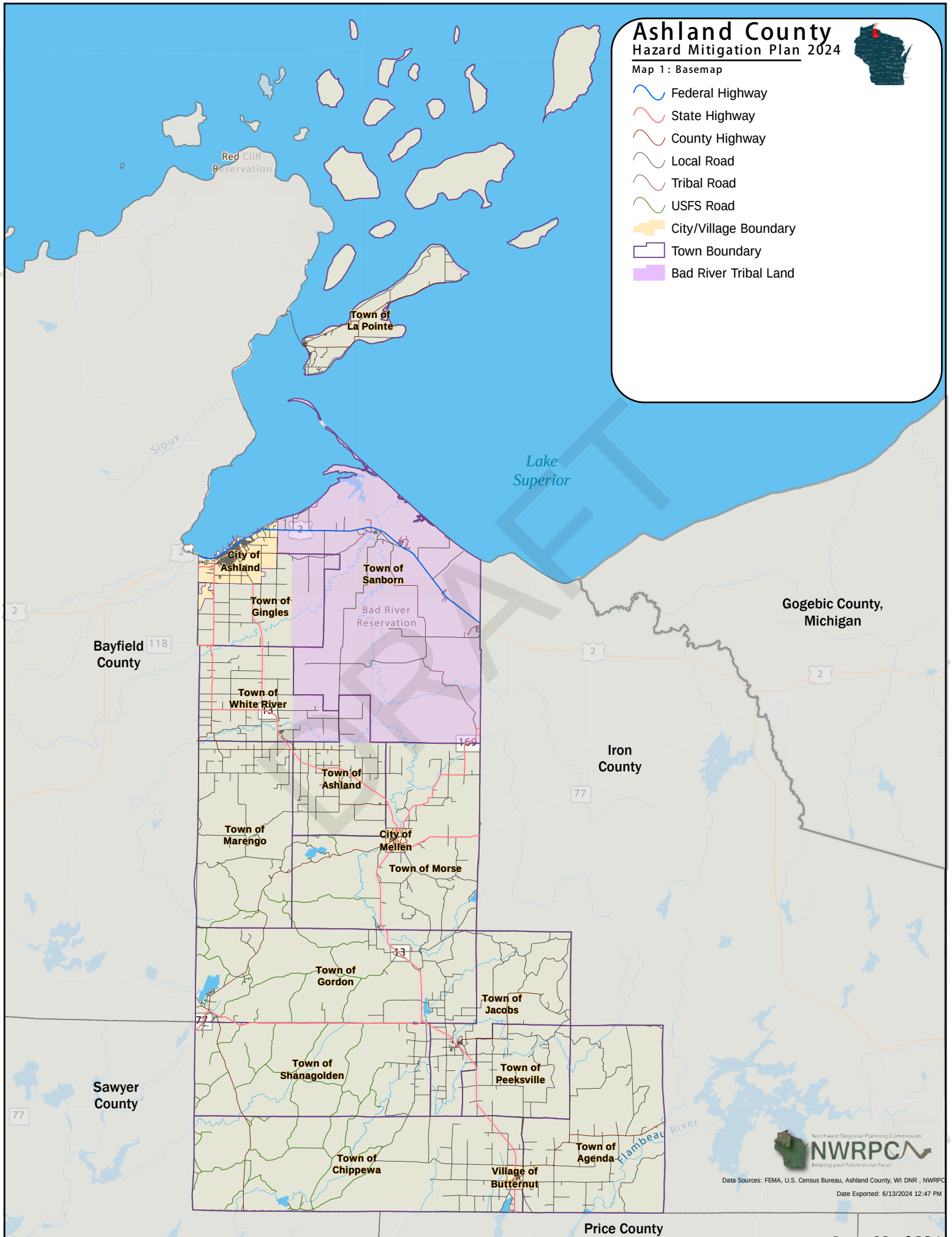
Ashland County

Hazard Mitigation Plan 2024



Map 1: Basemap

- Federal Highway
- State Highway
- County Highway
- Local Road
- Tribal Road
- USFS Road
- City/Village Boundary
- Town Boundary
- Bad River Tribal Land



Data Sources: FEMA, U.S. Census Bureau, Ashland County, WI DNR, NWRPC
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Hydrology

Within Ashland County, there are 85 lakes, 96 flowages, and 548.1 miles of streams. Of this number there are 257.7 miles of streams that are classified as trout streams. There are two different watersheds in Ashland County. Streams located in the northern basin flow into Lake Superior and streams in the southern portion of the county (south of the Great Divide) flow into streams that eventually enter the Mississippi River.

Ashland County contains parts of nine watersheds contributing to Lake Superior: Bayfield Peninsula Southeast Fish Creek, Lower Bad River, White River, Potato River, Marengo River, Tyler Forks, Upper Bad River, and Montreal River). Water quality in the basin is generally good, although localized point-source pollution from municipal and industrial wastewater discharges have had a negative effect. Other issues, such as pollution from stormwater drains, runoff from farm fields and feedlots, and erosion from logging and construction-sites, have contributed to degraded habitat and water quality in some Ashland County streams. Additional nonpoint source pollution arises from erosion of stream banks, ditches, and lakeshores as a result of fast runoff from rain and snow events.

Within Ashland County parts of six watersheds drain toward the Mississippi River: Upper South Fork Flambeau River, Lower North Fork Flambeau River, Butternut Creek, Upper North Fork Flambeau River, East Fork Chippewa River, and West Fork Chippewa River.

Soil Types

The soils of Ashland County are largely derived from the weathering of the glacial drift deposits and show a great variation within relatively short distances. The soil in the county is diverse, with areas of sandy soil that allow for rapid water infiltration and clay-rich soils that are less permeable, leading to surface runoff and flooding events within the clay plain portion of the county.

Climate

The climate of Ashland County is separated into two general classifications: a *modified continental climate* along the Lake Superior shoreline area and a *continental climate* throughout the rest of the county. The continental climate is generally characterized by hot summers and cold winters. The climate is somewhat modified in areas adjacent to Lake Superior. The heat-sink effect of the lake serves to moderate seasonal temperatures, resulting in cooler summers and warmer winters. Average temperatures in Ashland County range from 15° F in January to 71° F in July. Average temperatures along the lakeshore can be as much as 10-15°F cooler in the summer and slightly warmer during the winter months.

Average annual precipitation varies from about 35 inches in the Penokee highlands of south-central Ashland County to 32 inches along the lake and in the far southern part of the county. Lake enhancement results in generally higher snowfalls across northern Ashland County, particularly within the higher terrain. Occasionally, Ashland County experiences extreme seasonal weather conditions. Dramatic changes in temperature, severe storms, heavy precipitation, and severe winter weather events can and do occur.

Table 1: Ashland County Average Climate

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Avg Temp (°F)	14.9	16	28	39.4	51.3	61	67.1	65.4	58.1	45.3	33.1	20.2
Avg Daily Low (°F)	4.6	6.7	19.3	32.5	47	57	62	59.1	52.3	38.9	24	8.3
Growing Degree (Days)	0	0	5	19	133	340	542	485	269	63	8	0
Heating Degree (Days)	40	58	236	635	1018	1476	1642	1444	1175	770	415	145
Cooling Degree (Days)	0	0	1	0	11	44	125	83	30	4	0	0
Avg Precip (")	0.45	0.61	1.1	2.46	3.37	3.49	3.63	3.17	2.92	2.77	1.32	1.3
Ave Snow (")	25.8	16.6	16.3	6.6	0.6	0.0	0.0	0.0	0.1	2.3	13.5	25.5

Source: Weather station at Ashland Exp Farm, latitude 46°34' N, longitude 90°58' W, elevation 650 ft, 2000-2024

Demographic Characteristics

Historical Population

In recent decades, the Ashland County population has declined slightly. In the 2010 U.S. Census, the county was home to 16,157 people. In the 2020 U.S. Census, there were 16,027 people residing in Ashland County, which is a decline of 0.8%.

Table 2: Population 1970-2020

Community	1970	1980	1990	2000	2010	2020
C. Ashland	9,615	9,115	8,695	8,620	8,216	7,905
C. Mellen	1,168	1,046	972	845	731	698
T. Agenda	512	623	591	513	422	370
T. Ashland	504	596	567	603	594	589
T. Chippewa	417	402	405	433	374	349
T. Gingles	456	545	492	640	778	738
T. Gordon	312	333	301	357	283	261
T. Jacobs	928	907	885	835	722	648
T. La Pointe	159	156	147	246	261	428
T. Marengo	257	276	284	362	390	460
T. Morse	401	469	444	515	493	499
T. Peeksville	145	184	167	176	141	137
T. Sanborn	662	834	998	1,272	1,331	1,381
T. Shanagolden	148	174	172	150	125	131
T. White River	606	685	771	892	921	1,067
V. Butternut	453	438	416	407	375	366
Ashland County	16,743	16,783	16,307	16,866	16,157	16,027

Source: U.S. Census Bureau

Population Projections

Population projections are forecasts of potential future population growth. They are based on current or predicted trends, social and economic variables, and other demographic characteristics. Population projections formulated by the Wisconsin Department of Administration (the official state projections) are depicted below.

Table 3: Population Projections 2010-2040

Community	2010	2020	2025	2030	2035	2040
C. Ashland	8,216	8,050	8,065	7,980	7,835	7,460
C. Mellen	731	665	635	600	555	495
T. Agenda	422	395	375	355	330	295
T. Ashland	594	585	590	585	580	560
T. Chippewa	374	365	365	360	350	330
T. Gingles	778	845	905	950	990	995
T. Gordon	283	280	280	275	265	250
T. Jacobs	722	670	650	620	580	530
T. La Pointe	261	290	310	325	340	340
T. Marengo	390	420	445	460	475	475
T. Morse	493	505	515	520	525	510
T. Peeksville	141	135	130	125	115	105
T. Sanborn	1,331	1,380	1,440	1,475	1,510	1,490
T. Shanagolden	125	120	120	115	110	100
T. White River	921	985	1,030	1,065	1,090	1,085
V. Butternut	375	350	345	330	315	295
Ashland County	16,157	16,040	16,200	16,140	15,965	15,315

Source: Wisconsin Department of Administration

Table 4: Median Age Comparison 2010 & 2020

Age	2010	2020
Under 5 years	6.1%	5.4%
5 to 9 years	6.5%	6.0%
10 to 14 years	6.3%	5.7%
15 to 19 years	7.4%	7.5%
20 to 24 years	7.2%	6.0%
25 to 29 years	5.7%	5.2%
30 to 34 years	5.4%	5.6%
35 to 39 years	5.5%	6.0%
40 to 44 years	6.4%	5.3%
45 to 49 years	7.7%	5.2%
50 to 54 years	7.9%	5.9%
55 to 59 years	7.5%	8.1%
60 to 64 years	4.5%	7.7%
65 to 69 years	4.7%	7.4%
70 to 74 years	3.4%	5.2%
75 to 79 years	3.1%	3.7%
80 to 84 years	2.6%	1.5%
85 years and over	2.4%	2.6%

Source: U.S. Census Bureau

Vulnerable Populations

Social vulnerability refers to the demographic and socioeconomic factors that contribute to a community being more adversely affected by natural or human-caused hazards. The Social Vulnerability Index (SVI) developed by the Centers for Disease Control was designed to identify and quantify communities experiencing social vulnerability. The SVI indicates how well a community can endure external stresses on human health, like natural and human-caused/technological disasters.

The 2022 SVI compares counties on 16 social factors and groups them into four themes (Figure 1). A score is derived for each theme and an overall SVI ranking is derived by combining all factors to provide a comprehensive assessment. Possible scores range from 0 (lowest vulnerability) to 1 (highest vulnerability).

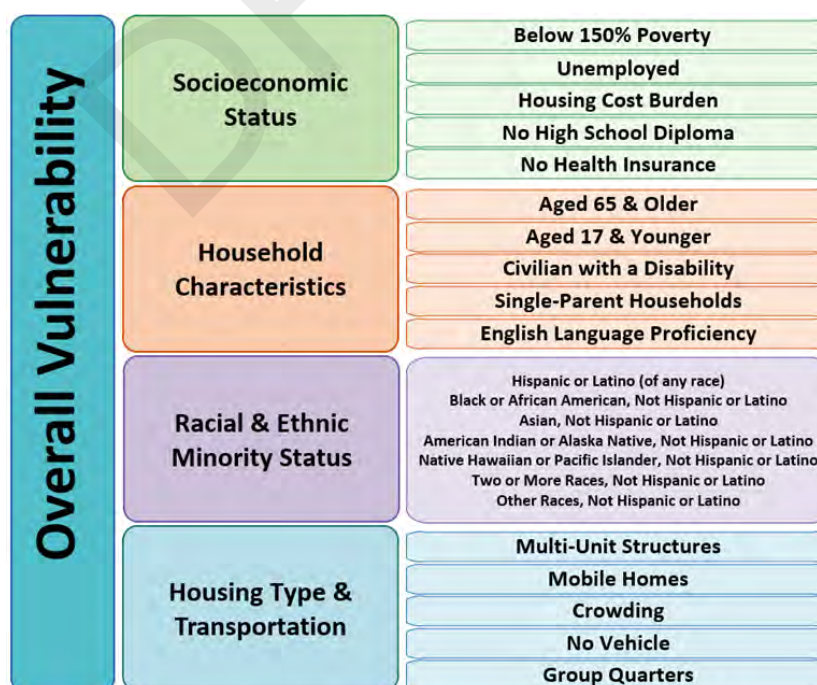
As indicated by the 2022 SVI, social groups in Ashland County have a relatively low to moderate level of vulnerability. Ashland County with an SVI of 0.4852 means that an estimated 48.5% of counties in the United States are less vulnerable than Iron County and 51.5% of counties in the US are more vulnerable than Iron County. Table 5 indicates the county's 2022 SVI rankings by theme. Map 2 represents the 2022 National Overall SVI Score at the census tract level.

Table 5: Ashland County Social Vulnerability Index 2022 Rankings

Theme	SVI Ranking
Socioeconomic Status	0.3252
Household Characteristics	0.3271
Racial & Ethnic Minority Status	0.5030
Housing Type & Transportation	0.8031
Overall	0.4852

Source: Agency for Toxic Substances and Disease Registry

Figure 1: Social Vulnerability Index 2022 Variables



Source: Centers for Disease Control and Prevention and Agency for Toxic Substances and Disease Registry

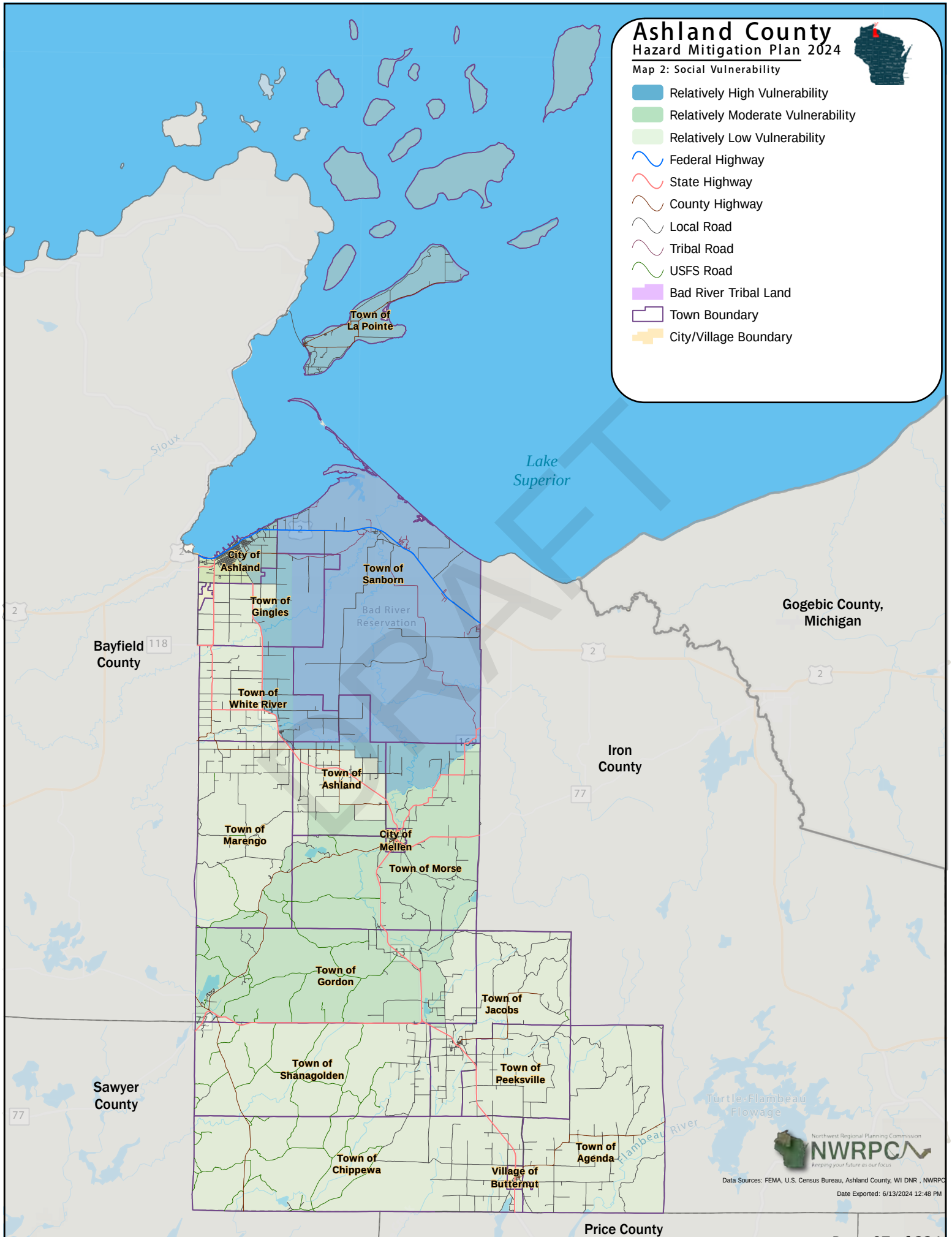
Ashland County

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Map 2: Social Vulnerability

- Relatively High Vulnerability
- Relatively Moderate Vulnerability
- Relatively Low Vulnerability
- Federal Highway
- State Highway
- County Highway
- Local Road
- Tribal Road
- USFS Road
- Bad River Tribal Land
- Town Boundary
- City/Village Boundary



Data Sources: FEMA, U.S. Census Bureau, Ashland County, WI DNR, NWRPC
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Housing Values

Housing value statistics will be used to assess the potential losses from hazards affecting Ashland County. The census-derived median value of owner-occupied housing units as well as the total assessed residential property value (2022) in Ashland County is depicted in Table 6.

Table 6: Housing Values

Community	Median Value (Owner-Occupied)	Total Assessed Value (Residential)
C. Ashland	\$144,100	\$289,573,900
C. Mellen	\$75,300	\$14,327,000
T. Agenda	\$109,600	\$34,478,200
T. Ashland	\$121,900	\$22,373,400
T. Chippewa	\$176,600	\$30,822,600
T. Gingles	\$195,500	\$42,169,500
T. Gordon	\$160,600	\$79,688,100
T. Jacobs	\$104,400	\$25,384,300
T. La Pointe	\$262,900	\$252,075,700
T. Marengo	\$169,400	\$22,404,200
T. Morse	\$214,600	\$35,980,900
T. Peeksville	\$180,400	\$8,480,700
T. Sanborn	\$109,600	\$13,363,300
T. Shanagolden	\$148,600	\$15,094,500
T. White River	\$169,400	\$33,400,200
V. Butternut	\$72,700	\$7,909,100
Ashland County	\$151,000	\$927,525,600

Source: American Community Survey 5-Year Estimates 2018-2022, Wisconsin Department of Revenue

Household Projections

Table 7 depicts household projections to the year 2040. This information is valuable for understanding and predicting population and housing needs and density in the future and potential planning for hazard situations.

Table 7: Household Projections 2010-2040

Community	2010 Census	2015 Projection	2020 Projection	2025 Projection	2030 Projection	2035 Projection	2040 Projection
C. Ashland	3,516	3,636	3,669	3,748	3,763	3,751	3,611
C. Mellen	337	339	326	318	305	287	260
T. Agenda	186	190	184	179	173	164	149
T. Ashland	242	248	252	260	263	267	262
T. Chippewa	152	158	157	161	162	161	154
T. Gingles	297	317	342	374	401	427	437
T. Gordon	143	150	150	153	154	151	145
T. Jacobs	330	332	324	322	313	299	278
T. La Pointe	138	151	162	178	190	203	207
T. Marengo	134	143	153	166	175	184	188
T. Morse	204	215	222	231	238	245	242

Community	2010 Census	2015 Projection	2020 Projection	2025 Projection	2030 Projection	2035 Projection	2040 Projection
T. Peeksville	66	68	67	66	65	61	57
T. Sanborn	467	492	513	547	572	598	601
T. Shanagolden	55	57	56	57	56	55	51
T. White River	289	310	327	350	369	386	391
V. Butternut	180	180	178	179	175	171	163
Ashland County	6,736	6,986	7,082	7,289	7,374	7,410	7,196

Source: Wisconsin Department of Administration, Demographic Services

Employment and Wages

In 2023, government was the leading industry in Ashland County, followed by the health care and social assistance industry. In total, there were 8,940 jobs in 2023 (a decline of 3.4% from 2018) and on average, workers earned \$57,511 in Ashland County. The highest paying industry is utilities, followed by finance and insurance. Among the lowest paying industry sectors are accommodation and food services and arts, entertainment, and recreation.

Table 8: Jobs by Industry

Industry	2018 Jobs	2023 Jobs	2023 Earnings Per Worker
Educational Services	509	403	\$32,852
Utilities	83	55	\$131,778
Agriculture, Forestry, Fishing and Hunting	169	155	\$50,424
Manufacturing	1,065	993	\$72,825
Government	1,899	1,823	\$64,161
Health Care and Social Assistance	1,594	1,556	\$76,668
Retail Trade	1,024	1,087	\$37,245
Construction	470	549	\$68,339
Accommodation and Food Services	786	739	\$23,015
Other Services (except Public Administration)	434	396	\$39,268
Finance and Insurance	184	216	\$78,173
Administrative and Support and Waste Management and Remediation Services	243	259	\$42,941
Transportation and Warehousing	175	176	\$56,877
Wholesale Trade	247	145	\$72,739
Arts, Entertainment, and Recreation	45	68	\$31,158
Professional, Scientific, and Technical Services	224	231	\$63,160
Information	60	49	\$41,867
Real Estate and Rental and Leasing	42	40	\$51,707
All Sectors	9,251	8,940	\$57,511 (Average)

Source: Lightcast Q2 2024

Land Use and Development Trends

A close relationship exists between the way land is used and the level of risk posed to life and property by natural and technological/human-caused hazards. Effective land use planning seeks to guide development away from known hazard areas and to maintain the protective features of the natural environment by preserving wetlands, floodplains, forestlands, and other vegetated areas. Hazard mitigation can also be achieved by ensuring that adequate building regulations and standards are developed and enforced, by granting permits to construct developments outside of risk areas, by designating open space and preserving natural protective features, by requiring that structures located within flood risk area are elevated above the typical flood level, and by educating the public.

Ashland County is predominantly rural. Much of the county outside of the Ashland urban area has very low-density development. The outlying lands are characterized by large tracts of forestland and other natural areas with isolated residential development. Several small unincorporated communities are located throughout the county.

Table 9: Current Land Use

Category	Acres
Agriculture	45,815
Commercial	1,714
Infrastructure	10,754
Manufacturing	454
Open Space/Woodlands/Other Natural Areas	627,920
Parks & Recreation	7,682
Residential	16,572

Source: Ashland County Comprehensive Plan 2016

The county has a sizable public land base of nearly 240,000 acres, which greatly restricts development potential. Shoreland development on inland waters is significant, with moderately high-density residential/recreational development present in some areas. Development along the Lake Superior shoreline is minimal, where growth is restricted due to actively eroding bluffs along with access and ownership constraints. The county's urban area is predominately the City of Ashland. Most commercial, industrial, and mixed-use development occurs in this area.

Archaeological and Historical Resources

The National Register of Historic Places also includes a listing of locations in Ashland County. As mitigation projects are considered, the county is committed to ensuring that archaeological and historical sites are preserved.

Table 10: Ashland County Historic Sites

Historic Site Name	Address	Municipality
Apostle Islands Lighthouses	N and E of Bayfield on Michigan	Bayfield
Ashland County Courthouse	201 W. 2nd Street, *201 2nd Street W.	Ashland
Ashland Harbor Breakwater Light	2 mi. N of Bay City Ck.	Ashland
Bass Island Brownstone Company Quarry	N of La Point on Basswood Island	La Pointe
Beaser School	612 Beaser Ave	Ashland
Big Bay Sloop (shipwreck)	ASI#02554, Address restricted	La Pointe

Historic Site Name	Address	Municipality
Chapple and MacArthur Avenues Residential Historic District	622 Chapple Ave	Ashland
Coole Park Manor	351 Old Fort Rd	La Pointe
Copper Falls State Park	WI 169, 1.8 mi NE of Mellen <i>*STH 169, 1.8 mi NE of Mellen</i>	Morse
Ellis School	310 Stuntz Ave.	Ashland
Glidden State Bank	216 First Street <i>*85 N. Grant Street</i>	Jacobs
Hadland Fishing Camp	North of La Pointe on Rocky Island	La Pointe
La Pointe Indian Cemetery	S. Old Main Street	La Pointe
La Pointe Light Station	Long Island in Chequamegon Bay	Bayfield
Lucerne (shipwreck)	Address restricted	La Pointe
Manitou Camp	Manitou Island, Apostle Islands National Lakeshore	La Pointe
Marina Site	Address restricted	La Pointe
Marion Park Pavilion	Marion Park <i>* 668 Park St.</i>	Glidden
Marquette (shipwreck)	5 mi E of Michigan Island, Lake Superior	La Pointe
Mellen City Hall	Bennett and Main Streets <i>* 102 E. Bennett</i>	Ashland <i>* Mellen</i>
Memorial Hall	1511 Ellis Ave.	Ashland
Moonlight (shipwreck)	Address restricted	La Pointe
Morty Site (47AS40)	Address restricted	Bayfield
Noquebay (schooner-barge) Shipwreck Site	Address restricted	La Pointe
Old Ashland Post Office	601 West Second St. <i>* 601 Second St. W.</i>	Ashland
P-Flat Site (47AS47)	Address restricted	Bayfield
Pretoria (schooner-barge) Shipwreck Site	Address restricted	Bayfield
R.G. Stewart (shipwreck)	Address restricted	La Pointe
Rocky Island historic District	Apostle Islands National Lakeshore	La Pointe
Security Savings Bank	212-214 W 2nd Street <i>* 212-214 2nd Street W.</i>	Ashland
Soo Line Depot	Third Ave W at Fourth St. <i>* 400 3rd Ave. W.</i>	Ashland
T.H. Camp (shipwreck)	Address restricted	La Pointe
Trout Point Logging Camp	Address restricted	Bayfield
Union Depot	417 Chapple Ave.	Ashland
Wakefield Hall	1409 Ellis Ave.	Ashland
West Second Street Historic District	W 2nd St from Ellis Ave. to 6th Ave.	Ashland
Wheeler Hall, Northland College	1411 Ellis Ave.	Ashland
Wilmarth School	913 3rd Ave W.	Ashland
Wilmarth, Lewis C. and Caroline, House	622 Chapple Ave.	Ashland
Winston-Cadotte Site	Address restricted	La Pointe

** Information from this table was provided by the National Registry of Historic Places. This registry had some errors in addresses and addressing conventions. The original material as listed on the registry comes first and the local, corrected information is listed after the asterisk.*

The Wisconsin Historical Society maintains a list of archaeological sites and cemeteries (Archaeological Site Inventory Database). This list is available to governmental agencies upon request. These sites include campsites/villages/communities, cabins/homesteads, sugar mapping sites, cemetery/burial/ mounds, trading/fur posts, mill/sawmills, and kilns.

All of these sites have been reported to the State Historical Society of Wisconsin and are protected sites. If there is concern that a mitigation project will impact one of these or any other identified or suspected archeological site, the county will work with the proper authorities to ensure that all applicable laws and regulations are followed.

Critical and Vulnerable Facilities and Infrastructure

Several types of facilities and infrastructure are critical to the health and welfare of the population following a disaster or during the recovery process. Critical facilities include police, fire, emergency medical services, and all government facilities as these facilities are vital to the continued delivery of key government services. These facilities also include those vulnerable facilities which may represent a substantial hazard to human life in the event of failure, such assembly areas, or facilities of historic, cultural, or economic significance.

Map 3 identifies all structure locations in Ashland County. Maps 4.1, 4.2, and 4.3 identify the critical facilities and infrastructure in Ashland County.

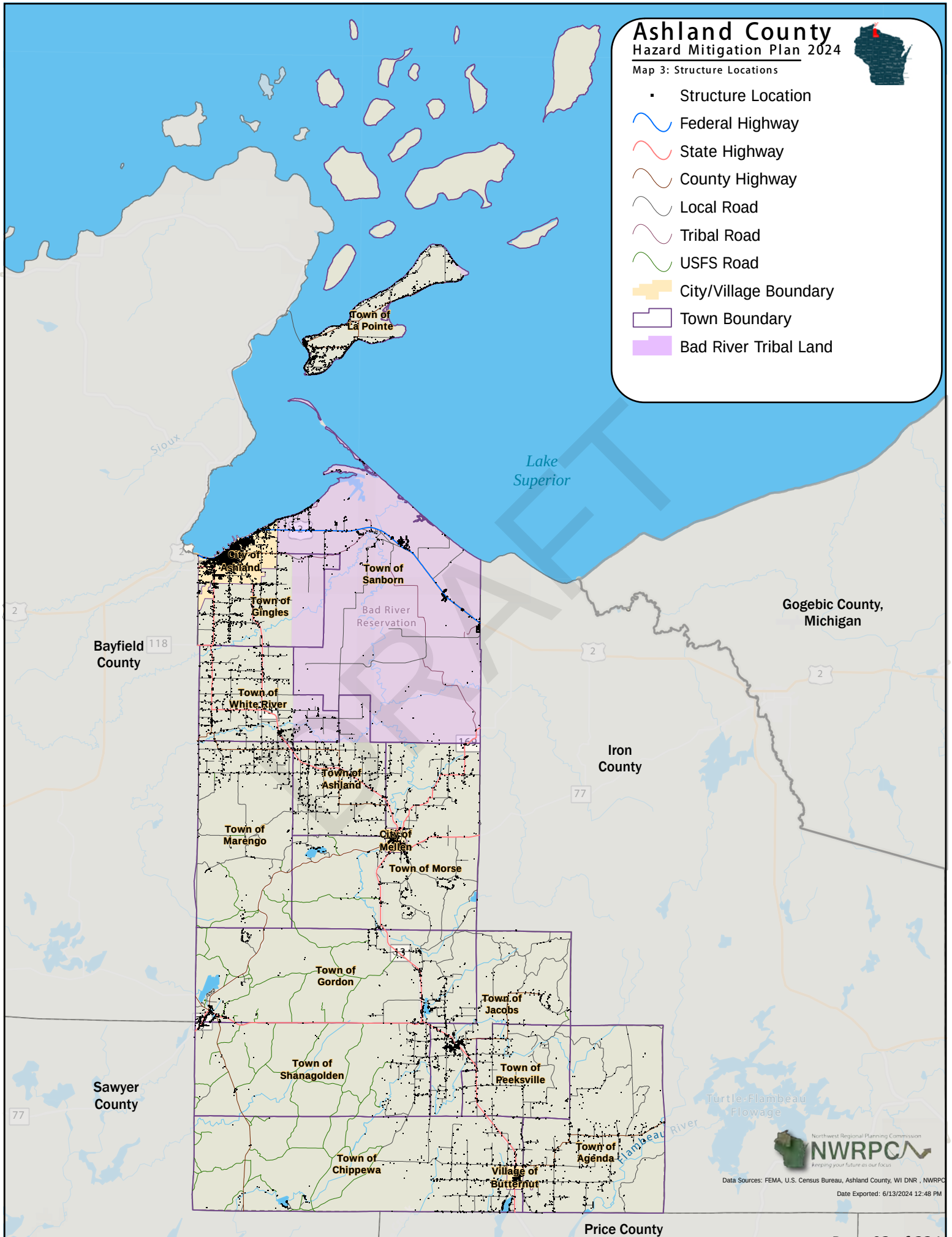
Ashland County

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Map 3: Structure Locations

- Structure Location
- Federal Highway
- State Highway
- County Highway
- Local Road
- Tribal Road
- USFS Road
- City/Village Boundary
- Town Boundary
- Bad River Tribal Land



Data Sources: FEMA, U.S. Census Bureau, Ashland County, WI DNR, NWRPC
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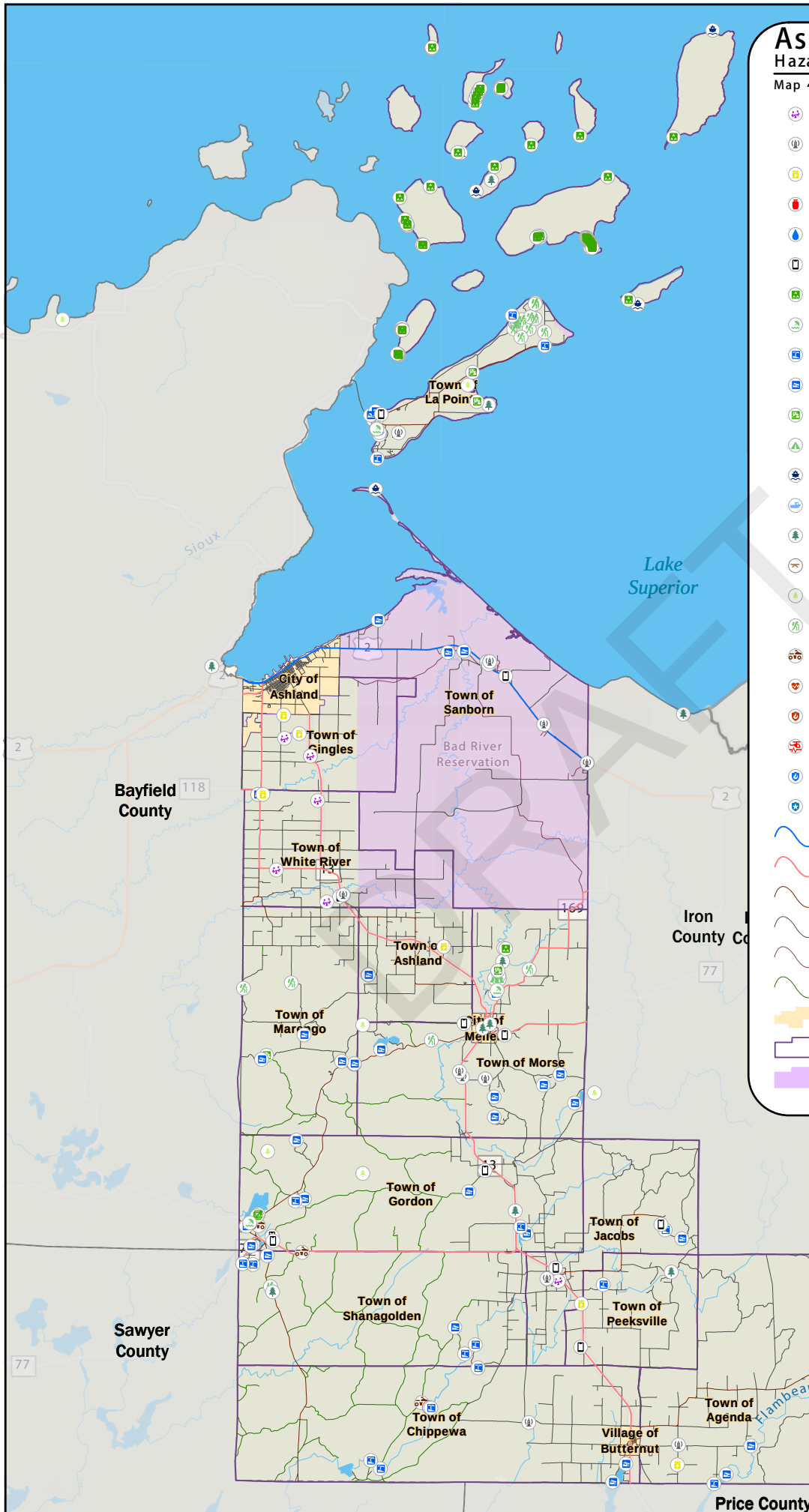
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Map 4.1: Ashland County Critical Facilities



- Daycare
- Communication Tower
- Electric Substation
- Gas Substation
- Lift Station
- Cell Phone Tower
- Backcountry Campsites
- Beach
- Boater Access (Carry-In)
- Boat Ramp
- Campground
- Campsite
- Dock
- Marina
- Park
- Picnic Area
- State Natural Area
- Trailhead
- Motorized Trailhead
- EMS
- Fire
- Fire-EMR
- Fire-EMS
- Law Enforcement
- Federal Highway
- State Highway
- County Highway
- Local Road
- Tribal Road
- USFS Road
- City/Village Boundary
- Town Boundary
- Bad River Tribal Land



Data Sources: FEMA, U.S. Census Bureau, Ashland County, WI DNR, NWRPC
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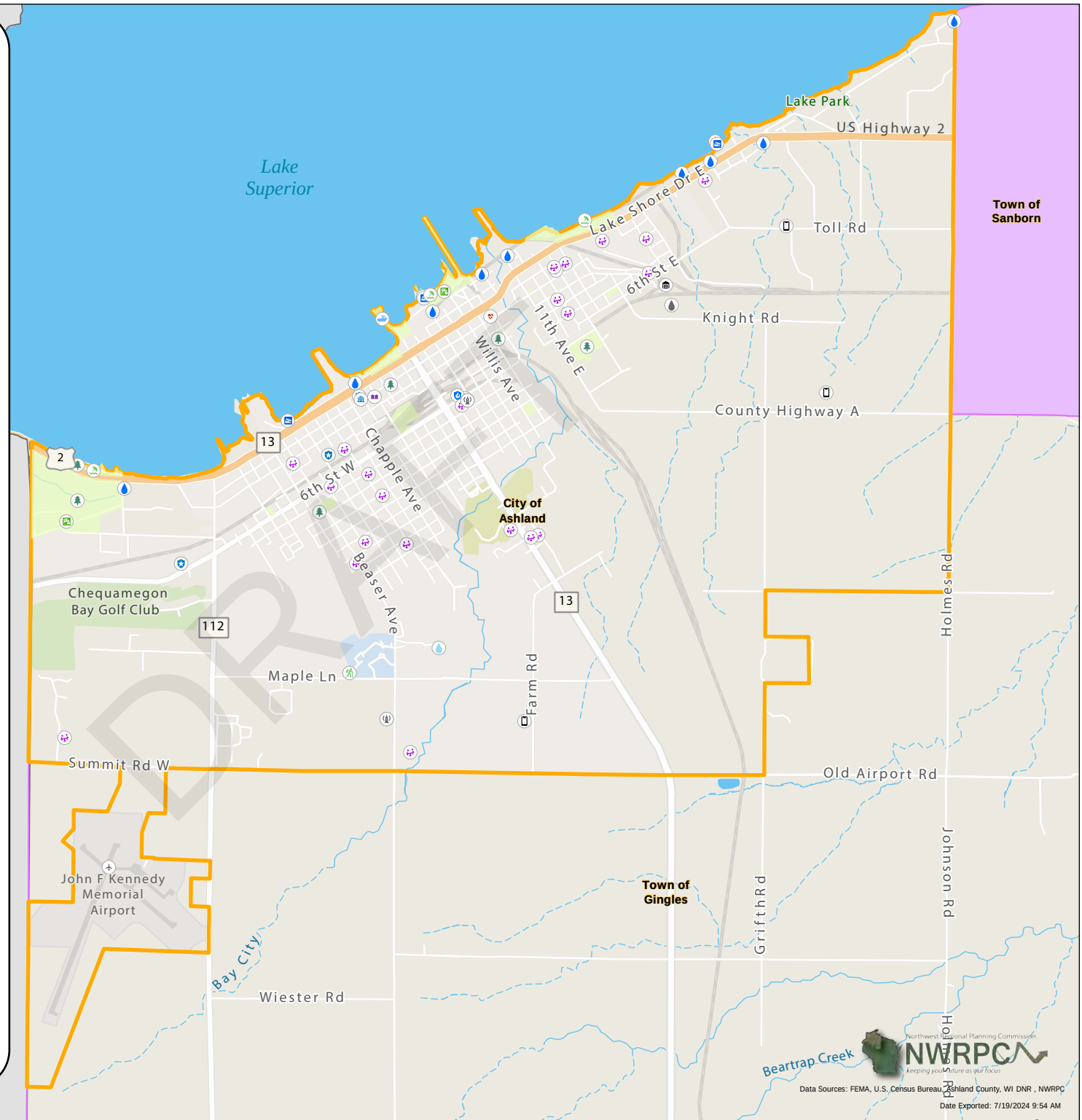
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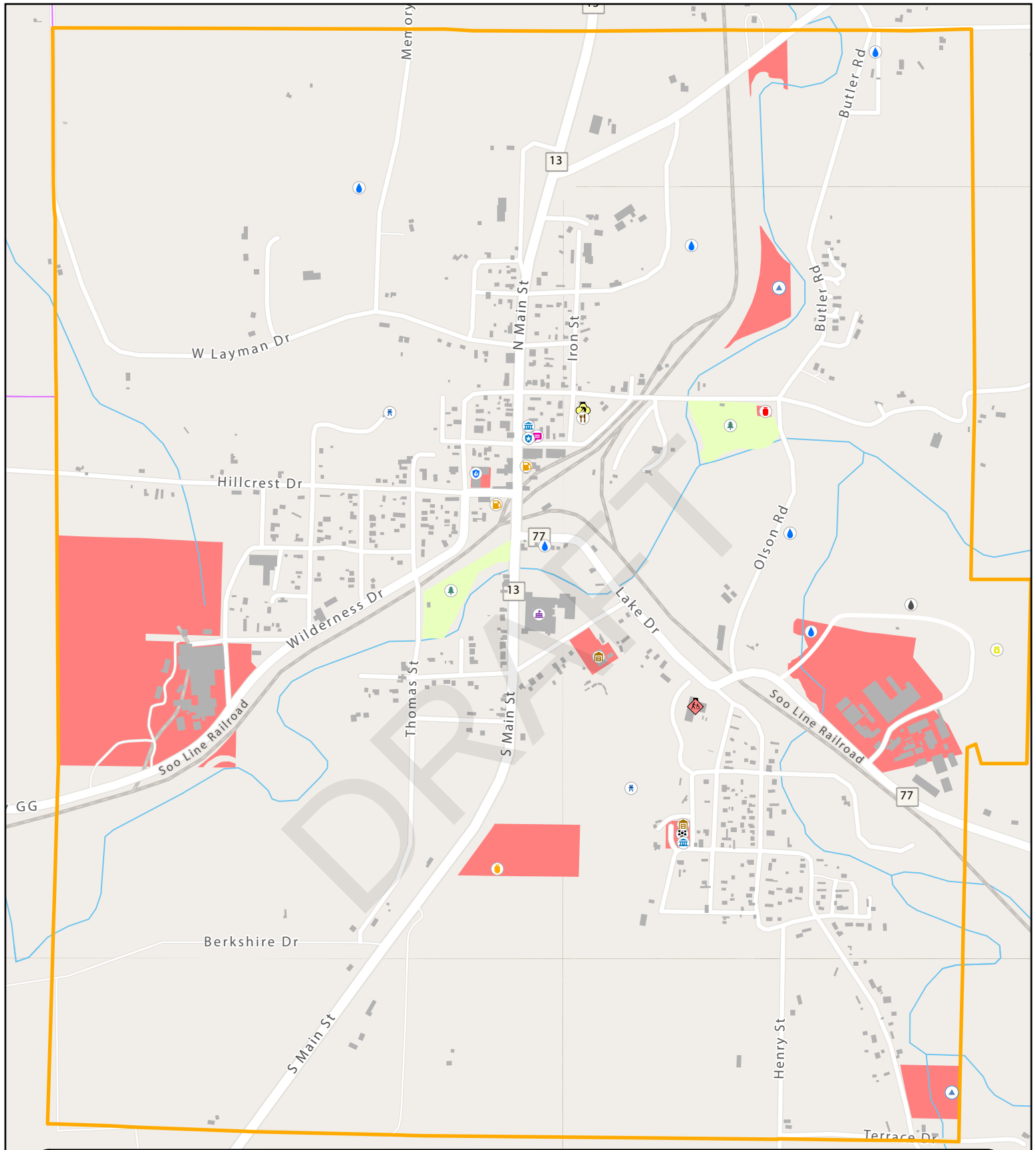
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Map 4.2: City of Ashland Critical Facilities



- Communication Tower
- Communication Tower
- Electric Substation
- Gas Substation
- Lift Station
- Water Tower
- Wastewater Treatment Plant
- Airport
- City Hall
- Clinic
- Library
- Public Works Garage
- Cell Phone Tower
- Daycares
- Beach
- Boat Ramp
- Campground
- Dock
- Marina
- Park
- Trailhead
- Fire-EMS
- Law Enforcement
- Dispatch
- Park/Recreation Area
- Federal Highway
- State Highway
- County Highway
- Local Road
- Tribal Road
- USFS Road
- City/Village Boundary
- Town Boundary
- Bad River Tribal Land





Ashland County

Hazard Mitigation Plan 2024

Map 4.3: City of Mellen Critical Facilities

- | | | | | |
|----------------------|------------------------|---------------------|--------------------|---|
| Communication Tower | Water Tower | Fire-EMS | Community Center | Hazardous Material Storage
Park/Recreation Area
City/Village Boundary |
| Electric Substation | Bulk Propane | Law Enforcement | Education Facility | |
| Lift Station | Gas Station | Government Offices | Food Distribution | |
| Wastewater Treatment | Natural Gas Substation | Public Works Garage | Senior Center | |
| Well House | Park | Media Outlet | Assisted Living | |

Public Safety Support

The Ashland County Communications Center (ACC) is a 9-1-1 Public Safety Answering Point (PSAP) and Dispatch Center for Ashland County. The communications center is staffed with five 9-1-1 dispatchers and one communications center controller.

The departments listed below provide ongoing training to their staff and participate in periodically scheduled disaster exercises with area hospitals, other emergency medical services, law enforcement, fire services and emergency management.

Medical

The Ashland County Office of Emergency Management, city and county emergency services responders, hospital emergency staff and various departments have developed medical and mass casualty plans. These plans will be used in the event of a disaster. Ashland County communities are served by a complete range of health facilities and health professionals. Some communities in Wisconsin have been designated by the U.S. Department of Health and Human Services as a Health Professional Shortage Area (HPSA). Either a geographic area or a specific population can be designated as an HPSA. This designation is used to determine eligibility for at least 34 federal programs, and state programs. According to the Wisconsin Office of Rural Health, portions of Ashland County have been designated as HPSA. About 20 percent of the U.S. population lives in areas designated as a shortage area.

Health care facilities available to county residents include the Ashland Clinic, Grandview Health System Clinic, Marshfield Clinic, Memorial Medical Center, Flambeau Hospital, Chequamegon Clinic, Main Street Clinic, and many other health care providers for specialized treatment. The County Health and Human Services Department is available to serve social and health needs.

Fire Service

Ashland County is served by the following fire departments:

- Ashland Fire Department
- Bad River Volunteer Fire Department
- Butternut Volunteer Fire Department
- Four Town Fire Association
- La Pointe Volunteer Fire Department
- Marengo Valley Fire Department
- Mellen Fire & Rescue

Law Enforcement

The Sheriff is the chief law enforcement officer in the county and is responsible for the protection of life and property within the boundaries of Ashland County. The Sheriff's Office provides law enforcement service to unincorporated areas of the county or to those jurisdictions that do not maintain full time police service. Ashland County is serviced by a 911 Emergency Response System that is operated by the Sheriff's Department. The Ashland County Sheriff's Department patrols the County. The City of Mellen, Town of La Pointe, Bad River Reservation, and the City of Ashland all have their own police services. Also, the Wisconsin State Patrol provides limited coverage from their northwest region office in Spooner.

Special Teams

Hazardous materials (HazMat) response is performed by Type II and Type III Teams in the Northwest Task Force. Wisconsin Emergency Management contracts and manages twenty-two Regional Hazardous Materials Response Teams. The teams are divided into Task Forces: Northeast Task Force, Northwest Task Force, Southeast Task Force, and the Southwest Task Force. These Task Forces are then divided into Type I, Type II, and Type III teams, all with complimentary capabilities and training requirements.

The Wisconsin Hazardous Materials Response System may be activated for an incident involving a hazardous materials spill, leak, explosion, injury, or the potential of immediate threat to life, the environment, or property. The Wisconsin Hazardous Materials Response system responds to the most serious of spills and releases requiring the highest level of skin and respiratory protective gear. This includes all chemical, biological, or radiological emergencies.

Local (County) Hazardous Materials Response Teams respond to chemical incidents which require a lower level of protective gear but still exceed the capabilities of standard fire departments. Forty counties, including Ashland County, currently have Level 4 Hazardous Materials Response Teams. Those teams may provide assistance to surrounding counties and are approved by the Local Emergency Planning Committees.

3. Risk Assessment

Introduction

Ashland County emergency managers, public agencies, and citizens must be prepared to respond to a wide array of natural and technological/human-caused hazards. Natural hazards are defined as a source of harm or difficulty created by a meteorological, environmental, or geological event. Physical events such as tornadoes, lightning, wildfire, hail, ice storms and flooding rains are not, in and of themselves, hazards. It is when these phenomena occur within populated areas, or when the impacts of these events negatively affect the human population, that they become hazardous. Humans can significantly influence the severity and frequency of natural hazards. For example, building in flood prone or subsidence areas substantially increases the chances for loss of life and property. Technological hazards result from accidents or the failure of a system or structure. They may include hazardous materials spills or airplane accidents. Human-caused hazards are the intentional actions of an adversary. They may include a chemical or cyberattack.

In hazard mitigation planning, risk is the potential for damage or loss when hazards interact with people or assets. Ashland County's relative geographic remoteness and low population density does not make the county immune to the risks from hazardous events. Many events have occurred in the county in the past and undoubtedly will occur in the future.

Hazard Events Historical Summary

The National Centers for Environmental Information (NCEI) publishes National Weather Service (NWS) data describing previous severe weather events and their associated deaths, injuries, and damages. This database was queried from January 1, 1960, to January 31, 2024. Wildfire data was collected through the Wisconsin Department of Natural Resources (WDNR) Fire Management Dashboards Wildfire View from 2012 to 2023.

The hazard occurrence data shows that of the 561 events, natural hazards occurring most frequently in Ashland County from January 1960 to December 2023 included: heavy snow (136 events), wildfires (104 events, and that is only from 2012 through 2023), thunderstorm wind (93 events), hail (70 events), drought (42 events), and more (Table 11).

There have been five deaths and three reported injuries from natural hazards in Ashland County in the last 63 years. Two deaths were attributed to high surf in 2022, one death was due to flash flooding in June 2018 as part of the historic 'Father's Day' flooding event, one death was due to rip current in 2016, and one death was due to flooding in 2016 in Marengo. Three injuries due to lightning are also attributed to the June 2018 event in La Pointe.

Table 11: Ashland County Hazard Events 2003-2023

Hazard	# of Events	Average # of Events Per Year	Risk*	Deaths	Injuries	Property Damages
Blizzard	4	0.20	Low	-	-	-
Cold/Wind Chill	3	0.15	Low	-	-	-
Drought	42	2.10	High	-	-	-
Extreme Cold/Wind Chill	11	0.55	Moderate	-	-	-
Flash Flood	13	0.65	Moderate	1	-	\$4,000.00
Flood	7	0.35	Low	1	-	\$189,000.00
Frost/Freeze	1	0.05	Low	-	-	-
Funnel Cloud	1	0.05	Low	-	-	-
Hail	51	2.55	High	-	-	\$1,500.00
Heat	2	0.10	Low	-	-	-
Heavy Snow	86	4.30	Very High	-	-	-
High Surf	1	0.05	Low	2	-	-
High Wind	2	0.10	Low	-	-	\$2,000.00
Ice Storm	5	0.25	Low	-	-	-
Lake-Effect Snow	24	1.20	Moderate	-	-	-
Lakeshore Flood	2	0.10	Low	-	-	-
Lightning	2	0.10	Low	-	3	\$80,000.00
Rip Current	1	0.05	Low	1	-	-
Strong Wind	2	0.10	Low	-	-	\$6,000.00
Thunderstorm Wind	51	2.55	High	-	-	\$215,500.00
Tornado	4	0.20	Low	-	-	-
Wildfire**	104	5.20	Very High	NA	NA	***\$48,832.33
Winter Storm	13	0.65	Moderate	2	-	-
Winter Weather	2	0.10	Low	-	-	-
Grand Total	433	-	-	5	3	\$546,832.33

*Risk based on occurrences per year: Very High > 3.6; High = 2.1-3.5; Moderate = 0.6 – 2.0; Low < 0.5.

**Information was only available from January 1, 2012, through December 31, 2023.

***Total cost for wildfire suppression.

Source: NOAA NCEI Storm Database (2003 - 2023); and WDNR (2012 - 2023)

Federal Disaster Declaration History

Ashland County has been included in 7 federal disaster declarations:

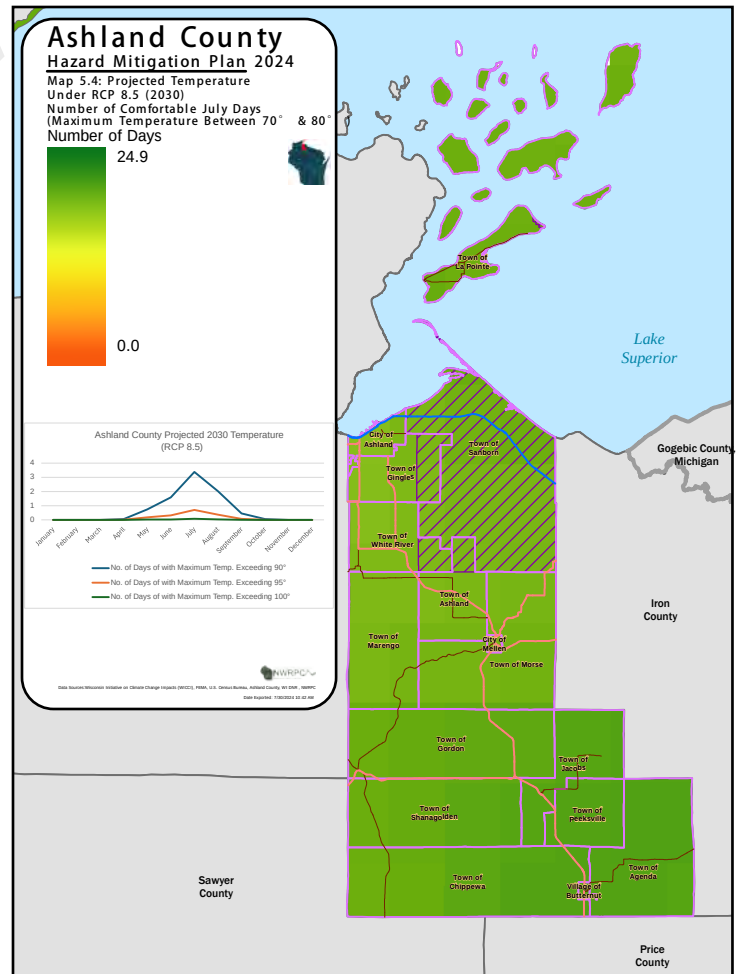
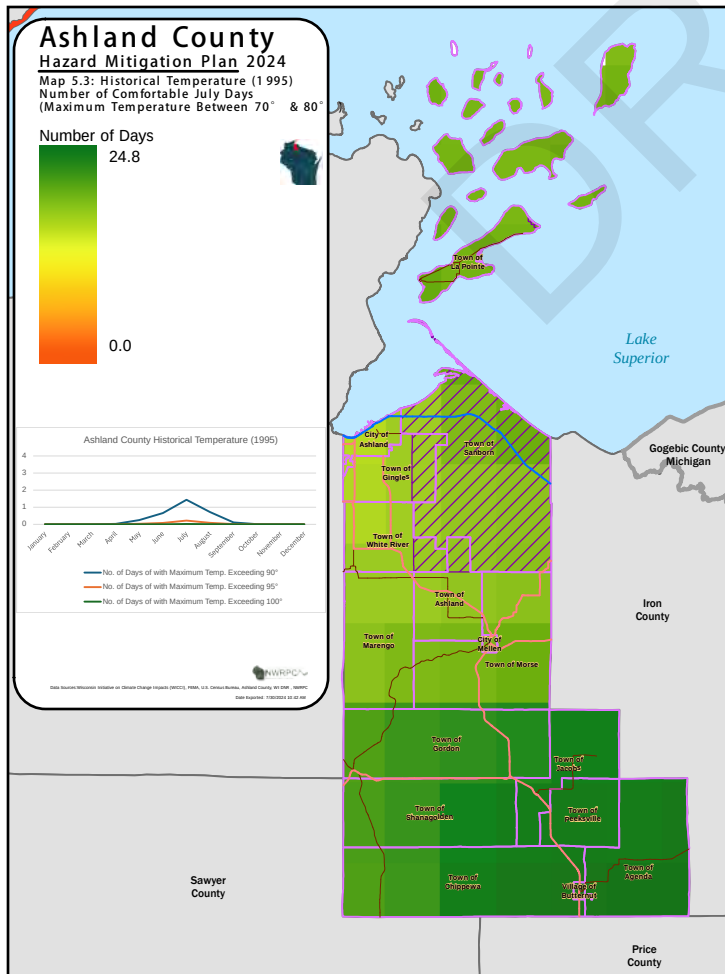
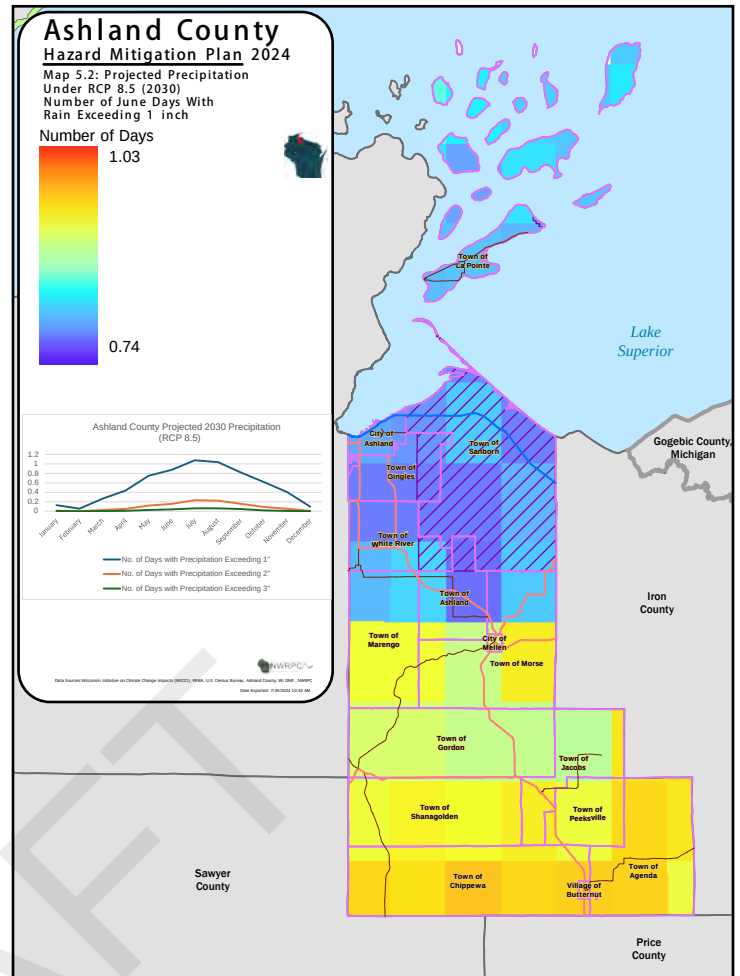
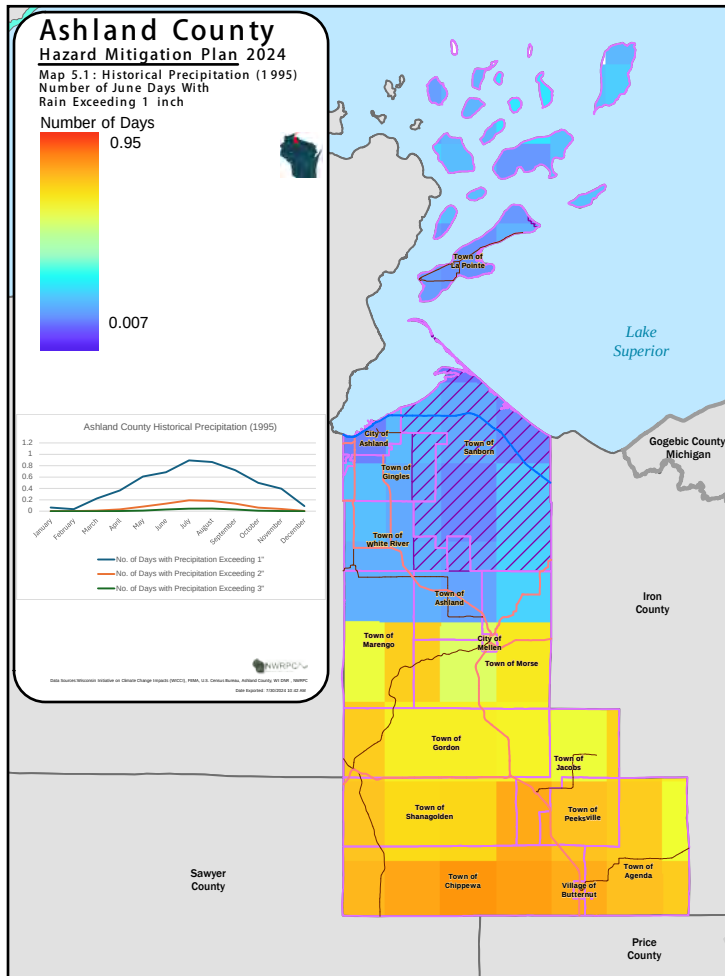
- In August 1999, Ashland County was struck by severe storms, straight-line winds, and flooding (FEMA-1284-DR-WI).
- In June 2000, Ashland County was struck by severe storms, straight-line winds, and flooding (FEMA-1332-DR-WI).
- In June 2012, heavy rains caused rising waters and flash flooding in parts of Northern Wisconsin, including Ashland County (FEMA-4076-DR-WI).
- In June 2013, Ashland County experienced historic 24-hour, 48-hour, 72-hour, and 7-day rainfall amounts (FEMA-4141-DR-WI).
- In July 2016, Ashland County experienced historic rain falls and flash flooding events that caused tremendous amounts of damage (FEMA-4276-DR-WI).
- In June 2018, Ashland County again experienced serve storms, straight-line winds, and flooding (FEMA-4383-DR-WI).
- In 2020, the COVID-19 Pandemic prompted a statewide disaster declaration (FEMA-4520-DR-WI).

Climate Change

Climate change refers to the changes in average weather conditions that persist over multiple decades or longer. These include significant shifts in temperature and precipitation patterns, both of which have impacts and implications on hazard risk and vulnerability. According to the Wisconsin Initiative on Climate Change Impacts (WICCI) 2021 Assessment Report, in general, Wisconsin is becoming warmer, wetter, and is experiencing more extreme events. Key findings from the WICCI report are as follows:

- Wisconsin's average daily temperature has become 3°F warmer since 1950.
- The decade from 2010 to 2019 was Wisconsin's wettest since records began in the 1890s.
- Average precipitation in Wisconsin has increased 17% (about 5 inches) since 1950.
- Winter precipitation in Wisconsin has increased over 20% since 1950.
- All seasons and regions of Wisconsin are getting warmer and wetter, but winters are warming more rapidly than summers, and nighttime low temperatures are warming faster than daytime high temperatures.

WICCI's Climate Working Group has produced down-scaled global climate models to project how Wisconsin's climate has been changing and how it might change in the future. Map 5 compares historical and projected precipitation and temperature metrics in Ashland County through the year 2030 using a representative concentration pathway (RCP) of 8.5. RCP 8.5 is the emissions scenario in which carbon dioxide emissions continue to rise throughout the twenty-first century.



Hazard Identification and Prioritization

The Hazard Mitigation Committee reviewed the list of identified relevant natural and technological/human-caused hazards affecting Ashland County. Based on the list of relevant hazards, the Committee updated its “**Hazard Priority Matrix**,” which uses a numerical weighting system to rank, and prioritize each identified hazard based on a series of nine criteria:

- **Probability** - Likelihood of occurrence or reoccurrence
- **Human Impact** - Possibility of death or injury
- **Property Impact** - Physical losses or damage
- **Business Impact** - Interruption of services
- **Duration** - Length of the event, including recovery
- **Warning Time** - Length of time to prepare or evacuate
- **Area Affected** - Size of the area affected by the hazard
- **Preparedness** - Level of preplanning in advance of the event
- **Response Capability** - Time, effectiveness, and resources available to respond

In each of the previous planning cycles, the Ashland County Hazard Mitigation Committee and representatives from participating local jurisdictions conducted an exercise to identify all hazards that will be addressed in this Hazard Mitigation Plan. **A new exercise has been executed as part of the 2023-2024 hazard mitigation plan update process.** As part of this exercise, individuals were asked to rate various aspects of each hazard based on perceptions of probability and severity. A total of 10 natural and 3 technological/human-caused hazards were identified. The composite scores assigned to each hazard were used to rank and prioritize hazards. The results for each jurisdiction are depicted in Tables 12-19.

Table 12: Ashland County Hazard Priority Matrix – Natural Hazards

HAZARD	PROBABILITY	HUMAN IMPACT	PROPERTY IMPACT	BUSINESS IMPACT	DURATION	WARNING TIME	AFFECTED AREA	PREPARED-NESS	RESPONSE CAPABILITY	RISK
	Likelihood this will occur	Possibility of death or injury	Physical losses and damages	Interruption of services	Event, secondary impacts	Time to prepare or evacuate	Size of area affected by hazard	Preplanning	Time, effectiveness, resources	Relative threat*
SCORE	0 = N/A 1 = Low 2 = Moderate 3 = High	0 = N/A 1 = Low 2 = Moderate 3 = High	0 = N/A 1 = Low 2 = Moderate 3 = High	0 = N/A 1 = Low 2 = Moderate 3 = High	0 = N/A 1 = Short 2 = Intermediate 3 = Long	0 = N/A 1 = Long 2 = Intermediate 3 = Short	0 = N/A 1 = Localized 2 = Intermediate 3 = Countywide	0 = N/A 1 = High 2 = Moderate 3 = Low or none	0 = N/A 1 = High 2 = Moderate 3 = Low or none	0 - 100%
Flooding and Dam Failure	2.6	1.6	2.0	2.0	1.9	2.3	1.6	1.6	1.6	52.7%
Storms: Winter	2.7	1.4	1.4	1.7	1.5	1.8	2.0	1.8	1.3	48.4%
Severe Storms: Hail, Lightning, and Thunderstorm	2.6	1.2	1.7	1.7	1.6	2.2	1.7	1.5	1.6	47.7%
Severe Temperature (Heat and Cold)	2.5	1.4	1.1	1.3	1.2	1.7	2.2	2.0	1.5	43.1%
Drought and Dust Storm	2.0	1.2	1.1	1.7	2.8	2.5	2.0	1.9	2.3	42.8%
Solar Storm	1.5	1.0	2.0	2.0	3.0	3.0	3.0	3.0	2.0	37.5%
Storms: Tornado and High Wind	1.7	1.4	2.2	2.0	1.8	2.9	1.5	1.6	1.9	36.1%
Coastal Erosion and Landslide	1.9	1.0	2.0	0.9	1.8	1.1	1.0	2.6	2.7	34.1%
Pandemic	1.5	2.0	0.7	1.5	2.1	1.9	2.5	1.7	2.0	30.0%
Wildfire	1.4	1.1	1.9	1.4	1.6	2.6	1.4	1.8	1.8	26.4%

Table 13: Ashland County Hazard Priority Matrix – Technological/Human-Caused Hazards

HAZARD	PROBABILITY	HUMAN IMPACT	PROPERTY IMPACT	BUSINESS IMPACT	DURATION	WARNING TIME	AFFECTED AREA	PREPARED-NESS	RESPONSE CAPABILITY	RISK
	Likelihood this will occur	Possibility of death or injury	Physical losses and damages	Interruption of services	Event, secondary impacts	Time to prepare or evacuate	Size of area affected by hazard	Preplanning	Time, effectiveness, resources	Relative threat*
SCORE	0 = N/A 1 = Low 2 = Moderate 3 = High	0 = N/A 1 = Low 2 = Moderate 3 = High	0 = N/A 1 = Low 2 = Moderate 3 = High	0 = N/A 1 = Low 2 = Moderate 3 = High	0 = N/A 1 = Short 2 = Intermediate 3 = Long	0 = N/A 1 = Long 2 = Intermediate 3 = Short	0 = N/A 1 = Localized 2 = Intermediate 3 = Countywide	0 = N/A 1 = High 2 = Moderate 3 = Low or none	0 = N/A 1 = High 2 = Moderate 3 = Low or none	0 - 100%
Utility Failure	1.9	1.4	1.1	2.0	1.6	2.9	1.9	2.5	1.9	39.7%
Civil Disturbance/Terrorism/Cyber attack	1.0	1.8	1.8	1.5	1.1	2.8	1.4	2.6	2.3	21.0%
Hazardous Materials Incident	1.0	1.0	2.0	1.0	2.5	3.0	1.0	1.0	1.0	17.4%

Table 14: City of Ashland Hazard Priority Matrix – Natural Hazards

HAZARD	PROBABILITY	HUMAN IMPACT	PROPERTY IMPACT	BUSINESS IMPACT	DURATION	WARNING TIME	AFFECTED AREA	PREPARED-NESS	RESPONSE CAPABILITY	RISK
	Likelihood this will occur	Possibility of death or injury	Physical losses and damages	Interruption of services	Event, secondary impacts	Time to prepare or evacuate	Size of area affected by hazard	Preplanning	Time, effectiveness, resources	Relative threat*
SCORE	0 = N/A 1 = Low 2 = Moderate 3 = High	0 = N/A 1 = Low 2 = Moderate 3 = High	0 = N/A 1 = Low 2 = Moderate 3 = High	0 = N/A 1 = Low 2 = Moderate 3 = High	0 = N/A 1 = Short 2 = Intermediate 3 = Long	0 = N/A 1 = Long 2 = Intermediate 3 = Short	0 = N/A 1 = Localized 2 = Intermediate 3 = Countywide	0 = N/A 1 = High 2 = Moderate 3 = Low or none	0 = N/A 1 = High 2 = Moderate 3 = Low or none	0 - 100%
Storms: Hail, Lightning, and Thunderstorm	3.0	1.0	2.0	1.0	1.0	3.0	3.0	2.0	2.0	62.5%
Coastal Erosion and Landslide	3.0	1.0	2.0	1.0	3.0	1.0	1.0	2.0	2.0	54.2%
Storms: Winter	3.0	1.0	1.0	3.0	1.0	1.0	3.0	1.0	1.0	50.0%
Severe Temperature (Heat and Cold)	3.0	1.0	1.0	1.0	2.0	0.0	3.0	2.0	2.0	50.0%
Flooding and Dam Failure	2.0	1.0	1.0	1.0	2.0	3.0	3.0	2.0	1.0	38.9%
Storms: Tornado and High Wind	2.0	1.0	2.0	1.0	2.0	2.0	3.0	2.0	1.0	38.9%
Wildfire	2.0	1.0	2.0	2.0	2.0	1.0	2.0	1.0	1.0	33.3%
Drought and Dust Storms	2.0	0.0	1.0	0.0	2.0	0.0	3.0	3.0	2.0	30.6%
Pandemic	1.0	3.0	0.0	2.0	3.0	2.0	3.0	1.0	2.0	22.2%

Table 15: City of Ashland Hazard Priority Matrix – Technological/Human-Caused Hazards

HAZARD	PROBABILITY	HUMAN IMPACT	PROPERTY IMPACT	BUSINESS IMPACT	DURATION	WARNING TIME	AFFECTED AREA	PREPARED-NESS	RESPONSE CAPABILITY	RISK
	Likelihood this will occur	Possibility of death or injury	Physical losses and damages	Interruption of services	Event, secondary impacts	Time to prepare or evacuate	Size of area affected by hazard	Preplanning	Time, effectiveness, resources	Relative threat*
SCORE	0 = N/A 1 = Low 2 = Moderate 3 = High	0 = N/A 1 = Low 2 = Moderate 3 = High	0 = N/A 1 = Low 2 = Moderate 3 = High	0 = N/A 1 = Low 2 = Moderate 3 = High	0 = N/A 1 = Short 2 = Intermediate 3 = Long	0 = N/A 1 = Long 2 = Intermediate 3 = Short	0 = N/A 1 = Localized 2 = Intermediate 3 = Countywide	0 = N/A 1 = High 2 = Moderate 3 = Low or none	0 = N/A 1 = High 2 = Moderate 3 = Low or none	0 - 100%
Utility Failure	2.0	2.0	1.0	2.0	1.0	3.0	2.0	2.0	1.0	38.9%
Hazardous Materials Incident	2	1	1	2	2	3	2	1	1	36.1%
Civil Disturbance/ Terrorism	1.0	2.0	3.0	3.0	2.0	3.0	1.0	2.0	2.0	25.0%

Table 16: City of Mellen Hazard Priority Matrix – Natural Hazards

HAZARD	PROBABILITY	HUMAN IMPACT	PROPERTY IMPACT	BUSINESS IMPACT	DURATION	WARNING TIME	AFFECTED AREA	PREPARED-NESS	RESPONSE CAPABILITY	RISK
	Likelihood this will occur	Possibility of death or injury	Physical losses and damages	Interruption of services	Event, secondary impacts	Time to prepare or evacuate	Size of area affected by hazard	Preplanning	Time, effectiveness, resources	Relative threat*
SCORE	0 = N/A 1 = Low 2 = Moderate 3 = High	0 = N/A 1 = Low 2 = Moderate 3 = High	0 = N/A 1 = Low 2 = Moderate 3 = High	0 = N/A 1 = Low 2 = Moderate 3 = High	0 = N/A 1 = Short 2 = Intermediate 3 = Long	0 = N/A 1 = Long 2 = Intermediate 3 = Short	0 = N/A 1 = Localized 2 = Intermediate 3 = Countywide	0 = N/A 1 = High 2 = Moderate 3 = Low or none	0 = N/A 1 = High 2 = Moderate 3 = Low or none	0 - 100%
Storms: Winter	2.6	0.8	0.8	1.0	0.8	1.6	1.4	1.8	1.4	34.7%
Severe Temperature (Heat and Cold)	2.0	0.8	1.0	1.2	1.0	1.4	1.4	1.4	1.4	26.7%
Storms: Hail, Lightning, and Thunderstorm	1.8	0.8	1.2	1.0	1.0	1.8	1.2	1.4	1.4	24.5%
Flooding and Dam Failure	1.4	0.8	1.0	1.0	1.2	1.6	1.2	1.4	1.4	18.7%
Pandemic	1.4	1.6	1.0	1.0	1.8	1.0	1.6	1.8	2.0	22.9%
Storms: Tornado and High Wind	1.0	0.6	1.2	1.0	1.2	3.0	1.2	1.4	1.8	15.8%
Landslide	0.8	0.6	0.8	0.6	0.8	1.0	0.8	1.0	1.0	7.3%
Wildfire	0.6	0.6	0.6	0.4	0.4	1.0	0.6	0.6	0.8	4.2%
Drought and Dust Storm	0.2	0.2	0.2	0.2	0.2	0.6	0.6	0.6	0.4	0.8%
Solar Storm	0.2	0.2	0.2	0.2	0.2	0.6	0.6	0.6	0.4	0.8%
Coastal Erosion	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0%

Table 17: City of Mellen Hazard Priority Matrix – Technological/Human-Caused Hazards

HAZARD	PROBABILITY	HUMAN IMPACT	PROPERTY IMPACT	BUSINESS IMPACT	DURATION	WARNING TIME	AFFECTED AREA	PREPARED-NESS	RESPONSE CAPABILITY	RISK
	Likelihood this will occur	Possibility of death or injury	Physical losses and damages	Interruption of services	Event, secondary impacts	Time to prepare or evacuate	Size of area affected by hazard	Preplanning	Time, effectiveness, resources	Relative threat*
SCORE	0 = N/A 1 = Low 2 = Moderate 3 = High	0 = N/A 1 = Low 2 = Moderate 3 = High	0 = N/A 1 = Low 2 = Moderate 3 = High	0 = N/A 1 = Low 2 = Moderate 3 = High	0 = N/A 1 = Short 2 = Intermediate 3 = Long	0 = N/A 1 = Long 2 = Intermediate 3 = Short	0 = N/A 1 = Localized 2 = Intermediate 3 = Countywide	0 = N/A 1 = High 2 = Moderate 3 = Low or none	0 = N/A 1 = High 2 = Moderate 3 = Low or none	0 - 100%
Utility Failure	1.4	0.8	1.2	1.2	1.2	2.4	1.0	2.0	1.2	21.4%
Civil Disturbance/ Terrorism	0.8	0.8	0.8	0.6	0.6	1.4	1.0	2.0	1.4	9.6%

Table 18: Mellen School District Hazard Priority Matrix – Natural Hazards

HAZARD	PROBABILITY	HUMAN IMPACT	PROPERTY IMPACT	BUSINESS IMPACT	DURATION	WARNING TIME	AFFECTED AREA	PREPARED-NESS	RESPONSE CAPABILITY	RISK
	Likelihood this will occur	Possibility of death or injury	Physical losses and damages	Interruption of services	Event, secondary impacts	Time to prepare or evacuate	Size of area affected by hazard	Preplanning	Time, effectiveness, resources	Relative threat*
SCORE	0 = N/A 1 = Low 2 = Moderate 3 = High	0 = N/A 1 = Low 2 = Moderate 3 = High	0 = N/A 1 = Low 2 = Moderate 3 = High	0 = N/A 1 = Low 2 = Moderate 3 = High	0 = N/A 1 = Short 2 = Intermediate 3 = Long	0 = N/A 1 = Long 2 = Intermediate 3 = Short	0 = N/A 1 = Localized 2 = Intermediate 3 = Countywide	0 = N/A 1 = High 2 = Moderate 3 = Low or none	0 = N/A 1 = High 2 = Moderate 3 = Low or none	0 - 100%
Flooding and Dam Failure	3.0	1.0	3.0	3.0	1.0	2.0	1.0	2.0	2.0	62.5%
Storms: Winter	3.0	2.0	1.0	1.0	3.0	2.0	2.0	2.0	1.0	58.3%
Severe Storms: Hail, Lightning, and Thunderstorm	2.0	1.0	2.0	1.0	2.0	2.0	1.0	2.0	2.0	2.0%
Severe Temperature (Heat and Cold)	2.0	2.0	1.0	0.0	0.0	2.0	1.0	2.0	2.0	27.8%
Drought and Dust Storm	2.0	1.0	1.0	2.0	3.0	3.0	2.0	0.0	1.0	36.1%
Storms: Tornado and High Wind	2.0	2.0	3.0	2.0	3.0	3.0	1.0	2.0	3.0	52.8%
Pandemic	2.0	3.0	0.0	0.0	3.0	1.0	1.0	1.0	2.0	30.6%
Wildfire	2.0	1.0	3.0	3.0	2.0	2.0	1.0	2.0	2.0	44.4%

Table 19: Mellen School District – Technological/Human-Caused Hazards

HAZARD	PROBABILITY	HUMAN IMPACT	PROPERTY IMPACT	BUSINESS IMPACT	DURATION	WARNING TIME	AFFECTED AREA	PREPARED-NESS	RESPONSE CAPABILITY	RISK
	Likelihood this will occur	Possibility of death or injury	Physical losses and damages	Interruption of services	Event, secondary impacts	Time to prepare or evacuate	Size of area affected by hazard	Preplanning	Time, effectiveness, resources	Relative threat*
SCORE	0 = N/A 1 = Low 2 = Moderate 3 = High	0 = N/A 1 = Low 2 = Moderate 3 = High	0 = N/A 1 = Low 2 = Moderate 3 = High	0 = N/A 1 = Low 2 = Moderate 3 = High	0 = N/A 1 = Short 2 = Intermediate 3 = Long	0 = N/A 1 = Long 2 = Intermediate 3 = Short	0 = N/A 1 = Localized 2 = Intermediate 3 = Countywide	0 = N/A 1 = High 2 = Moderate 3 = Low or none	0 = N/A 1 = High 2 = Moderate 3 = Low or none	0 - 100%
Utility Failure	2.0	1.0	1.0	2.0	2.0	2.0	1.0	3.0	1.0	36.1%
Civil Disturbance/Terrorism	1.0	3.0	3.0	3.0	1.0	3.0	1.0	3.0	2.0	26.4%

Hazard Profiling

Once hazards were identified, ranked, and prioritized, each natural and technological/human-caused hazard was researched to collect locally relevant data on historical occurrences and past losses. Each hazard was profiled by providing background information about the nature of the hazard. Statistical information on local occurrences was compiled using data from a wide range of federal, state, and local sources. Where sufficient data was available, maps were produced depicting the location and magnitude of hazard events.

- **Hazard Description** - Summary description of the hazard
- **Hazard History** - History of previous hazard events

Hazard Vulnerability and Risk Assessment

A hazard vulnerability and risk assessment was conducted for each of the profiled hazards using the best available data (spatial and tabular). The populations, buildings, natural, historic, and cultural resources, and critical and essential facilities at potential risk were considered as part of the risk assessment. All hazards were assessed using the following evaluative criteria:

- **Area Affected** - Geographic area or region affected by the hazard
- **Magnitude** - Size or extent of the hazard impact area
- **Duration** - Length of time of the event, including secondary impacts and recovery time
- **Frequency** - Rate at which the hazard occurs
- **Probability** - Likelihood of the hazard to occur or reoccur
- **Potential Climate Change Impact** - Potential future climate change impacts and their influence on the hazard
- **Population Affected** - Likelihood of death or injury
- **Critical Facilities and Infrastructure at Risk** - Potential impacts to critical facilities, infrastructure, and lifelines
- **Potential Economic Impact** - Effects on the level of economic activity in the area

Natural Hazards

Flooding and Dam Failure

HAZARD DESCRIPTION

The National Flood Insurance Program (NFIP) defines flooding as a general and temporary condition where two or more acres of normally dry land, or two or more properties, are inundated by water or mudflow. Floods are natural events that provide many environmental benefits, such as enriching soils and recharging aquifers. Floods are only considered hazards when development occurs in the floodplain, exposing people and/or property to the risk of flood damage. Flooding is the most widespread natural disaster in the United States.

Floods specifically affect floodplains, which are lowland areas adjacent to lakes or rivers that are periodically covered with water. In Wisconsin, riverine floodplains range from narrow, confined channels in the steep valleys of hilly regions, to wide, flat areas in plains and coastal regions. The amount of water that inundates a floodplain is a function of the size and topography of the contributing watershed, the regional and local climate, geological characteristics, and land use attributes.

The most common type of flooding is riverine flooding, also known as overbank flooding. Wisconsin also experiences flash floods, ice jam floods, local drainage floods, and high groundwater floods. Flash floods are notable for their rapid escalation, which typically occurs with little or no warning and tends to be accompanied by other problems.

Flood: An overflow of water onto normally dry land. The inundation of a normally dry area caused by rising water in an existing waterway, such as a river, stream, or drainage ditch. Ponding of water at or near the point where the rain fell. Flooding is a longer-term event than flash flooding: it may last days or weeks.

Flash Flood: A flood caused by heavy or excessive rainfall in a short period of time, generally less than 6 hours. Flash floods are usually characterized by raging torrents after heavy rains that rip through riverbeds and sweep away everything before them. They can occur within minutes or a few hours of excessive rainfall. They can also occur even if no rain has fallen, for instance after a levee or dam has failed, or after a sudden release of water by a debris or ice jam.

Lakeshore Flooding: Occurs when water is driven onto land from an adjacent body of water. This generally occurs during significant storms - for the Great Lakes, usually (but not always) in conjunction with high water levels.

Dam Failure: When a dam structure is breached or collapses, there is an uncontrolled release of significant amounts of water. In Ashland County, dam failure is most likely caused by aging infrastructure and/or excessive rainfall. Dam failures can have devastating consequences including flooding/flash flooding of downstream areas, loss of life, destruction of property, and environmental damage.

According to the Wisconsin Department of Natural Resources (DNR), Ashland County has 40 small, uncontrolled agricultural dams. Most of these dams are mill-type dams under the jurisdiction of the DNR or are privately owned. None of these dams could handle the volume of water generated by a 100- or 500-year flood without overtopping. These dams are inspected by

the DNR and the largest are required to have an Emergency Action Plan (EAP) and failure analysis on them. In Ashland County, the White River Dam has an EAP associated with it.

Hazard ratings are set for all large dams in the state. The hazard rating is not based on the physical attributes, quality, or strength of the dam itself, but rather the potential for loss of life or property damage should the dam fail. A dam is assigned a rating of high hazard when its failure would probably put lives at risk. In Ashland County, 10 dams have been given a hazard rating (Table 20).



White River Dam

Dams assigned the low hazard potential classification are those where failure or mis-operation results in no probable loss of human life and low economic and/or environmental losses. Losses are principally limited to the owner's property. Dams assigned the high hazard potential classification are those where failure or mis-operation will probably cause loss of human life.

Table 20: Ashland County Dam Hazard Potential

Dam Name	Condition	Hazard Potential	Owner Type	Storage (acre-ft)	Height (ft)
Elm Hoist Wildlife	Not Rated	Low	Private	72.0	18
Uihlein	Fair	Low	Private	103.0	18
Fawn Lake	Not Rated	High	Private	144.0	15
Day	Fair	Low	Local Gov.	230.0	12
Lake Three Dam	Not Rated	Low	Federal	550.0	17
White River	Not Available	Low	Public Utility	670.0	30
Hudson Bay	Not Rated	Low	Local Gov.	672.0	7
Dead Horse Slough	Fair	High	State	900.0	19
Day Lake	Not Rated	High	Federal	6,180.0	25
Beaverdam Lake Dam	Not Rated	Low	Federal	11,029.0	10

Source: National Inventory of Dams

National Flood Insurance Program

The National Flood Insurance Program (NFIP) makes flood insurance available in the communities that agree to adopt and enforce floodplain management regulations to reduce future flood risk. Participation is voluntary and is contingent on community compliance with NFIP floodplain management regulations. Ashland County and the participating jurisdictions participate in the NFIP. Each jurisdiction has adopted a local floodplain ordinance that aligns with the Wisconsin Department of Natural Resources model floodplain ordinance.

The main purpose of each jurisdiction's floodplain ordinance is to regulate and permit development in all areas that would be covered by the regional flood or base flood as shown on the Flood Insurance Rate Map (FIRM) or other maps approved by the DNR. In 2022, FEMA revised the FIRMs in Ashland County to incorporate new topographic information and more

current data affecting flood risk. Preliminary maps were released for community review, but final maps are not yet available. Because updated maps are not yet available, Table 23 lists the effective date of all map panels for each community.

In each jurisdiction, the designee that administers the ordinance is responsible for overseeing the permitting process and assisting in preparing permit applications and appeals. The designee is also responsible for inspecting and assessing all damaged floodplain structures to determine if substantial damage to the structures has occurred, for the record keeping of all official actions, and for investigating and reporting violations of the ordinance. Local staff from each jurisdiction attend continuing education to ensure that local floodplain regulations are consistent with FEMA requirements. Tables 21 and 22 provide more information on NFIP participation and claims. Additional information on each jurisdiction's NFIP participation and continued compliance was gathered as part of the Capability Assessment located in Appendix B.

Table 21: NFIP Participation

Community	Participation Status	Date of Entry	Current Effective Map Date	Designee Responsible
Ashland County (unincorporated areas)	Participating	2/15/1978	2/15/1978	Zoning Administrator
City of Ashland	Participating	1/9/1974	9/30/1977	Planning and Zoning Department
City of Mellen	Participating	12/17/1973	11/19/1986	Planning and Inspection Department
Village of Butternut	Participating	9/6/1974	5/14/1976	Code Enforcement Officer

Source: Federal Emergency Management Agency Community Status Book

Table-22: NFIP Claims

Community	Policies In-Force	Total Premium + Federal Policy Fee	Total Coverage
Ashland County (unincorporated areas)	6	\$2,557	\$1,319,000
City of Ashland	14	\$11,493	\$3,075,000
City of Mellen	2	\$1,519	\$52,000

Source: Federal Emergency Management Agency Policy Information by State and Community

As of February 25, 2024, there were 22 policies in-force in Ashland County, with a total coverage of \$4,446,000. Total claims paid were \$20,086. According to the NFIP repetitive loss and serious repetitive loss database, there is one repetitive loss property (residential) in the Town of Marengo, with the most recent date of loss being June 17, 2018.



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This map is neither a legally recorded map nor a survey and is not intended to be used as one. This drawing is a compilation of records, information and data used for reference purposes only. Ashland County is not responsible for any inaccuracies herein contained.

Created by:
Brittany Gordon-Wendelker
Ashland Co. Land & Water Conservation Department
6/9/2016

Table 23: Flood Insurance Rate Map Panels

Unincorporated Areas	
Product ID	Effective Date
5500040015	2/15/1978
5500040015A	2/15/1978
5500040020	2/15/1978
5500040020A	2/15/1978
5500040040	2/15/1978
5500040040A	2/15/1978
5500040045	2/15/1978
5500040045A	2/15/1978
5500040050	2/15/1978
5500040050A	2/15/1978
5500040060	2/15/1978
5500040060A	2/15/1978
5500040075	2/15/1978
5500040075A	2/15/1978
550004FND0	2/15/1978
550004IND0	2/15/1978
City of Ashland	
Product ID	Effective Date
550005IND0	9/30/1977
5500050001B	9/30/1977
5500050002B	9/30/1977
5500050001	9/30/1977
5500050002	9/30/1977
City of Mellen	
Product ID	Effective Date
500070001B	11/19/1986
5500070001	11/19/1986
Village of Butternut	
Product ID	Effective Date
550006A	5/14/1976
Bad River Band of Lake Superior Chippewa	
Product ID	Effective Date
55051CIND0A	5/23/2023

Source: Federal Emergency Management Agency Map Service Center

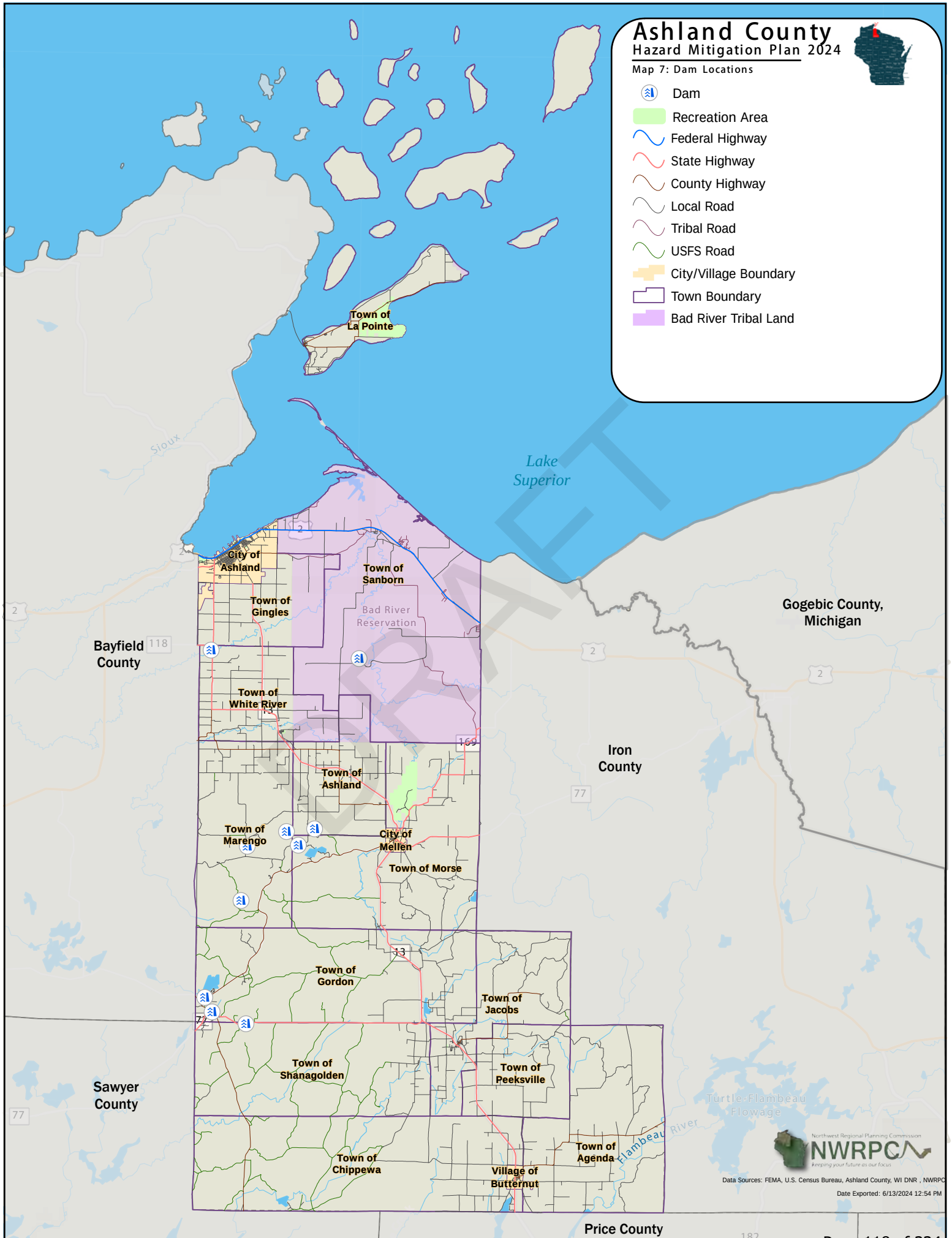
Ashland County

Hazard Mitigation Plan 2024



Map 7: Dam Locations

- Dam
- Recreation Area
- Federal Highway
- State Highway
- County Highway
- Local Road
- Tribal Road
- USFS Road
- City/Village Boundary
- Town Boundary
- Bad River Tribal Land



Data Sources: FEMA, U.S. Census Bureau, Ashland County, WI DNR, NWRPC
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HAZARD HISTORY

There were 27 flooding events recorded in the NCEI Storm Events Database between 1961 and 2023 and 22 flooding events in the last 20 years (Table 24). No injuries or crop damage dollar amounts were reported.

Table 24: Ashland County Flood Events 2003-2023

Location	Date	Hazard	Deaths	Property Damage
Ashland	7/24/2005	Flash Flood	-	-
Clam Lake	6/14/2012	Flash Flood	-	-
Clam Lake	6/14/2012	Flash Flood	-	-
Glidden	6/22/2012	Flood	-	-
Birch	4/30/2013	Flood	-	-
Odanah	5/1/2013	Flood	-	-
Ashland	7/11/2016	Flash Flood	-	-
Clam Lake	7/11/2016	Flash Flood	-	\$1,000.00
Sanborn	7/11/2016	Flash Flood	-	\$1,000.00
Odanah	7/11/2016	Flash Flood	-	\$1,000.00
Ashland	7/11/2016	Flash Flood	-	\$1,000.00
Marengo	7/14/2016	Flood	1	-
Peeksville	5/16/2017	Flood	-	-
NA	10/27/2017	Lakeshore Flood	-	-
Mellen	6/15/2018	Flash Flood	-	-
Sedgwick	6/16/2018	Flash Flood	-	-
Sanborn	6/17/2018	Flash Flood	1	-
Ashland	6/17/2018	Flood	-	-
Odanah	8/27/2018	Flash Flood	-	-
Odanah	7/4/2019	Flash Flood	-	-
NA	10/21/2019	Lakeshore Flood	-	-
Ashland	4/11/2023	Flood	-	-
Total			2	\$4,000.00

Source: NOAA NCEI Storm Database (2003 - 2023)

Recent flooding events (2016-2023) have been notably intense and destructive due to historic rainfall events.

May 16, 2017. Flood. Northwest Wisconsin had multiple rounds of heavy rain over several days, causing saturated soils, rising creek and river levels, and flooding. The town of Glidden in southern Ashland County was hit especially hard when the East Fork of the Chippewa River flooded part of the town. The upper part of the river basin of the river received about 4 to 6 inches of rain late Monday into early Tuesday, followed by additional rounds of rain through early Thursday. In total, the basin and Glidden area had about 5 to 8 inches from Monday through early Thursday. The town of Glidden had flooding, including homes in the town. Many roads within town, and some county roads near town, were closed because of the water.

October 27, 2017. Lakeshore Flood. A warm front was located across central Minnesota into southwest Wisconsin. Low level flow maintained the influx of moisture and warm air as a shortwave topped a ridge in place to the west. This led to storms throughout much of the day, a few of which were severe with damaging winds and hail. The storms also contained heavy rainfall which primed parts of the area for major flash flooding the following night.

June 15, 2018. Flash Flood. A warm front was located across central Minnesota into southwest Wisconsin. Low level flow maintained the influx of moisture and warm air as a shortwave topped a ridge in place to the west. This led to storms throughout much of the day, a few of which were severe with damaging winds and hail. The storms also contained heavy rainfall which primed parts of the area for major flash flooding the following night.

June 16-17, 2018. Flash Flood/Flood. Multiple rounds of thunderstorms along a stationary boundary starting Friday, June 15, and persisting through the day on June 16, acted to saturate soils across northwest Wisconsin. Another round of training storms developed the night of the 16th, fed by a moist low-level jet. Training storms and slow storm motion led to heavy rainfall across Douglas, Bayfield, Ashland, and Iron counties. Three-day rainfall amounts of 6 to 10 inches were common throughout these counties with a vast majority of it falling during the night of the 16th into the 17th. Areas of central Bayfield County saw more than 15 inches of rainfall during this event. This led to historic flooding focused on the Drummond, Grand View, and Benoit areas of Bayfield County, along with the Foxboro, Chaffey and Dairyland areas of western Douglas County. The KDLH radar failed during the evening of June 16 and frequent lighting prevented the restoration of service until after daybreak on the 17th, resulting in the main radar covering this event not being available. One man was killed after his vehicle left the road and went into a ditch filled with 6 to 8 feet of water near the Bad River south of Ashland. Additionally, one or more microbursts were reported in central Sawyer County near Grindstone Lake resulting in tree damage and damage to homes. One man was killed when a tree fell on his camper near the town of Edgewater. The runoff from the storms continued to cause problems into the new week as it led to significant rises on area rivers and additional flooding. Damages estimates of \$95,706 for Ashland County, \$3,988,546 for Bayfield County, \$66,180 for Burnett County, \$3,875,140 for Douglas County, and \$701,922 for Iron County, totaling \$8,727,494. The DNR reported damage totaling \$4,212,077 in the region, resulting in a total of \$12,939,615 in damages in northwest Wisconsin from this event.

August 27, 2018. Flood. A warm front lifted through Wisconsin the night of the 26th and into the morning of the 27th, leaving a moist and unstable airmass across the region. A cold front in eastern Minnesota pushed east during the afternoon to provide the lift to initiate storms. The storms produced very heavy rain that led to some flooding and also had some damaging winds.

July 4, 2019. Flash Flood. A slow-moving area of low pressure moved from central Minnesota the morning of the 4th to northeastern Wisconsin by the morning of the 5th. Slow moving showers and thunderstorms developed near this low across northwest Wisconsin and dropped 1 to 3 inches of rainfall in a span of a few hours leading to isolated areas of flash flooding.

October 21, 2019. Lakeshore Flood. An intense area of low pressure approached the region through the day on Monday, October 21, producing increasingly strong east to northeast winds. The winds increased through the day and were especially strong coming off Lake Superior into the western South Shore area. Peak wind speeds topped 70 MPH at some of the bridges and waves caused damage along many of the lake shore areas.

FEMA-4276-DR-WI

During the period of July 11-12, 2016, multiple rounds of severe thunderstorms impacted much of east central to northeast Minnesota and northwest Wisconsin. During a 24-hour period the area received 8 to 12 inches of precipitation with the worst of the heavy rain and resulting flash flooding occurring in the evening hours. Extending from Danbury in Burnett County to Hurley in Iron County, much of the total precipitation fell within just 8 hours. These storms resulted in widespread flash flooding causing numerous road closures including the multiple-day closure of US Highway 2, a major transportation corridor across northern Wisconsin. No travel advisories were issued within much of the



Flooding in Ashland County

region due to washouts and inundated roadways. The timing of these storms also came during peak tourist season. Tragically, this event resulted in the loss of 4 lives and caused numerous injuries and medical emergency calls to local first responders. Many of the area's state highways, county highways, and local roads were inundated with water and debris and had to be closed. Culverts and bridges were washed out, resulting in long detour routes for residents and the trucking industry. Highway crews were busy implementing road closures, making temporary road repairs, and cleaning up debris. Multiple Lake Superior harbors received significant damage. Saxon Harbor in Iron County was housing 70 boats at the time of the July 12 storm. Of these, at least 12 were destroyed, 19 beached, and 6 sunk and later recovered. Two boats remain unaccounted for, while two vehicles and three camper trailers were also lost. Thirty-three floating docks were swept out into the lake and destroyed. This event impacted over 350 homes and left behind tens of millions of dollars in public sector damage. Both the initial storm and a secondary severe thunderstorm event on July 21 caused tens of thousands of power outages across the northern part of the state and generated large amounts of debris. The stress on citizens and local emergency response efforts was further intensified by high heat index levels that occurred statewide from July 20-22. On August 9, 2016, a Major Disaster Declaration was declared, resulting in federal assistance to eligible applicants in 8 counties and 1 Tribal Nation. The declared counties were Ashland, Bayfield, Burnett, Douglas, Florence, Iron, Sawyer, and Washburn, and the affected Tribal Nation was the Bad River Band of Lake Superior Chippewa.

FEMA-4383-DR-WI

During the period of June 15-19, 2018, severe storms, straight-line winds, and flooding occurred in northern Wisconsin. Heavy rains occurred in northwest Wisconsin on June 14-17. Substantial precipitation (>10 inches) totals were received in the counties of Bayfield, Douglas, Ashland, Iron, Price, Sawyer, and the Bad River Nation. Roads, bridges, and culverts were flooded, and many were washed out. In addition, several dams failed during the extreme precipitation event.

The highest rainfall totals exceeded 15 inches in Bayfield County. In some locations over 10 inches occurred within six hours. Record crests occurred on rivers in the region. The Nemadji River at below Superior crested four feet above its previous record and the St. Croix River near State of Wisconsin Hazard Mitigation Plan Danbury crested three feet higher than its preceding maximum. Additional high level water marks were exceeded on Whittlesey Creek at Ashland and the White River near Ashland. Two fatalities resulted from the storm. A 75-year-old man was

found near his truck in a flooded roadway in the Town of White River. Another man was killed when a tree fell on a camper in the Town of Edgewater.

On August 10, 2018, a presidential disaster declaration was granted for Wisconsin. The declaration made Public Assistance available to state and eligible local governments and select private nonprofit organizations on a cost-sharing basis for emergency work resulting from severe storms, straight-line winds, and flooding in Ashland, Bayfield, Burnett, Clark, Douglas, and Iron counties. According to the Preliminary Damage Assessment Report the primary impact was to roads and bridges. The initial Public Assistance cost estimate was \$13,103,077.

The declaration also made Hazard Mitigation Grant Program assistance available. Six projects were funded. These included the acquisition of 13 residential structures, one commercial structure, one river gage installation, and one portable flood simulation model. Three hazard mitigation plan updates were approved.

VULNERABILITY AND RISK ASSESSMENT

Area Affected

Ashland County has over 1,000 miles of perennial streams, with an additional 712 miles of intermittent waterways. During the spring months, warm temperatures and rainfall can cause rapid melting of the heavy local snowpack. The resultant flooding largely impacts rural, unpopulated areas of the county but occasionally impacts the populated communities.

Certain areas of Ashland County are more flood prone than others. The most vulnerable areas are near rivers, lakes, streams, and ephemeral waterways. Floods in the urbanized areas are historically associated more with stormwater runoff than with riverine flooding. The impact on buildings includes damage to foundations and belongings in lower levels. The impact on the infrastructure includes damage to streets, blockage of traffic and the endangerment of pedestrians, especially children.

Within the rural parts of the county, the most likely areas to be affected by the flood hazard are those areas identified as Zone A (Special Flood Hazard Area) on Flood Hazard Boundary Maps. Zone A is the flood insurance rate zone that corresponds to the 1-percent annual chance floodplains that are determined in the Flood Insurance Study. While much of the rural lands delineated as Special Flood Hazard Areas are unpopulated, lakefront and some riverfront areas with development are a concern.

The clay plain of Ashland County (north of Mellen), is especially prone to flooding and flash flooding during major rainfall events. This is due to the relatively impermeable nature of the clay soils that does not allow rainfall to soak into the soil. This contributes to rapid runoff during intense storms and snowmelt due to low infiltration rates. Less well known but perhaps even more consequential, is the “transition area” where the extensive clay deposits meet and mix with coarse materials and sandy soils. The transition area corresponds to the ancient shores of Glacial Lake Duluth and is extremely sensitive to ravine and gully erosion because of the higher likelihood for confined flows. Both the transition area and clay plain become hazardous and produce flashy runoff during intense rainfall which activates and worsens conditions that contribute to road failures from excess sediment and debris (Appendix E). These events can be extremely dangerous and damaging – flash floods have caused major road washouts and the loss of a life during the 2016 and 2018 floods.

A breach of the Turtle Flambeau Reservoir Dam in neighboring Iron County would affect approximately 20 homes in the Town of Agenda on North Short and South Short Lane.

Magnitude

The Northwest Wisconsin Flood Impact Study¹ conducted after the historic 2018 flood investigated the impacts of flooding events across the region, including Ashland County. Loss estimates under the 100-year scenario for Ashland County are \$582,182 and \$875,091 under the 500-year scenario (Table 25). Estimates include up to 92 structures impacted under the 100-year scenario and 114 under the 500-year scenario. The model estimates that 12 critical community assets/facilities would be impacted under the 100-year scenario and 17 under the 500-year scenario. A dam failure could have substantial magnitude and impact many people in Ashland County.

Table 25: Ashland County 100-Year and 500-Year Flood Estimates

Municipality	Structures Impacted	Estimated Building Losses	Estimated Content Losses	Estimated Inventory Losses	Debris Generated (tons)
C. OF Mellen	17	\$ 74,485.00	\$ 77,857.00	\$ 7,326.00	234
T. OF Agenda	2	\$ 33,789.00	\$ 11,816.00	\$ -	13
T. OF Ashland	1	\$ -	\$ -	\$ -	0
T. OF CHIPPEWA	21	\$ 207,620.00	\$ 72,087.00	\$ -	144
T. OF GINGLES	1	\$ 7,859.00	\$ 2,607.00	\$ -	1
T. OF GORDON	8	\$ 70,128.00	\$ 20,295.00	\$ -	117
T. OF JACOBS	10	\$ 31,921.00	\$ 46,933.00	\$ 10,413.00	135
T. OF MARENGO	1	\$ -	\$ -	\$ -	5
T. OF MORSE	1	\$ 34,296.00	\$ 19,188.00	\$ -	7
T. OF PEKSVILLE	2	\$ 3,415.00	\$ 1,204.00	\$ -	7
T. OF SANBORN	2	\$ 4,978.00	\$ 1,871.00	\$ -	7
T. OF SHANAGOLDEN	3	\$ 4,827.00	\$ 1,829.00	\$ -	15
T. OF WHITE RIVER	1	\$ -	\$ -	\$ -	1
V. OF BUTTERNUT	22	\$ 108,833.00	\$ 200,411.00	\$ 30,101.00	316
GRAND TOTAL	92	\$ 582,162.00	\$ 456,098.00	\$ 47,840.00	1002

Municipality	Structures Impacted	Estimated Building Losses	Estimated Content Losses	Estimated Inventory Losses	Debris Generated (tons)
C. OF Mellen	12	\$ 86,218.00	\$ 112,561.00	\$ 12,514.00	237
T. OF Agenda	2	\$ 50,609.00	\$ 17,150.00	\$ -	21
T. OF Ashland	2	\$ 7,995.00	\$ 3,140.00	\$ -	3
T. OF CHIPPEWA	24	\$ 263,865.00	\$ 85,691.00	\$ -	171
T. OF GINGLES	1	\$ 8,967.00	\$ 2,844.00	\$ -	1
T. OF GORDON	8	\$ 89,271.00	\$ 25,171.00	\$ -	115
T. OF JACOBS	16	\$ 86,810.00	\$ 264,883.00	\$ 36,561.00	428
T. OF MARENGO	3	\$ 7,590.00	\$ 1,796.00	\$ -	22
T. OF PEKSVILLE	2	\$ 7,226.00	\$ 2,551.00	\$ -	7
T. OF SANBORN	12	\$ 127,432.00	\$ 70,234.00	\$ -	55
T. OF SHANAGOLDEN	4	\$ 41,208.00	\$ 14,072.00	\$ -	20
T. OF WHITE RIVER	2	\$ -	\$ -	\$ 17,201.00	3
V. OF BUTTERNUT	26	\$ 97,900.00	\$ 138,444.00	\$ 58,323.00	325
GRAND TOTAL	114	\$ 875,091.00	\$ 738,537.00	\$ 124,599.00	1,408

Duration

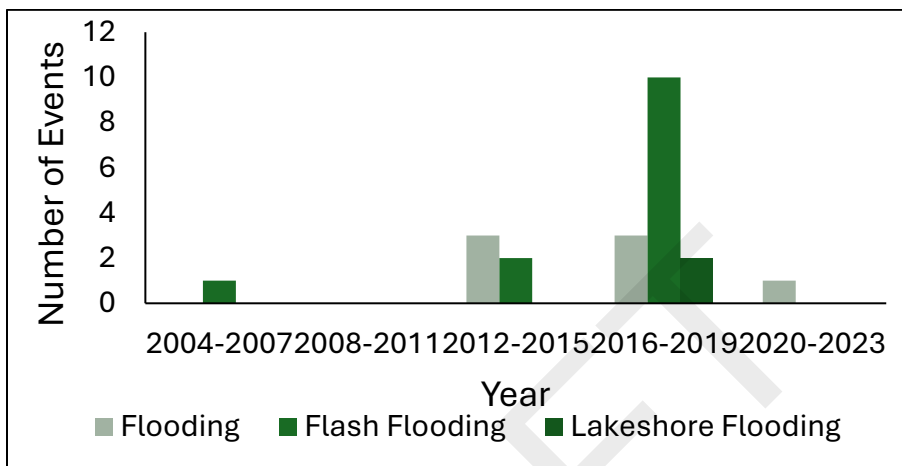
Flooding can range from intense flash flooding that happens over a short period of time to flooding that can last several days. Both instances can result in extensive damage to infrastructure, ecosystems, and economies. The average historical duration of lakeshore flooding events in Ashland County is 18.9 hours (historic range: 3.0 hours to 34.8 hours), while the average duration of flash flooding is 8.3 hours (historic range: < 1 hour to 64.4 hours). The average duration of flooding events is 40.3 hours (historic range: 2.5 hours to 138.0 hours).

¹ <https://nwrpc.com/DocumentCenter/View/1494/Northwest-Wisconsin-Flood-Impact-Study>

Frequency

Flooding events are relatively common in Ashland County. In the last 20 years, there have been 13 flash flooding events, 7 flooding events, and 2 lakeshore flooding events (Figure 2). Many of these events are centered around the 2016 and 2018 historic flooding events because there were multiple flooding events throughout the county in various locations; additionally, soil saturation led to subsequent flooding events following the major floods.

Figure 2: Ashland County Flooding Events 2003-2023

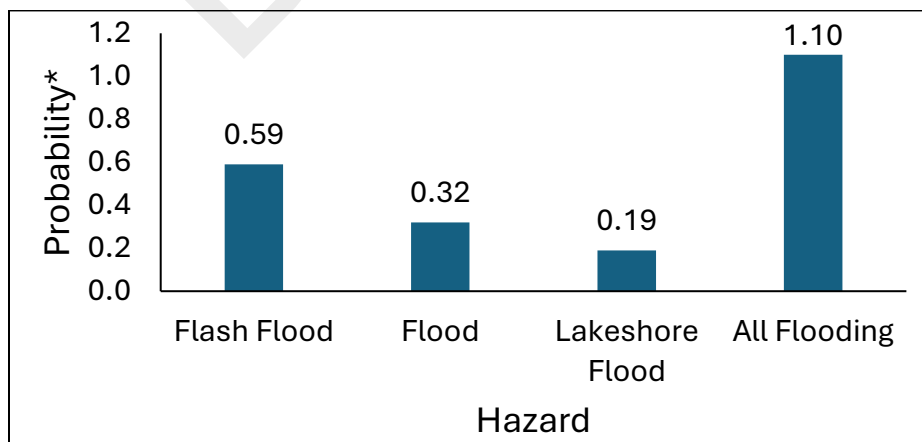


Source: NOAA NCEI Storm Database (2003 - 2023)

Probability

Historical data suggests that, in general, Ashland County will experience about one type of flooding event per year based on the last 20 years of data (Figure 3). The data shows that there is a 0.59 (out of 1.0) probability of a flash flood in a given year, 0.32 probability of a flood in a given year, and 0.19 chance of lakeshore flooding in a given year. It is important to note that while flooding events may only happen one time per year, they can last for long periods of time, and their devastating effects on infrastructure, ecosystems, and economies can last even longer.

Figure 3: Probability of Flooding Hazards Based on 2003-2023



*Probability calculated based on 2003-2023 because 2024 flood season has not yet occurred) to account for gaps in historical data and climate change.

Source: NOAA NCEI Storm Database (2003 - 2023)

Where probability and magnitude meet are the historic floods. A 100-year flood has an annual exceedance probability of 1%, meaning it is likely to occur once every 100 years. The annual exceedance probability of a 500-year flood is 0.2%, meaning an event at this magnitude is likely to occur once every 500 years.

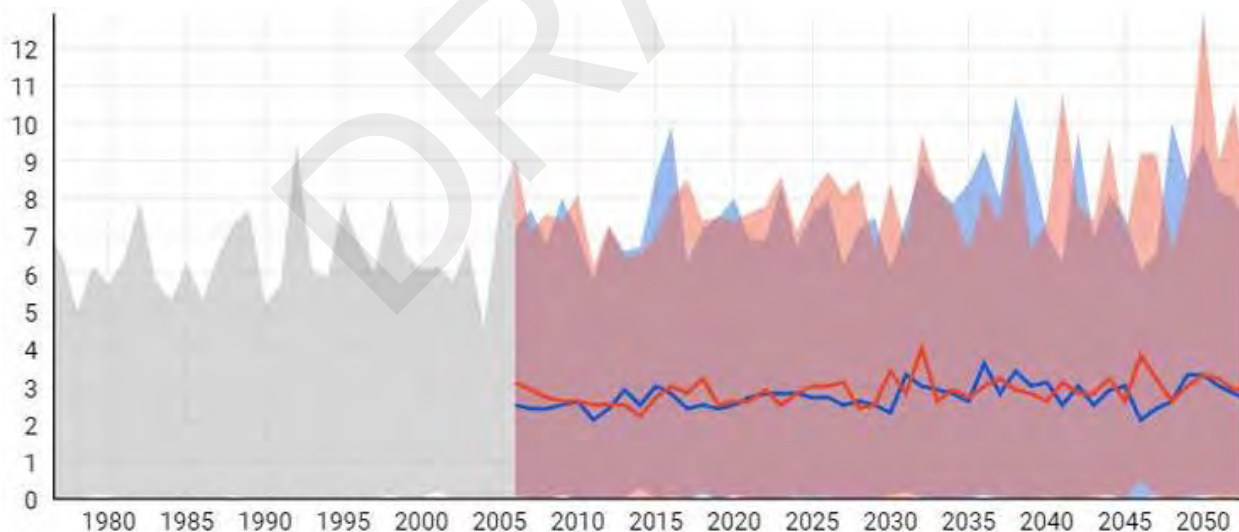
Potential Climate Change Impact

Model projections for 1980-2055 predict an increase in annual precipitation totals for Ashland County with about 75% probability. That is, in three-quarters of emissions scenarios and model runs, precipitation totals continue to increase into mid-century. Seasonal patterns in precipitation may also change: most projections foresee increases in winter, spring, and autumn precipitation and slight decreases in summer precipitation.

There is substantial agreement that heavy rain events will increase in frequency in Ashland County, beyond increases that may have already occurred. The average number of days per year with more than 1-inch of precipitation is expected to vary and increase overall compared to the historical average (Figure 4). By comparing projections for 2090 with 1980 estimates, Ashland County is expected to experience 13 more days/decade with 1-inch rains, 4.4 more days/decade with 2-inch rains, and 1.3-1.5 more days/decade of 3-inch rains.

Increased rainfall amounts could lead to dam failures. Many dam structures in Ashland County are older and may not be able to handle the potential increase precipitation, especially small earthen dams. The larger dams in the county have regular maintenance and are less likely to fail. However, if any of the larger dams fail, the effects would be more catastrophic and affect many people throughout the county.

Figure 4: Days Per Year with >1 Inch of Precipitation, 2008-2050



Source: U.S. Climate Resilience Toolkit Climate Explorer

Population Affected

The widespread effects of flooding could affect the entire population of Ashland County – particularly when roadways are impacted. The potential increase in substantial rainfall and flooding events means that the entire population could be impacted, especially in rural areas. When roads are washed out, emergency services and general traffic may not be able to reach the more remote areas of the county. If dams were to fail, people in the downstream path may face substantial risk to their property and even their lives.



Road infrastructure damage in Ashland County

Critical Facilities and Infrastructure at Risk

Flooding is one of the greatest threats to transportation infrastructure in Ashland County. The county has 1,193 miles of roadway which includes one Federal Highway (US 2) and two State Highways (STH 77 & 13). Flooding poses serious challenges for essential services, such as police and fire. In extreme cases, roads may be impassable, even to emergency vehicles. Such road conditions can also impair the function of critical facilities (e.g., staffing at clinics or schools). Dams are another infrastructure at risk. The predicted increases in precipitation in shorter durations is likely to lead to an increase in flooding events, which will put more stress on dam infrastructure. If a large dam were to fail, people's lives and property would be at risk. Additionally, the damage to riverine ecosystems would be substantial and take many years and millions of dollars in remediation to repair.

Potential Economic Impact

Rural communities like Ashland County are intricately tied to natural resources for their livelihoods and social structures. Major flooding due to increased precipitation is already affecting rural communities in Wisconsin. This could progressively increase over the years and impact the abilities of rural economic activities (like forestry and recreation) to thrive. Rural communities are often characterized by their natural resources and associated economic activity. Dominant economic drivers include agriculture, forestry, energy, outdoor recreation, and tourism. In addition, many rural areas with appealing landscapes are increasingly reliant on second-home owners and retirees for their tax base and community activities. Changes in seasonality and intensity of precipitation will increase costs of runoff containment. Because many rural communities are less diverse than urban areas in their economic activities, changes in the viability of one traditional economic sector will place disproportionate stresses on community stability. Businesses are often the center of small communities' economies, drawing in tourism dollars and ensuring a healthy community. The loss of any one business has disproportionate consequences to the community compared to being in a large urban area. Businesses accrue economic loss due to flooding through several reasons: Direct damage to business property (facility, equipment, vehicles, inventory, etc.).

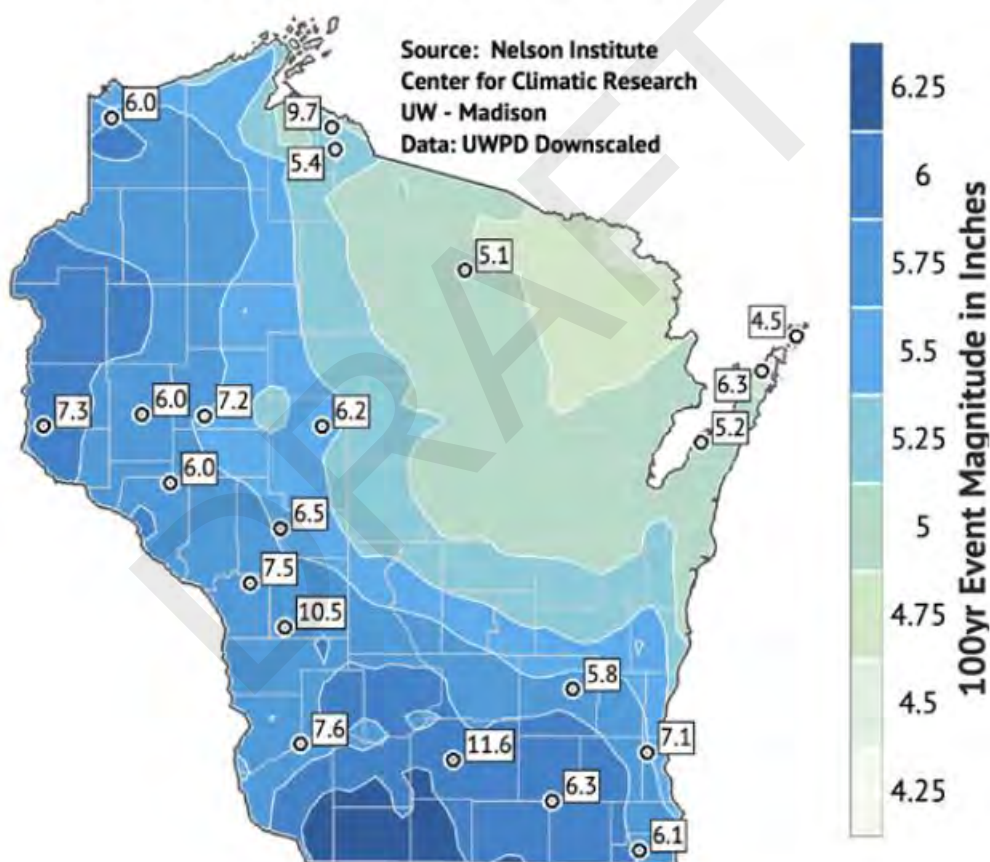
- Income loss due to closing a business for a period of time.
- Employees unable to report to work due to flooding.
- Income loss due to street closures limiting customer access.
- Income loss due to customers unable to access on or off-street parking.
- Lack of property insurance that covers floods or that includes disruption coverage.

Tourism is another significant contributor to Ashland County. Changes in the length and timing of seasons, temperature, precipitation, and severe weather events can have a direct impact on tourism and recreation activities by influencing visitation patterns and tourism-related economic activity.

The June 2018 flood that hit the region shut down numerous roads and caused millions of dollars in damage. The popular US Highway 2 route connecting the City of Superior with parts of Bayfield and Ashland County was damaged and closed for nearly three months during peak tourism season. This major route through northern Wisconsin averages 4,230 people driving east to west each day. The impact of this flood was felt by many business owners.

Figure 5: 100-Year Rainfall Event Magnitude and Actual 2010-2019 Extreme Events

100-year Rainfall Event Magnitude and Actual 2010-2019 Extreme Events



Source: WICCI 2021 Climate Change Assessment Report²

For more information on the localized and regional impacts of past flood events in Ashland County and Northwest Wisconsin, view the Northwest Wisconsin Flood Impact Study³ and the Northland College Center for Rural Communities Climate Change Adaptation Planning Guide.⁴

² <https://uwmadison.app.box.com/s/qi5evkp4nac87chjmfxxoa6kn9840sh35>

³ <https://nwrpc.com/DocumentCenter/View/1494/Northwest-Wisconsin-Flood-Impact-Study>

⁴ <https://www.northland.edu/wp-content/uploads/2019/05/CRC-ClimateChangeAdaptationGuide.pdf>

Storms: Winter

HAZARD DESCRIPTION

A winter storm is an event in which the main types of precipitation are snow, sleet, or freezing rain. Winter storms that affect Wisconsin develop over southeast Colorado, northwest Canada, and over the southern Plains. These storms move toward the Midwest and use both the southward plunge of cold air from Canada and the northward flow of moisture from the Gulf of Mexico to produce heavy snow over the region. Winter storms can vary in size and strength and include heavy snowstorms, blizzards, freezing rain, sleet, and blowing and drifting snow conditions.

In addition, winter storms are often accompanied by strong winds and bitterly cold temperatures. Wind chill, or the combined cooling power of the wind and temperature on exposed flesh, can also produce hazardous conditions.

Ashland County is particularly vulnerable to snow events due to lake-enhancement, or the “lake-effect,” which can produce significantly higher snowfall amounts relative to the surrounding areas. Lake-effect snow squalls form when a mass of cold air, traveling long distances over the relatively warm waters of a large body of water, absorbs moisture and heat. Condensation of the water vapor in rising air results in cloud formation, and consequently snowfall. As this air moves over the lee shores of the lake, additional lifting is provided by the sloping topography and by convergence as the air slows down over the rougher terrain. The net result can be very intense snowfalls on the lee shore, particularly in the higher elevations. The lake-effect can produce copious amounts of snow and may persist as long as winds remain favorable (north to northwest).

In Ashland County, the lake-effect results in an average of 105” of snow annually. In the City of Ashland, there is an average of 98” of snow annually due to its proximity and protection by Lake Superior, however, southern portions of the county in the snowbelt can receive up to 136” of snow annually.

The National Weather Service classifications for winter weather events include:

Blizzard: A storm which contains large amounts of snow or blowing snow, with winds more than 35 mph and visibilities of less than 1/4 mile for an extended period of time (at least 3 hours).

Heavy Snow: Accumulation of 4”+ of snow in 12 hours or less or 6”+ in 24 hours or less.

Ice Storm: Freezing rain produces significant or damaging accumulations of ice, usually 1/4” or greater.

Lake-Effect Snow: Snow showers that are created when cold, dry air passes over a large warmer lake, such as Lake Superior, and picks up moisture and heat.

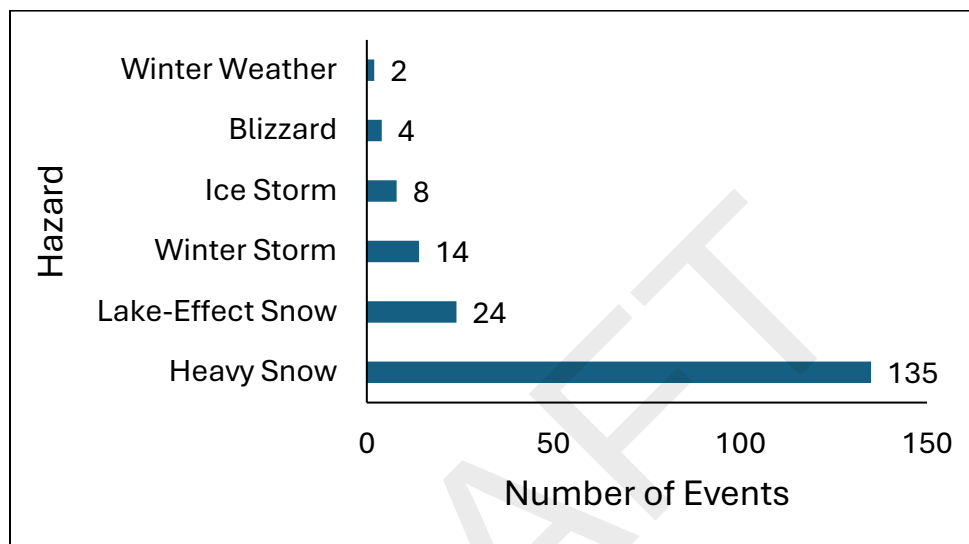
Winter Storm: A combination of heavy snow, blowing snow and/or dangerous wind chills. A winter storm is life-threatening.

Winter Weather: A winter weather phenomenon (such as snow, sleet, ice, wind chill) that impacts public safety, transportation, and/or commerce.

HAZARD HISTORY

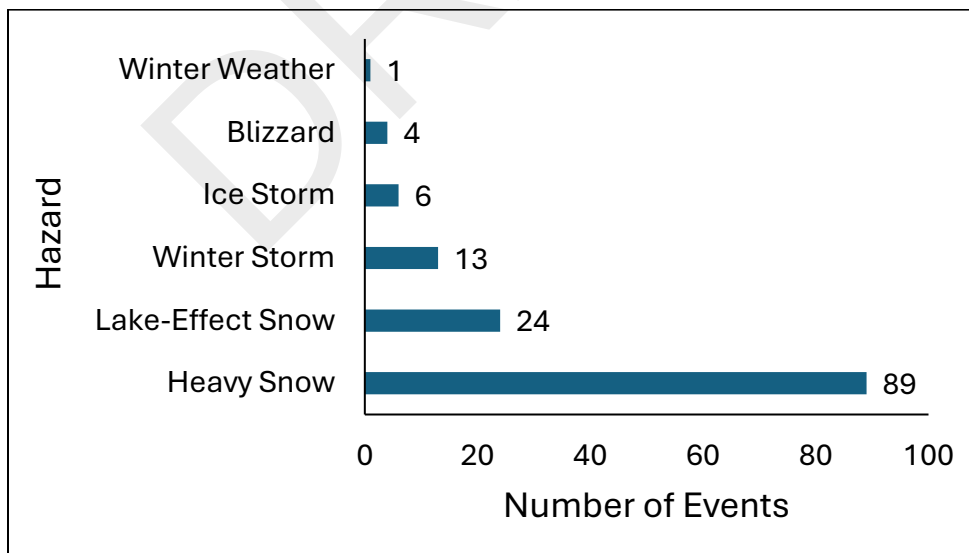
Winter storm events are common in Ashland County. Major snowfall events occur annually, with occasional severe winter storms. According to the NCEI Storm Events Database, from 1961-2023, there have been 187 winter weather related events (Figure 6). Heavy snows are the dominant winter weather hazard. From 2003-2023, there have been 89 heavy snow events, 24 lake-effect snow events, 13 winter storms, 6 ice storms, 4 blizzards, and 1 winter weather event (Figure 7).

Figure 6: Ashland County Winter Hazards 1961-2023

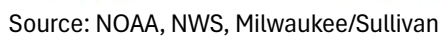


Source: NOAA NCEI Storm Database (2003 - 2023)

Figure 7. 2003-2023 Ashland County Winter Hazards



Source: NOAA NCEI Storm Database (2003 - 2023)



VULNERABILITY AND RISK ASSESSMENT

Area Affected

A winter storm event would likely affect all of Ashland County, as winter storm events are generally regionally in scale. The level of vulnerability increases in areas of higher population, development density, and infrastructure.

The middle of Ashland County usually receives greater amounts of snow due to lake-effect snow coming into contact with the Penokee Range. This change in topography creates an area where snowfalls can be drastically higher than immediately near Lake Superior. The lake-effect often doubles the amount of snowfall. Additionally, the south shore of Lake Superior and Madeline Island are susceptible to severe wind and wind chill events due to the effects of the Great Lake.

Population Affected

Winter storms affect the entire population of Ashland County. However, most of the county's population resides within the areas susceptible to lake-effect snows. The increased frequency of winter storm events within the snowbelt means that residents of these areas are more exposed to, thus affected by, this hazard.

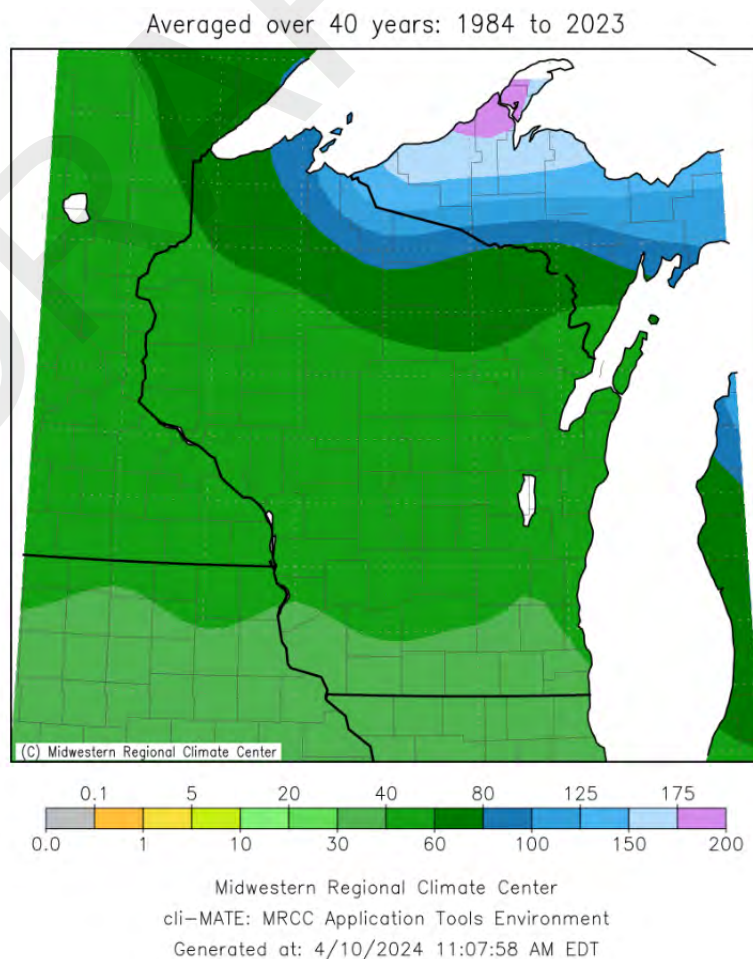
Magnitude

The primary factor defining the magnitude of winter storms is snowfall total, although other indices such as duration, wind chill, and ice accumulation may also be used. Figure 9 illustrates average annual accumulated snowfall across Wisconsin between 1984 and 2023. Over this 40-year period, Ashland County averaged 60-100 inches of snowfall.

Duration

Winter storms can range from a moderate snow over a few hours to a blizzard with heavy, wind-driven snow that lasts for several days. Severe winter storms are often followed by extended periods of cold weather. The average historical duration of heavy snow events in Ashland County is 27.3 hours (historic range: 6.0 hours to 76.0 hours), while the average duration of

Figure 9: Wisconsin Accumulated Snowfall 1984-2023



severe winter storms is 26.8 hours (historic range: 2.0 hours to 60.0 hours). The average duration of lake-effect snow events is 29.7 hours (historic range: 14.0 hours to 60.0 hours).

Frequency

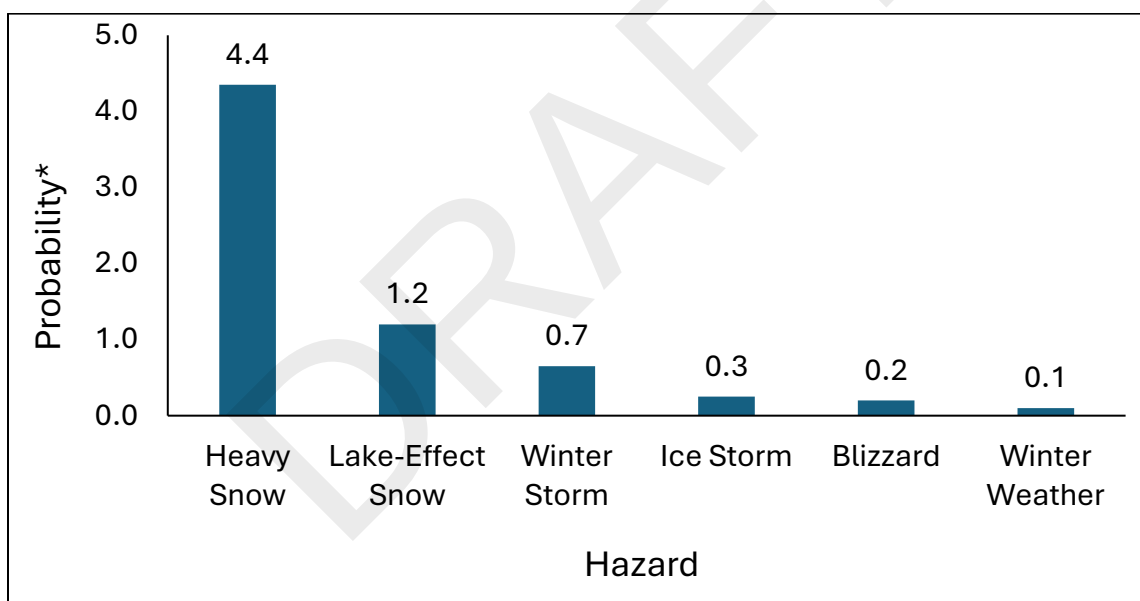
Winter storm events are a common occurrence in Ashland County. In five years, there have been 41 heavy snow events (1 event in January 2024), 4 ice storms, 3 blizzards, and 1 winter weather event (Figure 10). It is important to note that while events may only happen 1 time per year, they can last long periods of time, and their effects can last even longer.

Probability

The Wisconsin winter storm season generally occurs from October through March. However, severe winter weather has occurred as early as September and as late as early May. The annual probability of a major winter weather event impacting Ashland County is near 100%.

On average, Ashland County experiences 5-6 heavy snow events per year. It is likely that at least one of those events will produce snowfalls of 12 inches or greater. There is roughly a 50% chance of a storm event of 24 inches or greater in any given year. The probability of a severe winter storm (snow, wind, freezing rain, sleet) is also near 100%.

Figure 10: Probability of Winter Storm Hazards 2003-2023



*Probability calculated based on the last 20 years of data to account for gaps in historical data and climate change
Source: NOAA NCEI Storm Database (2003 - 2023)

Potential Climate Change Impact

A warming climate could affect the future frequency, intensity, and geographic location of winter storms in Ashland County. Studies have shown that long-term trends of warmer winter air will lead to warmer waters and declining ice coverage. This will likely contribute to an observed increase in lake-effect snowfall as longer periods of open water mean more evaporation and an increase in lake-effect snow. On Lake Superior, ice cover is expected to decrease by one to two months by the end of the century.⁵

⁵ WICCI 2021 Assessment Report

Population Affected

Winter storms affect the entire population of Ashland County. However, most of the county's population resides within the areas susceptible to lake-effect snows. The increased frequency of winter storm events within the snowbelt means that residents of these areas are more exposed to, thus affected by, this hazard.

Critical Facilities and Infrastructure at Risk

Winter storms pose the greatest threat to transportation infrastructure in Ashland County. The county has 1,193 miles of roadway which includes one Federal Highway (US 2) and two State Highways (STH 77 & 13). Heavy snow poses serious challenges for essential services, such as police and fire. In extreme cases, roads may be impassable, even to emergency vehicles. Such road conditions can also impair the function of critical facilities (e.g., staffing at clinics or schools).



*31" of snow fell in Ashland County on
December 23, 2013*

Potential Economic Impact

The economic impact of winter storms is difficult to quantify. Winter storms have the potential to negatively impact businesses and individuals. Conversely, snowfall attracts winter recreation enthusiasts, which brings revenue to local businesses. Heavy snow can cripple transportation infrastructure, causing travel delays, and road closures. As a result, businesses may experience temporary revenue losses.

Weather-related traffic accidents also result in economic losses. This is because crash rates tend to correlate with winter severity. Winter road maintenance, including snow removal costs, anti-icing materials, and salt use can be a significant burden, especially for local governments.

Although snow removal costs and traffic accident cost data specific to Ashland County is not readily available, according to the Wisconsin Department of Transportation, Wisconsin experienced an average of 34 winter storms and 64.6 inches of snow, resulting in a total cost of \$85,354,793 in winter road maintenance in the 2021-22 winter season. The costliest winter on record was the winter of 2013-14, when Wisconsin experienced an average of 43 winter storms and 93.2 inches of snow, resulting in a total of \$113,472,270 in winter maintenance costs.

Severe Storms: Hail, Lightning, and Thunderstorm

HAZARD DESCRIPTION

NOAA's National Center for Environmental Information (NCEI) defines severe weather as "destructive storm or weather" that is "usually applied to local, intense, often damaging storms such as thunderstorms, hailstorms, and tornadoes." While this definition can cover a variety of hazards beyond the previously listed ones, thunderstorms, tornadoes, high winds, hail, and lightning are the most prevalent in Wisconsin. Thunderstorms are complex weather systems that can produce hail and lightning as a byproduct.

Hail can also develop in thunderstorms when strong currents of rising air, known as updrafts, carry water droplets high within the storm, exposing these droplets to cold air and freezing them. As the frozen droplets begin to fall toward the ground, rising currents within the storm lift them again. The hailstones gain an ice layer and grow increasingly larger with each ascent. Eventually the hailstones become too heavy for the updraft to support, and they fall to the ground.

Though hail typically accompanies severe thunderstorms, all strong thunderstorms have the potential to produce hailstones of small diameter (less than one inch). The size of hailstones varies and is a direct consequence of the severity and size of the thunderstorm; greater instability in the atmosphere causes stronger updrafts. Stronger updrafts can keep hailstones suspended for longer periods of time, resulting in larger hailstones at ground level.

Lightning is another byproduct of a thunderstorm. The action of rising and descending air in a thunderstorm separates positive and negative charges, with lightning the result of the buildup and discharge of energy between positive and negative charge areas. Water and ice particles may also affect the distribution of the electrical charge. In only a few millionths of a second, the air in a lightning strike is heated to 50,000°F, a temperature five times hotter than the surface of the sun. The heated air expands so rapidly that it causes a shock wave which can be heard as thunder.

Lightning can travel between clouds (cloud-to-cloud), from one point to another within one cloud (intra-cloud), from a cloud to the air surrounding the storm (cloud-to-air), from a cloud to the ground (cloud-to-ground), or from the ground to a cloud (ground-to-cloud). The first four types are considered natural lightning because they occur naturally in the environment. Ground-to-cloud lightning is considered artificially initiated or triggered lightning because it strikes human-made objects like airplanes, very tall buildings, and structures on mountains.

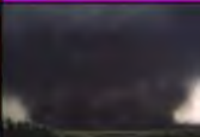
The hazard posed by lightning is significantly underrated. After floods, lightning kills the most people on average each year – in Ashland County, there is documentation of three people injured by lightning in 2018. In Wisconsin, there have been no reported lightning fatalities since 2017. While many casualties of lightning occur at the onset of a storm, more than half of lightning related deaths transpire after a thunderstorm has passed. The lightning threat diminishes after the last sound of thunder but may persist for more than 30 minutes. When thunderstorms are in the area, but not overhead, the lightning threat can still exist. Lightning has been known to strike ten miles or more from the storm in an area with clear skies. Large outdoor gatherings are particularly vulnerable to lightning strikes that could result in injuries and deaths. This vulnerability underscores the importance of developing site-specific emergency procedures for large events with particular emphasis on adequate early warning.

Thunderstorms are generated by an upward motion of unstable air (convection) that contains a high amount of moisture. They are characterized by heavy rain, high winds, downbursts, tornadoes, hail, and lightning. Occasionally, thunderstorms occur in winter during heavy snow events. Although, more typically, Wisconsin experiences the most thunderstorms during the summer months. Wisconsin thunderstorms are approximately 15 miles across and last for about 30 minutes, but events of longer duration or with high rates of precipitation can lead to flooding. The National Weather Service (NWS) classifies a thunderstorm as severe if one or more of the following conditions are met:

1. Winds reach or exceed 58 mph
2. The storm produces a tornado
3. The storm produces hail at least one inch in diameter
4. Flash flooding occurs

Figure 11: NWS Severe Thunderstorm Risk Categories

Understanding Severe Thunderstorm Risk Categories

THUNDERSTORMS (no label)	1 - MARGINAL (MRGL)	2 - SLIGHT (SLGT)	3 - ENHANCED (ENH)	4 - MODERATE (MDT)	5 - HIGH (HIGH)
No severe* thunderstorms expected	Isolated severe thunderstorms possible	Scattered severe storms possible	Numerous severe storms possible	Widespread severe storms likely	Widespread severe storms expected
Lightning/flooding threats exist with <u>all</u> thunderstorms	Limited in duration and/or coverage and/or intensity	Short-lived and/or not widespread, isolated intense storms possible	More persistent and/or widespread, a few intense	Long-lived, widespread and intense	Long-lived, very widespread and particularly intense
					

* NWS defines a severe thunderstorm as measured wind gusts to at least 58 mph, and/or hail to at least one inch in diameter, and/or a tornado. All thunderstorm categories imply lightning and the potential for flooding. Categories are also tied to the probability of a severe weather event within 25 miles of your location.



National Weather Service

www.spc.noaa.gov



Source: NOAA, Storm Prediction Center (SPC)

HAZARD HISTORY

According to the National Weather Service, there have been three injuries and zero fatalities due to lightning events and zero injuries and zero fatalities due to hail in Ashland County between 1961 and 2023 (Table 26).

Table 26: Ashland County Lightning, Hail, and Thunderstorms 1961-2023

Hazard	Year	Number of Events	Injuries	Property Damage
Hail	1962	1	-	-
	1964	1	-	-
	1981	1	-	-
	1985	2	-	-
	1986	1	-	-
	1988	1	-	-
	1989	1	-	-
	1991	2	-	-
	1994	1	-	-
	1997	1	-	-
	1999	1	-	-
	2001	2	-	-
	2002	3	-	-
	2003	1	-	-
	2004	4	-	-
	2005	2	-	-
	2006	2	-	-
	2007	2	-	-
	2008	1	-	-
	2010	11	-	-
	2011	5	-	\$1,500.00
	2012	4	-	-
	2014	2	-	-
	2015	3	-	-
	2017	2	-	-
	2018	7	-	-
	2020	2	-	-
	2021	2	-	-
	2022	1	-	-
	2023	1	-	-
	Total	70	0	\$1,500.00
Lightning	2011	1	-	\$80,000.00
	2018	1	3	-
	Total	2	3	\$80,000.00
Grand Total		72	3	\$81,500.00

Source: NOAA NCEI Storm Database (1961 - 2023)

July 11, 2011. Lightning. A home sustained an estimated \$80,000 worth of damage after lightning struck it, causing a fire. Lightning struck a gas meter located on the side of the house, igniting natural gas.

June 30, 2018. Lightning. A line of storms that had been severe overnight across northern Minnesota moved into northwestern Wisconsin after daybreak. While no longer severe, they were still producing lightning and a few campers were struck on Madeline Island near Bayfield.

July 27, 2010. Hail. A major severe weather episode occurred across northwest Wisconsin, with thunderstorms producing tornadoes, high winds, and large hail. A significant squall line with embedded supercells moved into northwest Wisconsin from Minnesota, with one particular storm producing three tornadoes in Ashland and Iron Counties. The Turtle Flambeau Flowage area of Iron County was hit the worst, with several injuries at a campground, massive tree damage, and structural damage occurring. Another area of major damage occurred in the Drummond and Delta areas, as down burst winds caused structural damage and destroyed hundreds of trees.

April 10, 2011. Hail. By the afternoon on April 10th, a surface low had moved close to the western tip of Lake Superior, ushering a warm and humid air mass into northwest Wisconsin. Thunderstorms developed quickly in the late afternoon but exited to the north and east after only several hours. Some of the storms produced very large hail up to 3 inches in diameter and some damaging wind gusts.

June 9, 2015. A thunderstorm dropped quarter-sized hail near Butternut, WI in Ashland County during the evening of June 9th. The storm also caused strong winds. A 48-mph gust was measured. The winds brought down a few small branches.

July 6, 2017. Hail. Several severe thunderstorms moved across northern Wisconsin and produced large hail and strong, gusty winds. Hail stones ranged in size from dime size up to a hen's egg size. The winds blew down several trees.

September 25, 2020. Hail. A strong, late season cold front worked through the Northland on the evening of the 25th. Ample shear was in place along with cold air aloft to lead to the development of storms that were efficient hail producers across parts of northwest Wisconsin. One of the storms was able to tap into the strong shear and produce a brief, weak tornado that produced tree damage near Upson.

June 29, 2023. Hail. Thunderstorms developed ahead of a cold front moving across the Northland during the late afternoon and early evening hours of the 29th. Most of the storms remained below severe limits but a few were able to produce hail up to an inch in diameter across parts of Bayfield and Ashland counties during the event.

Figure 12: Wisconsin Lightning Events 1982-2023



Wisconsin Lightning Events

1982 - 2023

Events / # Deaths / # Injuries



Reports of damage caused by lightning.

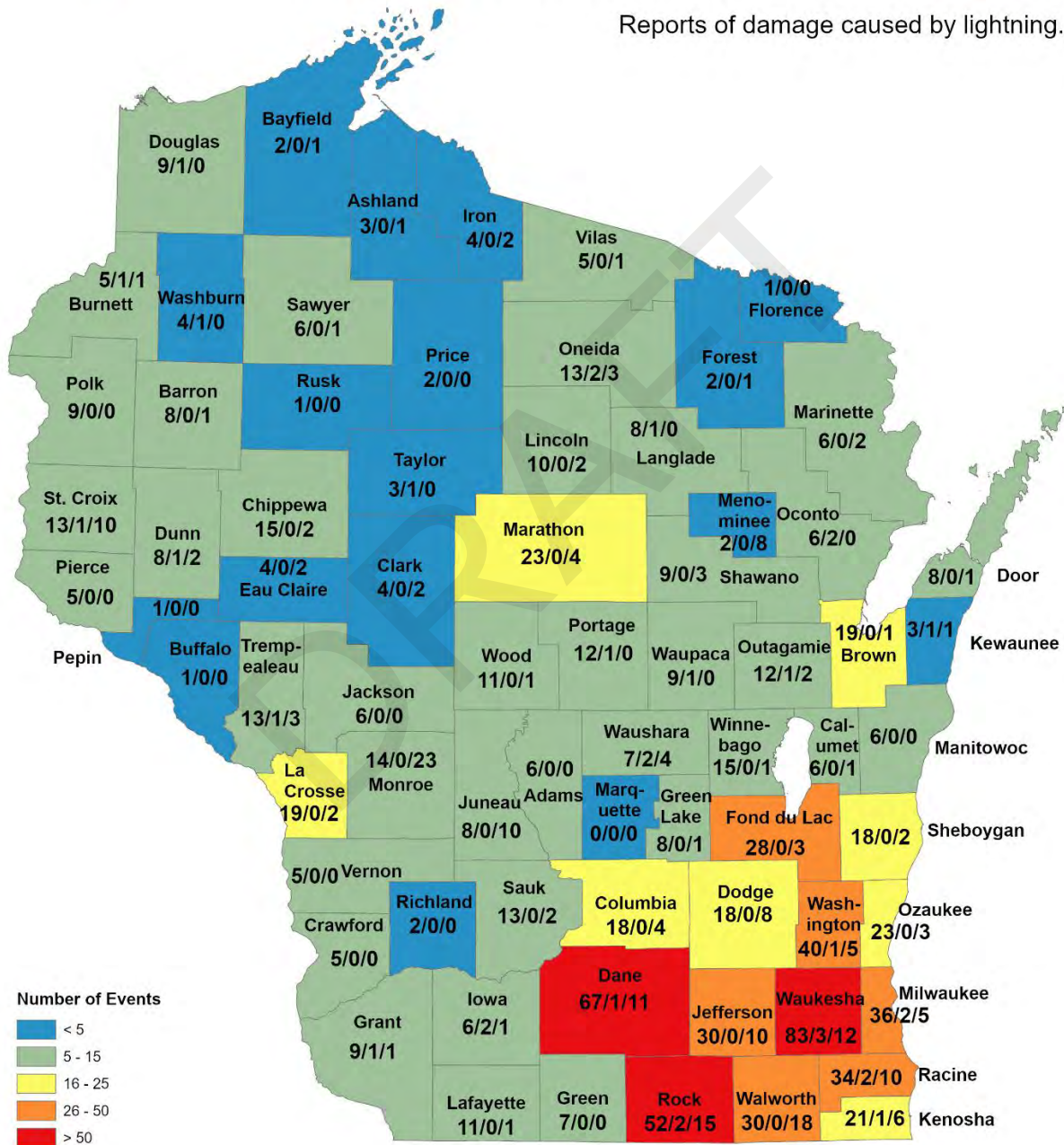


Figure 13: Wisconsin Severe Hail Events 1982-2023



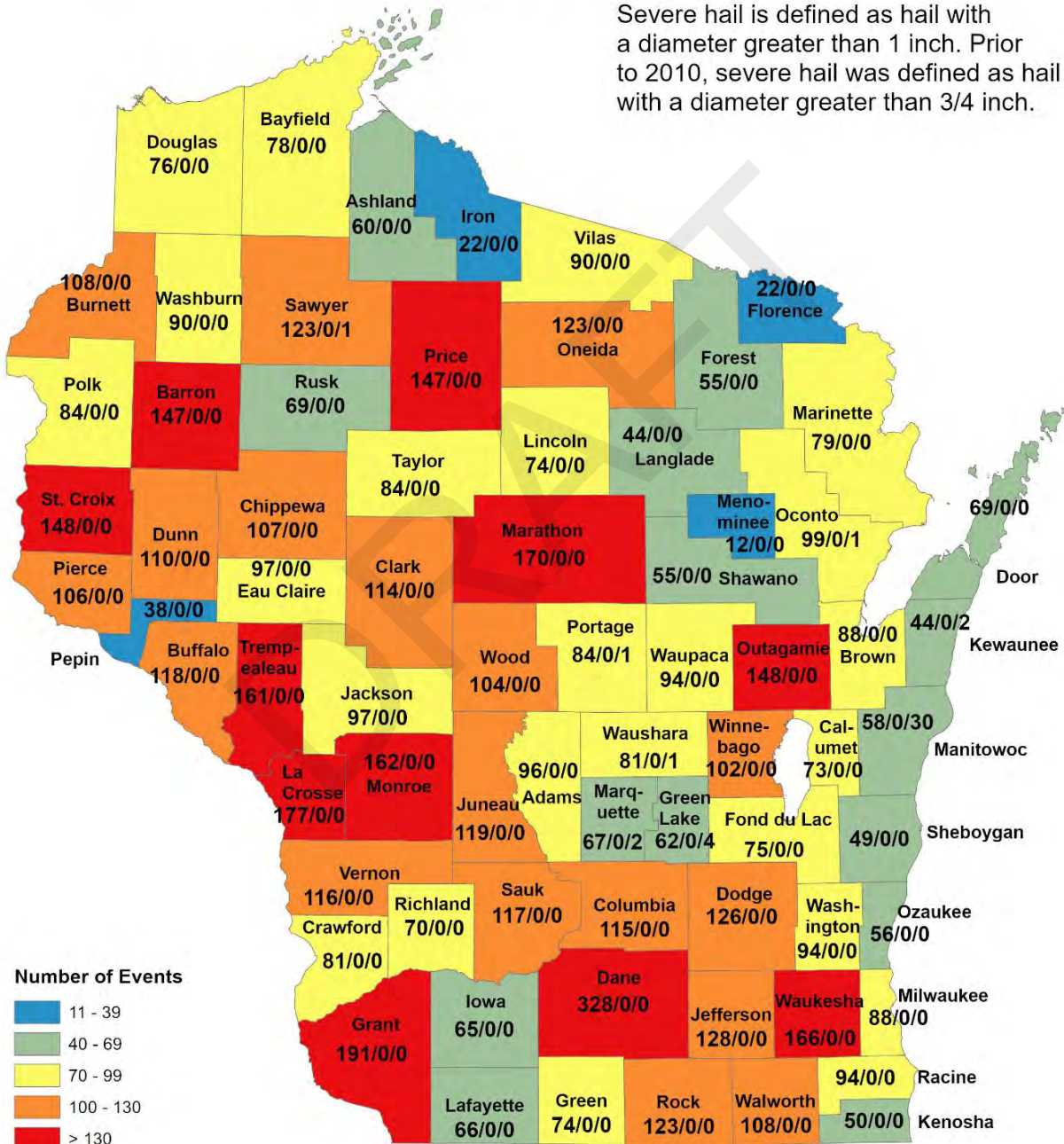
Wisconsin Severe Hail Events

1982 - 2023

Events / # Deaths / # Injuries



Severe hail is defined as hail with a diameter greater than 1 inch. Prior to 2010, severe hail was defined as hail with a diameter greater than 3/4 inch.



Source: NOAA, NWS. Milwaukee/Sullivan

VULNERABILITY AND RISK ASSESSMENT

Area Affected

The entirety of Ashland County is equally susceptible to thunderstorms and their resulting hail and lightning. A severe thunderstorm event would likely affect large portions of Ashland County, but the impacts of hail and lightning may be more specific to smaller areas. Lightning generally strikes in a localized area, although secondary impacts such as wildfire can be extensive. Structures and crops are likely to experience the greatest damage as a result of hail.

Magnitude

According to the National Weather Service, a typical lightning flash is about 300 million volts and about 30,000 amps. Lightning has tremendous potential to cause bodily harm and property damage, and strikes can occur almost anywhere. Lightning is more likely to strike tall trees, towers, and tall buildings. Currently, no classification system exists for lightning magnitude.

Hailstorm magnitude is a function of the size (diameter) of the hailstone, coupled with the intensity and duration of the storm event. Hail size is often estimated by comparing it to a known object. There can be significant variability in hail size within the same storm, which is why one location can have golf ball size hail, while pea size hail is reported only a mile away.

Typically, a weather warning (severe thunderstorm) would be issued in cases where the anticipated hail diameter is one inch or greater. Hail larger than an inch in diameter can result in damage to roofs, vehicles, skylights, and other objects. Even very small hail can destroy agricultural crops depending on crop maturity, wind speed or speed of the hailstones, and storm duration. A few very large stones can do less damage than a large number of small stones. Magnitude is dependent upon storm duration and the size of hailstones. Hailstorms between 2003 and 2023 produced stones up to 1.75 inches in diameter but averaged about 1.1 inches.

Duration

Lightning storms can be 10 to 15 miles in diameter and normally last 20 to 30 minutes.

Hailstorms can range from short-lived to extended, depending upon the size of thunderstorm clouds present in the area. On average, most hail producing areas of a thunderstorm are one-half mile wide and five miles long, with the event lasting a few minutes.

Frequency

On average, Ashland County experiences about two to three severe thunderstorms per year and numerous non-severe thunderstorms. Lightning occurs with all thunderstorms, not just severe storms. Lightning can also travel into the county from storms occurring outside of the county.

In a typical year, Ashland County can expect to experience about one major hail event per year, with most events occurring between April 1 and September 30 in any given year. Hail is associated with severe thunderstorms, which tend to form during the late afternoon and early evening hours.

Probability

The chance of a lightning event occurring in Ashland County during any given year is nearly 100%. Lightning can occur during any time of the year, but casualties are highest in the summer months. Most lightning events occur in July, and most lightning strikes occur in the afternoon.

Hail probability peaks in mid to late June in Wisconsin. The daily probability of hail greater or equal to 2 inches in diameter is roughly between 0.05% and 0.15% during the peak hail period.

Potential Climate Change Impact

A predicted increase in frequency and intensity of severe thunderstorms may increase lightning risk. Hailstorms are complex, localized, and short-lived events. This has resulted in limited high-quality, long-term trend data that can be used to assess change. Some studies indicate that the resulting atmospheric instability in a warming climate could decrease hail frequency but increase hailstorm intensity and hailstone size distribution. A warming climate could fuel stronger thunderstorm updrafts that suspend hail high within storms for longer, enabling them to grow and produce larger hailstones. A warming atmosphere may also alter the height at which hailstones start to melt as they fall. This would have a greater effect on smaller-sized hailstones, which could melt into rain before they hit the ground. Whereas larger hailstones pass too rapidly through the warm zones for melting to have much effect.

Population Affected

The risk posed by lightning is shared across Ashland County, although the risk that an individual would be directly struck by lightning is small. A person can be struck by lightning via:

- **Direct strike:** When a person is struck by lightning without hitting anything else. A direct strike is relatively uncommon but is potentially the deadliest.
- **Side flash:** When lightning strikes an object, like a tree, and the current jumps from the object to the person. A more common means by which people are struck by lightning.
- **Ground current:** When lightning strikes the ground and the electricity spreads outward, potentially passing into anyone or anything in the vicinity. The most deaths and injuries come from ground current.
- **Conduction:** When lightning travels through a conductive material, like electrical wires or metal plumbing in a house.

According to the CDC, the odds of being struck by lightning in a given year are less than one in a million, and almost 90% of all lightning strike victims survive.

Three people were injured by a lightning strike on Madeline Island during a thunderstorm in 2018. Lightning struck a tree in Big Bay Town Park on the island. The current then traveled through the root system and struck a woman getting into her vehicle, throwing her to the ground. Two men in a tent next to the tree were also struck. The woman and one of the men had minor injuries, but the other man sustained serious burns and was transported off the island for medical treatment.

Ashland County's population is equally susceptible to the risk posed by hail. No hail-related injuries or fatalities were reported in the NCEI Storm Events Database between 2003 and 2023.

Critical Facilities and Infrastructure at Risk

Lightning and hail both have the potential to cause damage and disruption to critical facilities, government services, and infrastructure. Critical facilities are equally as vulnerable to damage as other structures. Communications infrastructure, such as towers and antennas, are especially vulnerable to lightning as these objects are generally the tallest features in the landscape. Critical facilities, essential community infrastructure, and government service delivery would likely not be compromised due to a significant hail event, but loss of electric power due to a lightning strike could result in serious government service disruptions.

Potential Economic Impact

Lightning can cause damage to structures and infrastructure, including power and communication resources. Structural fires related to lightning are not uncommon. For example, the NCEI Storm Events Database reported that on July 1, 2011, a home sustained an estimated \$80,000 worth of damage after lightning struck it and caused a fire.

Lightning can cause considerable problems for forestry and agriculture. Agricultural production can be disrupted due to damage to machinery and loss of livestock. Lightning is also capable of causing damage to trees and is the primary natural cause of wildfires in Wisconsin. It is estimated that in northern Wisconsin there are between two and five lightning-caused fires per million acres of forested lands every year. Of the 104 wildfires reported in Ashland County between 2012 and 2023, 2 (1.9%) were lightning-caused fires. Secondary impacts due to lightning include revenue loss from lost production in business and industry, and costs associated with repair and replacement of infrastructure.

In general, all crops, forests, buildings, and vehicles in Ashland County are vulnerable, to some extent, to hail damage. Damage resulting from a hailstorm depends greatly on the location of the storm and the time of day the storm occurs (garaged vehicles vs. exposed). As these variables are nearly impossible to predict, and in the absence of historical data, future economic losses due to hail are difficult to assess. It is highly unlikely that all assets would be exposed to a hail event simultaneously, or that hail would impact all areas of the county over a given year. The most likely scenario would be isolated hail events affecting small areas of the county at any one time.

A hail event poses much more of a risk to populated communities than to the outlying rural areas. If a storm were to occur in the Ashland area, potential economic impact would likely be significantly higher than if the same event were to occur in a low-density rural area.

Severe Temperatures: Heat and Cold

HAZARD DESCRIPTION

Ashland County's mid-latitude climate results in a high variability in annual temperature. The county's climate is characterized by relatively short, warm summers and long, cold winters. Lake Superior moderates seasonal temperature variability in the northern portion of the county; however, the interior of Ashland County is susceptible to both extreme high and low temperatures. These extremes can last for extended periods and can pose severe health risks.

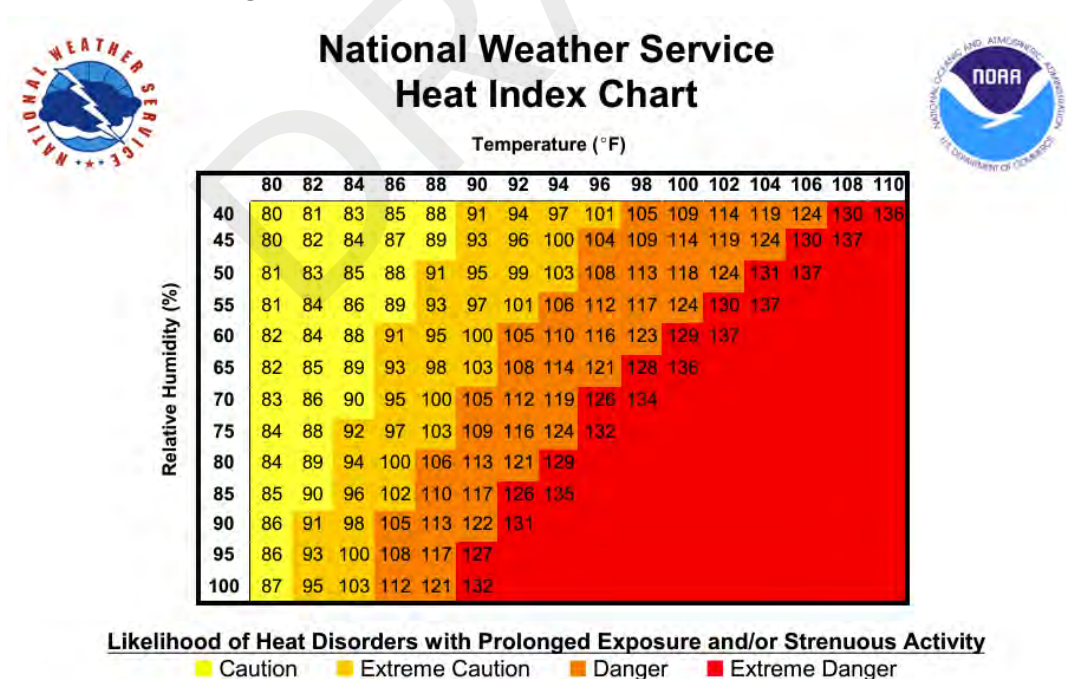
Heat

When extreme heat and high humidity combine, dangerous conditions can affect the general population, especially the young, elderly, and those with health problems. The most common risks include heat cramps, heat exhaustion, and heatstroke.

Heat cramps are the mildest form of heat illness and consist of painful muscle cramps and spasms that occur during or after intense exercise and sweating in high heat. Heat exhaustion is more severe and results from a loss of water and salt in the body. It occurs in conditions of extreme heat and excessive sweating without adequate fluid and salt replacement. Heat stroke is the most severe form of heat illness. It occurs when the body's heat-regulating system is overwhelmed by excessive heat. It is a life-threatening emergency and requires immediate medical attention.

The National Weather Service devised the Heat Index (HI) or the "apparent temperature". Given in degrees Fahrenheit, the HI is an accurate measure of how hot it feels when the relative humidity is factored in with the actual air temperature.

Figure 14: National Weather Service Heat Index



Source: National Weather Service

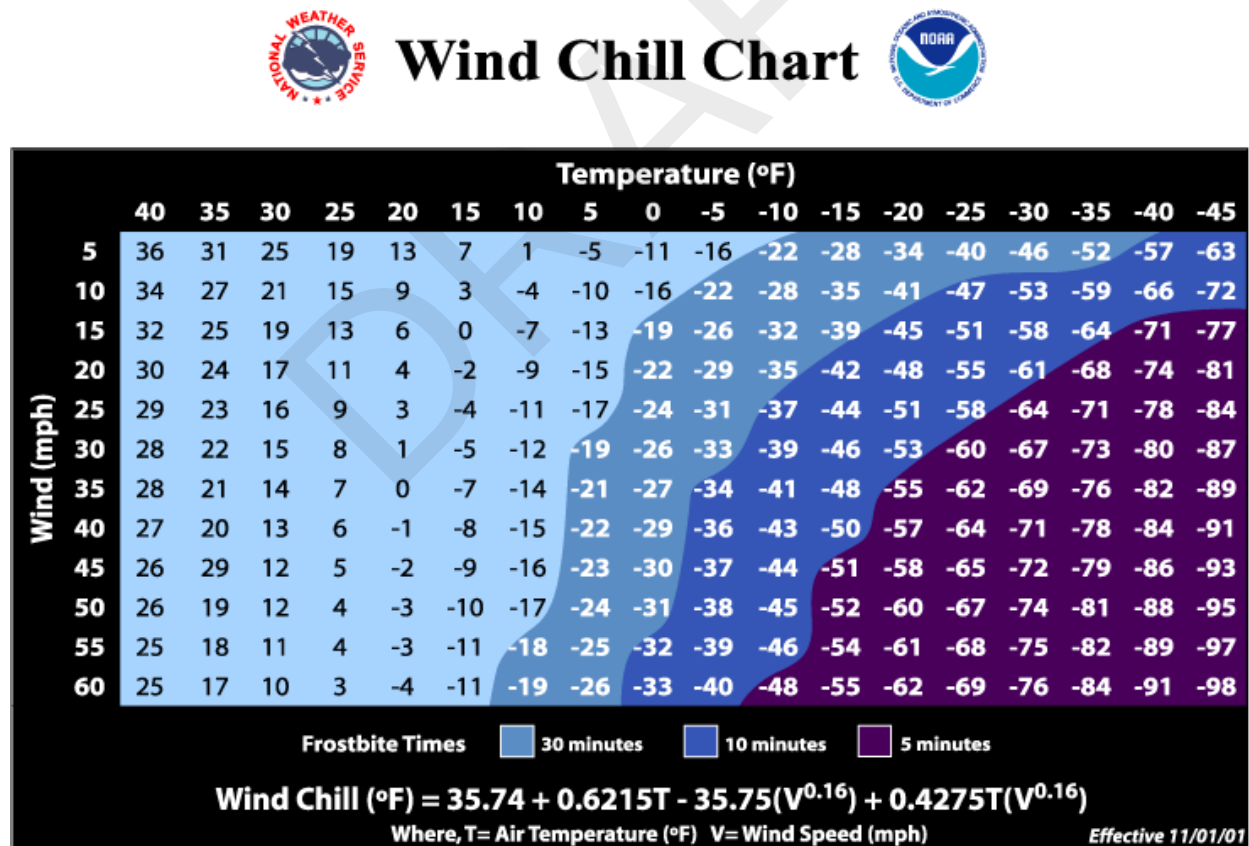
Cold

During the months of December through March, the predominant upper-level airflow is from the north-northwest. During these cold periods, arctic air can settle over the region, often for days, or even weeks. These periods are also often accompanied by lake-effect snow squalls as winds blow across the relatively warm waters of Lake Superior. Strong winds, which may accompany intense cold fronts, may also result in dangerous wind chills. The greatest risk from excessive cold temperatures is generally posed to children, the elderly, or those who work outdoors. The most common cold-related problems are hypothermia and frostbite.

Frostbite is the damage to body tissue caused by extreme cold. Frostbite leads to a loss of feeling and color in the areas it affects, usually extremities such as the nose, ears, cheeks, chin, fingers, and toes. Frostbite can permanently damage the body, and severe cases can lead to amputation. Hypothermia is the condition of abnormally low body temperature. Exposed to cold temperatures, the body begins to lose heat faster than it is produced. Body temperature that is too low affects the brain, making the victim unable to think clearly or move well.

Wind chill is a term used to describe what the air temperature feels like to the human skin due to the combination of cold temperatures and winds blowing on exposed skin. The colder the air temperature and the higher the wind speeds, the colder the air feels on skin when outdoors.

Figure 15. National Weather Service Wind Chill Chart



Source: National Weather Service

HAZARD HISTORY

According to the National Centers for Environmental Information database, there have been 18 extreme temperature-related events listed for Ashland County. Of those events, 16 were cold-related, and 2 were related to excessive heat (Table 27). No deaths, injuries, or monetary damages were reported for these events.

Table 27: Ashland County Severe Temperature History

Hazard	Begin Date	Duration (hrs)	Magnitude
Cold/Wind Chill	2/2/1996	12	-37°F to -42°F
Cold/Wind Chill	1/15/1997	28.5	WC -60°F to -70°F
Cold/Wind Chill	1/14/2005	64	-20°F to -40°F
Cold/Wind Chill	2/17/2006	18	WC -40°F to -55°F
Extreme Cold/Wind Chill	1/30/2008	11	WC -40°F to -55°F
Cold/Wind Chill	2/10/2008	12	WC -40°F to -45°F
Extreme Cold/Wind Chill	1/13/2009	84	WC -30°F to -40°F
Heat	7/16/2011	108	100°F to 120°F
Extreme Cold/Wind Chill	1/4/2014	65	WC -40°F to -50°F
Extreme Cold/Wind Chill	1/27/2014	36	WC -40°F to -55°F
Extreme Cold/Wind Chill	2/27/2014	5	WC -35°F to -45°F
Extreme Cold/Wind Chill	3/1/2014	13	WC -40°F to -50°F
Extreme Cold/Wind Chill	1/5/2015	2	WC -40°F to -45°F
Heat	7/20/2016	8	95°F to 105°F
Extreme Cold/Wind Chill	1/29/2019	19	WC -20°F to -40°F
Extreme Cold/Wind Chill	2/7/2021	7	-20°F to WC -49°F
Extreme Cold/Wind Chill	2/14/2021	3	WC -30°F to -40°F
Extreme Cold/Wind Chill	2/14/2021	11	-30°F to -40°F

Source: NOAA NCEI Storm Database (1961 - 2023)

February 2, 1996. A cold snap struck northwest Wisconsin between January 30 and February 4 causing many near-record low temperatures. On the morning of February 2, Phillips reported -42°F, Siren had -40°F, Park Falls and Saxon -38°F, and Ashland -37°F.

January 15, 1997. Temperatures in the teens below zero combined with winds gusting to 30 mph to create life-threatening wind chills of 60 to 70 degrees below zero. The winds also caused travel problems due to blowing and drifting of snow.

January 14, 2005. The Northland's cold snap began on January 13th when the high temperature for the day occurred at midnight, then fell through the day. The noon temperature at Hayward was 6 above. Many schools across northwestern Wisconsin were closed on Friday (January 14) due to very cold wind chills. Sporting events were canceled and recreation areas, ski hills, and skating rinks were closed. Wind chills that morning were in the -30s and -40s with frost bite times less than 10 minutes. Cold temperatures and wind chills continued through the weekend. By Monday morning temperatures were in the -20s and -30s, but winds were calm. By Tuesday, the 18th, the temperature finally broke zero, with highs ranging from the mid-teens to the mid-20s, recovering well from morning lows in the -20s.

February 17, 2006. Overnight temperatures from -15°F to -25°F along with winds around 15 to 20 mph created wind chills of -40°F to -55°F across Northwest Wisconsin. The coldest report came from a trained spotter in Price County near the city of Phillips with an overnight low of -24°F and the lowest wind chill of -56°F.

January 30, 2008. An Arctic air mass combined with brisk winds to produce wind chills of 40 to 55 below in northwest Wisconsin during the morning hours of January 30. Many school districts canceled classes due to the extreme weather.

February 10, 2008. Strong winds and bitterly cold air combined to bring the lowest wind chill readings of the winter to northwest Wisconsin. Wind chill values of -40°F to -45°F were common, with winds frequently gusting to 40 to 45 mph on Saturday evening, the 9th.

January 13, 2009. A strong cold front passed through northwestern Wisconsin during the late afternoon of the 12th. Arctic air became firmly entrenched after the frontal passage, and temperatures fell below zero and remained there through the morning of the 16th. Northwestern Wisconsin had 80 to 90 consecutive hours below zero. Morning low temperatures during each of these mornings ranged from the 20s and 30s below zero in much of northwestern Wisconsin. Wind chills bottomed out in the 30s to 40s below zero on the mornings of the 15th and 16th. Most schools and outdoor recreation were closed on these days. A 51-year-old Hayward man died of hypothermia while sleeping walking the morning of 13th.

July 16, 2011. Broad surface high pressure developed and persisted over the Tennessee and Ohio River valleys during the five-day period from July 16th through the 20th. Daily high temperatures were in the 90s with dew points in the 70s and lower 80s, creating heat indices over 100; approaching 120°F in a few places. Overnight lows were in the mid-60s to mid-70s. There was a one-day respite on the 19th when widespread showers and thunderstorms kept temperatures down. A cold front passing through the area during the night of July 20th brought an end to the extreme heat.

January 4, 2014. Bitterly cold Arctic air resulted in a prolonged period of very dangerous wind chills of -40°F to -50°F across northwest Wisconsin. The coldest period was early Monday January 6th. The observed wind chills Monday morning included -53°F near Shell Lake, -51°F near Clam Lake, -49°F at Glidden, -48°F at Superior, Siren, and Phillips, and -44°F at Hayward. Most schools and some businesses were closed both Monday and Tuesday.

January 27, 2014. The combination of Arctic air and winds of 15 mph (higher in some areas) resulted in a prolonged period of dangerously cold wind chill temperatures of 40 to 55 degrees below zero across northwest Wisconsin. The coldest period was early Monday. Most schools across northwest Wisconsin closed for both Monday and Tuesday.

February 27, 2014. Dangerous wind chills of -35°F to -45°F developed across parts of northwest Wisconsin early February 27th.

March 1, 2014. Winds Chills fell to dangerous levels of -40°F to -50°F.

January 5, 2015. Temperatures of -15°F to -25°F and 5 to 10 mph winds resulted in wind chills near -40°F.

July 20, 2016. Very warm air in the 80s and 90s and dew point temperatures in the lower and middle 70s resulted in heat index readings of 95 to 105 degrees across much of northwest Wisconsin on July 20. The highest readings were for areas closer to the Minnesota border.

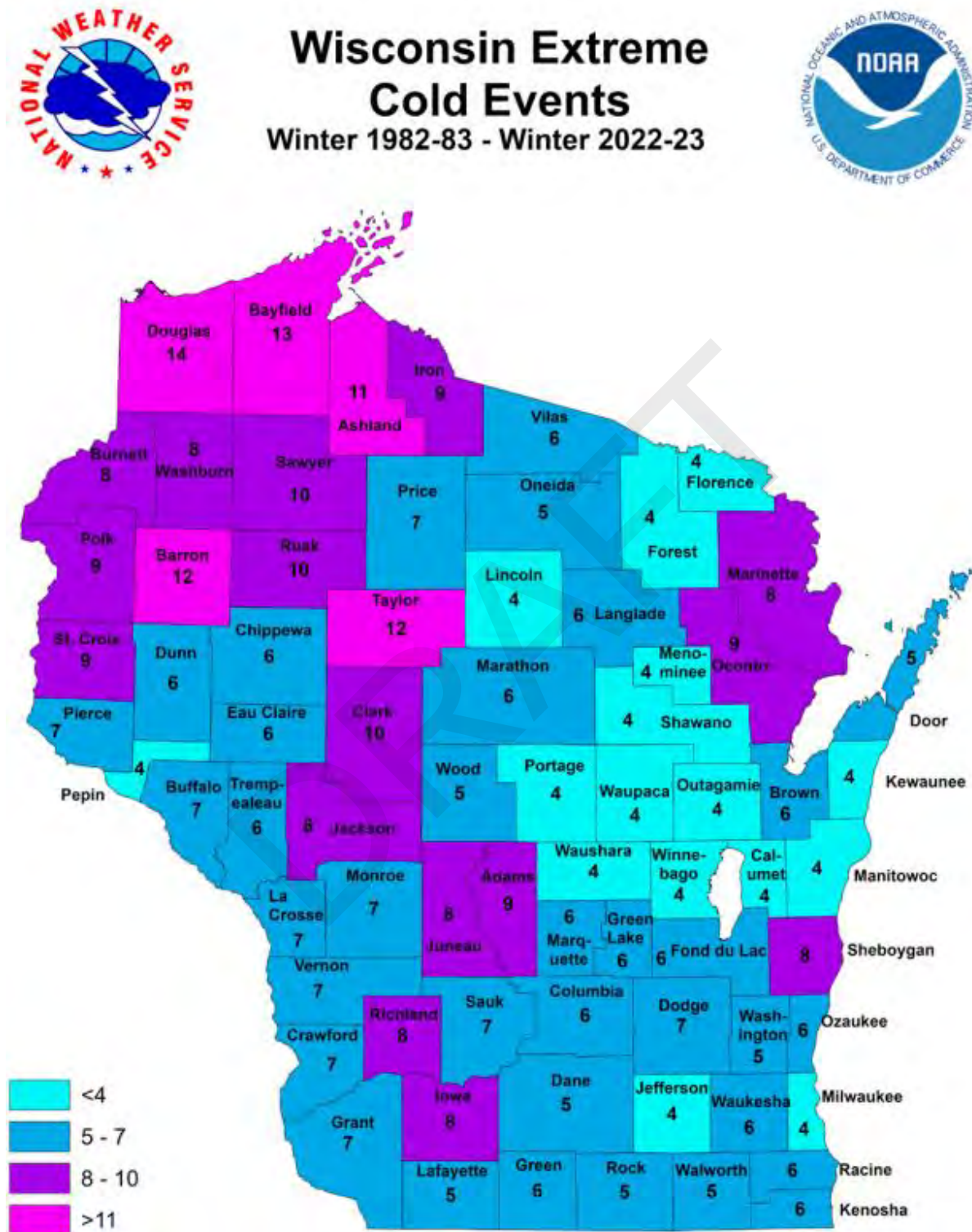
January 29, 2019. Heading into the last few days of January, a historically cold air mass settled over the region. This led to a prolonged period of sub-zero temperatures and dangerously cold wind chills. Many schools were closed for 2-3 days due to the cold. The coldest temperatures were seen January 30th into the 31st. Wind chills during this stretch remained in the 20s and 30s below zero with numerous locations reaching the 40s below zero during the early morning hours. Temperatures finally started warming on the 31st as the core of the high moved to the east and warmer air began to move in ahead of an area of low pressure.

February 7, 2021. An arctic air mass began to move into the Northland the night of the 5th and really settled in the night of the 6th. Air temperatures in the -20s were observed with winds of 10 to 15 mph that led to wind chills as low as -49°F. This was the first night of an extended cold outbreak across the region that lasted over a week.

February 14, 2021. The last two nights of the arctic outbreak were the most widespread in terms of extreme wind chills. On the night of the 13th, a surface low over Lake Superior coupled with high pressure over the Northern Plains set up a gradient over the Northland, keeping winds in place through the night and into the morning of the 14th. The entirety of the Northland saw extreme wind chills and air temperatures in the 30s and 40s below zero. This was the eighth night of an arctic outbreak across the region that lasted over a week.

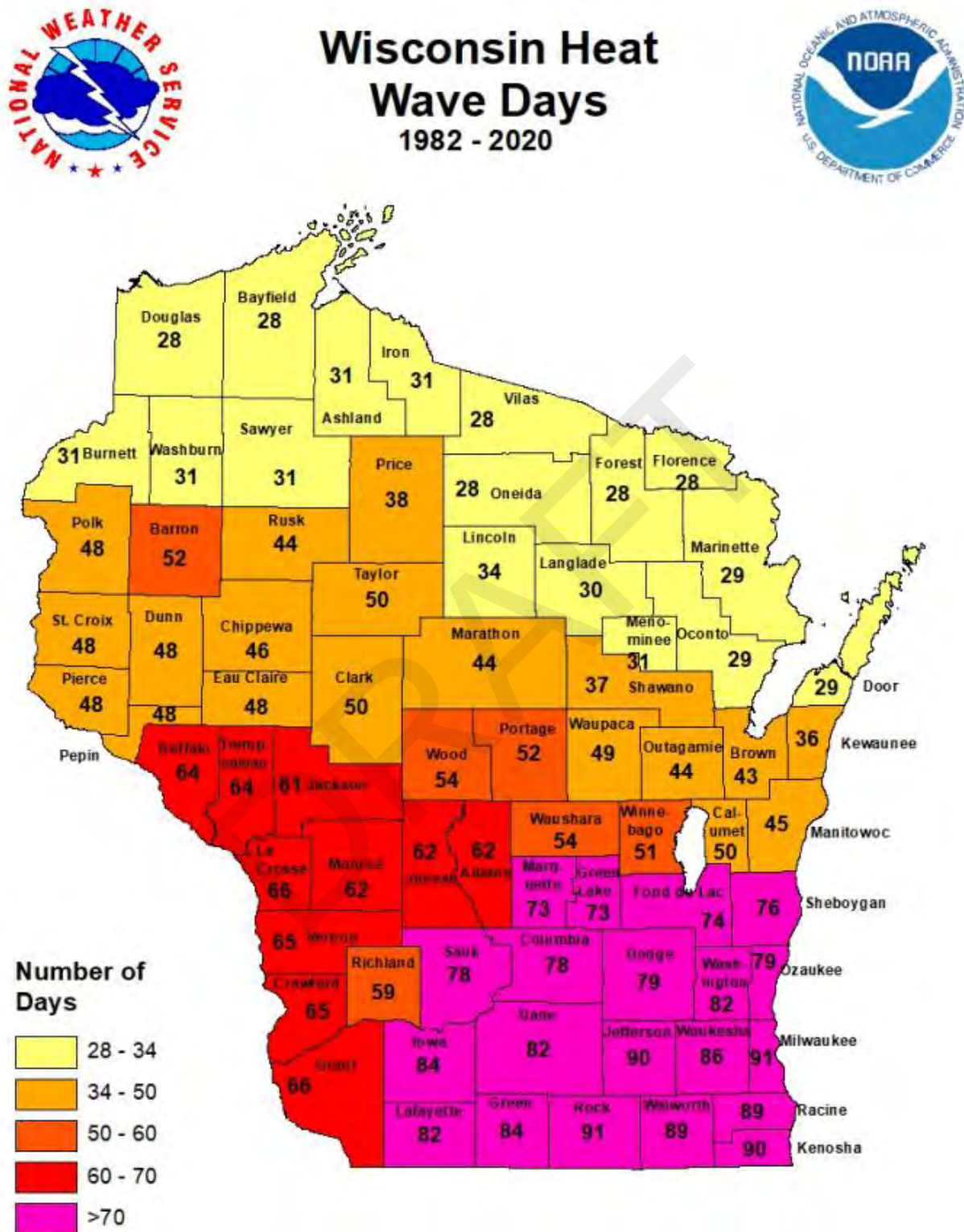
February 14, 2021. The last night of the arctic outbreak was once again widespread, affecting almost all of the Northland. High pressure was in place over the region leading to optimized radiational cooling conditions and the slightest breeze of wind was enough to send wind chills into dangerous criteria. Air temperatures dropped into the 30s and 40s below zero once again with wind chills as low as -44°F. This was the ninth and final night of an arctic outbreak across the region that lasted over a week.

Figure 16: Wisconsin Extreme Cold Events 1982-2023



Source: Source: NOAA, NWS, Milwaukee/Sullivan

Figure 17: Wisconsin Heat Wave Days 1982-2020



Source: Source: NOAA, NWS, Milwaukee/Sullivan

VULNERABILITY AND RISK ASSESSMENT

Area Affected

Extreme temperatures are likely to affect large areas. An extreme temperature event would likely affect all of Ashland County simultaneously. Temperature moderation caused by the heat-sink effect of Lake Superior may somewhat mitigate both summertime extreme highs and winter cold in those areas directly adjacent to the coast.

Magnitude

Extreme temperatures can take the form of extreme heat or extreme cold, with the latter being most common in Ashland County. Temperatures that climb to 10-15 degrees or more above the average high temperature for the region and last for extended periods of time are considered high temperature extreme events. The National Weather Service issues a heat advisory when a heat index of 105 to 115 is expected for at least 3 hours every day, or if nighttime lows are expected to remain above 80 for at least 2 consecutive nights.

One of the major concerns with extreme cold is the wind chill effect. The National Weather Service issues a wind chill advisory when the combination of cold air and winds of 10 mph or greater will create hazardous wind chill values of between 20 and 34 degrees below zero for 3 hours or longer. NWS issues a wind chill warning when the combination of very cold air and strong winds will create dangerously low wind chill values. This will result in frost bite and lead to hypothermia or death if precautions are not taken. Typical extreme cold events in Ashland County include temperatures below -20 and wind chills of -40 or below.

Duration

Periods of extreme heat or cold can range from a few hours to several days. Based on historical records, the average duration of extreme heat events in Ashland County is 58.0 hours (2.4 days), while the average duration of extreme cold events is about 24.4 hours (1 day).

Frequency

Based on historical data, Ashland County will experience an extreme cold event about once every two winters and an extreme heat event about every 10 years.

Probability

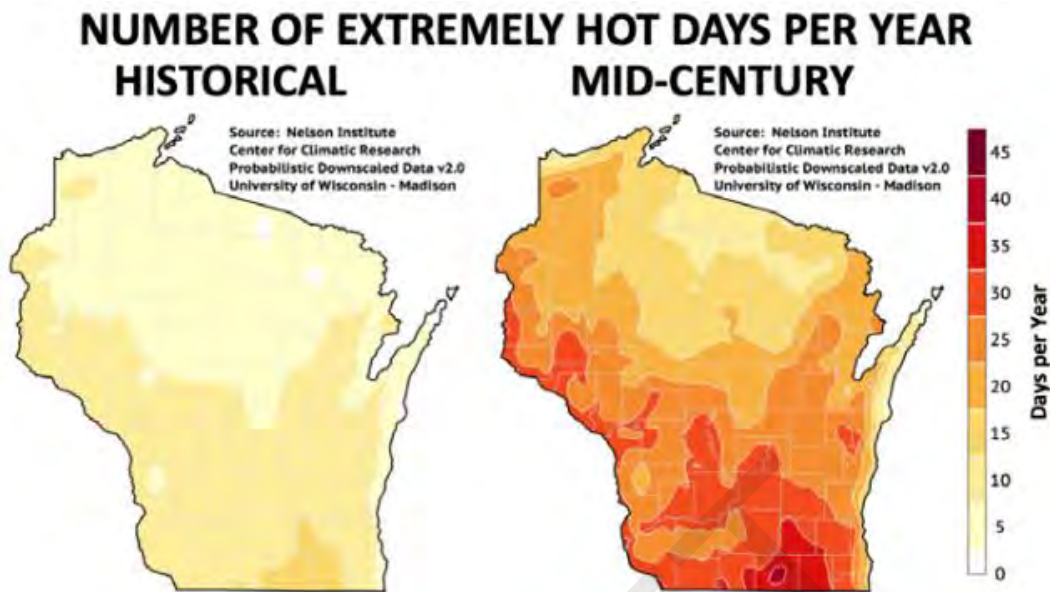
The annual probability of an extreme heat event in Ashland County is about 7%, while the probability of an extreme cold event in any given year is about 52%.

Potential Climate Change Impact

Projections from the Wisconsin Initiative on Climate Change Impacts predict warmer temperatures year-round. Winters are predicted to warm by 4° to 11°F by mid-century. Winter warming is also reflected in fewer extreme cold periods (below 0°F). Cold periods have been getting less common, and this trend is predicted to continue. Winter nights will warm the most, potentially reducing the duration and magnitude of extreme cold events. Days greater than 90°F are likely to reach 10-15 days per year by 2050 compared to the county historical average of just 5 days per year (Figure 18).

The health of anyone can be harmed by extreme heat events but some face greater risk than others. Older adults and people with chronic conditions are at risk for heat stroke and dehydration at those temperatures. Low-income residents that live in areas with an increased amount of cement and asphalt are also at risk.

Figure 18: Number of Extremely Hot Days Per Year



Source: WICCI 2021 Climate Change Assessment Report⁶

Population Affected

Severe heat or severe cold likely affects the entirety of Ashland County's population. Extreme temperature events can disproportionately affect vulnerable populations such as elderly populations, socially isolated people, and those with pre-existing chronic conditions such as cardiovascular disease. Outdoor workers are also susceptible to the effects of extreme heat and cold due to their increased exposure.

Critical Facilities and Infrastructure at Risk

Critical facilities are unlikely to be greatly affected by extreme temperatures; however, public infrastructure could be damaged due to severe weather conditions. Extreme heat and cold can tax local utilities, especially the electric service industry. As demand increases, energy usage could exceed available supply resulting in localized or regional power outages. Extreme cold events could cause damage to pipes and other utility lines, resulting in loss of service and costly repairs.

Potential Economic Impact

Extreme temperatures have the potential to negatively impact business and individuals. Business closure due to extreme temperature events is unlikely. The most notable cost associated with extreme temperature events would be the increased costs of heating or cooling. While no specific data is available to estimate potential heating or cooling costs, it is assumed that, based on increases in heating or cooling degree days, energy use costs could easily double during these extreme temperature events. There may be secondary losses when schools close and parents/guardians need to stay home with children.

⁶ <https://uwmadison.app.box.com/s/qi5evkp4nac87chjmfxxoa6kn9840sh35>

Drought and Dust Storm

HAZARD DESCRIPTION

Droughts are a deficiency in precipitation over an extended period of time. It is a normal, recurrent feature of climate that occurs in virtually all climate zones. There are cases when drought develops relatively quickly and lasts a very short period, exacerbated by extreme heat and/or wind, and there are other cases when drought spans multiple years, or even decades.

Droughts are often perceived to only happen in the dry, hot summer months, but extended periods in the winter months without snow can also lead to drought because snowfall is a crucial water source when it melts in spring. Insufficient precipitation during the winter months can also lead to depleted groundwater levels. Additionally, if there's a prolonged period of below-average temperatures, which can inhibit the usual cycle of precipitation, it could contribute to drought conditions despite being in the winter season.

Extended dry periods, particularly in spring, also greatly increase the risk of wildfires, especially on windy days with low humidity. In addition, the loss of vegetation in the absence of sufficient water can result in flooding, even from average rainfall, following drought conditions. Extended droughts can significantly lower water levels in lakes and river systems.

A dust storm is a wall of dust and debris that is often blown into an area by strong winds from thunderstorms. Most of the world's dust storms occur over the Middle East and North Africa. However, they can also happen anywhere in the United States. In the U.S., dust storms are most common in the Southwest, where they peak in the springtime.

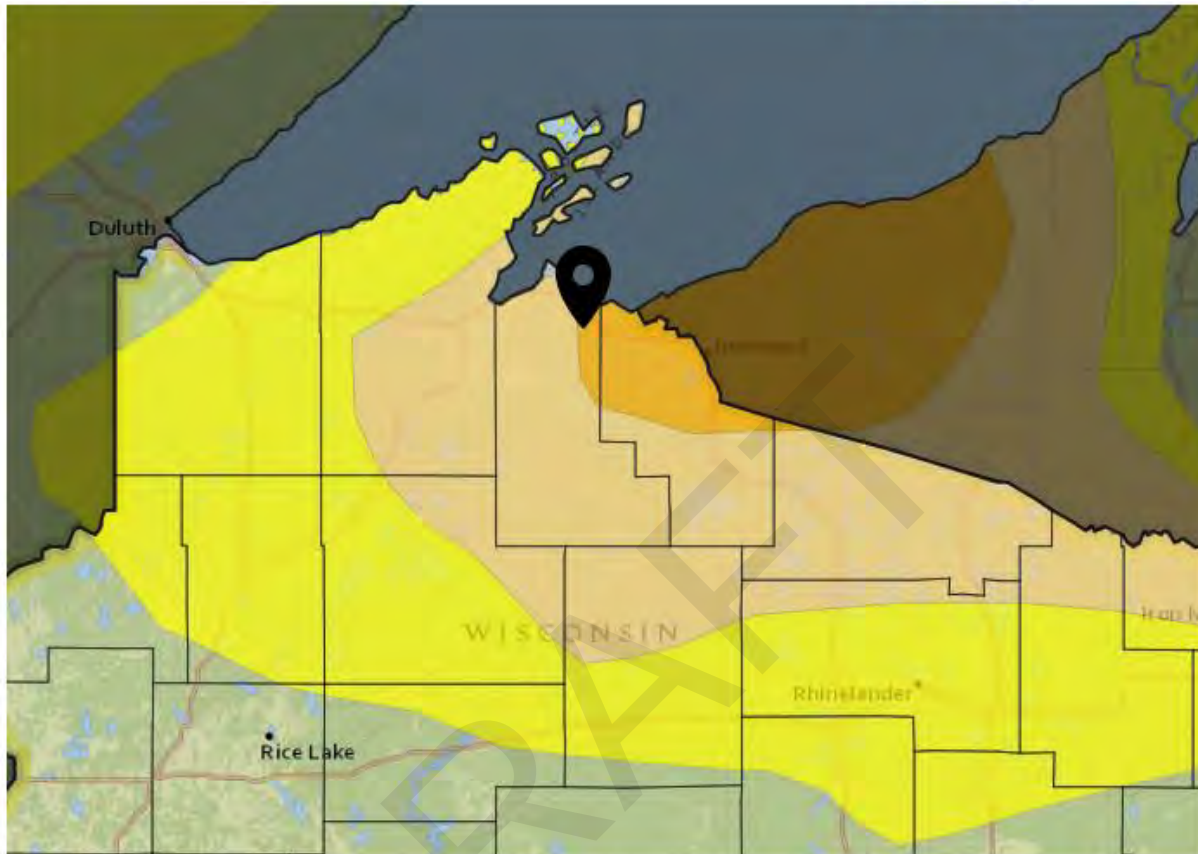
HAZARD HISTORY

Typically, droughts occur in Wisconsin on average about once every 10-12 years. The State of Wisconsin's longest recorded period of drought occurred during the "dust bowl" years of the 1930s, when the state had eight consecutive years of below average precipitation. The most recent significant drought period in northern Wisconsin occurred in 1987-1989.

The NOAA National Integrated Drought Information System (NIDIS) assesses drought conditions with the U.S. Drought Monitor (USDM), which is a joint effort of the National Drought Mitigation Center, U.S. Department of Agriculture, and NOAA. The USDM uses a five-category system, labeled Abnormally Dry or D0, (a precursor to drought, not actually drought), and Moderate (D1), Severe (D2), Extreme (D3) and Exceptional (D4) Drought. Drought categories show experts' assessments of conditions related to dryness and drought including observations of how much water is available in streams, lakes, and soils compared to usual for the same time of year.

Figure 19. April 30, 2024, Ashland County Drought Conditions

U.S. Drought Monitor



Basemap Sources: National Geographic, Esri, Garmin, HERE, UNEP-WCMC, USGS, NASA, ESA, METI, NRCAN, GEBCO, NOAA,

Drought & Dryness Categories

Drought & Dryness Categories	% of Ashland County
D0 - Abnormally Dry	2.98%
D1 - Moderate Drought	90.94%
D2 - Severe Drought	6.08%
D3 - Extreme Drought	0%
D4 - Exceptional Drought	0%
Total Area in Drought (D1-D4)	97.02%

Source(s): NDMC, NOAA, USDA
Data Valid: 04/30/24

Drought.gov

VULNERABILITY AND RISK ASSESSMENT

Area Affected

The area affected by drought is typically extensive, often encompassing multi-county regions or the entire state. Agricultural areas, forested areas, and properties dependent on private wells, especially shallow wells, are at the greatest risk from drought.

Magnitude

There are several ways to measure the magnitude of droughts. The USDM identifies areas in drought and labels them by intensity. The map uses four categories of drought, from D1 (least intense) to D4 (most intense). It also highlights areas with no drought and uses the D0 category to indicate abnormally dry areas that could be entering or recovering from drought.

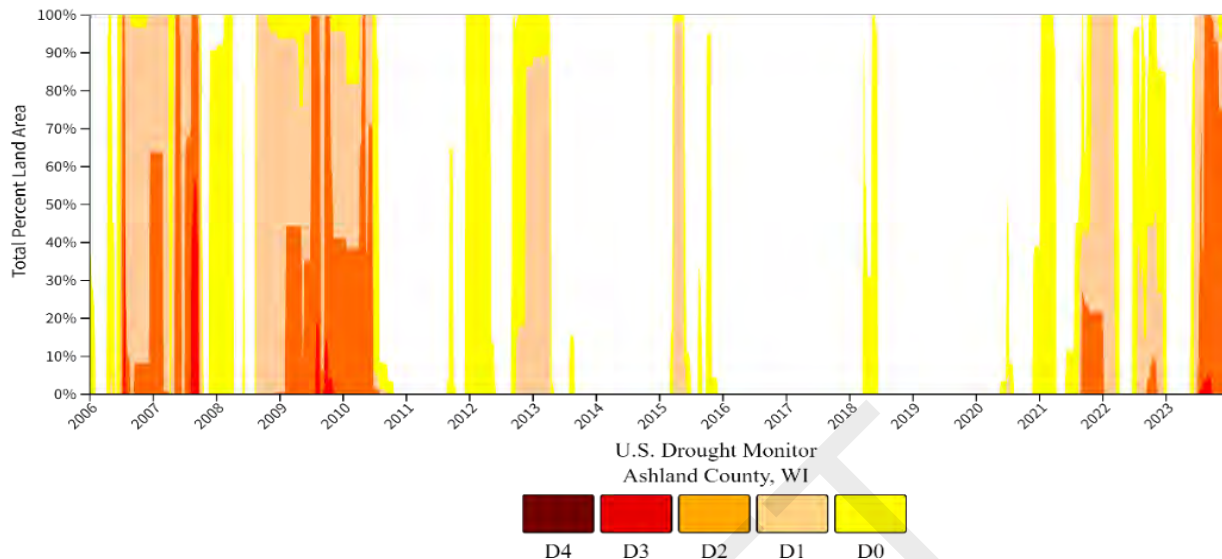
Table 28: USDM Drought Classification

Category	Description	Example Percentile Range for Most Indicators	Values for Standard Precipitation Index and Standardized Precipitation-Evapotranspiration Index
None	Normal or wet conditions	30.01 or above	-0.49 or above
D0	Abnormally Dry	20.01 to 30.00	-0.5 to -0.79
D1	Moderate Drought	10.01 to 20.00	-0.8 to -1.29
D2	Severe Drought	5.01 to 10.00	-1.3 to -1.59
D3	Extreme Drought	2.01 to 5.00	-1.6 to -1.99
D4	Exceptional Drought	0.00 to 2.00	-2.0 or less

Duration

In Ashland County, NCEI data records 1,184 days of drought since 2006 (no data prior to 2006, and some dates range in drought severity from moderate to extreme). There have been approximately 890 days of severe drought (D2), approximately 263 days of extreme drought (D3), and approximately 31 days of exceptional drought (D4). The longest drought between 2016 to present was 31 days, and the most severe drought was an exceptional drought (D4) that lasted 28 days in August 2023.

Figure 20. USDM Drought Data Ashland County, 2006-2023



Frequency

According to the NCEI database, there have been 42 instances of drought since 2016. These instances total 1,184 days across 17 years (about 70 days of drought on average per year). Between 1895 and 2023, the longest drought-free period for the area was for 47 months (1925-1929). The return interval is about 3.0 years for a drought of a magnitude -2.0 or lower (in any month of the year). The return interval for severe droughts (-4.0 and lower in any month of the year) is about 11.0 years.

Probability

The probability of drought occurring in Ashland County was estimated by using historical Climate Division 2 data obtained from the National Centers for Environmental Information for the period 1895 to 2023. Dry conditions were recorded in nearly 40% of all months, while at least mild drought conditions were present in nearly 25% of all months.

Potential Climate Change Impact

Climate models predict more frequent droughts, especially in the later portion of the growing season. The increase in drought frequency is implied by more dry days, warmer temperatures, and more evapotranspiration.

Summer precipitation in northern Wisconsin has decreased in recent decades. This stresses forests and makes them more vulnerable to wildfire, pests, and disease. Longer growing seasons are also increasing the risk for wildfires by allowing more plant growth. Vegetation also dries out at a faster rate in the spring and summer with reduced snowpack and earlier springs. These factors, combined with warmer air temperatures, are increasing vulnerability to wildfires.

Both increasing precipitation and drought are leading to extreme lake level fluctuations in Lake Superior that impacts habitats and structures built along the lakeshore. Summer droughts and longer periods between rain events can dry soils and wetlands and lower groundwater. Milder winters, longer growing seasons, increased atmospheric carbon dioxide, and longer drought periods favor germination and spread of both invasive and aggressive native species.

Population Affected

Drought severity can be variable across the county, but if a drought is occurring, it is likely that the impacts would affect the whole county. Severe drought would impact the entire population of Ashland County. Drought is also often accompanied by excessive heat, which increases stress on certain populations including children 5 years and younger, adults 65 and older, and those without access to air conditioning.

Critical Facilities and Infrastructure at Risk

There is no known risk to critical facilities or infrastructure due to drought, however, extremely dry conditions may limit the usability of some water source points for fire protection.

Potential Economic Impact

Ashland County has limited agriculture; however, the negative impact of drought on this economic sector has been well documented in other areas of the state. The majority of Ashland County's agriculture is cropland and woodland, both of which would be negatively impacted by drought.

Ashland County is 85% forested and its forests are greatly impacted by drought. Average annual timber harvests occur on +/-1,400 acres and generate revenues that average \$450,000.00 and have been as high as \$1,000,000.00; 10% of this revenue is returned to the Towns which contain County Forest acreage.

Extended periods of drought would also likely also induce secondary impacts such as a decrease in forest productivity, reduced water levels, wildlife mortality, and damage to fish and wildlife habitat. Tourism and recreation, a major segment of the local economy, may also suffer due to low water levels, reduced aesthetics, fire danger, etc.

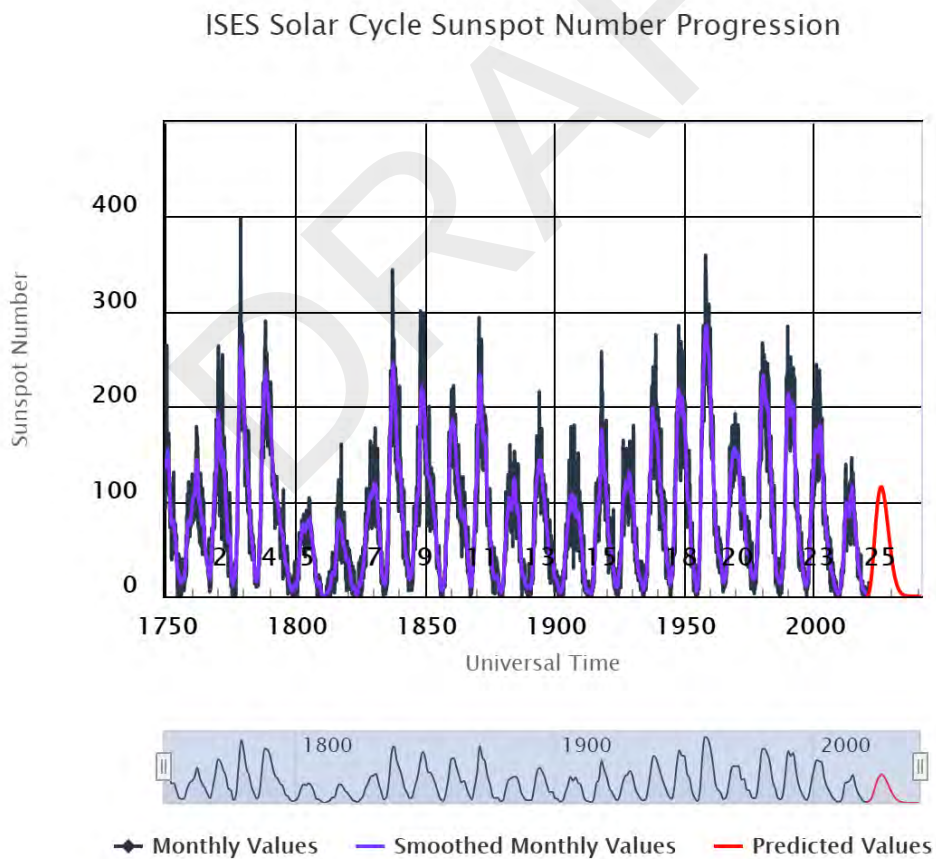
Solar Storm

HAZARD PROFILE

Solar activity changes on a cyclic scale, peaking on average every 11 years. The sun's activity is measured in terms of variations in the number of observed sunspots on the solar surface. Sunspots have been observed since the early 17th century and the sunspot time series is the longest continuously observed and recorded time series of any natural phenomena.

At the peak of the solar cycle, the sun becomes more active, producing more solar radiation and ejecting more solar material. These changes in the sun cause changes in space, the atmosphere, and on the surface of the Earth. Some of these changes are visible, such as the brilliant auroras which are more prevalent during periods of high solar activity. Some changes, such as a burst of solar radiation (solar flare) cannot be seen but can cause widespread damage to electrical systems, computers, and electronic devices. Solar activity includes solar flares, coronal mass ejections (CMEs), high-speed solar wind, and solar energetic particles. All solar activity is driven by the solar magnetic field. Solar flares are the most powerful types of solar storms. A solar flare is an intense burst of radiation coming from the release of magnetic energy associated with sunspots. They are seen as bright areas on the sun, and they can last from minutes to hours.

Figure 21: Solar Activity Cycles



Source: Space Weather Prediction Center

Solar flares are classified according to their strength. The smallest are A-class, followed by B, C, M, and X. Similar to the Richter scale used to measure the magnitude of earthquakes, each letter represents a 10-fold increase in energy output. An X-class is 10 times an M-class and 100 times a C-class. Within each letter class there is a finer scale from 1 to 9. Of greatest concern are X-class flares and CMEs, which can harm satellites and GPS systems, communications systems, ground-based technologies, and power grids. Solar radiation storms occur when a large-scale magnetic eruption occurs on the sun. Solar radiation storms at the S2-class or higher level may pose radiation risks to individuals in high flying aircraft at high latitudes. Solar radiation storms can also disrupt high frequency radio communications. Another type of storm associated with solar events is a geomagnetic storm. A geomagnetic storm is a temporary disturbance of the Earth's magnetosphere caused by a solar wind shock wave which typically strikes the Earth's magnetic field 24 to 36 hours after events such as CMEs, coronal holes, or solar flares. Geomagnetic storms can significantly disrupt communications, radio signals, and GPS systems. These storms also tend to result in brilliant aurora displays in high and even mid latitude regions of the planet.

HAZARD HISTORY

1847 - First recorded storm caused “anomalous currents” on telegraph lines in the UK

1859 - The Carrington Event caused significant disruption to telegraph systems

1870 - A large storm produced aurora sightings as low as the Middle East

1872 - Aurora was sighted as low as 0°-20° geomagnetic latitude

1882 - Caused disruption to several US telegraph systems and interrupted trading on the Chicago Stock Market

1903 - A very severe storm causing interruption to telegraph systems and transatlantic cables, and Switzerland suffered a power outage

1909 - Numerous aurora sightings as far south as the 30-35° geomagnetic latitude

1921 - Similar in size to the Carrington Event, a storm caused fires at several telegraph stations in Sweden

1938 - Interruption to radio communications recorded in Southern Europe

1940 - Damage caused to the US telephone system, and reported effects on the electricity network

1958 - Transatlantic communications were disrupted between Newfoundland and Scotland

1972 - A major storm knocked out long-distance phone communications across many states in the US. The event caused AT&T to redesign its power system for transatlantic cables

1989 - It took only 90 seconds for the entire Quebec power grid to collapse. The well-documented Quebec power outage lasted nine hours

2000 - The Bastille Day Event saw a very large CME and flare

2003 - The Halloween Storms included a mix of CMEs and flares leading to a one hour power outage in Sweden

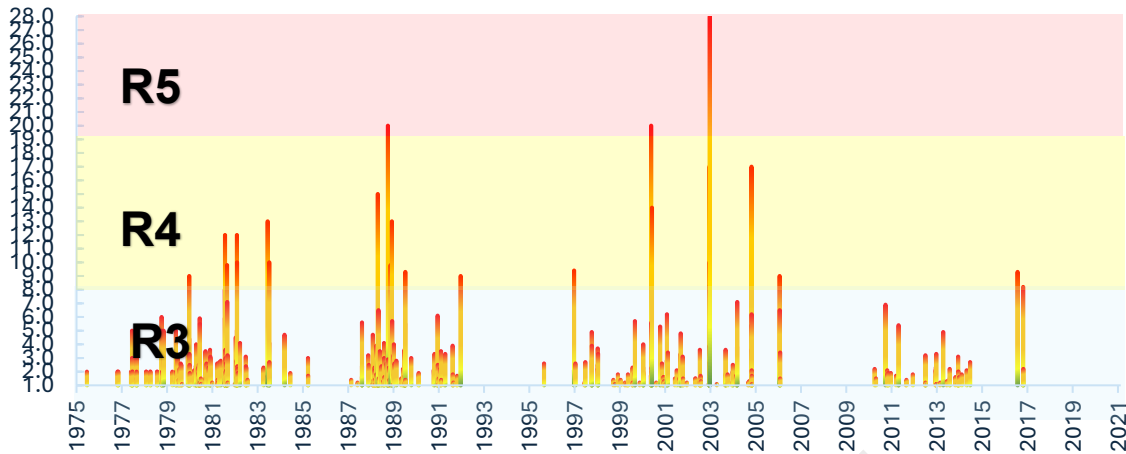
2006 - An X-9.0 class solar flare disrupted satellite-to-ground communications and GPS navigation signals for 10 minutes

2017 - The sun released two powerful solar flares, the second an X-9.3 class solar flare. The flares resulted in radio blackouts for up to an hour over the sunlit side of Earth

2022 - A mild solar particle geomagnetic storm of otherwise little consequence led to the premature reentry and destruction of 40 SpaceX Starlink satellites due to increased atmospheric drag.

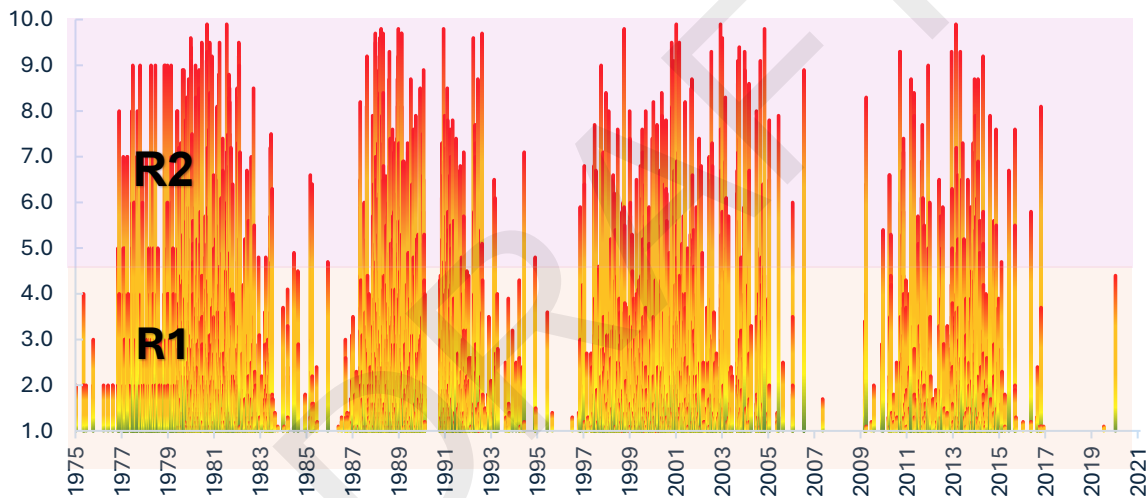
2024 - Flares resulted in a short-term but profound disconnection of the Earth's radio signal, resulting in signal loss at frequencies below 30 MHz. An extreme (G5) geomagnetic storm alert was issued by the National Oceanic and Atmospheric Administration (NOAA) – the first in almost 20 years.

Figure 22: X-Class Solar Flares 1975-2020



Source: National Centers for Environmental Information (NCEI)

Figure 23: M-Class Solar Flares 1975-2020



Source: National Centers for Environmental Information (NCEI)

VULNERABILITY AND RISK ASSESSMENT

Area Affected

The solar storm hazard affects all areas within Ashland County equally. Solar flares impact the Earth's upper atmosphere and can eject high energy particles that can cause satellite failures, and coronal Mass Ejections (CMEs) directly impact the Earth's geomagnetic field. A solar storm can disrupt electrical currents in power lines, increase radiation in the atmosphere, disrupt communication and navigation, damage satellites, and risk human health.

Magnitude

The magnitude of solar flare events is reflected in the following three tables related to radio blackouts, solar storm class, and geomagnetic storm class.

Table 29: Radio Blackouts (R-Class, X, & M Level Events)

Scale	Description	Effect	Physical Measure	Average Frequency (1 cycle = 11 years)
R5	Extreme	HF Radio: Complete HF (high frequency) radio blackout on the entire sunlit side of the Earth lasting for several hours. This results in no HF radio contact with mariners and enroute aviators. Navigation: Low-frequency navigation signals used by maritime and general aviation systems experience outages on the sunlit side of the Earth for many hours, causing loss in positioning. Increased satellite navigation errors in positioning for several hours on the sunlit side of Earth, which may spread into the night side.	X20 (2×10^{-3})	Less than 1 per cycle
R4	Severe	HF Radio: HF radio communication blackout on most of the sunlit side of Earth for one to two hours. HF radio contact lost during this time. Navigation: Outages of low-frequency navigation signals cause increased error in positioning for one to two hours. Minor disruptions of satellite navigation possible on the sunlit side of Earth.	X10 (10^{-3})	8 per cycle (8 days per cycle)
R3	Strong	HF Radio: Wide area blackout of HF radio communication, loss of radio contact for about an hour on sunlit side of Earth. Navigation: Low-frequency navigation signals degraded for about an hour.	X1 (10^{-4})	175 per cycle (140 days per cycle)
R2	Moderate	HF Radio: Limited blackout of HF radio communication on sunlit side, loss of radio contact for tens of minutes. Navigation: Degradation of low-frequency navigation signals for tens of minutes.	M5 (5×10^{-5})	350 per cycle (300 days per cycle)
R1	Minor	HF Radio: Weak or minor degradation of HF radio communication on sunlit side, occasional loss of radio contact. Navigation: Low-frequency navigation signals degraded for brief intervals.	M1 (10^{-5})	2,000 per cycle (950 days per cycle)

Source: NOAA Space Weather Prediction Center

Table 30: Solar Storms (S-Class)

Scale	Description	Effect	Physical Measure	Average Frequency (1 cycle = 11 years)
S5	Extreme	Biological: Unavoidable high radiation hazard to astronauts on EVA (extra-vehicular activity); passengers and crew in high-flying aircraft at high latitudes may be exposed to radiation risk. Satellite operations: Satellites may be rendered useless, memory impacts can cause loss of control, may cause serious noise in image data, star-trackers may be unable to locate sources; permanent damage to solar panels possible. Other systems: Complete blackout of HF (high frequency) communications possible through the polar regions, and position errors make navigation operations extremely difficult.	10^5	Fewer than 1 per cycle
S4	Severe	Biological: Unavoidable radiation hazard to astronauts on EVA; passengers and crew in high-flying aircraft at high latitudes may be exposed to radiation risk. Satellite operations: May experience memory device problems and noise on imaging systems; star-tracker problems may cause orientation problems, and solar panel efficiency can be degraded. Other systems: Blackout of HF radio communications through the polar regions and increased navigation errors over several days are likely.	10^4	3 per cycle
S3	Strong	Biological: Radiation hazard avoidance recommended for astronauts on EVA; passengers and crew in high-flying aircraft at high latitudes may be exposed to radiation risk. Satellite operations: Single-event upsets, noise in imaging systems, and slight reduction of efficiency in solar panel are likely. Other systems: Degraded HF radio propagation through the polar regions and navigation position errors likely.	10^3	10 per cycle
S2	Moderate	Biological: Passengers and crew in high-flying aircraft at high latitudes may be exposed to elevated radiation risk. Satellite operations: Infrequent single-event upsets possible. Other systems: Small effects on HF propagation through the polar regions and navigation at polar cap locations possibly affected.	10^2	25 per cycle
S1	Minor	Biological: None. Satellite operations: None. Other systems: Minor impacts on HF radio in the polar regions.	10	50 per cycle

Source: NOAA Space Weather Prediction Center

Table 31: Geomagnetic Storms (G-Class)

Scale	Description	Effect	Physical Measure	Average Frequency (1 cycle = 11 years)
G5	Extreme	Power systems: Widespread voltage control problems and protective system problems can occur. Some grid systems may experience complete collapse or blackouts. Transformers may experience damage. Spacecraft operations: May experience extensive surface charging, problems with orientation, uplink/downlink and tracking satellites. Other systems: Pipeline currents can reach hundreds of amps, HF (high frequency) radio propagation may be impossible in many areas for 1-2 days, satellite navigation may be degraded for days, low-frequency radio navigation can be out for hours, and aurora has been seen as low as Florida and southern Texas (typically 40° geomagnetic lat.).	Kp = 9	4 per cycle (4 days per cycle)
G4	Severe	Power systems: Possible widespread voltage control problems and some protective systems will mistakenly trip out key assets from the grid. Spacecraft operations: May experience surface charging and tracking problems, corrections may be needed for orientation problems. Other systems: Induced pipeline currents affect preventive measures, HF radio propagation sporadic, satellite navigation degraded for hours, low-frequency radio navigation disrupted, and aurora has been seen as low as Alabama and northern California (typically 45° geomagnetic lat.).	Kp = 8	100 per cycle (60 days per cycle)
G3	Strong	Power systems: Voltage corrections may be required, false alarms triggered on some protection devices. Spacecraft operations: Surface charging may occur on satellite components, drag may increase on low-Earth-orbit satellites, and corrections may be needed for orientation problems. Other systems: Intermittent satellite navigation and low-frequency radio navigation problems may occur, HF radio may be intermittent, and aurora has been seen as low as Illinois and Oregon (typically 50° geomagnetic lat.).	Kp = 7	200 per cycle (130 days per cycle)

Scale	Description	Effect	Physical Measure	Average Frequency (1 cycle = 11 years)
G2	Moderate	Power systems: High-latitude power systems may experience voltage alarms; long-duration storms may cause transformer damage. Spacecraft operations: Corrective actions to orientation may be required by ground control; possible changes in drag affect orbit predictions. Other systems: HF radio propagation can fade at higher latitudes, and aurora has been seen as low as New York and Idaho (typically 55° geomagnetic lat.).	Kp = 6	600 per cycle (360 days per cycle)
G1	Minor	Power systems: Weak power grid fluctuations can occur. Spacecraft operations: Minor impact on satellite operations possible.	Kp = 5	1,700 per cycle (900 days per cycle)

Source: NOAA Space Weather Prediction Center

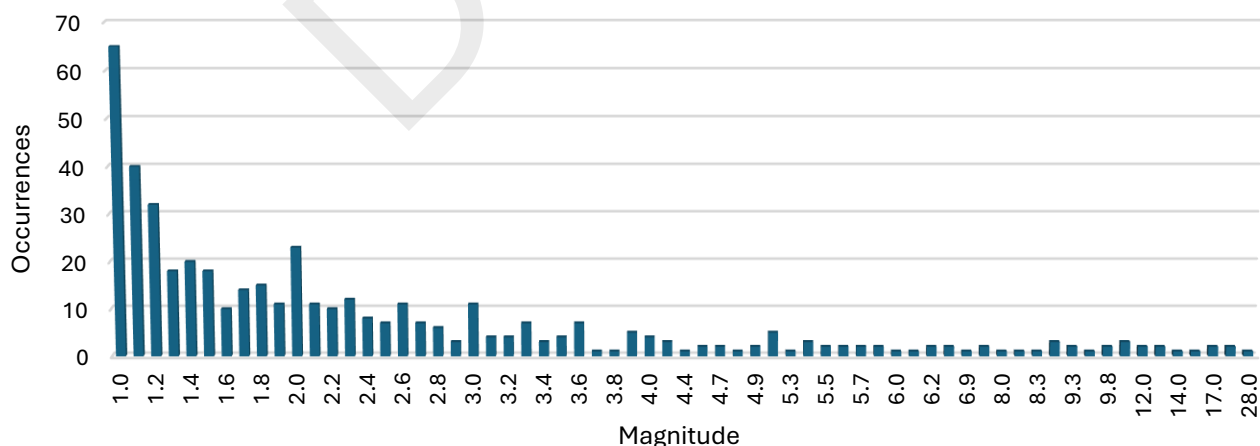
Duration

Solar storms may last only a few minutes to several hours, but their effects can linger in the Earth's magnetosphere and atmosphere for days to weeks. Based on analysis of historical data, the average duration of an M-class event is about 43 minutes, while an X-class event typically lasts 1 hour and 9 minutes. Negative impacts to communications, satellites, and technological infrastructure due to a solar flare event can last days or even weeks.

Frequency

The current solar cycle (24) is forecast to reach its minimum around 2020, before rising again in solar cycle 25. Following the minimum, solar activity will likely increase through 2025. Long range projections tend to indicate lower solar activity during cycle 25 than in cycle 24.

Figure 24: Frequency of X-Class Solar Storm Events 1975-2020



Source: National Centers for Environmental Information (NCEI)

Table 32: Solar Storm Frequency

Level	Total Events	Annual Occurrences	Daily Probability
R1	5,463	121.40	33.3%
R2	531	11.80	3.2%
R3	443	9.84	2.7%
R4	10	0.22	0.1%
R5	1	0.02	0.1%

Source: National Centers for Environmental Information (NCEI)

Probability

The probability of solar storms impacting Earth varies within the 11-year solar cycle. The current cycle, solar cycle 25 is forecast to be a fairly weak cycle, the same strength as cycle 24. Solar cycle 25 is expected to last until around 2030, and its peak is predicted to occur between late 2024 and early 2026. This period of increased solar activity can last for several years and may include impactful space weather events.

Potential Climate Change Impact

Although the sun influences Earth's climate, there is most likely little to no connection between solar storms and climate change.

Population Affected

It is likely that a severe solar storm event would affect most residents of Ashland County. The most likely impact would be an electrical blackout which could last several days to weeks, depending on damage to electrical infrastructure. A prolonged power outage may have secondary negative impacts such as problems with emergency services due to communication disruptions.

Critical Facilities and Infrastructure at Risk

Critical facilities such as medical, government, and public safety and emergency response are at risk due to a severe solar storm event. These facilities rely on electrical power and communications systems in their daily operations. Damage to electrical systems, GPS, HF communications and technological systems would make it more difficult to provide medical, governmental, and emergency services. The electrical grid (infrastructure), which provides power to Ashland County is at risk due to a severe solar storm. Failure of the grid would result in potentially long-term power outages to the region, state or even a large portion of the entire nation.

Potential Economic Impact

Local Impacts

The economic impact of a major solar storm event is difficult to accurately estimate but would likely be proportional to the magnitude of the event. Most businesses which rely on electricity and computer systems would be affected. Daily commerce and other business activities would likely be negatively impacted. There could be a reduction in tourism as people cancel travel plans due to lack of transportation or local lodging establishments having to turn guests away due to lack of power. Businesses that rely on GPS/GNSS would be negatively impacted as they would likely not have access to these systems due to satellite disruptions.

Global & National Impacts

A large-scale solar storm event would likely affect a large portion of the United States, most likely in the high geomagnetic latitudes of the upper Midwest and the northeast. The immediate aftermath of the storm would likely include a wide range of consequences including consumption and production declines due to lack of electrical power. These impacts would affect a wide range of business operations including production activities, transportation, logistics and financial transactions. International trade would likely be negatively impacted by a long-term power outage. The transit of goods and commodities would likely be interrupted, which could disrupt supply chains across the globe. Transportation systems would likely be negatively impacted due to loss of traffic signals. Radio communication for aviation, rail, and maritime may also be disrupted. Digital communications and GPS systems would likely be impacted causing disruptions to personal communications, business, and navigation.

DRAFT

Storms: Tornado and High Wind

HAZARD DESCRIPTION

Tornado

Tornadoes are violently rotating columns of air which extend from the clouds to the ground. This weather phenomenon typically occurs in the central, southeast, and northeast portions of the United States. Wind speeds in a tornado can be as high as 300 mph, destroying structures, trees, and vehicles. Tornadoes can be essentially dry accompanied by dust and debris, or they can be accompanied by rain or hail. They can occur individually or as a tornado family, which is a series of tornadoes produced by a single supercell thunderstorm. Some tornadoes never reach the ground and others oscillate up and down causing random, sporadic damage.

The average tornado moves southwest to northeast, but tornadoes have been known to move in any direction. A tornado path averages 4 miles but may reach up to 300 miles in length. Tornado widths average 300 to 400 yards, but tornadoes have cut swaths a mile or more in width, with severe tornadoes or groups of two or three funnels traveling together. On average, tornadoes move between 25 and 45 mph, but speeds over land of up to 70 mph have been reported. Tornadoes rarely last more than a couple of minutes over a spot or more than 15 to 20 minutes in a ten-mile area, but their short periods of existence do not limit their devastation.

Some tornadoes are clearly visible, while rain or nearby low-hanging clouds obscure others. Occasionally, tornadoes develop so rapidly that little, if any, advance warning is possible. Before a tornado hits, the wind may die down and the air may become very still. A cloud of debris can mark the location of a tornado even if a funnel is not visible. Tornadoes generally occur near the trailing edge of a thunderstorm. It is not uncommon to see clear, sunlit skies behind a tornado. Visible and audible danger signs include greenish or unusually colored clouds, a low-hanging and rotating wall cloud, funnel clouds, hail in the absence of rain, a loud train-like roaring sound, and a swirling cloud of debris.

Wisconsin lies along the northern edge of the nation's "tornado alley" maximum frequency belt for tornadoes which extends northeastward from Oklahoma into Iowa and then across to Michigan and Ohio. The peak tornado season in Wisconsin is from April to August, but tornadoes can occur any time of year.

National Weather Service Tornado Alerts

Tornado Watch: Weather conditions are favorable for thunderstorms capable of producing tornadoes. The watch area is typically large, covering numerous counties or even states.

Tornado Warning: A tornado has been reported by spotters or indicated by radar. There is imminent danger to life and property. The warning area is typically much smaller (around the size of a city or small county) that may be impacted by a tornado.

High Wind

Severe storms and strong weather systems are frequently accompanied by high winds. Most high winds that cause ground-level damage are a result of outflow generated by a thunderstorm downdraft. Damaging winds are classified as those exceeding 50-60 mph. Damage from severe thunderstorm winds account for half of all severe reports in the lower 48 states and is more common than damage from tornadoes. Wind speeds can reach up to 100 mph and can produce a damage path extending for hundreds of miles. The National Oceanic and Atmospheric

Administration (NOAA) National Severe Storms Laboratory classifies the types of damaging winds:

Straight-Line Wind: Any thunderstorm wind that is not associated with rotation and is used mainly to differentiate from tornadic winds.

Downdraft: A small-scale column of air that rapidly sinks toward the ground.

Downburst: All localized strong wind events that are caused by a strong downdraft within a thunderstorm.

Microburst: A small, concentrated downburst less than 2.5 miles across that produces an outward burst of strong winds at the surface. Microbursts are generally small and short-lived.

Macroburst: An outward burst of strong winds at or near the surface with horizontal dimensions larger than 2.5 miles and occurs when a strong downdraft reaches the surface.

Gust Front: The leading edge of rain-cooled air that clashes with warmer thunderstorm inflow. Characterized by a wind shift, temperature drop, and gusty winds out ahead of a thunderstorm. Sometimes the winds push up air above them, forming a shelf cloud or detached roll cloud.

Derecho: A widespread, long-lived windstorm that is associated with a band of rapidly moving showers or thunderstorms. Typically consists of numerous microbursts, downbursts, and downburst clusters. If the wind damage swath extends more than 240 miles and includes wind gusts of at least 58 mph or greater along most of its length, then the event may be classified as a derecho.

Haboob: A wall of dust that is pushed out along the ground from a thunderstorm downdraft at high speeds.

HAZARD HISTORY

Tornado

According to the NCEI Storm Events Database, there were 11 tornado events reported in Ashland County from 1961 to 2023 (Table 33). No deaths, injuries, or crop damage were reported.

Table 33:County Tornado Events

Location	Date	Magnitude	Length (mi)	Width (yd)	Property Damage (\$)
Ashland County	8/14/1961	EF2	4.5	400	\$250,000.00
Ashland County	7/19/1980	EF1	2	33	\$25,000.00
Ashland County	6/30/1983	EF0	0.1	80	\$30.00
Ashland County	7/3/1983	EF0	0.3	50	\$250.00
Ashland County	8/3/1988	EF0	4	20	\$0.00
Ashland County	9/16/1992	EF0	6.5	73	\$25,000.00
Clam Lake	5/12/1998	EF0	2	100	\$0.00
Morse	7/27/2010	EF2	0.93	650	\$0.00

Location	Date	Magnitude	Length (mi)	Width (yd)	Property Damage (\$)
Peeksville	7/27/2010	EF0	1.92	600	\$0.00
Ashland	8/11/2014	EF0	0.05	3	\$0.00
Sanborn	7/18/2020	EF1	0.6	50	\$0.00

Source: National Center for Environmental Information

May 12, 1998. Tornado. A weak tornado touched down briefly in a forested area on the the southeast side of Clam Lake. Many trees were blown down. The path length and width are estimated, based on a damage survey conducted by personnel from the National Weather Service office in Duluth, MN.

July 27, 2010. Tornado. A few storms formed over the southern end of Chequamegon Bay just to the west Ashland, WI on during the early afternoon of August 11th. At least two witnesses saw a waterspout form over the Bay and then briefly move inland as a tornado with the storms moving to the south-southwest. Pictures were taken of the waterspout. One witness described the tornado moving inland for about 10 seconds before dissipating near the median on US Highway 2.

August 11, 2014. Tornado. A few storms formed over the southern end of Chequamegon Bay just to the west Ashland, WI on during the early afternoon of August 11th. At least two witnesses saw a waterspout form over the Bay and then briefly move inland as a tornado with the storms moving to the south-southwest. Pictures were taken of the waterspout. One witness described the tornado moving inland for about 10 seconds before dissipating near the median on US Highway 2.

July 18, 2020. Tornado. Storms initiated over North Dakota Friday afternoon and congealed into a large storm complex that marched across Minnesota during the evening hours and into northwest Wisconsin for the early morning hours of the 17th. Damaging winds and a few short-lived tornadoes were produced by the complex leading to large areas of tree damage along with some property damage.

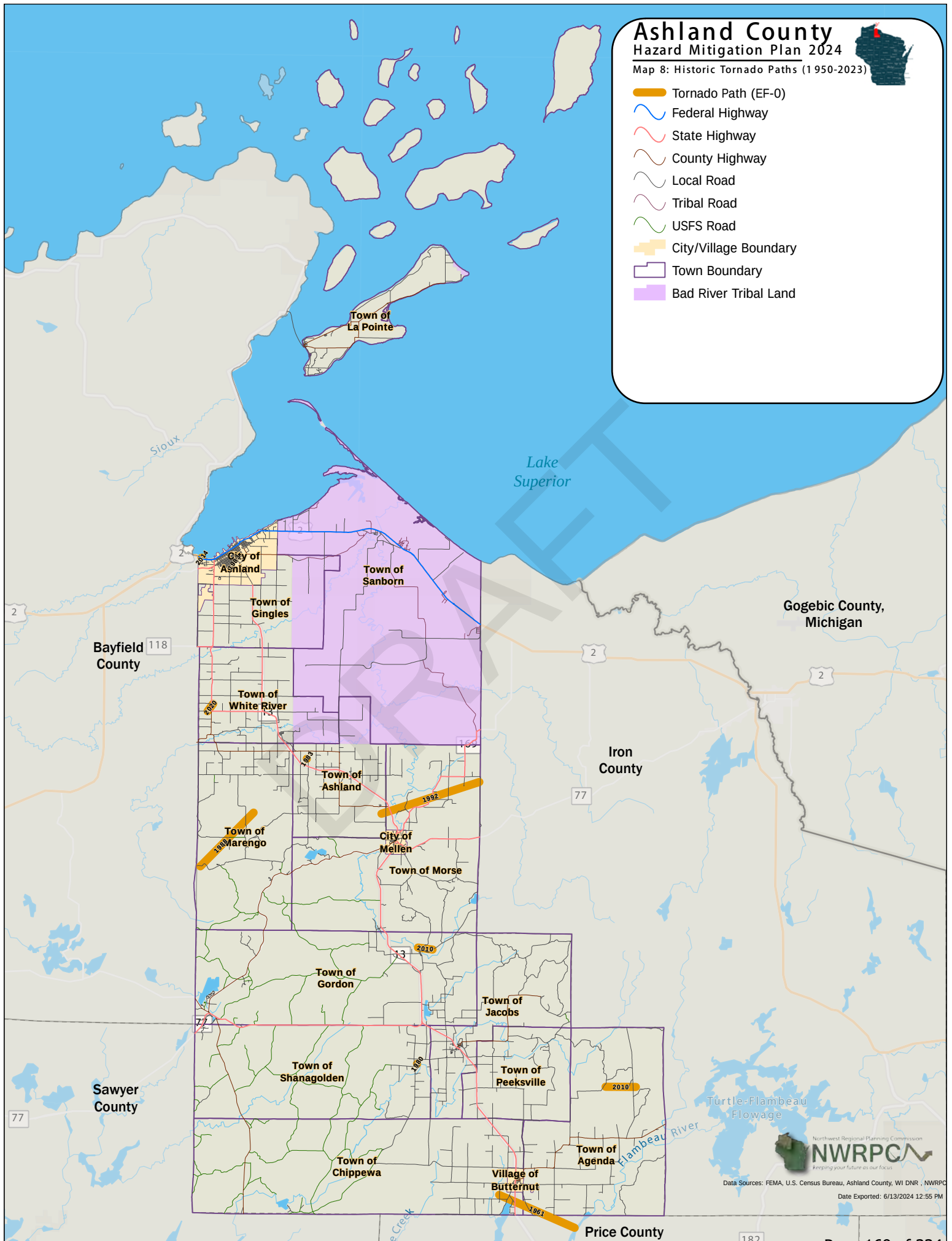
Ashland County

Hazard Mitigation Plan 2024

Map 8: Historic Tornado Paths (1950-2023)



- Tornado Path (EF-0)
- Federal Highway
- State Highway
- County Highway
- Local Road
- Tribal Road
- USFS Road
- City/Village Boundary
- Town Boundary
- Bad River Tribal Land



Gogebic County,
Michigan

Iron
County

Bayfield
County

Sawyer
County

Price County

Turtle-Flambeau
Flowage



Northwest Regional Planning Commission
NWRPC
Keeping your future as our focus

Data Sources: FEMA, U.S. Census Bureau, Ashland County, WI DNR, NWRPC
Date Exported: 6/13/2024 12:55 PM

Figure 25: Wisconsin Tornado Events 1844-2023



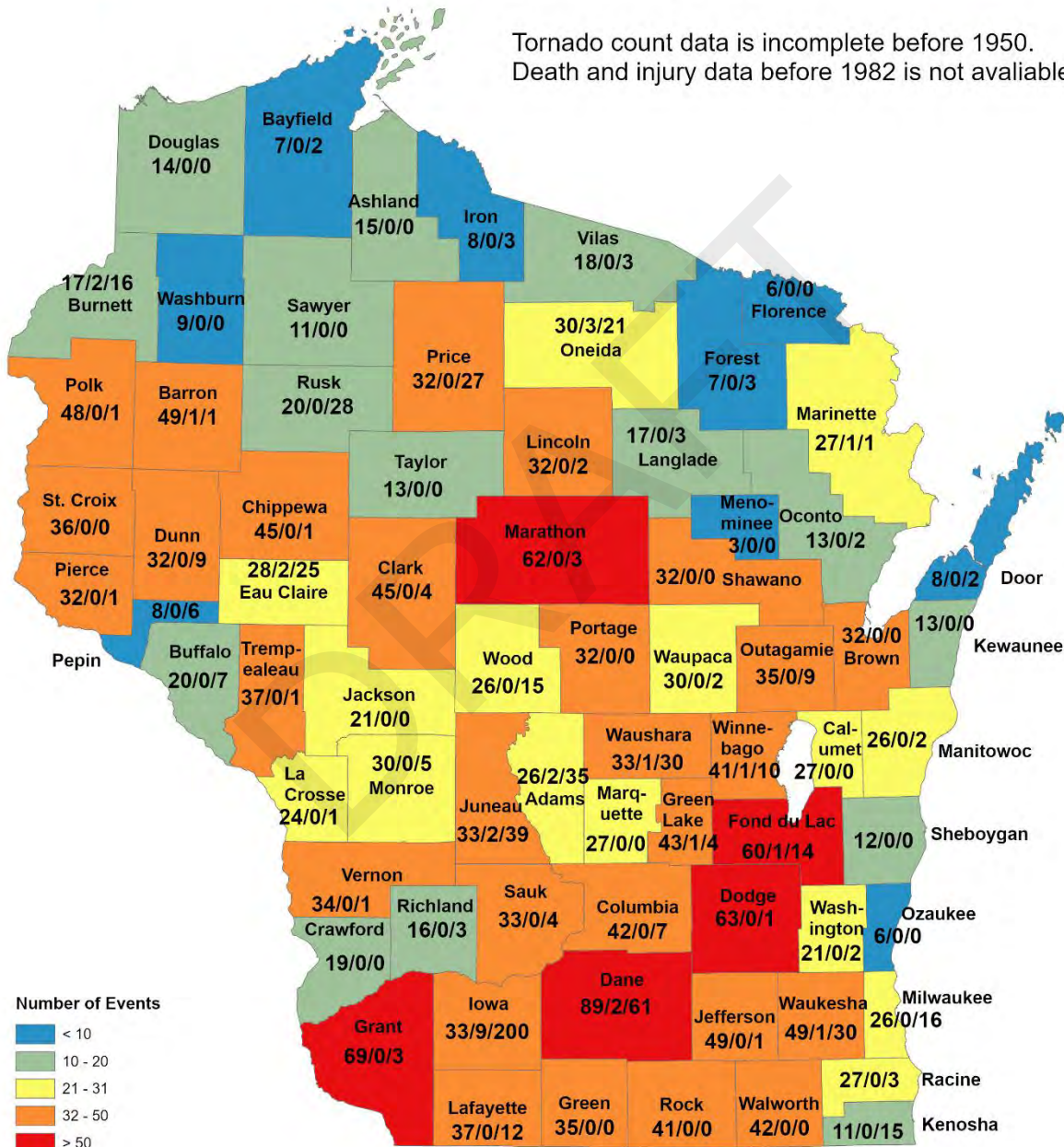
Wisconsin Tornado Events

1844 - 2023

Events / # Deaths / # Injuries



Tornado count data is incomplete before 1950.
Death and injury data before 1982 is not available.



Source: NOAA, NWS, Milwaukee/Sullivan

High Wind

High wind events have historically occurred quite regularly in Ashland County. The NCEI Storm Events Database documents a total of 97 wind-related events – high wind (2 events), strong wind (2 events), and thunderstorm wind (93 events) – occurring in Ashland County between 1969 and 2023. Of the events recorded, wind damage to trees and power outages were the most common impacts. No storms resulted in loss of life or injury. In the last 20 years, there have been 56 wind events resulting in \$73,500 in property damage.

Table 34: Ashland County Wind Events, 2003-2023

Location	Date	Hazard	Magnitude (mph)	Property Damage (\$)
Butternut	7/20/2003	Thunderstorm Wind	50	\$0.00
	9/15/2004	Strong Wind	40	\$1,000.00
Ashland	6/27/2005	Thunderstorm Wind	50	\$0.00
Butternut	6/29/2005	Thunderstorm Wind	60	\$0.00
Glidden	6/30/2005	Thunderstorm Wind	60	\$0.00
Glidden	8/9/2005	Thunderstorm Wind	60	\$0.00
Ashland	9/13/2005	Thunderstorm Wind	51	\$0.00
Clam Lake	7/29/2006	Thunderstorm Wind	50	\$0.00
Ashland	7/29/2006	Thunderstorm Wind	50	\$0.00
Mellen	7/30/2006	Thunderstorm Wind	50	\$0.00
Ashland	6/18/2007	Thunderstorm Wind	52	\$0.00
Mellen	7/26/2007	Thunderstorm Wind	52	\$0.00
Ashland	5/17/2008	Thunderstorm Wind	52	\$0.00
Mellen	7/14/2010	Thunderstorm Wind	52	\$2,000.00
Glidden	7/14/2010	Thunderstorm Wind	50	\$500.00
Glidden	7/27/2010	Thunderstorm Wind	50	\$0.00
Odanah	8/13/2010	Thunderstorm Wind	50	\$3,000.00
	10/26/2010	Strong Wind	45	\$5,000.00
	5/9/2011	High Wind	60	\$2,000.00
Butternut	5/22/2011	Thunderstorm Wind	55	\$0.00
Butternut	5/22/2011	Thunderstorm Wind	70	\$10,000.00
Butternut	5/22/2011	Thunderstorm Wind	50	\$0.00
Marengo	7/1/2011	Thunderstorm Wind	70	\$50,000.00
Sanborn	7/1/2011	Thunderstorm Wind	61	\$0.00
Ashland	7/1/2011	Thunderstorm Wind	52	\$0.00
Ashland	7/1/2011	Thunderstorm Wind	52	\$0.00
Butternut	7/1/2011	Thunderstorm Wind	60	\$0.00
Butternut	9/12/2011	Thunderstorm Wind	50	\$0.00
Odanah	7/2/2012	Thunderstorm Wind	50	\$0.00
Ashland	7/22/2014	Thunderstorm Wind	54	\$0.00
Ashland	7/22/2014	Thunderstorm Wind	54	\$0.00
Ashland	7/21/2016	Thunderstorm Wind	65	\$0.00
Ashland	7/21/2016	Thunderstorm Wind	70	\$0.00

Location	Date	Hazard	Magnitude (mph)	Property Damage (\$)
La Pointe	7/21/2016	Thunderstorm Wind	70	\$0.00
La Pointe	7/21/2016	Thunderstorm Wind	70	\$0.00
La Pointe	7/21/2016	Thunderstorm Wind	70	\$0.00
La Pointe	7/21/2016	Thunderstorm Wind	70	\$0.00
	10/27/2017	High Wind	52	\$0.00
Agnew	7/25/2018	Thunderstorm Wind	50	\$0.00
Peeksville	6/21/2020	Thunderstorm Wind	60	\$0.00
Peeksville	6/21/2020	Thunderstorm Wind	55	\$0.00
Ashland	7/8/2020	Thunderstorm Wind	52	\$0.00
Marengo	7/18/2020	Thunderstorm Wind	50	\$0.00
Agnew	7/18/2020	Thunderstorm Wind	50	\$0.00
Marengo	7/18/2020	Thunderstorm Wind	50	\$0.00
Cayuga	9/25/2020	Thunderstorm Wind	50	\$0.00
Ashland	9/20/2021	Thunderstorm Wind	52	\$0.00
Ashland	5/18/2022	Thunderstorm Wind	51	\$0.00
Birch	5/18/2022	Thunderstorm Wind	50	\$0.00
Butternut	5/18/2022	Thunderstorm Wind	50	\$0.00
Ashland	7/3/2023	Thunderstorm Wind	52	\$0.00
Glidden	7/3/2023	Thunderstorm Wind	52	\$0.00
Butternut	7/3/2023	Thunderstorm Wind	52	\$0.00
Ashland	7/3/2023	Thunderstorm Wind	52	\$0.00
Odanah	7/27/2023	Thunderstorm Wind	50	\$0.00
La Pointe	8/16/2023	Thunderstorm Wind	55	\$0.00

Source: National Centers for Environmental Information (NCEI)

Events / # Deaths / # Injuries

Severe thunderstorm wind is defined as straight line winds from a thunderstorm greater than 57 mph

Number of Events

- 35 - 59
- 60 - 99
- 100 - 149
- 150 - 200
- > 200

County Data (County Name / Total Events / Year Range):

- Douglas 97/0/0
- Bayfield 73/0/3
- Ashland 64/0/0
- Iron 42/0/1
- Vilas 112/2/1
- Burnett 95/0/3
- Washburn 59/0/0
- Sawyer 94/1/0
- Price 84/0/3
- Oneida 117/0/2
- Florence 35/0/0
- Polk 154/0/0
- Barron 109/0/9
- Rusk 73/0/0
- Forest 76/0/0
- Marinette 87/0/0
- St. Croix 129/1/3
- Dunn 111/1/7
- Chippewa 117/1/24
- Clark 127/0/1
- Marathon 186/0/7
- Oconto 81/0/3
- Pierce 104/0/0
- Eau Claire 80/0/1
- Shawano 133/0/2
- Door 85/0/6
- Pepin 39/0/0
- Buffalo 91/0/2
- Trempealeau 121/0/6
- Jackson 101/1/4
- Clark 127/0/1
- Portage 119/0/0
- Waupaca 131/0/2
- Outagamie 133/1/8
- Manitowoc 107/1/1
- La Crosse 158/1/15
- Monroe 153/0/5
- Juneau 106/0/0
- Adams 124/0/8
- Waushara 109/1/1
- Winnebago 134/1/6
- Calumet 80/0/1
- Sheboygan 95/0/0
- Vernon 138/0/2
- Richland 82/0/0
- Sauk 166/0/5
- Columbia 172/1/2
- Dodge 170/0/14
- Washington 138/1/3
- Ozaukee 60/0/6
- Grant 207/1/0
- Iowa 141/0/0
- Dane 330/0/4
- Jefferson 214/0/10
- Waukesha 249/0/3
- Milwaukee 151/0/10
- Lafayette 137/0/2
- Green 184/0/0
- Rock 287/0/5
- Walworth 242/0/16
- Racine 133/0/6
- Kenosha 120/1/11

100

VULNERABILITY AND RISK ASSESSMENT

Area Affected

All locations within Ashland County are equally susceptible to this hazard. The physical area directly affected by a tornado is determined by the total area of the tornado (path length x width). A tornado may touch down only briefly before dissipating, or may stay on the ground for several miles, resulting in a damage path. In urbanized areas, a tornado will leave a path of destruction affecting structures, cars, trees, and utility lines all along a path, while adjacent areas may suffer little or no damage. Based on historical events recorded in the NCEI Storm Events Database, the average length of a tornado in Ashland County is 2.1 miles and the average width is 187.2 yards.

The potential for high winds is shared equally among all areas of Ashland County. High wind events can be localized, affecting very small geographic areas, or even individual neighborhoods. These events can also be very widespread, impacting an entire county or region. Based on a review of past high wind events, particularly vulnerable properties include mobile housing (especially unanchored), roofs of structures, and utilities (antennas, power lines, telephone lines, etc.).

Magnitude

The Fujita Scale was first developed in 1971 by Ted Fujita, a meteorologist at the University of Chicago. Storm experts began using an enhanced version of the scale in 2007 which includes more detailed descriptions of the damage. Both scales indicate damage only, and associated wind speeds are estimations. According to the NCEI Storm Events Database, historical tornado events ranged in magnitude from EF0 to EF5 (65 mph-135 mph).

Table 35: The Enhanced Fujita Scale

EF-Scale	Wind Speed	Potential Damage
EF0	65-85 mph	Light damage. Shingles blown off, gutters damaged, tree branches broken
EF1	86-110 mph	Moderate damage. Windows broken, doors damaged, mobile homes overturned
EF2	111-135 mph	Considerable damage. Roofs torn off, mobile homes destroyed, large trees snapped
EF3	136-165 mph	Severe damage. Entire stories of homes destroyed, significant damage to large buildings
EF4	166-200 mph	Devastating damage. Well-constructed homes leveled, cars thrown significant distance
EF5	200+ mph	Incredible damage. Well-constructed homes swept away, trees completely debarked

Source: The Tornado Project

The Beaufort Wind Scale was one of the first scales to estimate wind speeds. The scale was developed by Britain's Admiral Sir Francis Beaufort in 1805 to help sailors estimate the winds via visual observations. The scale starts with 0 and goes to a force of 12. The Beaufort Scale is still used today to estimate wind strengths.

Table 36: Beaufort Wind Scale

Beaufort Force	Description	Speed (MPH)	Specification on Land
0	Calm	Less than 1	Smoke rises vertically
1	Very Light	1-3	Smoke drift indicates wind direction. Wind vanes cease moving
2	Light breeze	4-7	Wind felt on exposed skin. Leaves rustle, wind vanes begin to move
3	Gentle breeze	8-12	Leaves and small twigs constantly moving. Light-weight flags extended
4	Moderate breeze	13 - 18	Dust and loose paper raised. Small branches begin to move
5	Fresh breeze	19 - 24	Moderate size branches move. Small trees with leaves begin to sway
6	Strong breeze	25 - 31	Large branches in motion. Whistling in overhead wires. Plastic garbage cans tip
7	Near gale	32 - 38	Whole trees in motion, inconvenient to walk against wind
8	Gale	39 - 46	Twigs break from trees. Walking is seriously hindered
9	Strong gale	47 - 54	Branches break off trees and some small trees blow over
10	Storm	55 - 63	Trees uprooted. Considerable structural damage occurs
11	Violent storm	64 - 73	Widespread damage
12	Hurricane	> 74	Very widespread damage

Source: National Weather Service

Using NCEI historical data, the average intensity of high winds in Ashland County is about 45 mph. At this speed, winds could be expected to break tree branches.

Duration

Tornados are typically brief events, with long recovery times. However, in rare cases these events can last for several hours. A typical tornado travels at around 10-20 miles per hour.

Thunderstorm winds can be 10 to 15 miles in diameter and normally last 20 to 30 minutes.

Frequency

Wisconsin lies along the northern edge of the nation's tornado belt, which extends northeastward from Oklahoma into Iowa. Winter, spring, and fall tornadoes are more likely to occur in southern Wisconsin than in northern counties. Yet, tornadoes have occurred in Wisconsin every month of the year. Based on historical observations, the recurrence interval for a tornado in Ashland County is about ten years. This frequency is significantly lower than in the counties of central and southern Wisconsin.

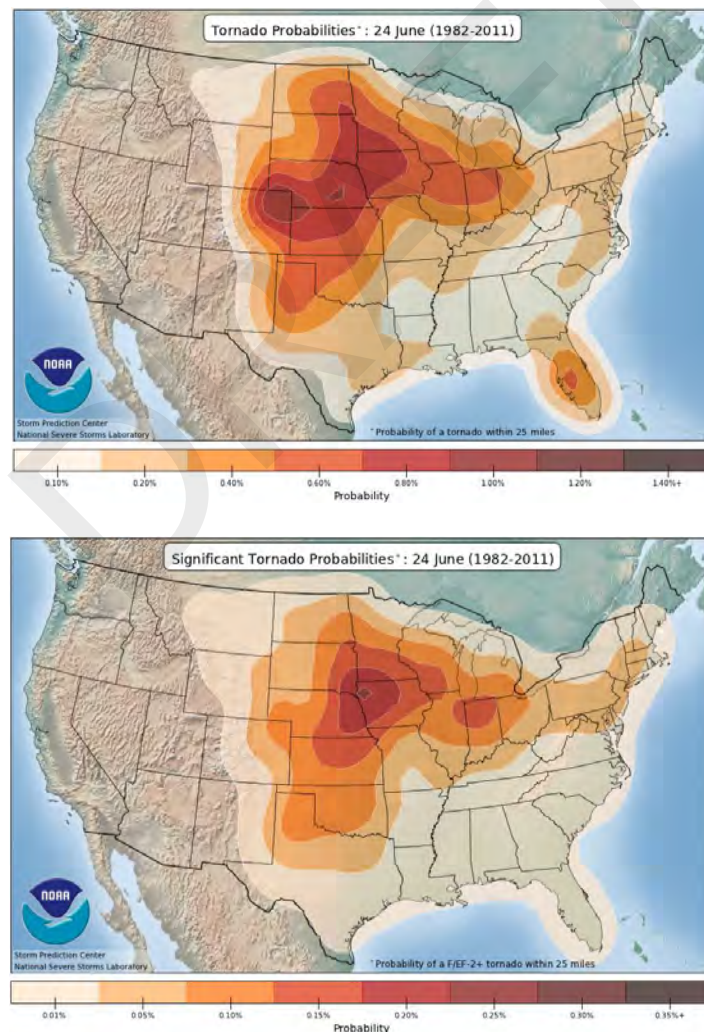
Based on recent storm records, (2003-2023), Ashland County can expect an average of two high wind event in any given year.

Probability

The peak of tornado season in northern Wisconsin occurs in late spring to early summer. The following graphics (Figure 27) indicate estimated tornado probabilities across the United States for the week of June 24, which is the approximate peak of tornado season in Wisconsin. On this day, the probability of any tornado occurring within Ashland County is within the range of 0.10% to 0.25%. On the same day, the probability of a significant tornado (EF2 or greater) is within the range of 0.01% to 0.075%.

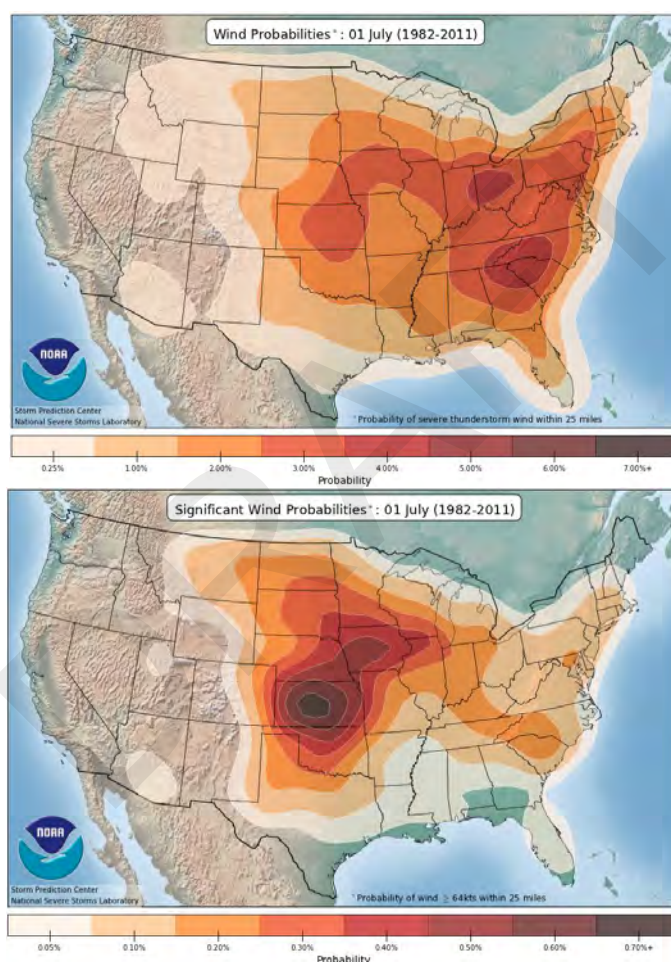
Based on the probability graphs, the most likely time of year for tornado activity is roughly between the 141st day and the 253rd days of the year (end of May to early October). The highest probability of occurrence is from mid-June through mid-July. The peak probability of a tornado occurrence occurs about July 2nd, with a probability of 0.21 percent. At this time of the year, the chance of a tornado in Ashland County would be about 1 in 370 in any given year. The probability of a significant tornado (F2 and greater) is significantly lower than the general tornado probability. The peak probability of a significant tornado is roughly 0.025 percent, or 1 in 4,000.

Figure 27: Tornado Probabilities



High winds are the most common form of severe weather in Wisconsin. Although thunderstorms and associated high winds can occur during any month or time, the severe thunderstorm season generally occurs April through August, with severe thunderstorms often starting in the afternoon. Based on historical observations, the probability of a wind event occurring somewhere within Ashland County during any given year is near 100%. The following graphics indicate estimated wind probabilities across the United States for the week of July 1, which is the approximate peak of severe thunderstorm season in the region. On this day, the probability of any event where winds exceed 50 knots (57.5 mph) is within the range of 0.25% to 1.50%. On the same day, the probability of a significant wind event (62 knots or 71.2 mph) is within the range of 0.05% to 0.25%.

Figure 28: Wind Probabilities



Potential Climate Change Impact

Numerous complex atmospheric conditions combine to generate a tornado, so it is difficult to discern the climate change impact. Overall, an increase in frequency and intensity of severe thunderstorms would consequently increase tornado risk. There is some research that suggests that warming temperatures could lead to a greater risk of more off-season tornadoes. This could mean more tornadic activity at a time of year when people are least expecting it.

High winds are often localized and short-lived, making it difficult for climate studies and models to include calculations involving wind speed. This has resulted in limited high quality, long-term data that can be used to assess changes. Some studies have found that while mean wind speed is decreasing, maximum wind speeds are increasing and affecting larger areas. The increase in maximum wind speed is likely because as the air warms, it can hold more moisture, which enhances downdrafts and results in faster and more powerful winds.

Population Affected

While the risk of tornados is shared equally across the county, the population impacted by a specific event can vary greatly. If a tornado were to strike a populated community such as the City of Ashland, a large number of people could be affected. The population density of rural Ashland County is generally less than ten people per square mile. People residing in mobile homes or vehicles such as RVs are particularly at risk from tornados. These structures offer little protection and can be easily overturned or destroyed by the violent winds of a tornado. In Ashland County there are five mobile home parks and ten campgrounds (Table 35).

Table 37: Ashland County Mobile Home Parks and Campgrounds

Name	Location
Mobile Home Parks	
Kenwood Terrace	Ashland
Whispering Pines	Ashland
Hillside Terrace MHP LLC	Butternut
Aspen Ridge Housing LLC	Marengo
Ponderosa MHP	Mellen
Campgrounds	
Kreher Park	Ashland
Prentice Park	Ashland
Chequamegon-Nicolet National Forest	Ashland County
Day Lake Campground	Clam Lake
Northern Lure Resort & Campground	Glidden
Top O' the Morn Resort and Campground	Iron River
Apostle Islands National Lakeshore	La Pointe
Big Bay State Park	Madeline Island
Copper Falls State Park	Mellen
Wildwood Haven Resort & Campground	Mellen

Source: mobilehome.net & visitashland.com

Of the 7 tornado-related home deaths in the State of Wisconsin between 1996 and 2023, 2 of were in mobile homes and 5 were in permanent homes. In addition to mobile homes, campers are also especially vulnerable because trees can fall into campsites and onto tents.

Localized thunderstorm wind events would affect a small portion of Ashland County's population, whereas a large-scale derecho-type event could impact the entire population or a large part of the region. The most vulnerable portion of the population are those who reside in mobile homes or travel homes, those who are camping in tents and people who are dependent on electricity for healthcare needs.

Critical Facilities and Infrastructure at Risk

Tornados pose the same risk to critical facilities as to other structures in the county. While many of these structures contain “safe areas” or basements which provide shelter in the event of a storm, the structures themselves may not be able to withstand the winds of a violent tornado. Above ground infrastructure including power and utility lines, pipelines and communications towers are highly vulnerable to tornadic winds. If a tornado were to occur, there is a high likelihood of localized power disruption.

High winds can cause severe damage to structures, power systems, telecommunications infrastructure, and water and sewage systems. Wind vulnerability is very much based on building construction and standards. Other factors such as location, condition, and maintenance of trees also play a significant role in determining vulnerability. Local transportation networks can also be impacted when trees and electrical wires fall on roadways, leading to road closures.

Potential Economic Impact

With limited historical data, estimates of potential damage are hard to determine. The NCEI Storm Events Database documented tornado events have resulted in a combined \$300,280 in damage, or an average of \$27,300 per event. Realistically, an event involving a tornado would most likely affect a small portion of the county. If the impacted area was in a developed area, such as the City of Ashland, significant structural damage could occur.

In Wisconsin, the average tornado is 351 feet in width and travels 3.7 miles along the ground (NOAA). Thus, the potential primary damage path is 6,857,136 ft², or roughly 0.25 square miles. Based on historical record, a tornado in Ashland County is likely to be a magnitude EF1, with 0% to 20% structural value loss. A tornado of this magnitude within a rural area is not likely to cause significant structural damage. Conversely, the same tornado striking a populated area, such as Ashland, may result in substantial structural damage.

High winds are capable of producing widespread damage to homes, businesses, personal property, and infrastructure. These storms may also down trees and destroy agricultural crops. Revenue losses to businesses may result from prolonged power outages caused by down electric lines. Fallen debris may also necessitate temporary road closures resulting in people being stranded at home or work.

Based on historical events, the most likely impact from high winds will be downed trees. Because of the low population density of the rural area, it can be inferred that a severe wind event in these areas would not cause widespread property damage. If such an event were to occur in the Cities of Ashland or Mellen, the structural and property damage would likely be significant by comparison. If the event were exceptionally severe, timber losses and economic impact to the forest products industry could be significant.

Between 2003 and 2023, the average property damage due to wind events in Ashland County was \$1,300 but ranged from \$0 to \$50,000.

Coastal Erosion and Landslide

HAZARD DESCRIPTION

Coastal Erosion

The clay bluffs of Ashland County's Lake Superior shoreline are highly vulnerable to the effects of bluff erosion. Coastal erosion is a natural geologic process that may occur slowly over a period of thousands of years or dramatically as with landslides and severe storms. Coastal erosion is closely linked with lake levels; the higher the water, the greater the wave impacts which erode away shoreland bluffs. Other factors influencing coastal erosion include water currents, groundwater flow, freeze/thaw cycles, soil types, bank composition, and shoreline vegetation. Erosion rates are particularly high along clay bluffs, sand plains, and high bluffs composed of till, with short-term erosion rates of 3 to 15 feet per year having been recorded along sand plains and 2 to 6 feet per year along high bluff lines. This natural process is not particularly problematic unless human development is threatened.

Landslide

A landslide is the movement of a mass of rock, debris, or earth down a slope. A landslide occurs when the slope or soil stability changes from stable to unstable, which may be caused by heavy rain, snowmelt, erosion, flooding, and wildfire. Human activities such as grading for construction and roads, mining, deforestation, irrigation, and vegetation removal can also greatly contribute to landslide potential.



Coastal erosion with landslide on the Bad River Reservation

HAZARD HISTORY

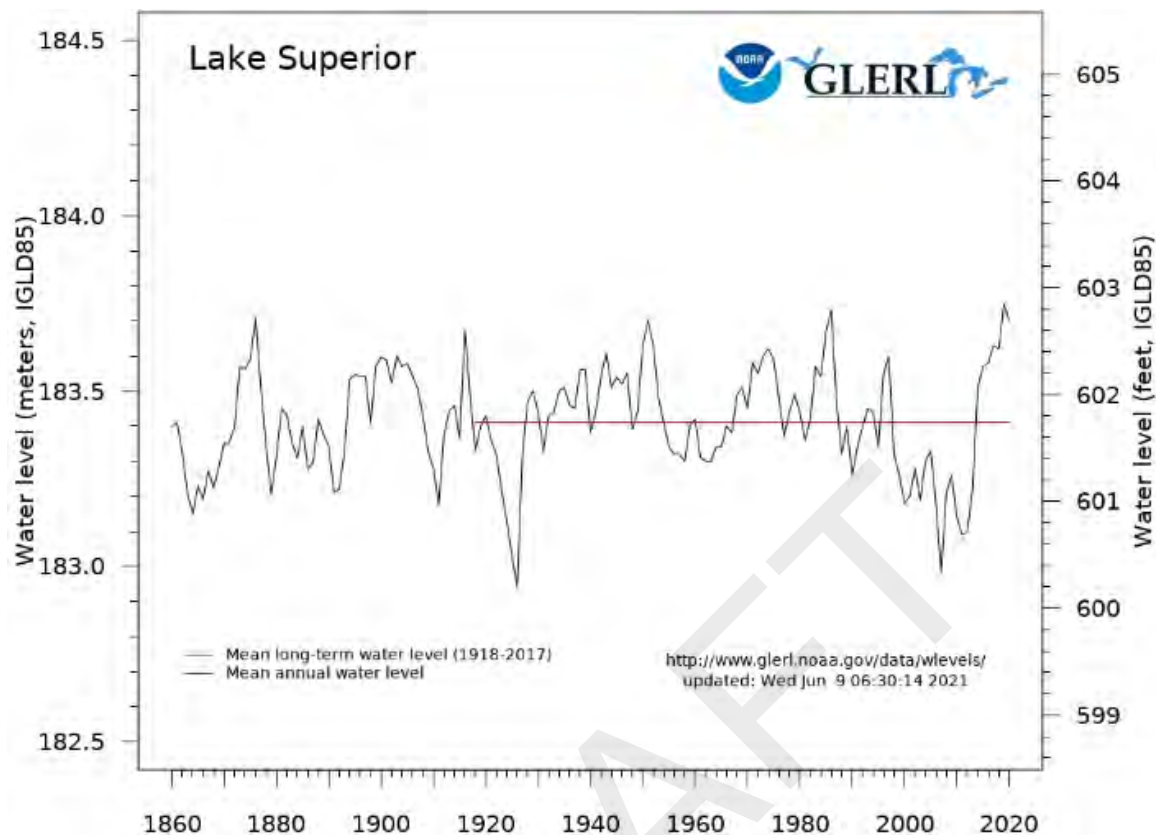
Coastal Erosion

Like much of the south shore, portions of the Ashland County Lake Superior shoreline are receding. The average annual recession rate for the entire coastline in Iron County is 3.8 feet per year. Annualized recession rates vary from about 0.50 feet per year to 10+ feet per year in isolated locations. The undeveloped portions of Ashland County's coastal shoreline is likely similar.

The Lake Superior shoreline was heavily damaged by relentless waves caused by strong off lake winds that gusted over 50 mph for many hours during a winter storm October 27-28, 2017. The Apostle Islands Devil's Island Lighthouse recorded a wind gust of 68 mph around 11 am, but wind had been gusting over 40 mph since the previous evening. At the Granite Island buoy, north of Marquette, Michigan, a record Lake Superior wave height was recorded at 28.8 feet.

The Lake Superior chart datum water level is 601.10 feet, with the lowest levels occurring in March and April and the highest lake levels occurring in October and November. In the winter of 1926, Lake Superior reached its lowest recorded level at 599.52 feet above sea level. Lake levels climbed to above average levels in the late 1960s and 1970s, before reaching an all-time high of 603.38 feet above sea level in 1986. Lake Superior experienced lows throughout the late 1990s and 2000s, before again climbing to above average highs in 2013.

Figure 29: Lake Superior Hydrograph



Landslide

Landslide risk areas in Ashland County are relatively undeveloped and sparsely populated. While physical evidence indicates that landslides have occurred, no structural damage or injury has been documented. Regionally, coastal landslides have been problematic as evidenced by the recent event in the Village of Oliver (Douglas County). In the fall of 2002, a massive landslide impacted several homes along the St. Louis River. Hazard Mitigation Grant Program funds were used to acquire and demolish three of the seven affected properties.

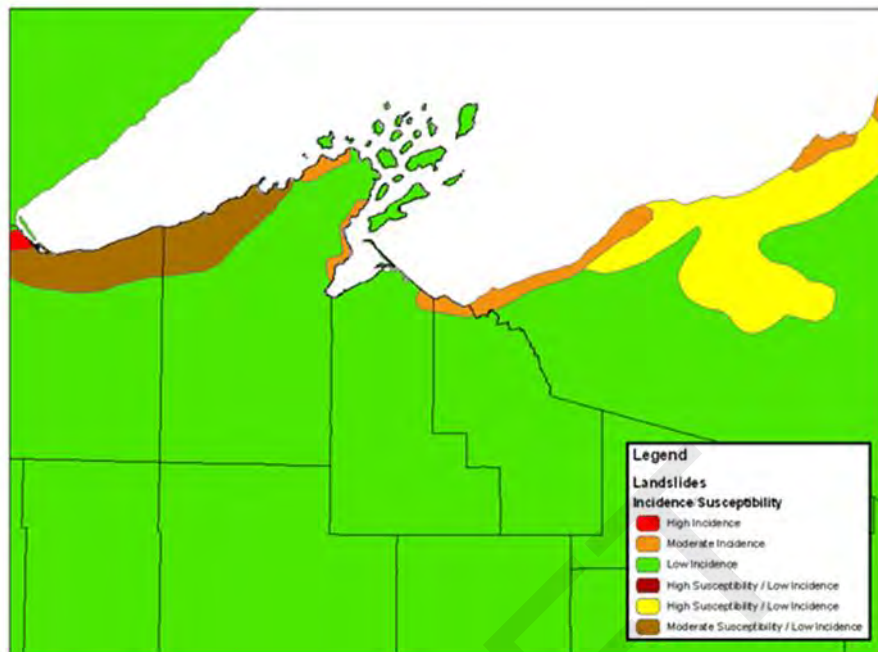
VULNERABILITY AND RISK ASSESSMENT

Area Affected

Ashland County has approximately 153 miles of Lake Superior coastline ranging from high clay bluffs to low, flat wetlands. Land ownership consists of tribal, National Park Service, and private holdings. The Bad River Reservation occupies 36 miles of Lake Superior coastline. Much of the county's coastline is undeveloped, remaining in a primarily forested state. The City of Ashland is the largest developed area along the coastline.

Landslide risk in Ashland County is greatest along the Lake Superior coastline. Figure 30 indicates that the county's coastline has a low (0-1.5%) to moderate (1.5%-15% of area involved) landslide incidence. The high clay bluffs present in this area are particularly vulnerable to the gravitational processes of creep, slumping, and occasional landslides. The coastal area is situated along a lacustrine clay plain which is particularly vulnerable to erosion and slumping. The primary concern includes development along coastal bluffs, stream banks, and slopes within the clay plain.

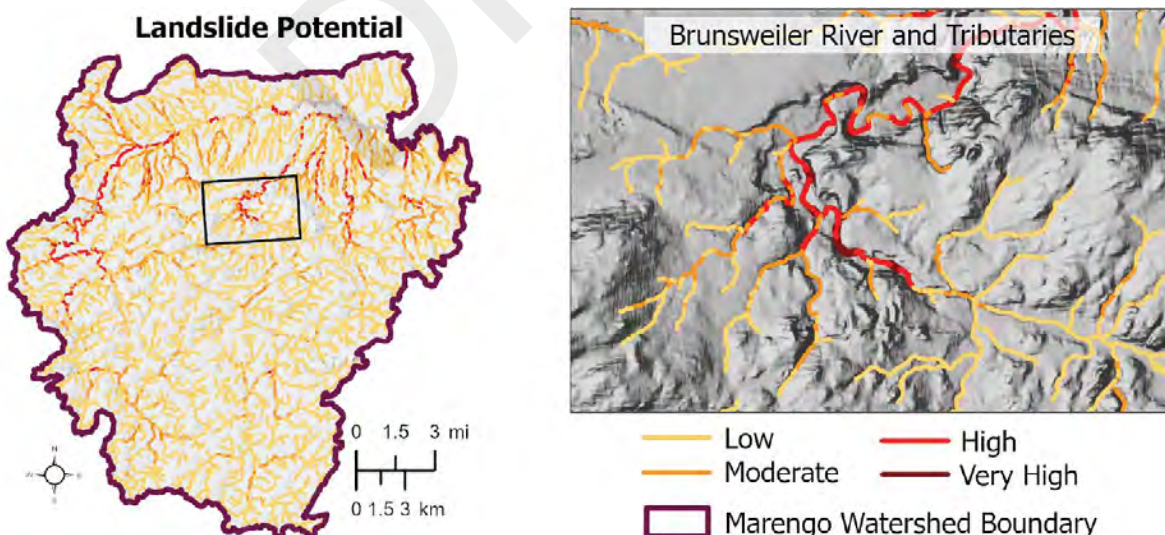
Figure 30: Landslide Incidence and Susceptibility



Source: U.S. Geological Survey

In the Marengo River Watershed, 8% of all channels scored 'high' or 'very high' for landslide potential as part of the Fluvial Erosion Hazards (FEH) Landslide Potential Screen, most of which are along the main stem of the Marengo River and large tributaries like the Brunsweler River and Silver Creek (Appendix E).

Figure 31: Marengo River Watershed Landslide Vulnerability Screen



Source: A Strategy for Natural Flood Management and Climate Resilient Infrastructure in Ashland County

Magnitude

Coastal erosion impacts range from no damage to severe and are dependent on several interconnecting factors. All areas of the coast experience natural erosion, but higher lake levels and storm events can increase coastal erosion. Many of the bluffs along Lake Superior shoreline in Ashland County are actively eroding. Actual erosion rates range from 0.5 feet per year to more than 10 feet per year.

The magnitude of landslides may range from a slow creep of the bluff to complete bluff failure and collapse. Magnitude is partially dependent upon the height and angle of the slope or bluff. In general, the higher the bluff or slope, the greater the risk of a landslide. Similarly, the steeper the slope, the easier it is for gravity to pull the slope away, resulting in a landslide.

Duration

High water levels in Lake Superior may persist for several years, resulting in increased shoreline erosion and susceptibility to flooding. Short-term water fluctuations caused by storm surge, wind set-up and seiche events may last for a few hours to several days.

Some landslides begin as slow creep movements until a threshold is exceeded resulting in total slope failure and a landslide. The creep process may occur over a period of years while the actual landslide event may occur within minutes.

Frequency

Lake level change, storm events, seiche, and other processes, which effect erosion and flooding, are natural occurring phenomena which are highly variable. Long-term Lake Superior water level fluctuations have varied dramatically since records have been collected. While water levels typically follow a seasonal cycle, long-term water level change does not occur on such predictable cycles. The primary factor driving fluctuation is natural climate variation, which is also unpredictable. Natural water levels may be altered by human activity through consumptive use and global climate change.

Minor landslides are a relatively common occurrence within the clay plain; however, the statistical frequency to which these events occur is unknown.

Probability

Shoreline flooding and erosion are natural processes, occurring at high, average, and even low Lake Superior water levels. However, during periods of high water, flooding and erosion are more obvious, and can cause serious damage to homes and businesses, transportation infrastructure, and other structures in coastal communities. Variable based on the specific coastal hazard, but when considered as a whole, the annual probability that coastal erosion will affect Ashland County is 100%.

While it is likely that landslide events will occur, the statistical probability is unknown and will be dependent on rainfall patterns, terrain slope, geology, soil, and land cover. Landslide monitoring in Ashland County has not occurred in the past and little, if any, data is available to estimate future probability. The probability of bluff failure is 100%.

Potential Climate Change Impact

An increase in the occurrence and severity of coastal hazards, including landslides, can be expected as changes in climate bring warmer, wetter winters with more freeze-thaw events, and more extreme precipitation events. An increase in the frequency of severity of rain events will likely reduce coastal bluff stability, leading to more bluff slumping. Heavy rain events

compounded by drought conditions could lead to major slope failure. This is because the dryness can create deep fissures in shoreline bluffs, allowing surface waters access to deeper parts of the bluff.

Both high and low Lake Superior water level extremes are anticipated under a changing climate. This could include potentially higher highs, lower lows, and more rapid fluctuations than seen in the historical record. High water level variability combined with bigger waves and storm surges could increase erosion and decrease the stability of coastal bluffs.

Wave energy reaching the Lake Superior coast is expected to increase, due to anticipated decreases in ice cover extent and duration. A reduction of ice cover will expose the coast to waves for a greater portion of the winter, the season when coastal storm intensity is greatest and large wave events are most frequent.

Climate change is likely to alter slope and bedrock stability through changes in precipitation and/or temperature. According to the U.S. Geological Survey, slope saturation by water in the form of intense rainfall, snowmelt, and changes in water and groundwater levels is a primary cause of landslides. It is difficult to determine future locations and timing of large rock avalanches, as these depend on local geological conditions and other non-climatic factors.

Population Affected

Coastal hazards will only affect the population residing directly along the Lake Superior shoreline. This includes the population of the City of Ashland and residents on Madeline Island.

Landslide casualties in the United States are primarily caused by rockfalls, rockslides, and debris flows. Because these events are usually localized, the population affected is likely to be very small. Based on census occupancy statistics, the number of people living within a given household is likely to be only 2-3 people.

Critical Facilities and Infrastructure at Risk

The City of Ashland and La Pointe on Madeline Island are the primary places where critical facilities and infrastructure are at risk due to coastal erosion. However, these populated areas are not located on erodible clay bluffs and are not likely to see substantial impacts beyond the impacts of lake-level fluxes.

The risk of landslides to the built environment is very low due to the rural nature of the county beyond the City of Ashland, City of Mellen, and Village of Butternut. In general, the area is sparsely populated, with little infrastructure or development outside of developed areas and State Highway 13.

Potential Economic Impact

Homeowners residing in actively eroding areas may be forced to construct structural shoreline protection facilities such as seawalls, revetments, and other shoreline armaments. These options can be very costly, require permitting and are not generally considered to be long-term solutions. In some cases, it may be necessary to relocate the structure away from the bluff. This alternative may be the more effective but may also be very costly. Impacts to the City of Ashland and La Pointe on Madeline Island may be substantial and costly if not addressed in a timely manner.

Pandemic

HAZARD DESCRIPTION

As defined by the Centers for Disease Control and Prevention (CDC), the amount of a particular disease usually present in a community is the baseline or **endemic** level of the disease. This level is not necessarily the desired level, which may in fact be zero, but rather is the observed level. Occasionally, the amount of disease in a community rises above the expected level.

Epidemic refers to an increase, often sudden, in the number of cases of a disease above what is normally expected. **Outbreak** carries the same definition as epidemic but is often used for a more limited geographic area. **Cluster** refers to an aggregation of cases grouped in place and time that are suspected to be greater than the number expected, even though the expected number may not be known. **Pandemic** refers to an epidemic that has spread over several countries or continents, usually affecting a large number of people.

HAZARD HISTORY

The United States and Wisconsin share a lengthy history shaped, in part, by the impacts of emerging infectious disease. Perhaps the deadliest disease epidemic in the United States and Wisconsin was the European introduction and spread of smallpox and measles to Native Americans in the 1830s. Many archaeologists have speculated that these epidemics swept through these communities in Wisconsin long before European explorers reached the area.

During that same time period, malaria was common among French, British, and later American troops on the Wisconsin frontier, and in the summer months malaria would often reach epidemic levels. Cholera epidemics also swept through the United States and Wisconsin from 1832 to 1834, and again from 1849 to 1854. The worst of the cholera epidemics were centered in Milwaukee.

There have been at least five pandemics in the United States within the last 100 years:

- **1918-1919:** "Spanish Flu"
- **1956-1958:** "Asian Flu"
- **1968-1969:** "Hong Kong Flu"
- **2009-2010:** "Swine Flu" or H1N1
- **2019-Present:** "Coronavirus Disease 2019" or COVID-19

1918-1919 Event: This influenza pandemic, also known as the Spanish flu, was caused by the H1N1 virus. Although there is not universal consensus regarding where the virus originated, in the United States, it was first identified in military personnel in the spring of 1918. It is estimated that about 500 million people or one-third of the world's population became infected with the virus. The estimated number of deaths was 50 to 100 million worldwide. In Wisconsin, the Spanish flu infected more than 100,000 and claimed around 8,400 lives.

1957-1958 Event: In February 1957, a new influenza A virus (H2N2) emerged in East Asia, also known as the Asian Flu. This virus was first reported in Singapore in February 1957, Hong Kong in April 1957, and in coastal cities in the United States in the summer of 1957. The World Health Organization estimates approximately two million deaths worldwide, although estimates vary widely depending on the source.

1968-1969 Event: In early 1968, a new influenza A virus (H3N2) was discovered in Hong Kong, also known as the Hong Kong Flu. The first cases in the United States were detected as early as September 1968. Illness was not widespread in the United States until December 1968. Those over the age of 65 were most likely to die from this strain. The estimated number of

deaths was 1 million worldwide with about 100,000 occurring in the United States. The H3N2 virus continues to circulate worldwide as a seasonal influenza A virus.

2009-2010 Event: In the spring of 2009, a new influenza A virus (H1N1), also known as swine flu emerged. The virus was first detected in the United States and spread quickly across the world. This virus contained a unique combination of influenza genes not previously identified in animals or people. Confirmed worldwide deaths totaled 14,286.

2019-Present Event: First identified in December 2019 in Wuhan, China, coronavirus disease 2019 (COVID-19) is an illness caused by a new coronavirus called severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) that rapidly spread around the world. Due to the alarming spread and severity, the World Health Organization declared COVID-19 a global pandemic on March 11, 2020. Throughout the COVID-19 pandemic, genetic variants of SARS-CoV-2 have emerged and circulated around the world. As of February 9, 2023, globally there have been over 672 million confirmed cases of COVID-19. In Wisconsin, there have been over 1.99 million confirmed cases.

On March 12, 2020, Governor Tony Evers declared a public health emergency in Wisconsin. On March 25, 2020, a “Safer at Home” order was issued banning all nonessential travel and business. The Wisconsin State Supreme Court overturned the “Safer at Home” order in May 2020. A statewide mask mandate went into effect in August 2020, requiring those age five and older to wear a face mask when indoors or in enclosed spaces with anyone outside their household or living unit.

Wisconsin COVID-19 Pandemic DR-4520-WI

On April 4, 2020, a major disaster declaration was declared for the entire state of Wisconsin. This declaration made federal emergency aid available to supplement state, tribal, and local recovery efforts in the areas affected by the COVID-19 pandemic beginning on January 20, 2020.

VULNERABILITY AND RISK ASSESSMENT

Area Affected

A pandemic is a large-scale outbreak of infectious disease that can greatly increase morbidity and mortality over a wide geographic area and cause significant economic, social, and political disruption. Disease outbreak locations are dictated by the proximity which individuals have to infected people or to infected vectors. Residents in rural areas may be at a slightly lower risk due to the relative geographic isolation.

Magnitude

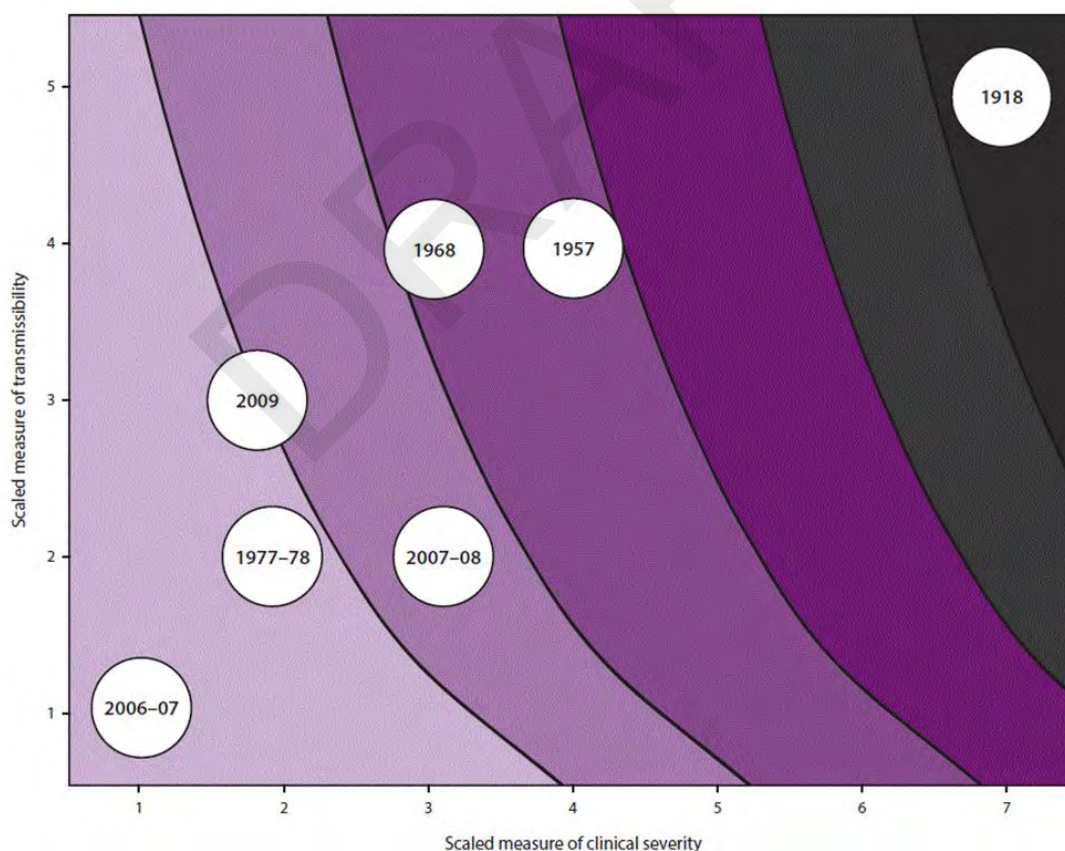
Infectious disease may range in severity from asymptomatic to severe or fatal. A pandemic can range from mild to extremely severe in terms of clinical severity and transmission rate. As observed during the 2009 H1N1 pandemic response, attack rates and case-fatality ratios can be difficult to measure early in a pandemic because of variations in care-seeking behavior and testing practices (i.e., not everyone will seek care for their illness and not everyone is tested and receives a diagnosis). As a result, severe cases might be more likely to be reported, resulting in an overestimate of the case-hospitalization or case-fatality ratios. Tools for pre-pandemic planning have been updated and augmented based on that experience, and the Pandemic Severity Index in the 2007 guidance was replaced in 2014 with the Pandemic Severity Assessment Framework (PSAF). PSAF was also the official pandemic severity assessment tool listed in the CDC’s National Pandemic Strategy at the time of the COVID-19 pandemic.

PSAF is an evaluation framework which uses quadrants to evaluate both the transmissibility and clinical severity of a pandemic and to combine these into an overall impact estimate. Clinical severity is calculated via multiple measures including case-fatality rates, case-hospitalization ratios, and death-hospitalization ratios. Viral transmissibility is measured via available data among secondary household attack rates, workplace attack rates, community attack rates, and rates of emergency department and outpatient visits.

Colors in the PSAF transition from light to dark as the estimated number of deaths increases. Transmissibility is measured on a scale of 1-5 and includes school, workplace, and community attack rates, secondary household attack rates, school and/or workplace absenteeism rates, and rates of emergency department and outpatient visits for the illness. Clinical severity is measured on a scale of 1-7 and includes case-fatality ratios, case-hospitalization ratios, and death-hospitalization ratios.

A team of researchers assessed the severity of the COVID-19 pandemic using the PSAF in early 2020.⁷ In their preliminary assessment, they rated COVID-19's scaled transmissibility at 5 and its scaled clinical severity at 4-7, placing the COVID-19 pandemic in the "very high severity" quadrant. This preliminary assessment ranks the COVID-19 pandemic as the most severe pandemic since the 1918 influenza pandemic.

Figure 32: Pandemic Severity Assessment Framework



Source: Centers for Disease Control and Prevention

⁷ Ribas Freitas, André Ricardo; Napimoga, Marcelo; Donalisio, Maria Rita (April 2020). ["Assessing the Severity of COVID-19"](#).

Duration

A pandemic is not a "one time" event. Periods of illness may come in "waves" anywhere from 3 to 12 months apart. The total duration varies depending on the characteristics of the virus and the public health response but is likely to be 12 to 18 months.

While a pandemic event could occur at any time, it is anticipated that the most likely period of occurrence would be somewhere between the average influenza season's starting and ending dates. Based on statistical influenza season data provided by the Wisconsin State Laboratory of Hygiene, the average starting date of flu season in Wisconsin is on or around December 6. The average ending date is around May 14 and the average duration of the season is about 159 days. The average peak, where the highest number of cases are reported, occurs on or about February 12.

Table 38: Influenza Reported by Northern Region Antigen Sites

Year	Start Date	End Date	Peak	Duration (days)
2018-19	11/10/2018	4/27/2019	3/16/2019	168
2017-18	12/16/2017	5/5/2018	1/31/2018	140
2016-17	12/17/2016	5/20/17	2/25/2017	154
2015-16	1/16/2016	5/21/2016	3/26/2016	126
2014-15	11/18/2014	5/23/2015	1/3/2015	186
2013-14	11/9/2013	5/24/2014	1/4/2014	196
2012-13	11/10/2012	4/27/2013	12/22/2012	168
2011-12	12/17/2011	5/19/2012	4/21/2012	154
2010-11	1/1/2011	5/21/2011	1/29/2011	140
Averages	December 6	May 14	February 12	159 Days

Source: Wisconsin State Laboratory of Hygiene

Frequency

The frequency of a pandemic event is unpredictable, but with the increasing connectivity and mobility of today's world, our shared global health risk also increases. A total of 5 events have occurred in the past 100 years, resulting in a rough average of 1 event every 20 years.

Probability

The specific probability that a pandemic will impact Ashland County cannot be predicted, however health experts agree that a future pandemic event is inevitable. Pandemic risk is driven by the combined effects of spark risk (where a pandemic is likely to arise) and spread risk (how likely it is to diffuse broadly through human populations). Factors that contribute to the probability include a growing population, increasing urbanization, greater travel and connectivity between population centers, habitat loss, climate change, and increased interactions at the human-animal interface.

Potential Climate Change Impact

Climate change can exacerbate the spread of infectious diseases by altering ecosystems, increasing the range and activity of vectors like mosquitoes and ticks, and causing extreme weather events that disrupt healthcare systems and facilitate the spread of pathogens. For example, warmer temperatures can expand the geographic range of diseases like malaria and dengue fever, while heavy rainfall and flooding can lead to contaminated water sources and

increased transmission of waterborne diseases. Additionally, changes in temperature and precipitation patterns can affect the distribution and behavior of animal hosts, potentially leading to the emergence of new zoonotic diseases. Overall, climate change poses significant challenges for preventing and controlling pandemics, highlighting the importance of addressing both environmental and public health concerns.

Population Affected

Specific populations are at a greater risk, including people with underlying health conditions or weakened immune systems, the elderly, and the very young.

Critical Facilities and Infrastructure at Risk

While a pandemic will not directly impact critical facilities and infrastructure, it could severely impact availability of local health care services and the delivery of government programs. A pandemic severely impacts local health care services and may overburden health care facilities through increasing patient loads and reduction of staffing. Local health care organizations and systems may also be impacted by national medical supply shortages, including availability of personal protective equipment, medications, and vaccines to treat patients or protect residents. As infections rise during the height of a pandemic wave, disruptions in the delivery of government services and programming could occur.

Potential Economic Impact

A pandemic has an incalculable economic impact, as it can cause acute, short-term fiscal shocks as well as longer-term damage to economic growth. These include direct costs associated with medical supplies, personal protective equipment, hospitalization and care, and broader economic impacts associated with lost employment, productivity, business revenue, and supply shortages. In general, most economic functions would be challenged by the high rate of absenteeism associated with a pandemic and the need to restrict access to many businesses. During the COVID-19 pandemic, Wisconsin lost over 359,000 jobs alone in March of 2020, representing an unprecedented 339% increase in the unemployment rate in the span of one month. The estimated cumulative financial costs of the COVID-19 pandemic related to the lost output and health reduction is estimated at more than \$16 trillion. About half of this amount is the lost income from the COVID-19-induced recession, the remainder is the economic impact.

Since mid-March 2020, residents, businesses, and governments in Wisconsin and elsewhere have been dealing with the consequences of the COVID-19 pandemic. Despite the largest federal stimulus package in history, the economic fallout from the pandemic has been significant in Wisconsin and worldwide. One of the broadest measures of an economy is gross domestic product (GDP), or the value of all goods and services produced. During 2015-2019, annual increases in inflation-adjusted Wisconsin GDP ranged from 1.0% to 3.3%. During the first half of 2020, Wisconsin GDP fell 11.4%. Quarterly GDP declines during the 2007-2009 recession provide context for the magnitude of this drop. During that economic downturn, the largest two-quarter decline was 4.4%. During the entirety of the recession, Wisconsin GDP fell less than 5%. While nearly all industries have been affected by the pandemic, the accommodation and food service industry and the arts and entertainment industry were hardest hit. As of November 2020, employment was 25% below February 2020 levels in hotels, restaurants, and bars and 36% below February 2020 levels in the arts and entertainment industry.⁸

⁸ Forward Analytics, "The COVID Economy: The Economic Impacts of COVID-19 in Wisconsin"

Wildfire

HAZARD DESCRIPTION

A wildfire is a fire that burns uncontrollably in a natural setting. Wildfires are a part of the natural disturbance regime of forest ecosystems in Wisconsin. Some ecosystems, such as the jack pine communities of the Great Lakes states, depend on fire to promote forest regeneration. Wildfire is also one of the most destructive forces of nature, which poses significant challenges for resource managers, firefighters, and those residing in the wildland-urban interface (WUI). The wildland-urban interface (WUI), defined as the area where houses are in or near wildland vegetation, is the area where wildfires pose the greatest risk to people due to the proximity of flammable vegetation. There are two main types of WUI: intermix WUI, the area where houses and wildland vegetation directly intermingle, and interface WUI, where settled areas abut wildland vegetation.

Ground fires, or bog fires, burn ground fuels and tend to smolder rather than producing much flame. These types of fires occur relatively infrequently. Fires which consume surface fuels are referred to as **surface fires**. These are the most common types of wildfire occurring in the mixed forests of northern Wisconsin. These fires are generally low intensity and do not kill mature trees, although some mortality may occur in moderate to severe surface fires. Fires which burn through the canopy are referred to as **crown fires**, which are the most destructive and dangerous class of wildland fire. Crown fires are also generally the most difficult fires to control. In catastrophic crown fires, tree mortality can be high. Given a pathway, intense surface fires can spread to the aerial fuels to become crown fires. Ladder fuels such as shrubs or small trees of intermediate height, act as ladders carrying the flames from the forest surface up into the tops of trees.

Ashland County is within a WDNR Intensive Fire Protection area. Fire suppression and management activities within Ashland County are carried out by both state and local jurisdiction in accordance with their respective operations and management plans and cooperative agreements between the jurisdictions. Primary responsibility for these activities within each jurisdiction falls to the state and local fire departments.

HAZARD HISTORY

While most wildfires in Wisconsin are generally small in area, large fires can and do occur. One of the largest and most devastating wildfires in United States history occurred in Wisconsin. In October of 1871, a wildfire struck the Town of Peshtigo in northeastern Wisconsin killing 1,300-1,500 people and burning approximately 1.2 million acres.

Over 98% of all wildfires in Wisconsin are caused by people, and the number one cause is debris burning. Most debris fires occur in the spring after the snow cover melts and prior to vegetation greening. Spring is also when people are outside doing yard clean-up and then choosing to burn leaves, brush, and pine needles. Equipment fires account for nearly one third of Wisconsin's wildfires. The majority of them are caused by sparks or hot exhaust systems from logging, farming equipment, and off-road recreational vehicles.

Between 2012 and 2023, there were 104 wildfire events, or an average of 21 wildfires per year reported in Ashland County (Maps 9 and 10). Between 2018 and 2023, the majority of the 50 reported wildfires in Ashland County were human-caused, with 32.0% due to equipment and 28.0% due to debris burning (Table 39).

Table 39: Ashland County Wildfires 2018-2023

Year	Month	Acres Burned	Cause	Municipality	Fire Danger Rating
2018	April	0.55	Debris Burning	Sanborn	High
2018	May	1.3	Debris Burning	Agenda	High
2018	May	0.07	Other causes	Sanborn	High
2018	May	0.3	Not Available	Chippewa	High
2018	May	0.3	Not Available	Agenda	Moderate
2018	May	2.42	Other causes	La Pointe	Moderate
2018	May	0.12	Other causes	White River	Moderate
2019	April	0.2	Debris Burning	Agenda	Moderate
2019	April	0.86	Debris Burning	Gingles	High
2019	April	0.08	Equipment	Ashland	High
2019	May	0.6	Debris Burning	Morse	High
2019	June	4.99	Debris Burning	Sanborn	High
2019	June	0.12	Debris Burning	White River	High
2019	August	0.01	Debris Burning	White River	High
2020	April	0.2	Equipment	Agenda	High
2020	April	0.01	Equipment	Agenda	High
2020	April	0.03	Power	Sanborn	High
2020	May	0.33	Power	Gordon	High
2020	May	0.07	Recreation and ceremony	Sanborn	High
2020	May	0.09	Equipment	Ashland	High
2020	July	0.03	Other causes	Ashland	High
2020	November	0.04	Power	Jacobs	Low
2021	March	0.04	Equipment	White River	Moderate
2021	March	0.05	Equipment	White River	Moderate
2021	March	0.01	Recreation and ceremony	Sanborn	High
2021	April	0.07	Other causes	White River	High
2021	April	39.1	Debris Burning	White River	High
2021	April	0.01	Power	White River	High
2021	May	0.01	Equipment	Chippewa	Very High
2021	July	0.06	Debris Burning	Peeksville	Low
2021	July	0.07	Equipment	Agenda	Low
2021	July	0.01	Equipment	Agenda	Low
2021	August	0.01	Equipment	Gingles	Low
2022	April	1.4	Other causes	Agenda	Low
2022	May	2.48	Other causes	Peeksville	Very High
2022	May	0.04	Debris Burning	Gordon	Very High
2022	May	0.31	Equipment	Peeksville	Very High
2022	May	0.07	Equipment	Peeksville	Very High
2022	May	0.36	Equipment	Peeksville	Very High
2022	May	0.01	Equipment	Peeksville	Very High
2022	May	0.01	Equipment	Peeksville	Very High
2022	May	0.01	Equipment	Chippewa	Very High
2022	May	2.26	Other causes	Gordon	Very High

Year	Month	Acres Burned	Cause	Municipality	Fire Danger Rating
2022	June	0.2	Power	Agenda	Low
2022	June	0.01	Other causes	Gingles	Low
2022	October	0.23	Power	Shanagolden	Moderate
2022	October	0.05	Other causes	Peeksville	Moderate
2022	November	0.05	Debris Burning	Marengo	Moderate
2023	June	0.01	Debris Burning	Sanborn	Moderate
2023	August	0.01	Debris Burning	Agenda	Moderate

Source: Wisconsin Department of Natural Resources, Fire Management

VULNERABILITY AND RISK ASSESSMENT

Area Affected

Wildfires occur in wildland areas with vegetative fuels. Vegetative fuels are combustible materials comprised of both living and dead vegetation. Ashland County faces its greatest wildfire risk in areas where the developed landscape meets the wildland environment. The highest number of wildfire events occur in close proximity to developed areas (communities) and at the interface between human activities and wildland fuels or the WUI. Other high-risk areas exist across the county where there are hazardous forest fuels such as jack and red pine, grasslands, and brushlands. Ashland County WUI statistics are depicted below in Table 40.

Table 40: Ashland County WUI Statistics

Category	Square Miles	Percent
Intermix WUI	56.0	2.4%
Interface WUI	12.7	0.6%
WUI (Total)	68.7	3.0%
Non-WUI	2,223.6	97.0%

Source: SILVIS Lab, Department of Forest Ecology and Management, University of Wisconsin – Madison 2020

The average area impacted by an Ashland County wildfire is 1.5 acres. The largest wildfire reported between 2012 through 2023 was a fire in April 2012 that burned 45.0 acres.

Magnitude

The physical setting, weather, and condition of forest fuels will dictate the magnitude of a wildfire. In forests with accumulated fuels, fire can burn very intensely and spread rapidly, possibly spreading into the tops of the trees. Surface fires can migrate into the tops of the trees via ladder fuels resulting in a condition referred to as “crowning.” Crown fires are very difficult to control and threaten communities, infrastructure, and resources.

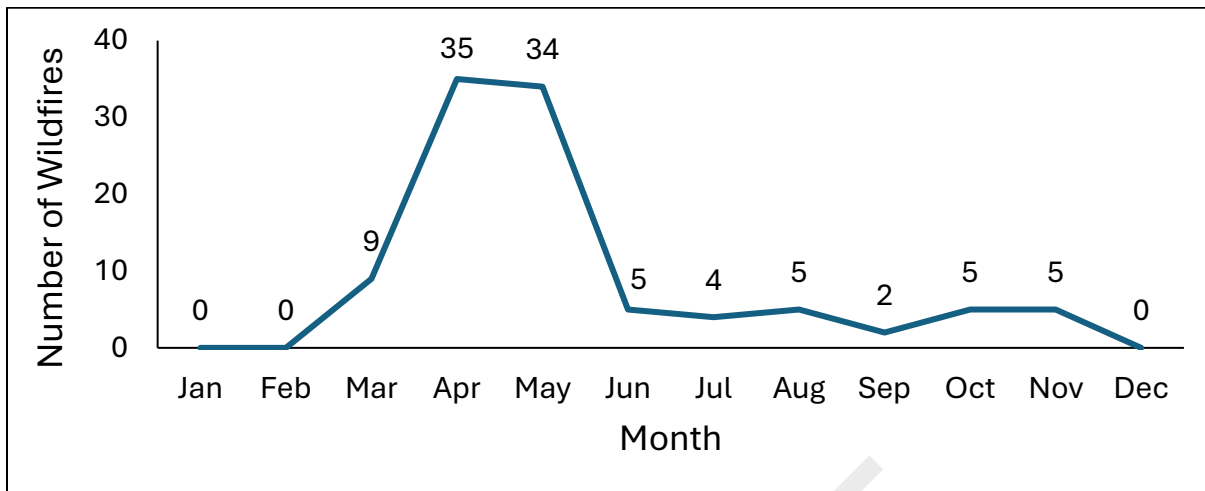
Duration

In the absence of suppressive action, and given favorable weather and topographic conditions, a wildfire will burn until its fuel source is exhausted. In the pre-suppression era, fire duration was generally much longer than it is today. The average duration of a wildfire in Ashland County is about 17 hours; the longest duration was 6.2 days.

Frequency

Between 2012 and 2023, there were 104 documented wildfire occurrences in Ashland County, or an average of about 9 fires per year. The majority of wildfires occur during the spring.

Figure 33: Wildfire Occurrences 2012-2023



Source: Wisconsin Department of Natural Resources

Probability

Increased rural development in Ashland County in recent years has increased the potential threat of wildfire. Because most wildfires are human caused, more people and increased activity in the wildland environment results in a higher wildfire risk.

Between 2012 and 2023 there were 104 documented wildfire occurrences or an average of about 9 wildfires reported per year in Ashland County. The likelihood of a wildfire occurring somewhere in the county in any given year is very high, nearly 100%.

Potential Climate Change Impact

Increasing temperatures, changing precipitation patterns, and extended droughts all have the potential to increase the frequency and severity of wildfires as fire weather and fuel conditions are altered. Projected trends of warmer springs, longer summer dry seasons, and drier soils and vegetation will lengthen the wildfire season. Earlier spring melting and reduced snowpack will result in decreased water availability during hot summer conditions, which in turn also contributes to increased wildfire risk.

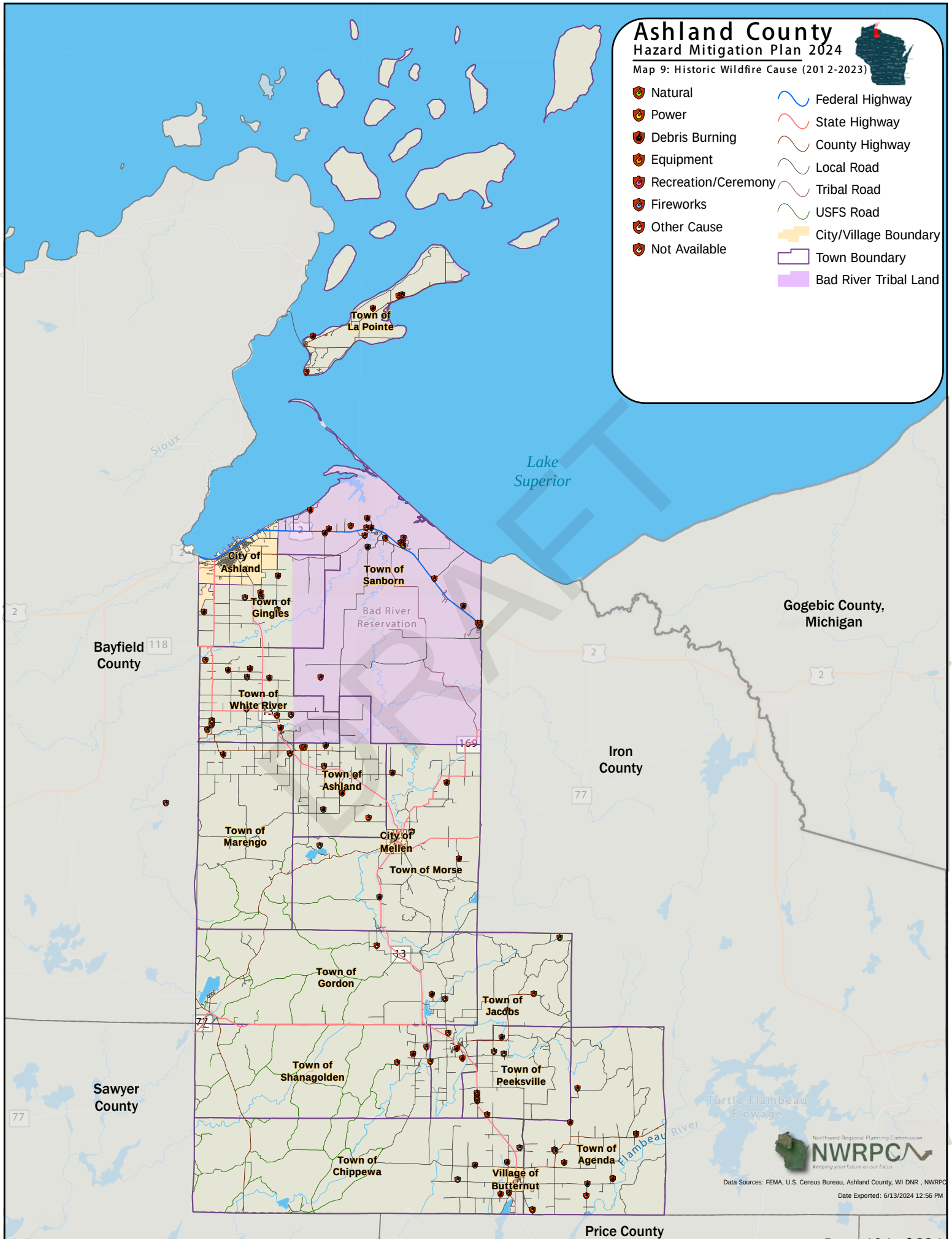
Ashland County

Hazard Mitigation Plan 2024

Map 9: Historic Wildfire Cause (2012-2023)



- | | |
|---------------------|-----------------------|
| Natural | Federal Highway |
| Power | State Highway |
| Debris Burning | County Highway |
| Equipment | Local Road |
| Recreation/Ceremony | Tribal Road |
| Fireworks | USFS Road |
| Other Cause | City/Village Boundary |
| Not Available | Town Boundary |
| | Bad River Tribal Land |

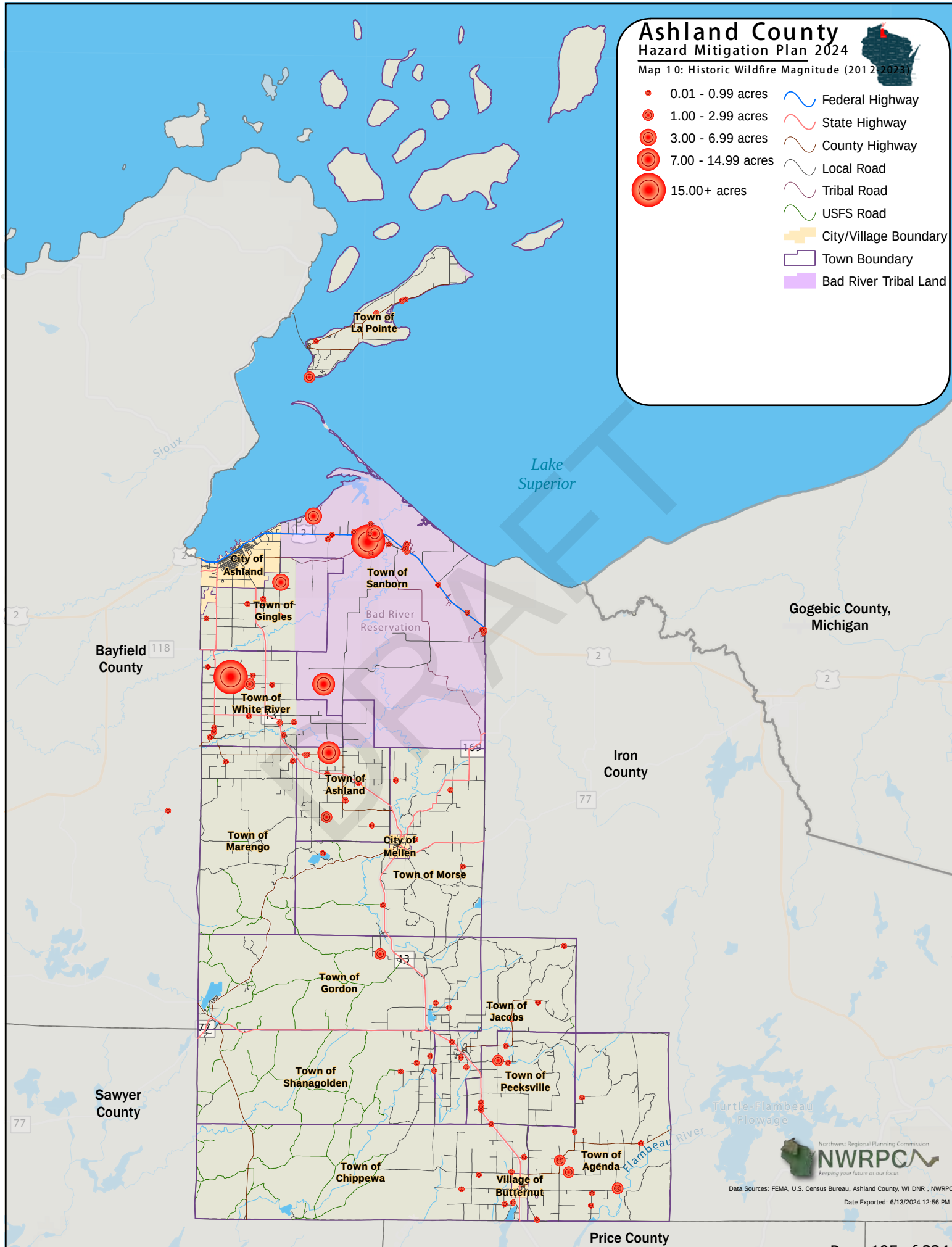
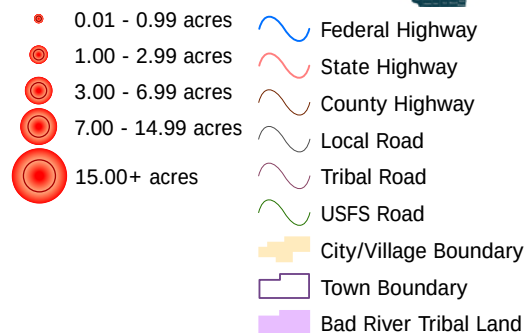


Data Sources: FEMA, U.S. Census Bureau, Ashland County, WI DNR, NWRPC
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Ashland County

Hazard Mitigation Plan 2024

Map 10: Historic Wildfire Magnitude (2012-2023)



Data Sources: FEMA, U.S. Census Bureau, Ashland County, WI DNR, NWRPC
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Population Affected

The population at greatest risk from wildfire are residents within the wildland-urban interface. A large percentage of the population and structures are in the interface area, with additional people residing within the intermix area (Table 41). Wildfires have the potential to cause significant injury, death, and damage to property. While there is little information about the number of injuries and fatalities from wildfires in Wisconsin, wildfires simultaneously impact weather and the climate by releasing large amounts of carbon dioxide, carbon monoxide, and fine particulate matter into the atmosphere. The resulting air pollution can cause respiratory and cardiovascular problems for many individuals.

Table 41: Ashland County Housing Units in WUI

Category	Housing Units	Percent
Intermix WUI	2,551	27.1%
Interface WUI	4,602	48.9%
WUI (Total)	7,153	76.0%
Non-WUI	2,254	24.0%

Source: SILVIS Lab, Department of Forest Ecology and Management, University of Wisconsin – Madison 2020

Critical Facilities and Infrastructure at Risk

Critical facilities and infrastructure share a risk equal to that of other development. Wildfires can disrupt transportation, communications, power and gas services, and water supply.

Potential Economic Impact

While most wildfires in Ashland County do not affect human development, there is a potential for structural damage or loss. Due to the small and short-lived nature of fires in Ashland County, there has only been one structure lost to wildfire since 2012. There are 239,000 forest land acres in Ashland County: 67.13% are privately owned, and 32.87% are publicly owned. A catastrophic wildfire would likely result in some economic losses in the forest products sector. According to the Wisconsin Department of Natural Resources Forest Economic Fact Sheet, the forestry industry is in the top ten industries in the county for employers, value-added, and industry output. In 2020, forestry directly employed 419 people and indirectly employed 165 people for a labor income of \$480,420,000.

Technological/Human-Caused Hazards

Utility Failure

HAZARD DESCRIPTION

Water and Sewer

Water and sewer utility failure is the disruption of supply and/or treatment of water and wastewater services. This can occur due to infrastructure damage, equipment failure, natural disasters, contamination events, or power outages. Consequences of water and sewer utility failure include lack of access to clean water, hygiene and sanitation concerns, impact on public health, disrupted essential services, environmental pollution, economic losses, and social unrest.

Gas and Electricity

Gas and electricity utility failure refers to the disruption of gas or electricity to homes, businesses, or entire areas. This can be caused by equipment failure, natural disasters, infrastructure damage, or human error. Consequences can include loss of essential services, economic losses, safety hazards, public health impacts, and social disruptions.

Internet

Internet failure results in the complete loss of internet and telecommunication services. This can occur due to technical issues, equipment failure, natural disasters, cyberattacks, or infrastructure damage. Consequences of internet failure can include communication breakdown, disruption to work and education, financial implications, social isolation, loss of entertainment and information, public safety concerns, and possible impact on critical infrastructure.

Utility failures can have far-reaching effects on individuals, communities, and economies, underscoring the importance of robust infrastructure, emergency preparedness, and proactive measures to mitigate risks.



Electrical Substation

HAZARD HISTORY

Water and Sewer

Qualified on duty or on call Wastewater Operators and Sewer Department personnel are available to respond to emergency calls at all times. The Certified Operators conduct routine monitoring of source water quality per Wisconsin Department of Natural Resources regulations.

Gas and Electricity

No comprehensive record of these occurrences exists. However, short-term disruptions due to severe weather are common.

Internet

Minor system disruptions due to severe weather, loss of power or accidents do occur. Major geomagnetic storm events have impacted telecommunications and electric power systems in some areas of Wisconsin.

VULNERABILITY AND RISK ASSESSMENT

Area Affected

A utilities emergency could affect individual buildings, localized areas, entire municipalities, or the entire county depending on the severity of the emergency.

Magnitude

A utilities emergency could affect individual buildings, localized areas, entire municipalities, or the entire county depending on the severity of the emergency.

Duration

The duration of utility failures is unknown and unpredictable. A utilities emergency could last for a few hours to a few days.

Frequency

The frequency of utility failures is unknown and unpredictable. Utilities emergencies are common secondary effects of many hazards, such as severe weather, hazardous material spills, and transportation accidents. Small scale utility emergencies are generally a common occurrence.

Probability

A small-scale utilities emergency is likely to happen on an annual basis. A large-scale utilities emergency affecting the entire county for an extended period of time is much less likely.

Potential Climate Change Impact

The projected increased risk in the severity of storm events could lead to increased failures of utility services in Ashland County.

Population Affected

A utilities emergency could affect individual buildings, localized areas, entire municipalities, or the entire county depending on the severity of the emergency. Vulnerable populations, such as children, the elderly, and individuals with compromised immune systems, are particularly at risk when utilities fail.

Critical Facilities and Infrastructure at Risk

There is potential for a utilities emergency to impact all infrastructure and all critical facilities in the service area.

Potential Economic Impact

A utilities emergency impacting water and sewer services could have negative impacts on businesses, such as restaurants which must close due to the emergency. There is also the potential cost for repairs to fix the utilities emergency.

Civil Disturbance/Terrorism/Cyber Attack

HAZARD DESCRIPTION

Civil Disturbance

Adopted on December 15, 1791, the First Amendment to the United States Constitution prohibits interfering with the right to peaceably assemble or prohibit the petitioning for a governmental redress of grievances. The First Amendment thereby guarantees the right for people to come together and collectively express, promote, pursue, and defend their ideas. On occasion, these assemblies go beyond a peaceable gathering and protest to civil unrest where public safety becomes a concern.

In legal terms, civil disturbance or civil unrest means acts of violence and disorder detrimental to public law and order. Examples of civil unrest include riots, unlawful obstruction, labor disputes, strikes, and public demonstrations. These incidents may arise due to economic conditions, unpopular political actions, tensions between groups with opposing social or political viewpoints, food/water/fuel supply shortages, or racial issues. Because these incidents usually involve large groups of people, they are more likely to occur in populated, urban areas.

Terrorism

The United States defines terrorism (international and domestic) as “any activity that involves a violent act or an act dangerous to human life that is a violation of the criminal laws of the United States or any State, or that would be a criminal violation if committed within the jurisdiction of the United States or of any State; and appears 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 assassination or kidnapping.” Section 802 of the USA PATRIOT Act expanded this definition to include domestic acts of terrorism.

Contamination: The intentional release of chemical, biological or radiological agents, as well as nuclear hazards.

Chemical: Poisonous vapors, aerosols, liquids, and solids that have toxic effects on people, animals, or plants. Can be released by bombs or sprayed from aircraft, boats, and vehicles. Can be used as a liquid to create a hazard to people and the environment. May pose viable threats for hours to weeks.

Biological: The deliberate release of biological substances such as toxins, bacteria, or fungi with the intention of causing harm. May pose a danger for a period of hours to years.

Radiological: Radioactive elements which pose significant hazards to human and animal health which may remain hazardous in the environment for many years. The initial effects are likely to be localized to the site of the attack. Depending on atmospheric conditions, the subsequent behavior of radiological contaminants may become more dynamic and widespread.

Nuclear: Devices detonated on the earth’s surface or at high altitude, pose serious risks to human life and the environment. The light, heat, and shockwave produced are capable of complete devastation within the blast zone. The release results in long-term human and ecological health impacts. Depending on atmospheric conditions, nuclear fallout can be transported and deposited well away from the immediate blast area, impacting locations far-removed from the detonation site.

Explosives: Materials that rapidly release large amounts of energy and produce a pressure shock wave during detonation.

Cyber-Terrorism: Any premeditated, politically motivated attack against information, computer systems, computer programs, and data which results in violence against non-combatant targets by sub-national groups or clandestine agents. Attacks on digital information systems can result in widespread disruption, damage, and possible loss of life. Computer systems vital to utilities, transportation, energies, financial systems, or other government services are generally the highest-risk targets. The effects of a cyberattack may be localized or widespread and may reach far beyond the initial point of attack.

Energy Release (Bombing and Incendiary): Refers to the use of an explosive or incendiary device. Detonation results in near instantaneous damage and devastation within the blast area. The extent of damage is determined by the type and quantity of the explosive used and the manner in which it is used. Explosive incidents can also result in cascading effects, such as the incremental failure of a structure or system. Incendiary devices inflict their devastating effects by combining the effects of powerful explosives and highly flammable materials. These “firebombs” are designed to detonate and to set nearby materials on fire.

Electromagnetic Pulse (EMP): A short burst of electromagnetic energy. It may occur in the form of a radiated, electric, or magnetic field or conducted electrical current depending on the source. An EMP can seriously damage electronic devices connected to power sources or antennas. This includes communication systems, computers, electrical appliances, and automobile or aircraft ignition systems. The damage could range from a minor interruption to actual burnout of components. Most electronic equipment within 1,000 miles of a high-altitude nuclear detonation could be affected. Battery-powered radios with short antennas generally would not be affected. Although an EMP is unlikely to harm most people, it could harm those with pacemakers or other implanted electronic devices.

Weapons of Mass Destruction (WMD): Any weapons designed or intended to cause death or serious bodily injury through the release, dissemination, or impact of toxic or poisonous chemicals, or their precursors; any weapon involving a biological agent, toxin, or vector, or any weapon that is designed to release radiation or radioactivity at a level dangerous to human life. WMDs could include chemical, biological, radiological, nuclear, explosive, or incendiary agents. WMDs are designed with the intent to inflict the maximum damage, death/injuries, and disruption.

Mass Shootings: There is some debate as to whether or not mass shootings, such as school shootings, should be classified as terrorism incidents. For purposes of hazard mitigation planning, shooting events are profiled as a subheading under terrorism. The FBI defines mass shootings as “four or more murders occurring during the same incident, with no distinctive time period between the murders. There have been several high-profile mass shooting events in the United States over the past few years, including an incident in August 2012 at a Sikh temple in Oak Creek, WI which left 6 people dead and 4 injured. In the wake of several mass shooting incidents at various public education institutions across the county, there is growing concern about school safety and a call to institute policies and procedures to prevent these types of incidents in the future.

Industrial Sabotage: Involves the intentional disruption of the business activity of an enterprise. The motives behind these activities may vary from internal and external conflicts to corporate

competition or political/social issues. Most acts of industrial sabotage are non-violent, and result in disruption of business and economic activities.

High-risk targets for acts of terrorism include military, education, and civilian government facilities, international airports, medical and research facilities, transportation systems, large cities, and high-profile landmarks. Terrorists might target large public gatherings, water and food supplies, utilities, and corporate centers. Terrorists are also capable of spreading fear by sending explosives or biological and chemical agents through the mail.

While terrorist targets are more likely to lie within urban and populated areas, rural areas are also vulnerable to terrorist activity. Rural areas such as Ashland County provide a relative degree of isolation and protection, but the remoteness and low population density may also allow individuals or groups to organize, train, and prepare more inconspicuously.

Cyberattack

A cyberattack is a malicious attempt to access or damage a computer or network system. This culminates into destructive consequences that can compromise data and promulgate cybercrimes such as information and identity theft. There are many types of cyberattacks, and although attacks evolve every day, cybercriminals rarely look to reinvent the wheel. Instead, they rely heavily on the approaches known to be effective. The following are some of the most commonly used cyber-attacks:

Botnets: Called a “botnet” because these programs, otherwise known as bots, or robots, exist across a network of devices. A single bot cannot do much damage but collectively are powerful and potentially dangerous. For example, botnets can help a cyber attacker facilitate a denial-of-service attack, which floods a webpage with traffic designed to take it offline. Botnets are also used to steal passwords and sensitive information, spread spam, and distribute viruses.

Cross-Site Scripting Attacks (XSS): Use third-party web resources to execute scripts in a scriptable program or web browser. Can have severe consequences if used to exploit other vulnerabilities, which could potentially enable the attacker to capture screenshots, log keyboard activity, steal network data, and even remotely control a device.

Denial-of-Service and Distributed Denial of Service Attacks: Flood systems, servers, or networks with traffic to exhaust resources and bandwidth. A denial-of-service (DoS) attack is used to overload a system’s resources, causing it to become unresponsive to service requests. A distributed denial-of-service (DDoS) attack also targets the system’s resources, but the launch source comes from a large number of host machines, each of which is infected and under the control of the attacker. DDoS attacks work in partnership with botnets and are capable of completely incapacitating a website or online service.

Malware: Unwanted software installed on a system or device without a person’s knowledge or permission. Malware or “malicious software” often infiltrates a system by attaching itself to authentic code and propagating. There are many different types, and more and more emerge every year. Ransomware is a type of malware that locks and encrypts a victim’s files. The attackers then demand a ransom from the victim to restore access to the data upon payment.

Phishing and Spear Fishing Attacks: Send fraudulent communications that appear to come from a reputable source, usually through email, text, or instant message to acquire a person’s sensitive information or to influence them into doing something. Might feature an attachment that downloads malware or a link to a fake website to trick someone into downloading malicious

software. Spear phishing is more targeted and requires the attackers to conduct research into their targets, so they can craft a tailored and personal email. For example, the “from” field in an email might be fake, leading the recipient to believe the message is from someone they know; or an email might pretend to be from a person’s employer, requesting urgent funds.

Structured Query Language (SQL) Injection Attack: A malicious code is inserted into a server that uses SQL and forces the server to reveal information. An attacker could carry out the attack simply by submitting malicious code into a vulnerable website search box. When successful, sensitive information can be read, stolen, modified, inserted, updated, or deleted.

HAZARD HISTORY

Civil Disturbance

Perhaps one of the most notable examples of civil unrest followed the 1983 Voigt decision, which reaffirmed Native American treaty rights to hunt, fish and gather on lands ceded to the United States by the Lake Superior Chippewa Tribes in 1837 and 1842. The court decision and subsequent spearfishing activity brought about violent clashes at public boat landings between the fishermen and protestors. The violent scenes at northern Wisconsin boat landings received both national and international attention.

In more recent history, the George Floyd protests were an extended period of civil unrest which began in Minneapolis, MN on May 26, 2020. The protests began in Minneapolis-Saint Paul and quickly spread internationally. While most protests were peaceful, demonstrations in some cities escalated into riots, arson, and looting. The civil unrest led to 617 arrests, two deaths, and upwards of \$500 million in property damage to 1,500 locations. This makes it the second-most destructive period of civil unrest in the history of the United States, after the 1992 Los Angeles riots. By the time the Los Angeles riots ended, there were more than 12,000 arrested, 63 deaths, and an estimated \$1 billion in property damage.

Terrorism

There have been no documented domestic or international terrorism events in Ashland County. According to the Global Terrorism Database, there were 50 documented terrorism incidents in the State of Wisconsin between 1970 and 2020, or an average of one incident per year.

Cyberattack

Cyberattacks happen on a continual basis. In May 2000, the FBI Internet Complaint Center (IC3) was established as a center to receive complaints of internet crime in the United States. Since its inception, IC3 has received more than 7.3 million complaints, averaging 651,800 complaints per year over the last five years. In 2022, Wisconsin reported 7,863 internet crime complaints, with losses totaling \$108,909,445. This ranked Wisconsin 19th (out of 57) in the number of internet crime complaints by each state, territory.

Table 42: Wisconsin Internet Crime Complaints

	2018	2019	2020	2021	2022
Total Complaints	6,621	6,378	8,308	8,646	7,863
Rank (Out of 57)	17	20	22	22	19
Total Losses	\$24,649,284	\$21,576,109	\$36,081,681	\$51,816,862	\$108,909,445
Rank (Out of 57)	25	30	25	26	23

Source: FBI IC3

VULNERABILITY AND RISK ASSESSMENT

Civil Disturbance

Area Affected

These events usually impact a small area, less than a city block. A large-scale uprising or demonstration has the potential to affect a much larger area. Government facilities, landmarks, prisons, and universities are common sites where crowds and mobs may gather.

Magnitude

There is a range that can be associated with the severity of the hazard depending on the nature of the disturbance. A localized civil disturbance that involved a small segment of the population such as a small-scale demonstration or labor strike would have a low severity; whereas a riot, looting or large-scale uprising that threatens public safety would have a high level of severity.

Duration

Civil disturbance events can be expected to last from a period of a few hours to days, depending on the nature of the event.

Frequency

Civil disturbance events are exceedingly rare in Ashland County. The county may experience a low severity disturbance once every 10 or 20 years.

Probability

While there has been no history of civil disturbance at the level of major emergency or disaster in Ashland County, the potential for such an incident does exist. Future events are likely to be low severity labor or demonstration events. The probability of a high severity event is extremely low. In the future, some limited disturbance can be expected if there are renewed mining, pipeline, or Lake Superior water extraction interests in Ashland County. Controversial natural resource utilization activities may elicit minor non-violent protest and/or demonstration.

Potential Climate Change Impact

Ashland County may not experience civil disturbances solely due to climate change, but the intersection of climate-related impacts with existing social, economic, and environmental vulnerabilities can contribute to tensions and conflicts within the county.

Population Affected

Low severity events are likely to affect only a small segment of the population.

Critical Facilities and Infrastructure at Risk

All critical facilities and infrastructure have some degree of risk as potential targets of civil disturbance. Government facilities or offices would likely have the highest risk.

Potential Economic Impact

Given the unpredictable nature of civil disturbances, an estimate of potential losses associated with a disturbance is very difficult. Civil disturbance can tax local resources and result in property damage.

Terrorism

Area Affected

Terrorism objectives are widely varied and so are the potential targets of terrorist action. In theory, any public facility, utilities, infrastructure, or gathering place could be a target for terrorist

activity. In addition, certain types of businesses and governmental institutions may be more prone to terrorist activities due to the specific nature of their business or size. Businesses such as banks, financial institutions, health care facilities, or businesses engaging in controversial activities are at the greatest risk. Local, state, and federal government facilities, public schools, and colleges/universities are also potential terrorist targets.

Magnitude

A terrorism attack in Ashland County could be minor to catastrophic.

Duration

Depending on the nature of the event, terrorism actions may be very short or instantaneous, as in the case of a bombing, or may last much longer. The recovery time for major events is often very long (weeks to months), with permanent psychological impacts.

Frequency

There have been no documented terrorism activities in Ashland County.

Probability

Because there have been no historical events in Ashland County, the probability is unknown.

Potential Climate Change Impact

Ashland County may not experience terrorism solely due to climate change, but the intersection of climate-related impacts with existing social, economic, and environmental vulnerabilities can contribute to tensions and conflicts within the county.

Population Affected

The population impacted will be dependent on numerous factors, including the nature of the event, location, and time of day. The likelihood that any individual will be affected by this hazard in Ashland County is very low. Of the 50 historical incidents between 1970 and 2020 in Wisconsin, 11 injuries and 14 fatalities were reported.

Critical Facilities and Infrastructure at Risk

It is highly unlikely that a terrorism event would impact all at-risk facilities and infrastructure, but rather a single structure.

Potential Economic Impact

It is highly unlikely that a terrorism event would impact all at-risk facilities, but rather a single facility. For example, an attack on gas pipeline infrastructure could have severe economic repercussions, both locally and nationally.

Cyberattack

Area Affected

Cyberattacks can come from anywhere in the world or from many places at once. The attack can be isolated to a single device, to a network, or to a regional area such as an electrical grid.

Magnitude

The magnitude of cyberattacks can be minor to catastrophic. Cyberattacks can affect a single computer or an entire network or grid system.

Duration

A cyberattack itself can be relatively short, but the recovery of data, information, and processes can be a long and strenuous effort after the attack.

Frequency

Cyberattacks are extremely frequent events for those who regularly use a computer. Large-scale cyberattack frequency varies greatly.

Probability

The pervasive presence of information technology likely assures a near 100% probability of occurrence. The probability of a single device cyber-attack is almost certain. The probability of a large-scale, county-wide cyberattack is less likely.

Potential Climate Change Impact

The potential impacts of climate change on cyberattacks in Ashland County are highly indirect. Global climate-related impacts can contribute to increased cyberattacks as people resort to cybercrime.

Population Affected

All Ashland County residents who use electronic devices could be targeted by a cyberattack. Small-scale hackers often focus efforts on elderly citizens because they are considered easier targets to collect valuable information from. Governments and municipalities are more likely to be targeted with a large effort looking for information or to cause disruption.

Critical Facilities and Infrastructure at Risk

Attacks are a risk to critical infrastructure, potentially affecting county government, utility providers, healthcare sectors, municipal water and sewer providers, transportation systems, and providers of internet, phone, and television service.

Potential Economic Impact

Economic impact will vary greatly depending on the intended purpose of the attack, type of attack, and target or targets of attack. When estimating the economic cost of cyberattacks, the loss of intellectual property, sensitive information, and confidential information is hard to value. There are also opportunity costs including the costs of securing networks, insurance, as well as the cost of recovery if a cyberattack does occur. The FBI's IC3 received a total of 800,944 complaints in 2022, with reported losses exceeding \$10.3 billion. In Wisconsin, nearly \$109 million in losses were reported.

Hazardous Materials Incident

HAZARD DESCRIPTION

According to the Federal Code of Regulations (49 CFR 171.8), a hazardous material is, "a substance or material, which has been determined by the Secretary of Transportation, to be capable of posing an unreasonable risk to health, safety, and property when transported in commerce."

These materials include various forms of flammable, combustible, poisonous, and radioactive substances. The release of hazardous materials can lead to property damage, short- and long-term health effects, serious injuries, and even death. Emergency response to incidents involving the release of hazardous materials may require fire, law enforcement, search and rescue, and hazardous materials units. A hazardous materials incident can be described as the uncontrolled release of hazardous materials capable of posing a risk to life, health, safety, property, or the environment.

Hazardous materials incidents typically occur as either fixed facility incidents or transportation incidents. The principal difference being that it is reasonably possible to identify and prepare for a fixed facility incident because laws require those facilities to notify state and local authorities about what is being used or produced at the facility. Transportation incidents are more difficult to prepare for because the transport of hazardous materials, while regulated, is not actively monitored. This makes it very difficult to determine what material(s) could be involved until the accident occurs.

Pipelines in Ashland County also represent a potential source for hazardous materials incidents. The county currently has four pipelines, three for natural gas transmission and one for crude oil.

HAZARD HISTORY

According to the Wisconsin Department of Natural Resources Bureau for Remediation and Redevelopment Tracking System database, there were 75 hazardous materials incidents in Ashland County between 2013 and 2024. Most incidents were transportation-related and were the result of traffic accidents.

Between 2015 and 2020, there were 17 hazardous liquid pipeline incidents and 4 gas transmission pipeline incidents on lines which run through Wisconsin. While none of these events occurred in Ashland County, there is a possibility that such an event could occur in the future.

Table 43: Ashland County Hazardous Materials Incidents, 2013-2024

Municipality	End Date	Activity Type	Municipality	End Date	Activity Type
White River	2013-11-07	Spill	Ashland	2015-02-02	Spill
Chippewa	2013-12-18	Spill	Ashland	2015-10-06	Spill
Ashland	2014-10-16	No Action Required	Mellen	2016-02-08	Spill
Ashland	2014-09-29	Leaking Underground Storage Tank	Chippewa	2016-02-26	Spill
			Ashland	0000-00-00	Offsite
Ashland	2014-07-01	Spill	Ashland	2016-04-08	Spill
La Pointe	0000-00-00	Environmental Repair Program	Ashland	2016-06-16	Spill
			La Pointe	2016-06-21	Spill
			Ashland	2016-08-22	Spill

Municipality	End Date	Activity Type
White River	2016-11-14	Spill
Barksdale	2016-11-17	Spill
Gingles	2016-11-18	Spill
Eileen	2016-11-18	Spill
Butternut	2017-02-09	Environmental Repair Program
Ashland	2017-03-10	Spill
Ashland	2018-09-28	Leaking Underground Storage Tank
Ashland	2017-05-08	No Action Required
Mellen	2017-06-01	No Action Required
Ashland	2017-11-27	Leaking Underground Storage Tank
Ashland	2017-09-16	Environmental Repair Program
Ashland	2017-10-31	Spill
Ashland	2017-11-27	Environmental Repair Program
Glidden	0000-00-00	Leaking Underground Storage Tank
Ashland	2017-11-06	Spill
Ashland	0000-00-00	Environmental Repair Program
Ashland	2018-04-11	Spill
Sanborn	2019-04-09	Spill
Ashland	2019-01-09	Spill
Mellen	0000-00-00	Offsite
La Pointe	2019-06-10	No Action Required
Gordon	2019-07-16	Spill
La Pointe	2019-12-02	Spill
La Pointe	2019-07-26	Abandoned Container
La Pointe	2019-08-13	Spill
La Pointe	2019-08-12	No Action Required
La Pointe	0000-00-00	Leaking Underground Storage Tank
Ashland	2021-01-04	Spill
Ashland	2020-08-13	No Action Required
Mellen	0000-00-00	Leaking Underground Storage Tank

Municipality	End Date	Activity Type
Ashland	0000-00-00	Offsite
Ashland	2020-11-02	Spill
Mellen	2021-06-17	No Action Required
Ashland	2021-02-17	Spill
Ashland	2021-03-05	Spill
Jacobs	2021-07-02	Spill
Ashland	2021-08-05	Leaking Underground Storage Tank
La Pointe	2021-07-15	No Action Required
Ashland	2021-09-24	No Action Required
Mellen	2021-12-22	No Action Required
La Pointe	2022-01-26	No Action Required
Ashland	0000-00-00	Environmental Repair Program
Ashland	0000-00-00	Environmental Repair Program
Ashland	2023-11-29	Spill
Ashland	0000-00-00	Environmental Repair Program
Ashland	2022-08-30	No Action Required
Gingles Tn	2022-08-15	Spill
Ashland	2022-08-15	Spill
Gingles Tn	2023-09-15	Environmental Repair Program
Ashland	2022-09-28	Spill
Ashland	0000-00-00	Leaking Underground Storage Tank
Mellen	2023-05-18	Spill
Ashland	0000-00-00	Environmental Repair Program
Ashland	2023-10-11	Spill
Ashland	2023-06-01	Spill
Butternut	2023-06-02	Spill
Ashland	0000-00-00	Environmental Repair Program
La Pointe	2023-08-22	Spill
Gingles	2023-12-19	Spill
Marengo	2024-03-21	No Action Required

Source: Wisconsin Department of Natural Resources
Bureau of Remediation and Redevelopment Tracking System

VULNERABILITY AND RISK ASSESSMENT

Area Affected

Historically, hazardous materials incidents in Ashland County have affected a relatively small area (<40 acres). These events do have the potential to affect a significantly larger area or even an entire community, depending on the nature of the event. An incident resulting in the release of toxic agents into the air or water has the potential to impact large areas of the county. Several past incidents have occurred on or near public roadways, with the highest frequency occurring on high volume highways (USH 2, STH 13, and STH 77) and within the county's populated communities. The Wisconsin DNR regulates the transport of hazardous materials in Wisconsin. The DNR requires transporters of hazardous materials to obtain a license to haul the materials and the company must meet strict documentation requirements. The DNR does not, however, track the specific date/time of the transport or the route of transit.

A hazardous materials incident involving any of the major gas and oil transmission lines in Ashland County has the potential to adversely affect localized areas along the line corridors.

Figure 34: Ashland County Pipelines



Source: Pipeline and Hazardous Materials Safety Administration

Magnitude

Most historic events have been minor. A Regional Response Team may be activated for an incident involving a hazardous materials spill, leak, explosion, injury, or the potential of immediate threat to life, the environment, or property. The Regional or "Level A" Teams respond to the most serious of spills and releases requiring the highest level of skin and respiratory protective gear. This includes all chemical, biological, or radiological emergencies. The regional response team serving Ashland County is based in Superior.

Duration

Hazardous materials incidents can occur anytime and without warning. Most incidents are handled well before becoming a disaster. Clean-up time is variable, depending on the nature of the incident. Serious incidents may require long-term environmental remediation.

Frequency

There were 75 hazardous materials spills in Ashland County between 2013 and 2024, or an average of about 7-8 incidents per year.

Probability

Based on historical records, there is a near 100% likelihood that at least one minor hazardous materials incident will occur during any given year.

Potential Climate Change Impact

The impacts of climate change on hazardous materials incidents are largely indirect.

Population Affected

The population affected by a future transportation-related incident will be dependent on several factors including location of incident, nature of chemicals released and environmental factors. Based on historical evidence, it is assumed that there is a high probability of incident containment before significant population impact.

Critical Facilities and Infrastructure at Risk

Critical facilities and infrastructure most at risk includes the Enbridge oil and gas pipelines, the Great Lakes Gas Transmission, and the Northern Natural Pipeline.

Potential Economic Impact

The potential economic impact associated with a fixed facility or transportation-related incident is unknown.

4. Mitigation Strategy

Introduction

Each participating jurisdiction in the Ashland County Hazard Mitigation Plan has a unique set of capabilities available to increase their resilience. These capabilities include the laws, policies, programs, staff, funding, and other resources on hand to carry out the plan and increase resilience. Reviewing each participant's capabilities helps the Ashland County Hazard Mitigation Committee find and evaluate resources they can use to reduce disaster losses now or in the future. A capability assessment for each participating jurisdiction is found in Appendix B.

Identifying and analyzing the natural and technological/human-caused hazards impacting Ashland County and each participating jurisdiction has resulted in the formulation of actions that are intended to protect life and property. Utilizing Hazard Mitigation Committee, stakeholder, and public input, a comprehensive list of mitigation goals and actions has been developed to assist in efforts to reduce the effects of natural and technological/human-caused hazards. The mitigation actions have been placed in priority order as identified in each jurisdiction's Hazard Priority Matrices in Tables 12-19.

Mitigation Goals

The goals for the Ashland County Hazard Mitigation Plan, as determined by the Hazard Mitigation Committee were:

Goal 1: To preserve life and minimize the potential for injuries or death.

Goal 2: To preserve and enhance the quality of life throughout Ashland County by identifying potential property damage risks and recommending appropriate mitigation strategies to minimize potential property damage.

Goal 3: To promote countywide planning that avoids transferring the risk from one community to an adjacent community, where appropriate.

Goal 4: To identify potential funding sources for mitigation projects and form the basis for FEMA project grant applications.

Mitigation Action Prioritization

The mitigation actions have been placed in priority order as identified in the Hazard Priority Matrices. Using this approach, actions appearing earlier in each jurisdiction's table are higher priorities than those appearing later. As the mitigation actions are further developed during the implementation process, a cost-benefit review will be undertaken to determine feasibility and cost-effectiveness. Each jurisdiction identified and discussed all potential mitigation actions and narrowed down those actions that appeared to have the most impact and to be the most cost effective.

Criteria used to establish mitigation actions included:

1. The direct impact on saving lives and preventing property damage.
2. The immediate and long-term impacts of each action.
3. The cost effectiveness of each action.

The Hazard Mitigation Committee and each jurisdiction reviewed their capabilities and risk assessment as a basis for developing potential mitigation actions. In addition, particular emphasis was placed on actions that reduced risk to new and existing buildings, structures, and infrastructure.

The Hazard Mitigation Committee developed a methodology for prioritizing the action items that meet the requirements of 44 CFR. The actions were prioritized according to the following criteria:

- **High Priority:** Activity addresses multiple goals, benefits exceed cost, funding is secured under existing programs, or is grant eligible.
- **Medium Priority:** Activity addresses at least one plan goal, benefits exceed costs, requires special funding authorization under existing programs, grant eligibility is questionable.
- **Low Priority:** Project will mitigate the risk of a hazard, benefits exceed costs, funding has not been secured, project is likely not grant eligible.

These priority definitions are dynamic and can change from one category over time. For example, a project might be assigned a medium priority because of the uncertainty of a funding source but be changed to high once a definitive funding source has been identified. The prioritization schedule for this plan will be reviewed and updated in accordance with the plan maintenance strategy.

The Mitigation Action Plan is reviewed over the five years of the plan's life by the Hazard Mitigation Committee and with the elected leaders from each jurisdiction to triage projects and determine what can and should be done within the planning period. These options are usually discussed in open meetings prior to implementation, as required by Wisconsin state law.

The determining factor for most projects is budget availability. The units of government have several options for funding implementation including grants, special taxing authority (for the project and/or any matching funds), general purpose revenue from existing budgets, and regulatory authority, which can be used to require that an individual or business complete the project using their funds. The units of government use or improve, if necessary, the mechanisms described above to ensure the implementation of hazard mitigation ideas.

Mitigation Action Plans

Each participating jurisdiction developed a Mitigation Action Plan that describes how the identified mitigation actions will be implemented. The Mitigation Action Plan also defines how these actions will be prioritized, administered, and incorporated into existing planning mechanisms.

Mitigation actions are defined by:

- **Hazard:** The hazard or hazards which are addressed by the identified action. Several of the plan's actions are classified as "All Hazards," meaning they address more than one identified hazard.
- **Action:** A measure, project, plan, or activity proposed to reduce current and future vulnerabilities described in the risk assessment.
- **Action Applies To:** Identifies the jurisdiction that each action applies to.
- **Priority:** The assigned priority ranking based on the following criteria:
 - High Priority - Activity addresses multiple goals, benefits exceed cost, funding is secured under existing programs, or is grant eligible.
 - Medium Priority - Activity addresses at least one plan goal, benefits exceed costs, requires special funding authorization under existing programs, grant eligibility is questionable.
 - Low Priority - Project will mitigate the risk of a hazard, benefits exceed costs, funding has not been secured, project is likely not grant eligible.
- **Timeframe:** Specified period by which the identified action is to be completed. Timeframes are not fixed and may change depending on many variables, including funding availability.
- **Cost of Project:** Estimated cost for completion of the action.
- **Potential Funding Source:** The target agency for funding or specific grant funding source, where applicable.
- **Responsible Management/Partners:** The position, office, department, or agency responsible for implementing the action. Potential partners for action implementation (WisDOT, WDNR, Bad River Band, etc.)

Key to Responsible Management/Partners	
EM	Ashland County Emergency Management
Extension	UW-Madison Extension
Fire	Fire Departments
Forestry & Recreation	Ashland County Forestry and Recreation Department
GIS	Ashland County GIS Department
HHS	Ashland County Health and Human Services
Highway	Ashland County Highway Department
LWCD	Ashland County Land and Water Conservation Department
Police	Police Departments
Sheriff	Ashland County Sheriff's Office
USACE	United States Army Corps of Engineers
WDNR	Wisconsin Department of Natural Resources
Zoning	Ashland County Zoning Office

Key to Potential Funding Source	
FAA	Federal Aviation Administration
FCC	Federal Communications Commission
FEMA BRIC	FEMA Building Resilient Infrastructure and Communities Grant Program
FEMA EMPG	FEMA Emergency Management Performance Grant Program
FEMA EOC	FEMA Emergency Operations Center Grant Program
FEMA FMA	FEMA Flood Mitigation Assistance Grant Program
FEMA HMA	FEMA Hazard Mitigation Assistance Grant Program
FEMA HMGP	FEMA Hazard Mitigation Grant Program
FEMA HSGP	FEMA Homeland Security Grant Program
FEMA PG	FEMA Preparedness Grant
HUD	United States Department of Housing and Urban Development
PSC EIGP	Public Service Commission Energy Innovation Grant Program
US DOE	United States Department of Energy
US DOJ	United States Department of Justice
US EPA	United States Environmental Protection Agency
USDA FSA	United States Department of Agriculture Farm Service Agency
WDNR	Wisconsin Department of Natural Resources
WEDC	Wisconsin Economic Development Corporation
WI DHS	Wisconsin Department of Health Services
WI DOA	Wisconsin Department of Administration
WisDOT	Wisconsin Department of Transportation

*

Designates an action that supports the NFIP.



Designates new action item.

Ashland County Mitigation Action Plan

Hazard	Action	Action Applies To	Priority	Timeframe	Cost of Project	Potential Funding Source	Responsible Management/ Partners
All Hazards	1. Coordinate a meeting with emergency personnel and representatives from nursing homes, schools, and hospitals to overview all Emergency Operations Plan (EOP) policies and procedures.	Ashland County	High	1-2 Years	Staff time & resources	Annual budget, FEMA EMPG	EM/ HHS
All Hazards	2. Train emergency response personnel and emergency response Team in NIMS. Organize and bring NIMS compliance up to date.	Ashland County	High	Ongoing, As Needed	Staff time & resources	Annual budget	EM/Police/Fire
All Hazards	3. Perform a study to develop an emergency source of supply of potable water in the Town of Jacobs.	Ashland County	High	1-5 Years	\$30,000	Wisconsin Geological Survey	Town of Jacobs
All Hazards	4. Explore and implement an emergency notification system to alert residents to potential emergency situations.	Ashland County	High	5 Years	Explore: Staff Time & Resources Implement: \$40,000	FEMA	EM/Bayfield County EM
All Hazards	5. Continue to improve coverage and interoperability for first responder communication systems.	Ashland County	High	Ongoing	Staff time & resources	Annual budget	Sheriff
All Hazards	6. Construct an Emergency Operations Center (EOC) at the Ashland County Highway Department.	Ashland County	High	1-2 Years	\$400,000	Annual budget, FEMA EOC	Highway, EM
All Hazards	7. Distribute NOAA weather radios to rural populations.	Ashland County	Medium -High	Annually	\$30/unit	FEMA BRIC, FEMA HMGP	EM/HHS/ Bad River Band
All Hazards	8. Distribute portable solar chargers to residents.	Ashland County	Medium -High	Annually	\$25/unit	US DOE	EM/Extension/ Bad River Band
All Hazards	9. Formalize intergovernmental agreements between the Highway Dept. and the municipalities.	Ashland County	Medium -High	Ongoing	Staff time & resources	Annual budget	Highway/ Municipalities

Hazard	Action	Action Applies To	Priority	Timeframe	Cost of Project	Potential Funding Source	Responsible Management/ Partners
All Hazards	10. Host community education classes or other forms of outreach on family disaster planning, supply kits, weather education, and community emergency response.	Ashland County	Medium	Biannual - early winter & summer	Staff time & resources	Annual budget, FEMA EMPG	EM/ HHS
All Hazards	11. Coordinate a meeting with all transportation entities in and around Ashland County to plan for emergencies and evacuations during a disaster. • ADRC of the North • Ashland County Aging Unit • Bad River Transit • BART • Lakeshore Bus Co • School Districts • Madeline Island Ferry Line	Ashland County	Medium	1-2 Years	Staff time & resources	Annual budget, FEMA PG	EM/Sheriff/ Police/Fire/
All Hazards	12. Evaluate options for updating zoning ordinances on coastal and inland waterways focusing on 92F and transitional soils. Educate the community on this concern.	Ashland County	Medium	5 Years	Staff time & resources	Annual budget	LWCD/Zoning
All Hazards	13. Ensure that GIS mapping is available to emergency operations personnel (fire, EMS, law enforcement) and is routinely updated.	Ashland County	Low	Ongoing	Staff time & resources	Annual budget	GIS
Severe Storms: Hail, Lightning, & Thunderstorm	14. Install lightning safety signs at outdoor venues (parks, baseball/football fields, downtowns, etc.). 	Ashland County	Medium	5 years	<\$1,000	WI DHS, FEMA PG	EM/Forestry & Recreation

Hazard	Action	Action Applies To	Priority	Timeframe	Cost of Project	Potential Funding Source	Responsible Management/ Partners
Flooding and Dam Failure	15. Update road projects including: • Lake Drive culvert replacement • Minnie Creek Road culvert replacement • Conley Road replace damaged culvert • Galilee Road two culvert replacements	Ashland County	High-Very High	• 2025-26 • 2026 • 2025-26 • 2024	\$175,000	Annual budget	Town of Morse
Flooding and Dam Failure	16. Complete capital improvement plans to prioritize local roads that are routinely exposed to flooding.	Ashland County	High	1-2 Years	\$50,000	Annual budget, WisDOT	Highway/ LWCD
Flooding and Dam Failure	17. Conduct dam maintenance for Hudson Dam, including: • Road and catwalk • New boards • Crack seal and grout	Ashland County	High	Ongoing (Every 10 years)	\$30,000-40,000	Annual budget	Highway/ Zoning/WDNR
Flooding and Dam Failure	18. Do an assessment of what groundwater capacities, quality, and flow direction are for future development.	Ashland County	High	3 years	\$100,000	Wisconsin Geological and Natural History Survey	LWCD/ EM/Zoning/ WI Geological and Natural History Survey
Flooding and Dam Failure	19. *Incorporate updated floodplain mapping into county GIS.	Ashland County	High	1-2 Years, Complete in 2025	Staff time & resources, \$5,000	Annual budget	Zoning/GIS/WDNR
Flooding and Dam Failure	20. Work with local municipalities to conduct flood evaluations.	Ashland County	Medium	Ongoing	Staff time & resources	Annual budget	EM/Highway/ Zoning/ Municipalities
Flooding and Dam Failure	21. Install flooding safety signs at outdoor venues (parks, baseball/football fields, downtowns, etc.). 	Ashland County	Medium	5 years	<\$1,000	WI DHS, FEMA PG	EM/Forestry & Recreation

Hazard	Action	Action Applies To	Priority	Timeframe	Cost of Project	Potential Funding Source	Responsible Management/ Partners
Flooding and Dam Failure	22. * Explore flood mitigation measures (e.g., buyouts, elevations, floodproofing, etc.) countywide.	Ashland County	Medium	Ongoing	Staff time & resources,	FEMA EMPG, FEMA FMA	EM/ <i>Municipalities</i>
Flooding and Dam Failure	23. * Educate residents about the National Flood Insurance Program (NFIP).	Ashland County	Low	Annually	Staff time & resources	Annual budget	EM/ <i>Municipalities/ Bad River Band</i>
Flooding and Dam Failure	24. Review potential strategies to manage growth and flooding issues on Caville Road in the Town of Sanborn.	Ashland County	Low	Ongoing	Staff time & resources	Annual budget	Town of Sanborn/ <i>EM</i>
Storms: Winter	25. Develop living snow fence to act as windbreak.	Ashland County	High	5 Years	\$25,000-\$100,000	WisDOT on STH, USDA FSA	Highway
Storms: Winter	26. As part of a public information campaign, make winter and cold weather safety materials publicly available.	Ashland County	Medium	Ongoing	Staff time & resources	Staff time & resources	EM/HHS/ <i>Municipalities/ Bad River Band</i>
Storms: Winter	27. Continually evaluate the salt/sand/wet agent mix of winter road agents for all communities to balance safety, costs, and environmental impacts.	Ashland County	Medium	Ongoing	Staff time & resources	Annual budget	Highway/ <i>City of Ashland</i>
Severe Storms: Hail, Lightning, & Thunderstorm	28. Ongoing maintenance to keep powerline right-of-way at least 20 feet clear.	Ashland County	High	Ongoing	Up to \$100,000	Annual budget	Highway/ <i>Price and Bayfield Electric</i>
Severe Storms: Hail, Lightning, & Thunderstorm	29. As part of a public information campaign, make winter and cold weather safety materials publicly available.	Ashland County	Medium	Ongoing	Staff time & resources	Annual budget	EM/ <i>Municipalities/Bad River</i>
Severe Temperature	30. As part of a public information campaign, make severe temperature safety materials publicly available.	Ashland County	Medium	Ongoing	Staff time & resources	Annual budget	EM/ HHS/ <i>Municipalities/ Bad River Band</i>
Severe Temperature	31. Develop a list of cooling and warming shelters in Ashland County.	Ashland County	Medium	1-2 Years	Staff time & resources	Annual budget	EM

Hazard	Action	Action Applies To	Priority	Timeframe	Cost of Project	Potential Funding Source	Responsible Management/ Partners
Severe Temperature	32. Promote cooling and warming shelters in Ashland County.	Ashland County	Medium	Ongoing, As needed	Staff time & resources	Annual budget	EM/HHS
Drought and Dust Storm	33. Complete water conservation, usage tracking, and savings outreach measures.	Ashland County	High	5 Years	Staff time & resources	Annual budget	Jacobs Sanitary District
Solar Storms	34. Educate the public on solar storm impacts and vulnerabilities.	Ashland County	Medium	Ongoing	Staff time & resources	Staff time & resources	EM
Solar Storms	35. Research and explore what other communities have done for mitigation of solar storms (e.g., hardening of infrastructure).	Ashland County	Medium	5 Years	Staff time & resources	Annual budget	EM
Solar Storms	36. Educate elected officials and other leadership on solar storm impacts and vulnerabilities.	Ashland County	Medium	Ongoing	Staff time & resources	Annual budget	EM
Storms: Tornado and High Wind	37. Identify storm shelters for golf courses, campgrounds, parks, and mobile home parks.	Ashland County	High	5 Years	Staff time & resources	Annual budget	EM/ <i>Municipalities</i>
Storms: Tornado and High Wind	38. As part of a public information campaign, make tornado and high wind safety materials publicly available.	Ashland County	Medium	Ongoing	Staff time & resources	Annual budget	EM/ <i>Bad River Band</i>
Coastal Erosion and Landslide	39. Add riprap to Madeline Island to protect roads/stabilize shorelines from coastal erosion from high water, high wind, and wave inundation.	Ashland County	High	5 Years	Average \$100-\$275/ linear foot	WI Coastal Management, BRIC, HMGP	Highway/ <i>Town of La Pointe</i>
Coastal Erosion and Landslide	40. Evaluate options for updating zoning ordinances on coastal (USACE) and inland waterways (WDNR) focusing on 92F and transitional soils. Educate the community on this concern.	Ashland County	Medium	5 Years	Staff time & resources	Annual budget	Zoning/LWCD/ <i>USACE/WDNR</i>
Pandemic	41. Develop a pandemic response plan.	Ashland County	High	Ongoing	Staff time & resources	Annual budget	EM/HHS
Wildfire	42. Continue to cut back brush from the rights-of-way of all roads.	Ashland County	High	Ongoing	Staff time & resources	Annual budget	Highway/ <i>Municipalities</i>
Wildfire	43. Install additional dry hydrants.	Ashland County	Low	5 Years	\$7,500	Annual budget	Fire

Hazard	Action	Action Applies To	Priority	Timeframe	Cost of Project	Potential Funding Source	Responsible Management/ Partners
Utility Failure	44. Obtain service map from Price Electric, Bayfield Electric, and Xcel Energy.	Ashland County	High	10 Years	Staff time & resources	Annual budget	EM/Price Electric/ Bayfield Electric/ Xcel Energy
Utility Failure	45. Conduct an assessment to evaluate the needs and budget and begin a project for emergency backup systems for community facilities around the county (to include emergency shelters). Explore possible options including backup generators, solar, outdoor/mobile generator receiver panels, etc.	Ashland County	High	10 Years	\$150,000	Annual or capital budget	EM
Utility Failure	46. Coordinate with power companies to understand the feasibility and prioritization of burying powerlines in the county.	Ashland County	High	5 Years	Staff time & resources	Annual budget	EM/Bayfield Electric/ Price Electric
Utility Failure	47. Investigate the use of solar power microgrids as self-sufficient power generation for municipalities	Ashland County	High	5+ Years	\$100-000-\$300,000 to implement	US EPA, PSC EIGP	EM/ Municipalities
Utility Failure	48. Study on line load and loss.	Ashland County	Medium	Ongoing	\$30,000	Annual budget	Price Electric
Civil Disturbance/ Terrorism/ Cyber Attack	49. Obtain security alarms, fire alarms, and video cameras for municipal facilities.	Ashland County	High	5 Years	\$50,000	Annual Budget	Town of Jacobs Sanitary District
Hazardous Materials Incident	50. Maintain partnership with state HazMat.	Ashland County	High	Ongoing	Staff time & resources	Annual budget	Ashland Fire/EM

City of Ashland Mitigation Action Plan

Hazard	Action	Action Applies To	Priority	Timeframe	Cost of Project	Potential Funding Source	Responsible Management/ Partners
All Hazards	1. Train Emergency Response personnel and Emergency Response Team in NIMS. Organize and bring NIMS compliance up to date.	City of Ashland	High	Ongoing, As Needed	Staff time & resources	Annual budget	Police/Fire/ Ashland County EM
All Hazards	2. Establish public access television station to be available in emergencies	City of Ashland	High	1-5 Years	Staff time & resources	Annual budget	IT
All Hazards	3. Equip public access television studio to be available in emergencies.	City of Ashland	High	1-2 Years	\$30,000	Annual budget	IT
All Hazards	4. Create and adopt an Emergency Operations Plan for the Police and Fire Departments.	City of Ashland	High	1-5 Years	\$5,000,000	FEMA PG	Administration/ Police/Fire
All Hazards	5. Continue enforcement of the city's ordinances to guide development away from hazardous areas.	City of Ashland	High	Ongoing	\$50,000	Annual budget	Planning & Zoning
All Hazards	6. Develop a plan to allow for the continuity of municipal operations that will ensure the essential functions of an organization that can operate during and after an emergency incident. Plan to include methods to maintain normal operating systems.	City of Ashland	High	1-2 Years	\$5,000	Annual budget	Administration
All Hazards	7. Develop an evacuation plan including emergency shelters and evacuation routes for Ashland residents.	City of Ashland	High	5 Years	\$25,000	Annual budget	Fire/Police/ Ashland County EM
All Hazards	8. Perform a study to develop an emergency source of supply of potable water.	City of Ashland	High	1-5 Years	\$30,000	WI DHS	Public Works
All Hazards	9. Develop an emergency source of potable water supply.	City of Ashland	High	5-10 Years	\$250,000	WI DHS	Public Works
All Hazards	10. Obtain computer systems and software to assist with emergency planning.	City of Ashland	High	1-2 Years	\$35,000	Annual budget	Administration/IT/ Fire/Police
All Hazards	11. Distribute NOAA weather radios to rural populations.	Ashland County	Medium -High	Annually	\$30/unit	FEMA BRIC, FEMA HMGP	EM/HHS/ Bad River Band

Hazard	Action	Action Applies To	Priority	Timeframe	Cost of Project	Potential Funding Source	Responsible Management/ Partners
All Hazards	12. Host community education classes or other forms of outreach on family disaster planning, supply kits, weather education, and community emergency response.	City of Ashland	Medium	Biannual - early winter & summer	Staff time & resources	Annual budget, FEMA EMPG	Police/Fire/ Ashland County EM
All Hazards	13. Establish 3-1-1 system.	City of Ashland	Medium	5-10 Years	Unknown	FCC	IT/Ashland County Sheriff
All Hazards	14. Increase municipal fuel storage capacity for emergency operations.	City of Ashland	Medium	1-2 Years	\$100,000	Capital budget	Public Works
All Hazards	15. Adopt a Post Disaster Recovery Ordinance.	City of Ashland	Medium	1-2 Years	\$500	Annual budget	Administration
All Hazards	16. Provide airport with portable hangars for equipment and storage, fuel storage, and refueling capabilities; ensure secure and properly maintained runways.	City of Ashland	Medium	1-5 Years	\$500,000	FAA	JFK Memorial Airport Staff/ Commission
All Hazards	17. Install methods to deter birds and wildlife at airport.	City of Ashland	Medium	Ongoing	\$10,000	Annual budget	JFK Memorial Airport Staff/ Commission
All Hazards	18. Improve roadways that currently do not allow safe access for emergency vehicles.	City of Ashland	Medium	Ongoing	\$400,000	Annual budget	Public Works
All Hazards	19. Plan, design, and construct an east-side loop in Ashland. Route would connect STH 13 to the east side of Ashland, providing another access around Bay City Creek. Route would serve as a detour across Bay City Creek.	City of Ashland	Medium	10-15 Years	\$10,000,000	WisDOT	Public Works
All Hazards	20. Ensure that the city continues to have access to multiple modes of transportation (rail, marine, highway, air).	City of Ashland	Medium	Ongoing	Staff time & resources	Annual budget	Planning & Development/ Public Works/ Administration/ JFK Memorial Airport/ Harbor Master

Hazard	Action	Action Applies To	Priority	Timeframe	Cost of Project	Potential Funding Source	Responsible Management/ Partners
All Hazards	21. Ensure that GIS mapping is available to emergency operations personnel (fire, EMS, law enforcement) and is routinely updated.	City of Ashland	Low	Ongoing	Staff time & resources	Annual budget	Admin/ Contractor
Severe Storms: Hail, Lightning, & Thunderstorm	22. As part of a public information campaign, make winter and cold weather safety materials publicly available.	City of Ashland	Medium	Ongoing	Staff time & resources	Annual budget	Administration/ Public Works/ Ashland County EM
Coastal Erosion and Landslide	23. Create a dredge spoil basin to permit harbor dredging to occur.	City of Ashland	High	1-5 Years	\$600,000	WI Coastal Management	Planning & Development/ Public Works/ Administration/ Harbor Master
Storms: Winter	24. As part of a public information campaign, make winter and cold weather safety materials publicly available.	City of Ashland	Medium	Ongoing	Staff time & resources	Annual budget	Administration/ Public Works/ Ashland County EM
Severe Temperature (Heat and Cold)	25. As part of a public information campaign, make severe temperature safety materials publicly available.	City of Ashland	Medium	Ongoing	Staff time & resources	Annual budget	Administration/ Public Works/ Ashland County EM
Flooding and Dam Failure	26. *Incorporate updated floodplain mapping into city's GIS.	City of Ashland	High	1-2 Years, Complete in 2025	Staff time & resources, \$5,000	Annual budget	Administration/ Contractor
Flooding and Dam Failure	27. Replace non-code compliant water lines and fire hydrants.	City of Ashland	High	10 Years	\$20 M	WDOA, WDNR	Public Works
Flooding and Dam Failure	28. Upgrade and make inspections of city water intake pipe in Lake Superior.	City of Ashland	High	5 Years	\$300,000	WDOA, WDNR	Public Works
Flooding and Dam Failure	29. Complete investments, testing, and maintenance of water and sewer systems to ensure they are operating withing health standards and codes.	City of Ashland	High	Ongoing	Staff time & resources	Annual budget, WDOA, WDNR	Public Works

Hazard	Action	Action Applies To	Priority	Timeframe	Cost of Project	Potential Funding Source	Responsible Management/ Partners
Flooding and Dam Failure	30. Maintain City of Ashland "KIYI Dock".	City of Ashland	High	Ongoing	Staff time & resources	Annual budget	Harbor Master/ USACE
Flooding and Dam Failure	31. Maintain City of Ashland "Soo Line Oredock".	City of Ashland	High	Ongoing	Staff time & resources	Annual budget	Harbor Master/ USACE
Flooding and Dam Failure	32. *Educate residents about the National Flood Insurance Program (NFIP).	City of Ashland	Low	Annually	Staff time & resources	Annual budget	Planning & Development/ <i>Ashland County EM</i>
Storms: Tornado and High Wind	33. Identify storm shelters for golf courses, campgrounds, parks, and mobile home parks.	City of Ashland	High	1-5 Years	\$100,000	FEMA BRIC	Police/Fire/ <i>Ashland County EM</i>
Storms: Tornado and High Wind	34. As part of a public information campaign, make tornado and high wind safety materials publicly available.	City of Ashland	Medium	Ongoing	Staff time & resources	Annual budget	Administration/ <i>Ashland County EM</i>
Wildfire	35. Address blight in community by demolition of vacant, abandoned, and substandard buildings.	City of Ashland	High	Ongoing	Staff time & resources	Annual budget, WDNR	Planning & Development
Wildfire	36. Install additional dry hydrants.	City of Ashland	Medium	As needed	\$50,000	WDNR	Public Works/Fire
Wildfire	37. Continue to cut back brush from the right-of-ways.	City of Ashland	Medium	Ongoing	Staff time & resources	Annual budget	Utilities/Fire
Drought and Dust Storms	38. Complete water conservation, usage tracking, and savings outreach measures.	City of Ashland	High	Ongoing	Dependent on measure	WDNR, US EPA	Public Works
Pandemic	39. Develop a pandemic response plan.	City of Ashland	High	5-10 Years	Staff time & resources	WDHS, Annual budget	Administration/ <i>Ashland County EM</i>
Utility Failure	40. Work with utilities to place new local electrical distribution lines underground where applicable.	City of Ashland	High	Ongoing	Depends on feasibility/ location	Annual budget	Public Works/ Planning & Development
Utility Failure	41. Update facility maintenance plan for wastewater.	City of Ashland	High	1-3 Years	Staff time & resources	Annual budget	Public Works

Hazard	Action	Action Applies To	Priority	Timeframe	Cost of Project	Potential Funding Source	Responsible Management/ Partners
Utility Failure	42. Conduct a needs assessment to evaluate the needs, budget, and begin project for emergency backup systems for community facilities. Possible options include backup generators, solar, outdoor/mobile generator receiver panels, etc.	City of Ashland	Medium	10 Years	\$150,000	Annual or capital budget	Public Works/Parks & Recreation/ Police/Library/ JFK Memorial Airport
Utility Failure	43. Evaluate the condition of older sewer infrastructure to ensure failures do not create cascading flooding issues.	City of Ashland	Medium	Ongoing	Staff time & resources	Annual budget	Public Works
Hazardous Materials Incident	44. Maintain partnership with state HazMat.	City of Ashland	High	Ongoing	Staff time & resources	Annual budget	Fire
Civil Disturbance/ Terrorism	45. Complete planning for civil disturbance, terrorism, and radiological emergencies.	City of Ashland	High	Ongoing	\$15,000	Annual budget, FEMA HSGP	Police/Fire
Civil Disturbance/ Terrorism	46. Increase security measures in public buildings, including at city administrative facilities.	City of Ashland	High	1-2 Years	\$50,000	Annual budget, FEMA HSGP	Public Works/Parks & Rec/Police/Fire
Civil Disturbance/ Terrorism	47. Obtain security alarms, fire alarms, and video cameras for municipal facilities.	City of Ashland	Medium	10-15 Years	\$250,000	Annual budget, US DOJ	IT/Public Works/Fire/ Police

City of Mellen Mitigation Action Plan

Hazard	Action	Action Applies To	Priority	Timeframe	Cost of Project	Potential Funding Source	Responsible Management/ Partners
All Hazards	1. Create and adopt an Emergency Operations Plan (EOP). <i>Comment: Adapt Mellen Municipal Utilities (MMU) Emergency Operations Plan (ERP) to city needs.</i>	City of Mellen	Medium	5 years	Staff time & resources	Annual budget, FEMA PG	City of Mellen
All Hazards	2. Maintain municipal fuel storage capacity for emergency operations.	City of Mellen	Medium	Ongoing	Staff time & resources	Annual budget	Mellen Street and Alley
All Hazards	3. Plan for emergency source of potable water.	City of Mellen	Medium	Ongoing	Staff time & resources	Annual budget	MMU
All Hazards	4. Test the City of Mellen siren monthly.	City of Mellen	Medium	Ongoing	Staff time & resources	Annual budget	Mellen Fire
All Hazards	5. Continue to improve coverage and interoperability for first responder communication systems.	City of Mellen	Medium	Ongoing	Staff time & resources	Annual budget, FEMA PG	Ashland County Sheriff/Mellen Police, Fire, and Rescue
All Hazards	6. Formalize intergovernmental agreements between County Highway Dept and City of Mellen.	City of Mellen	Medium	Ongoing	Staff time & resources	Annual budget	Ashland County Health/City of Mellen
All Hazards	7. Coordinate with County Emergency Management Coordinator, city and county emergency personnel, and representatives from homes, schools, and hospitals to assess storm safety procedures/ emergency care procedures.	City of Mellen	Low	Ongoing	Staff time, \$10,000-\$20,000	Annual budget, EMPG	Ashland County EM/Mellen Police & Fire
All Hazards	8. Host community education classes or other forms of outreach on family disaster planning, supply kits, weather education, and community emergency response.	City of Mellen	Low	Biannual-early winter and summer	Staff time, \$25,000	Annual budget, EMPG	Ashland County EM/Mellen Police & Fire
All Hazards	9. Maintain public transportation system to move people during an emergency or evacuate areas in a disaster. <i>Comment: Possible use of BART and school buses.</i>	City of Mellen	Low	Ongoing	Staff time & resources	Annual budget, EMPG	Ashland County EM/Mellen Police & Fire

Hazard	Action	Action Applies To	Priority	Timeframe	Cost of Project	Potential Funding Source	Responsible Management/ Partners
All Hazards	10. Train emergency response personnel and emergency response teams in the National Incident Management System (NIMS).	City of Mellen	Low	Ongoing	Staff time & resources	Annual budget for staff time	<i>Ashland County EM/Mellen Police & Fire</i>
Storms: Hail, Lightning, & Thunderstorm	11. Make thunderstorm, hail, and lightning safety materials publicly available as part of public information campaign.	City of Mellen	Low	Ongoing	Staff time & resources	Annual budget, ReadyWisconsin, FEMA PG	<i>Ashland County EM/City of Mellen</i>
Drought and Dust Storms	12. Continue water conservation, usage tracking, and savings outreach measures.	City of Mellen	Low	5 years	Staff time & resources	Annual budget, WDNR Drinking & Groundwater Program, US EPA WaterSense	MMU
Storms: Winter	13. Make winter and cold weather safety materials publicly available as part of public information campaign.	City of Mellen	Low	Ongoing	Staff time & resources	Annual budget, ReadyWisconsin, FEMA PG	<i>Ashland County EM/City of Mellen</i>
Severe Temperature (Heat & Cold)	14. Make severe temperature safety materials publicly available as part of public information campaign.	City of Mellen	Low	Ongoing	Staff time & resources	Annual budget, ReadyWisconsin, FEMA PG	<i>Ashland County EM/City of Mellen</i>
Storms: Hail, Lightning, & Thunderstorms	15. Make thunderstorm, hail, and lightning safety materials publicly available as part of public information campaign.	City of Mellen	Low	Ongoing	Staff time & resources	Annual budget, ReadyWisconsin FEMA PG	<i>Ashland County EM/City of Mellen</i>
Storms: Hail, Lightning, and Thunderstorms	16. Ongoing maintenance to clear dead/damaged trees from side streets.	City of Mellen	Low	Ongoing	Staff time & resources	Annual Budget	Mellen Street & Alley
Flooding and Dam Failure	17. Complete capital improvement plans to prioritize local roads that are routinely exposed to flooding.	City of Mellen	Low	5 years	Staff time & resources	Annual budget	Mellen Street and Alley
Flooding and Dam Failure	18. Perform routine bridge inspection and maintenance.	City of Mellen	Low	Ongoing	Staff time & resources	Annual budget, WisDOT LBIA	<i>Ashland County Health /City of Mellen</i>
Flooding and Dam Failure	19. Maintain Emergency Response Plan for utilities.	City of Mellen	Low	Ongoing	Staff time & resources	Annual budget	MMU

Hazard	Action	Action Applies To	Priority	Timeframe	Cost of Project	Potential Funding Source	Responsible Management/ Partners
Flooding and Dam Failure	20. *Educate residents about the National Flood Insurance Program (NFIP).	City of Mellen	Low	Ongoing	Staff time & resources	Annual budget, FEMA PG	<i>Ashland County EM/</i> City of Mellen
Flooding and Dam Failure	21. Cap unused/out of service wells to prevent contamination.	City of Mellen	Low	Ongoing	\$20,000-\$75,000	Annual budget	City of Mellen
Flooding and Dam Failure	22. Maintain wellhead protection plans.	City of Mellen	Low	Ongoing	Staff time & resources	Annual budget	City of Mellen
Pandemic	23. Make pandemic safety materials publicly available as part of public information campaign.	City of Mellen	Low	Ongoing	Staff time & resources	Annual budget, WI DHS, FEMA PG	<i>Ashland County EM/</i> City of Mellen
Storms: Tornadoes and High Winds	24. Make tornado and high wind safety materials publicly available as part of public information campaign.	City of Mellen	Low	Ongoing	Staff time & resources	Annual budget, ReadyWisconsin, FEMA PG	<i>Ashland County EM/</i> City of Mellen
Storms: Tornadoes and High Winds	25. Determine if warning siren testing needs to be revised/implemented. Consider cell phone warning system.	City of Mellen	Low	Ongoing	Staff time & resources	Annual budget	Mellen Fire/Police
Landslide	26. Make landslide safety materials publicly available as part of public information campaign.	City of Mellen	Low	Ongoing	Staff time & resources	Annual Budget	<i>Ashland County EM/</i> City of Mellen
Wildfire	27. Improve enforcement of burning permit ordinance.	City of Mellen	Medium	Ongoing	Staff time & resources	Annual budget	City of Mellen
Wildfire	28. Address blight in community by demolition of vacant, abandoned, and substandard buildings.	City of Mellen	Low	Ongoing	\$5-\$15 per square foot	Annual Budget, WDNR Ready for Reuse, WEDC/US EPA Brownfields Grants/Loans	City of Mellen
Wildfire	29. Continue to enforce property maintenance ordinance.	City of Mellen	Low	Ongoing	Staff time & resources	Annual budget	City of Mellen
Wildfire	30. Conduct FireWise Programs.	City of Mellen	Low	Ongoing	Staff time & resources	Annual budget	<i>DNR/</i> Mellen Fire

Hazard	Action	Action Applies To	Priority	Timeframe	Cost of Project	Potential Funding Source	Responsible Management/ Partners
Wildfire	31. Continue wildfire emergency operations training and interagency coordination initiatives.	City of Mellen	Low	Ongoing	Staff time, \$2,000-\$10,000	Annual budget, WDNR Forest Fire Protection Grant	<i>USFS/DNR/ Mellen Fire</i>
Drought and Dust Storms	32. Continue water conservation, usage tracking, and savings outreach measures.	City of Mellen	Low	5 years	Staff time & resources	Annual budget, WDNR Drinking & Groundwater, US EPA WaterSense	MMU
Solar Storm	33. Make sunscreen/block safety publicly available as part of public information campaign.	City of Mellen	Low	Ongoing	Staff time & resources	WI DHS	<i>Ashland County EM/City of Mellen</i>
Utility Failure	34. Maintain generator to conduct city garage and MMU functions.	City of Mellen	Low	Ongoing	Staff time & resources	Annual budget	City of Mellen/MMU
Utility Failure	35. Maintain city records backup.	City of Mellen	Low	Ongoing	Staff time & resources	Annual budget	City of Mellen/MMU
Civil Disturbance/ Terrorism	36. Obtain security alarms, fire alarms, and video cameras for municipal facilities.	City of Mellen	Low	Ongoing	\$5,000-\$20,000	FEMA PG, FEMA SLCGP	City of Mellen
Civil Disturbance/ Terrorism	37. Maintain MMU “Red Flag Rule” and adapt to city.	City of Mellen	Low	Ongoing	Staff time & resources	FEMA PG	City of Mellen/MMU

Mellen School District Mitigation Action Plan

Hazard	Action	Action Applies to	Priority	Timeframe	Cost of Project	Potential Funding Source	Responsible Management/Partners
Flooding and Dam Failure	1. Assist City of Mellen with educating residents about the National Flood Insurance Program (NFIP).	Mellen School District	High	Annually	Annual budget	Central Supply	School Administration
Storms: Winter	2. Assist City of Mellen with educating residents about winter and cold weather safety measures.	Mellen School District	High	Annually	Annual budget	Central Supply	School Administration
Severe Storms: Hail, Lightning, & Thunderstorms	3. Construct a safety shelter for City of Mellen residents in the event of severe storms.	Mellen School District	High	2025-2027	\$1.2 million	FEMA BRIC	School Administration/ <i>Contractor</i>
Severe Temperature (Heat and Cold)	4. Construct a safety shelter for City of Mellen residents in the event of severe temperatures.	Mellen School District	High	2025-2027	\$1.2 million	FEMA BRIC	School Administration/ <i>Contractor</i>
Drought and Dust Storm	5. Construct a safety shelter for City of Mellen residents in the event of drought and dust storms.	Mellen School District	High	2025-2027	\$1.2 million	FEMA BRIC	School Administration/ <i>Contractor</i>
Storms: Tornado and High Wind	6. Construct a safety shelter for City of Mellen residents in the event of tornado and high wind.	Mellen School District	High	2025-2027	\$1.2 million	FEMA BRIC	School Administration/ <i>Contractor</i>
Pandemic	7. Construct a safety shelter for City of Mellen residents in the event of a pandemic to provide for necessary social distancing for meeting and testing.	Mellen School District	High	2025-2027	\$1.2 million	FEMA BRIC	School Administration/ <i>Contractor</i>
Wildfire	8. Install Fire Signs by School Forests.	Mellen School District	High	2 years	Annual budget	School Forest Fund	School Forest Committee
Civil Disturbance/ Terrorism	9. Construct a safety shelter for City of Mellen residents in the event of civil disturbance/terrorism.	Mellen School District	High	2025-2027	\$1.2 million	FEMA BRIC	School Administration/ <i>Contractor</i>

5. Plan Maintenance

Introduction

Plan maintenance outlines the process Ashland County will undertake for monitoring, evaluating, and updating the plan. The first section, **Monitoring, Evaluating, and Updating**, describes the system established to track implementation of the plan over time (monitoring), assess how well the plan meets its stated purpose and goals (evaluating), and the process to review and revise the plan at least one every five years (updating). The next section, **Continued Public Involvement** describes how public involvement will be assured as the plan is maintained. The final section, **Plan Integration** describes the process by which participating jurisdictions will integrate data from the Ashland County Hazard Mitigation Plan into other planning mechanisms.

Monitoring, Evaluating, and Updating

To ensure that the Ashland County Hazard Mitigation Plan continues to meet community needs, the document should be periodically reviewed and updated. The plan's vision and strategy should be examined on an annual basis. Changing values and beliefs, coupled with evolving technology, necessitates that the document be considered a "living" document that guides actions. The Mitigation Strategy should not only be re-evaluated within this "values" context, but also include an examination of successes and failures. During the plan's lifecycle, all jurisdictions should consider the Mitigation Action Plan as they set their annual budgets, as grants become available, and after a disaster event.

The Ashland County Hazard Mitigation Committee should meet annually to monitor and evaluate the plan. A more complete plan update should occur at least once every five years. It is important that representatives from each participating jurisdiction are involved in the plan monitoring, evaluating, and updating process. Additionally, elected officials, representatives from businesses, academia, public environmental organizations, social service providers, and members of the public should be included in the plan maintenance process.

In the process of monitoring and evaluating the plan, the Hazard Mitigation Committee should answer the following questions:

1. Do the goals continue to address expected conditions in Ashland County?
2. Is the risk assessment still appropriate or has the nature or magnitude of the hazard and/or vulnerability changed over time?
3. Are current resources appropriate for implementing this plan?
4. Have responsible parties participated as originally proposed?
5. Have outcomes met expectations?
6. What problems have occurred in the implementation process?
7. What were the plan's successes and failures?
8. Have members of the public been adequately involved in the process? Are their comments being heard?

Annual Review

The Ashland County Hazard Mitigation Committee should be responsible for the following tasks relative to evaluating and monitoring the plan at least annually:

1. Review the plan goals to ensure consistency with changing values, beliefs, and technology.
2. Monitor and evaluate the mitigation strategy to assure that the plan reflects current hazard analyses, development trends, code changes, risk analyses, and perceptions.
3. Document the successful (and unsuccessful) completion of mitigation actions, monitor/adjust established timelines, and ensure that mitigation projects are properly closed out.
4. Developing new future mitigation actions to be undertaken in the community.
5. Continue to involve local units of government, stakeholders, and the public in the planning process.

Five-Year Update (Required)

The Ashland County Hazard Mitigation Committee should be responsible for the following tasks relative to reviewing and revising the plan at least once every five years:

1. Convene the Ashland County Hazard Mitigation Committee and complete stakeholder and public outreach.
2. Identify new plans, studies, reports, and technical information that pertain to Ashland County's vulnerabilities.
3. Validate or update the hazards list.
4. Update hazard profiles to include events that occurred since the last plan.
5. Validate or update community capabilities.
6. Validate or update community assets.
7. Update the risk assessment based on the above.
8. Update the mitigation strategy based on the new risk assessment.
9. Address changes in development and changes in priorities.
10. Document and describe the plan update process.

Continued Public Involvement

To facilitate continued public involvement after the plan has been approved and as part of plan implementation, monitoring, and evaluation, the Ashland County Hazard Mitigation Committee should assure that the following steps are taken:

1. The public should be directly involved in the review and update of the plan. All meetings should be open to the public and publicized to encourage attendance. Time for public comment should be granted throughout the process.
2. Copies of the plan should be made available at publicly accessible locations.

3. The plan will be available on the Ashland County website and will contain an email address and phone number the public can use for submitting comments and concerns about the plan.
4. A public meeting will be held annually to provide the public with a forum for expressing concerns, opinions, and ideas.

Plan Integration

The integration of the Ashland County Hazard Mitigation Plan into other planning mechanisms is an ongoing process for Ashland County, the City of Ashland, City of Mellen, Village of Butternut, and the Mellen School District. Through annual review and continuous evaluation, the hazard mitigation principles, vulnerability information, and mitigation actions of the Ashland County Hazard Mitigation Plan will complement and enhance current and future planning documents, ordinances, studies, and decisions.

These include but are not limited to planning mechanisms and decisions related to land use, transportation, housing, natural and cultural resources protection, watershed management, farmland preservation, climate change, sustainability, and economic development. More specifically these include capital improvement plans, comprehensive plans, transportation plans, outdoor recreation plans, other long-range plans, zoning ordinances, floodplain ordinances, and any other mechanisms where natural hazard information and mitigation policies may be integrated. This also includes all planning mechanisms that were identified in the Capability Assessment of each participating jurisdiction (Appendix B).

At the county-level these long-range planning documents include the Emergency Operations Plan, Ashland County Comprehensive Plan, Land and Water Resource Management Plan, the Clam Lake Area Wildfire Protection Plan, future Community Wildfire Protection Plans, and other important planning documents as they pertain to hazard mitigation.

Ashland County, the City of Ashland, the Village of Butternut, and the Mellen School District will all incorporate the Ashland County Hazard Mitigation Plan by reference into their capital improvement plans. Ashland County, the City of Ashland, City of Mellen, and the Village of Butternut will also incorporate the mitigation plan into their comprehensive plans. This will ensure that all future trends in development can be established with the benefits of the information on risk and vulnerability to natural hazards identified in this plan. The mitigation plan will also be used to help guide building code changes and future land use planning efforts.

Appendices

Appendix A: Planning Process Documentation

DRAFT

Agenda

Ashland County Hazard Mitigation Plan Update Meeting 1

Wednesday, November 29, 2023
10:00-11:30 AM

Ashland Fire Department Conference Room
215 6th Street East
Ashland, WI 54806

Microsoft Teams meeting

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1. Call meeting to order
2. Introductions
3. Overview of hazard mitigation plan update:
 - a. Committee roles and responsibilities
 - b. Participating jurisdictions
 - c. In-kind match
 - d. Timeline
4. Overview of updated FEMA requirements
5. Develop list of stakeholders and identify stakeholder/public outreach methods
6. Review identified hazards and update hazard vulnerability rankings
7. Public comment
8. Set next meeting date
9. Adjourn

SIGN-IN

Ashland County Hazard Mitigation Plan Update

November 29, 2023

10 AM

Name (Please Print)	Department/Organization	Email/Phone Number
Mark Hill	Ashland County Dispatch	mark.hill@ashlandcountywi.gov 715.685.7640 EXT 459
Christine Dzwonkowski	Ashland Co EM	
Matt Erickson	Ashland Co Hwy	matt.erickson@ashlandcountywi.gov
BRUCE BLAKEMAN	ASHLAND COUNTY ZONING	bruce.blakeman@ashlandcounty.wi.gov
Terry VAN BUREN	MAYOR - City of Mellen	vanbaren.terrance@outlook.com
Becky Mesko	Utility Clerk Deputy Clerk Treasurer City of Mellen	mellenmu@cityofmellen.or
NATHAN KUGER	BAD RIVER NAT. RES. DEPT.	airquality@badriver-nrn.gov
Matt MacKenzie	Ashland	mmackenzie@ashlandco.wi.org
Lissa Radke	UW Extension	lissa.radke@wisc.edu
Mary Jo Gingras	Ashland Co Land + Water	
Emily Nelson	Northwest Regional Planning Commission	
(Virtual) Andrew Spychalla	Bad River Natural Resources	
(Virtual) Chris Kopel	Bayfield Electric	
(Virtual) Megan Mader	Northwest Regional Planning Commission	
(Virtual) Cindy Pritzl	Butternut Clerk / Treasurer	

Agenda

Ashland County Hazard Mitigation Plan Update Meeting 2

Wednesday, January 10, 2024
10:00 AM

Ashland Fire Department Conference Room
215 6th Street East
Ashland, WI 54806

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1. Call meeting to order
2. Public Comment
3. Verify Hazard Identification and Prioritization
4. Complete Capability Assessment
5. Review Mitigation Strategy
 - Review Mitigation Goals
 - Review Mitigation Actions Progress and Completion
6. Set next Meeting Date
7. Adjourn

SIGN-IN

Ashland County Hazard Mitigation Plan Update

January 10, 2024

10 AM

Name (Please Print)	Department/Organization	Email/Phone Number
Christina Dzwonkowski	Ashland Co EM	christina.dzwonkowski@ashlandcountywi.gov
Matt Erickson	Ashland Co Hwy	
NATHAN KUGER	BAD RIVER NAT. RES.	airquality@badriver-nsn.gov
Becky Mesko	City of Mellen	mellenmu@cityofmellen.org 715-274-2136
Terry VanBuren	City of Mellen	
Matt Spangler	Ashland Fire	mspangle@coawis.org 715-682-7052
BREE BLAKEMORE	ASHLAND ZONING	
LISSA RADKE	Ash Cty UW Extension	682-7017
Mark Hill	Ashland County Dispatch	mark.hill@ashlandcountywi.gov
Maryjo Gingras	Ashland Land+Water Conservation Dept.	maryjo.gingras@ashlandcountywi.gov 682-7187
Rhonda Elmhorst-Friemuth	Mellen School District	
Megan Mader	NWRPL	

Emily Nelson

NWRPL

Agenda

Ashland County Hazard Mitigation Plan Update Meeting 3

Tuesday, February 13, 2024
10:00 AM

Ashland Fire Department Conference Room
215 6th Street East
Ashland, WI 54806

Microsoft Teams meeting

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1. Call meeting to order
2. Public Comment
3. Discuss Hazard Identification and Prioritization – Solar Storms
4. Review Mitigation Strategy
 - Review Mitigation Goals
 - Review Mitigation Actions Progress and Completion
5. Set next Meeting Date
6. Adjourn

SIGN-IN

Ashland County Hazard Mitigation Plan Update

February 13, 2024

10 AM

Name (Please Print)	Department/Organization	Email/Phone Number
Christine Dzwonkowski	Ashland EM	
Mark Hill	Ashland Co Dispatch	
Zack Zander	Brd River	
Terry VanBuren	City of Mellen	
Matt Spangler	Ashland Fire	MSpangler@coawhi.org
Matt Erickson	Ashland Co Hwy	
Mary Jo Gingras	Ashland Co Land + Water	
✓ Loren Erickson	Price Electric	
✓ Rhonda Elmhorst-Friemuth	Mellen School District	
✓ Michael Kuchta	Town of LaPorte	
Stuart Matthias	Ashland Fire Chief	
Megan Mader	NWRPL	

Emily Nelson

NWRPL

Agenda

Ashland County Hazard Mitigation Plan Update Meeting 4

Tuesday, March 5, 2024
10:00 AM

Ashland Fire Department Conference Room
215 6th Street East
Ashland, WI 54806

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1. Call meeting to order
2. Public Comment
3. Review Mitigation Strategy
 - Review Mitigation Actions Progress and Completion
 - Identify New Mitigation Actions
4. Set next Meeting Date
5. Adjourn

Sign In

3/5/2024

Ashland County Hazard Mitigation Plan

<u>Name</u>	<u>Organization</u>	<u>Email</u>	<u>Phone #</u>
Terry VanBuren	City of Mellen		
STUART MATTHIAS	ASHLAND FIRE	smatthia@coawi.org	
Emily Nelson	Northwest Regional Planning		
NATHAN KUGER	BAD RIVER JANDS	arguelity@badriver-usn.ga	
Becky Mesko	City of Mellen	mellenmu@cityofmellen.org	
Matt Erickson	Ashland Co Hwy	715-209-4798	
BRANT KUCERA	ASHLAND CITY of ASHLAND	bkucera@coawi.org	
Mark Hill	Ashland County Dispatch		
Christina Dzwonkowski	Ashland Co EM		
Lissa Radke	Ashland Cty Extension		
Michael Kuchta	LaPointe - Virtual		
Rhonda Elmhurst-Friemuth	Mellen School District		
Megan Mader	NWRPC		

Agenda

Ashland County Hazard Mitigation Plan Update Meeting 5

Tuesday, May 7, 2024
10:00 AM

Ashland Fire Department Conference Room
215 6th Street East
Ashland, WI 54806

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1. Call Meeting to Order
2. Public Comment
3. Review Mitigation Strategy
 - Review Mitigation Actions Progress and Completion
 - Identify New Mitigation Actions
4. Plan Maintenance Procedures Overview
5. Other Business
6. Set next Meeting Date
7. Adjourn

SIGN-IN

Ashland County Hazard Mitigation Plan Update

May 7, 2024

10 AM

Name (Please Print)	Department/Organization	Email/Phone Number
Terry VanBuren	City of Meller	
NATHAN KILGER	BAD RIVER NAT. RES.	arguaity@badriver-nsn.gov
Cole Nandrup	Bad River NAT. RES.	climate@badriver-nsn.gov
STUART MATTHEW	ASHLAND FIRE DEPT	smatthie@proanw.org
LISSA RADKE	UW Extension - Ash City	
Christina Dzwonkowski	Ashland Co EM	
BRANT KUCERA	CITY OF ASHLAND	
BRUCE BLAKEMAN	ASHLAND COUNTY ZONING	
Matt Erickson	Ashland County Highway	
MaryJo Gingras	Ashland County Land+Water Conservation	
Loren Erickson (virtual)	Price Electric COOP	
Cindy Pritzl (virtual)	Village of Butternut	

Rhonda Elmhorst-Friemuth (virtual)

Mellen School District

Agenda

Ashland County Hazard Mitigation Plan Update Meeting 6

Monday, June 17, 2024

10:00 AM

Ashland Fire Department Conference Room
215 6th Street East
Ashland, WI 54806

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Meeting ID: 277 778 491 778

Passcode: koag4T

1. Call Meeting to Order
2. Public Comment
3. Review Draft Hazard Mitigation Plan
4. Discuss Public Review and Comment Period
5. Overview of Plan Approval and Adoption Process
6. Other Business
7. Set Next Meeting Date
8. Adjourn

SIGN-IN

Ashland County Hazard Mitigation Plan Update

June 17, 2024

10 AM

Name (Please Print)	Department/Organization	Email/Phone Number
Mark Hill	Ashland County Communication Center	_____
Terry VanBuren	City of Mellen	
STUART MATTHIAS	ASHLAND FIRE	smatthia@gmail.com
Becky Mesko	City of Mellen	mellenmu@cityofmellen.org 715-274-2136
NATHAN KILGER	BAD RIVER NAT. RES.	airquality@badriver-nrn.gov
Lissa Radke	UW Extension Ashland County	lissa.radke@wisc.edu
Christina Dzwonkowski	Ashland Co EM	Christina. Dzwonkowski@ Ashlandcountywi.gov
BRANT KUCERA	CITY OF ASHLAND	bkucera@coawi.org
MaryJo Gingras	Ashland Co. LWCD	maryjo.gingras@ ashlandcountywi.gov
Ben Orysen (virtual)	Price Electric	

Appendix B: Capability Assessment

DRAFT

CAPABILITY ASSESSMENT: ASHLAND COUNTY

Planning and Regulatory

Capability Type	In Place	Department/Staff Responsible
Capital Improvements Plan	Y	Administrator
Climate Change Adaptation Plan	N	
Community Wildfire Protection Plan	N	
Comprehensive Plan	Y	County Board
Continuity of Operations Plan	Y	Highway, Emergency Management
Forest Comprehensive Land Use Plan	Y	County Forest, USFS
Economic Development Plan	Y	NWRPC, ARDC
Land & Water Resource Management Plan	Y	Land & Water Conservation
Local Emergency Operations Plan	Y	Emergency Management
Stormwater Management Plan	N	
Transportation Plan	Y	Road Improvement Plan, Highway
Acquisition of land for open space and public recreation use	Y	Forestry
Building Code	Y	Zoning, UDC
Fire Code	Y	State of WI
Flood Insurance Rate Maps	Y	Zoning
Floodplain Ordinance	Y	Zoning
Subdivision Ordinance	Y	Zoning
Shoreland Zoning Ordinance	Y	Zoning
Zoning Ordinance	Y	Zoning
National Flood Insurance Program	Y	Emergency Management
Animal Waste Storage Ordinance	Y	NR 151, Land & Water Conservation

How can planning and regulatory capabilities be expanded and improved to reduce risk?

- FIRMs were updated in 2022 to incorporate new topographic information and more current data affecting flood risk, but final FIRMs are not yet available.
- Incorporate hazard mitigation into the 10-year update of the Ashland County Comprehensive Plan in 2025.
- Cooperation between Bad River Band of Lake Superior Chippewa and Ashland County.

Administrative and Technical

Capability Type	Yes	No	Department/Staff Responsible
Administrative			
Planners with knowledge of land development and land management practices	X		Zoning, Land & Water Conservation
Engineer/professional trained in building/infrastructure construction practices	X		Land & Water Conservation
Planners with an understanding of natural and/or human-caused hazards	X		Zoning, Land and Water Conservation, Highway, Health & Human Services, Sheriff, Emergency Management
Emergency Manager	X		Emergency Management
Floodplain Administrator	X		Zoning
Land Surveyors	X		County Surveyor
Scientists familiar with the hazards of the community	X		Forestry, Land & Water Conservation, Health & Human Services
Personnel skilled in Geographic Information System (GIS) and/or FEMA's HAZUS	X		GIS Coordinator, Emergency Management, Sheriff
Technical			
Grant Writing	X		Land & Water Conservation, Extension, Emergency Management, Highway, Health & Human Services, GIS Coordinator, Sheriff, new grant specialist hire
Hazard Data and Information	X		Emergency Management, GIS Coordinator, Sheriff, Land & Water Conservation, Zoning
GIS Analysis	X		GIS Coordinator
Mutual Aid Agreements	X		Highway, Emergency Management, Sheriff

How can administrative and technical capabilities be expanded and improved to reduce risk?

- Explore potential professional development opportunities.
- Training and capacity for staff to prepare/respond to hazards.
- Cooperation between Bad River Band of Lake Superior Chippewa and Ashland County.

Financial

Capability Type	Yes	No	Department/Staff Responsible
Funding Resource			
Authority to levy taxes	X		County Board
Capital Improvements Project Funding	X		County Board
Community Development Block Grant	X		All departments
Federal Funding Programs (Non-FEMA)	X		All departments
Water/Sewer Fees	X		Zoning, County Board
Gas/Electric Fees		X	
Stormwater Utility Fees		X	
Impact Fees for Development	X		Zoning
State Funding Programs	X		All departments
Private or Nonprofit Grant Programs	X		All departments
Manure Storage Fees	X		Land & Water Conservation

How can financial capabilities be expanded and improved to reduce risk?

- Cooperation between Bad River Band of Lake Superior Chippewa and Ashland County.
- Securing funding to keep up with the rapid technological changes and advances in public safety communications and infrastructure.

Education and Outreach

Capability Type	Yes	No	Agency/Department/Staff Responsible
Program/Organization			
Community Newsletters	X		Extension, Departments
Local News – Newspaper/Radio (e.g., Daily Press, Duluth News Stations, Bottom Line News, Radio 93.3 WBSZ & 106.9)	X		Administration, Departments
Organizations that Represent/Advocate for/Interact with Underserved and Vulnerable Communities	X		HHS, ADRC, SRWA, The Brick, homeless shelter, Crossroads, Bad River, churches, schools, North Lakes, BART, Laura Jean Zach Center, senior centers
Social Media	X		Sheriff, Highway, Land and Water, Emergency Management, HHS, ADRC
Website	X		Ashland County, ADRC
Hazard Awareness Campaigns (e.g., Firewise, StormReady, Turn Around, Don't Drown, When Thunder Roars, Go Indoors, Severe Weather Awareness Week, September National Preparedness Month, Cleansweep)	X		Extension, Emergency Management, City of Ashland, Land and Water, HHS, Sheriff Department

How can education and outreach capabilities be expanded and improved to reduce risk?

- Balance of financial and staff capacity for education and outreach and other duties.
- It is a continuing challenge to ensure that emergency services can notify the public in a timely manner. Because of the nature of modern society, adequate notification requires multiple outlets but managing the usage, cost and updates of these systems is an ongoing project for all communities.
- Cooperation between Bad River Band of Lake Superior Chippewa and Ashland County.

Ashland County – National Flood Insurance Program

NFIP participation status	Participating
Adoption of NFIP minimum floodplain management criteria via local regulation	Ashland County adopted a floodplain zoning ordinance that meets the NFIP minimum standards. (Amended 9/16/2021). The Floodplain standards regulate development in areas per the official Flood Insurance Rate Maps.
Adoption of the latest effective Flood Insurance Rate Map (FIRM)	The current FIRMs took effect on 02/15/1978.
Implementation and enforcement of local floodplain management regulations to regulate and permit development in SFHAs	The county's current floodplain zoning ordinance includes the floodplain standards which regulate development and new construction in SFHAs defined in the FIRMs. The requires a land use permit for any development within the floodplain. Determination as to whether a site is located in a floodplain must be made through zoning office review of floodplain maps or through field verification of flood boundary.
Designee to implement the addressed commitments and requirements of the NFIP	Ashland County Zoning Administrator
Implementation of substantial improvement/substantial damage provisions of their floodplain management regulations after an event	As indicated in floodplain zoning ordinance, the Zoning Administrator follows Wisconsin Department of Natural Resources guidance documents on conducting substantial damage assessments, including the State of Wisconsin Flood Damage Assessment Packet: https://dnr.wisconsin.gov/topic/FloodPlains/communities.html#:~:text=SUBSTANTIAL%20DAMAGE%20GUIDANCE%20PACKETS
Floodplain management programs/activities that contribute to continued compliance	The Ashland County Zoning Administrator is responsible for administering the floodplain standards in the county floodplain zoning ordinance. Staff attend continuing education and will work on updates to the floodplain standards as needed to ensure that the local regulations are consistent with FEMA requirements.

CAPABILITY ASSESSMENT: CITY OF ASHLAND

Planning and Regulatory

Capability Type	In Place	Department/Staff Responsible
Capital Improvements Plan	Yes	Public Works
Climate Change Adaptation Plan	No	N/A
Community Wildfire Protection Plan	No	WIDNR
Comprehensive Plan	Yes	Planning
Continuity of Operations Plan	Yes	Police, Fire, Public Works, Admin
Forest Comprehensive Land Use Plan	No	N/A
Economic Development Plan	No	N/A
Land & Water Resource Management Plan	No	County of Ashland
Local Emergency Operations Plan	Yes	Police, Fire
Stormwater Management Plan	Yes	Public Works
Transportation Plan	Yes	Planning, Streets Department
Acquisition of land for open space and public recreation use	Yes	Parks and Rec
Building Code	Yes	Planning
Fire Code	Yes	Fire
Flood Insurance Rate Maps	No	N/A
Floodplain Ordinance	Yes	Planning
Subdivision Ordinance	Yes	Planning
Shoreland Zoning Ordinance	Yes	Planning
Zoning Ordinance	Yes	Planning
National Flood Insurance Program	Yes	Planning

How can planning and regulatory capabilities be expanded and improved to reduce risk?

- With more extreme weather due to climate change the adoption of a Climate Change Action Plan will be critical in the future.
- The state does not allow us to implement stormwater fees without referendum, this makes it virtually impossible to find funding for stormwater management, thus any planning efforts are rarely implemented.

Administrative and Technical

Capability Type	Yes	No	Department/Staff Responsible
Administrative			
Planners with knowledge of land development and land management practices	X		Planning
Engineer/professional trained in building/infrastructure construction practices	X		Public Works
Planners with an understanding of natural and/or human-caused hazards	X		Planning
Emergency Manager		X	County of Ashland
Floodplain Administrator	X		Planning
Land Surveyors		X	Contracted
Scientists familiar with the hazards of the community		X	None
Personnel skilled in Geographic Information System (GIS) and/or FEMA's HAZUS		X	Contracted
Technical			
Grant Writing	X		Police, Fire, Public Works, Parks, Planning
Hazard Data and Information	X		Fire, Public Works
GIS Analysis	X		Public Works, Planning
Mutual Aid Agreements	X		Police, Fire, Public Works

How can administrative and technical capabilities be expanded and improved to reduce risk?

- The City and County need to build a stronger relationship with coordinating emergency management services.
- The City has not worked with Northland College and UW Extension enough to tap into their knowledge as scientists.

Financial

Capability Type	Yes	No	Department/Staff Responsible
Funding Resource			
Authority to levy taxes	X		Council, Finance
Capital Improvements Project Funding	X		Public Works
Community Development Block Grant	X		Planning, Public Works
Federal Funding Programs (Non-FEMA)	X		Planning, Parks, Library, Public Works, Police, Fire
Water/Sewer Fees	X		Public Works, Finance
Gas/Electric Fees		X	Xcel Energy
Stormwater Utility Fees		X	Prohibited by state unless voted
Impact Fees for New Development		X	N/A
State Funding Programs	X		Public Works, Planning, Parks, Library,
Private or Nonprofit Grant Programs	X		Parks, Library

How can financial capabilities be expanded and improved to reduce risk?

- State takes a very punitive approach to municipalities when levying new taxes making raising revenue challenging.
- Without stormwater fees this issue is not addressed to the degree which it should be.
- The City should research using impact fees for offsetting the community cost of development; although we charge tap in fees for utilities these fees tend to be small.

Education and Outreach

Capability Type	Yes	No	Agency/Department/Staff Responsible
Program/Organization			
Community Newsletters		X	N/A
Local News – Newspaper/Radio	X		Administration
Organizations that Represent/Advocate for/Interact with Underserved and Vulnerable Communities	X		Great Lakes Clinic, Brick Food Pantry, County Aging Unit, Ashland Housing Authority
Social Media	X		Administration
Website	X		Administration
Hazard Awareness Campaigns (such as Firewise, StormReady, Severe Weather Awareness Week, school programs, public events)	X		Fire, County of Ashland Emergency Management

How can education and outreach capabilities be expanded and improved to reduce risk?

- We need to work more closely with County emergency management to raise public awareness of hazards.
- Should look to utilize the newspaper more often to address hazard mitigation, we do frequently use radio as a way to inform the community.

City of Ashland – National Flood Insurance Program

NFIP participation status	Participating
Adoption of NFIP minimum floodplain management criteria via local regulation	The City of Ashland adopted a floodplain zoning ordinance that meets the NFIP minimum standards. The City requires a development and/or building permit for any development within the floodplain. The Floodplain standards regulate development in areas per the community's official FIRMs. The City will update the Floodplain standards as required by the NFIP.
Adoption of the latest effective Flood Insurance Rate Map (FIRM), if applicable	The current FIRMs took effect on 09/30/1977.
Implementation and enforcement of local floodplain management regulations to regulate and permit development in SFHAs	The City's current Unified Development Ordinance (UDO) includes the floodplain standards which regulate development and new construction in SFHAs defined in the community's FIRMs. The City's Planning and Development Department is tasked with administering the ordinance. When a property owner or contractor stops in for a permit City staff verifies zoning and confirms whether the floodplain standards apply. From there staff will work with the property owner to ensure that the standards are met.
Designee to implement the addressed commitments and requirements of the NFIP	City of Ashland Planning and Zoning Department
Implementation of substantial improvement/substantial damage provisions of their floodplain management regulations after an event	The City's zoning standards include a provision for nonconforming structures. Structures destroyed to an extent of more than 50% of the replacement cost at the time of destruction may not be reconstructed except in conformity with the ordinance. The ordinance requires that new structures comply with the ordinance. The 50% figure provided in the local regulations is consistent with FEMA's standards also. Staff needs to work on updating the language in the nonconforming section of the ordinance to provide increased clarity that structures considered Substantially Damaged under FEMA's 50% cost to repair rule shall be brought into compliance with current ordinances.
Floodplain management programs/activities that contribute to continued compliance	Planning and Development staff at the City are responsible for administering the floodplain standards in the UDO. Staff attend continuing education and will work on updates to the floodplain standards as needed to ensure that the local regulations are consistent with FEMA requirements.

CAPABILITY ASSESSMENT: CITY OF MELLEN

Planning and Regulatory

Capability Type	In Place	Department/Staff Responsible
Capital Improvements Plan	NO	
Climate Change Adaptation Plan	NO	
Community Wildfire Protection Plan	YES	MELLEN FIRE DEPT
Comprehensive Plan	YES	CITY STAFF
Continuity of Operations Plan	NO	
Forest Comprehensive Land Use Plan	NO	ASHLAND CTY FORESTRY/LAND & WATER CONSERVATION
Continuity of Operations Plan	NO	
Economic Development Plan	NO	NWRPC CEDS, COMP PLAN
Land & Water Resource Management Plan	NO	ASHLAND LAND & WATER CONSERVATION
Local Emergency Operations Plan	YES	MELLEN MUNICIPAL UTILITIES, MELLEN STREET & ALLEY
Stormwater Management Plan	NO	
Transportation Plan	YES	COMPREHENSIVE PLAN, 5 YR LRIP
Acquisition of land for open space and public recreation use	NO	
Building Code	YES	CITY STAFF, BLDG & GRNDS
Fire Code	YES	CITY STAFF, BLDG & GRNDS, FIRE DEPT
Flood Insurance Rate Maps	YES	WI-DNR, FEMA 1978
Floodplain Ordinance	YES	CITY STAFF
Subdivision Ordinance	YES	CITY STAFF, FLOOD PLAIN ORD
Shoreland Zoning Ordinance	NO	Wi-DNR
Zoning Ordinance	YES	CITY STAFF – FLOOD PLAIN ORD
National Flood Insurance Program	YES	PLANNING & INSPECTION DEPARTMENT

How can planning and regulatory capabilities be expanded and improved to reduce risk?

- Incorporate hazard mitigation into the City of Mellen Comprehensive Plan.
- The state does not allow us to implement stormwater fees without referendum, this makes it virtually impossible to find funding for stormwater management, thus any planning efforts are rarely implemented.

Administrative and Technical

Capability Type	Yes	No	Department/Staff Responsible
Administrative			
Planners with knowledge of land development and land management practices		X	CONTRACTED AS NEEDED
Engineer/professional trained in building/infrastructure construction practices		X	CONTRACTED AS NEEDED
Planners with an understanding of natural and/or human-caused hazards		X	CONTRACTED AS NEEDED
Emergency Manager	X		ASHLAND CTY EMERGENCY MANAGEMENT
Floodplain Administrator	X		ASHLAND CTY ZONING ADMINISTRATOR
Land Surveyors		X	CONTRACTED AS NEEDED
Scientists familiar with the hazards of the community		X	CONTRACTED AS NEEDED
Personnel skilled in Geographic Information System (GIS) and/or FEMA's HAZUS		X	CITY STAFF COLLABORATES W/ CTY
Technical			
Grant Writing		X	CONTRACTED AS NEEDED
Hazard Data and Information		X	CONTRACTED AS NEEDED
GIS Analysis		X	CITY STAFF COLLABORATES W/ CTY
Mutual Aid Agreements	X		POLICE, FIRE, AMBULANCE

How can administrative and technical capabilities be expanded and improved to reduce risk?

- Training and capacity for city staff to prepare/respond to hazards.

Financial

Capability Type	Yes	No	Department/Staff Responsible
Funding Resource			
Authority to levy taxes	X		CITY COUNCIL
Capital Improvements Project Funding	X		CITY COUNCIL
Community Development Block Grant	X		CITY COUNCIL
Federal Funding Programs (Non-FEMA)	X		CITY COUNCIL
Water/Sewer Fees	X		CITY COUNCIL/MMU
Gas/Electric Fees		X	XCEL ENERGY
Stormwater Utility Fees		X	N/A
Impact Fees for New Development		X	N/A
State Funding Programs	X		CITY COUNCIL
Private or Nonprofit Grant Programs	X		CCITY COUNCIL

How can financial capabilities be expanded and improved to reduce risk?

- Without stormwater fees this issue is not addressed to the degree which it should be.

Education and Outreach

Capability Type	Yes	No	Agency/Department/Staff Responsible
Program/Organization			
Community Newsletters		X	
Local News – Newspaper/Radio	X		CITY STAFF
Organizations that Represent/Advocate for/Interact with Underserved and Vulnerable Communities		X	
Social Media		X	
Website		X	
Hazard Awareness Campaigns (such as Firewise, StormReady, Severe Weather Awareness Week, school programs, public events)	X		CITY STAFF, SCHOOL PROGRAMS

How can education and outreach capabilities be expanded and improved to reduce risk?

- Coordination with Ashland County Emergency Management on education and outreach.
- Include a link to the Ashland County Hazard Mitigation Plan on the city's website.

City of Mellen – National Flood Insurance Program

NFIP participation status	Participating
Adoption of NFIP minimum floodplain management criteria via local regulation	City of Mellen adopted a floodplain zoning ordinance that meets the NFIP minimum standards. The Floodplain standards regulate development in areas per the community's official Flood Insurance Rate Maps. The City will update the Floodplain standards as required by the NFIP.
Adoption of the latest effective Flood Insurance Rate Map (FIRM), if applicable	The current FIRMs took effect on 11/19/1986.
Implementation and enforcement of local floodplain management regulations to regulate and permit development in SFHAs	The City's current Floodplain Ordinance includes the floodplain standards which regulate development and new construction in SFHAs defined in the community's FIRMs. The Planning and Inspection Department is tasked with administering the ordinance. When a property owner or contractor stops in for a building permit, staff, including the City's State Certified Building Inspector verifies the location and confirms whether the floodplain standards apply. The Ashland County Zoning Administrator is referred to as necessary.
Designee to implement the addressed commitments and requirements of the NFIP	City of Mellen Planning and Inspection Department
Implementation of substantial improvement/substantial damage provisions of their floodplain management regulations after an event	The City follows the Floodplain Ordinance for implementation. The City's Building Inspector identifies substantially damaged structures and follows Wisconsin Department of Natural Resources guidance on conducting substantial damage assessments to make sure structures are brought into compliance: https://dnr.wisconsin.gov/topic/FloodPlains/communities.html#:~:text=SUBSTANTIAL%20DAMAGE%20GUIDANCE%20PACKETS
Floodplain management programs/activities that contribute to continued compliance	The City Planning and Inspection Department is responsible for administering the floodplain standards in the City Floodplain Ordinance. The most recent Community Assistance Contact was in 2016. Staff attend continuing education and will work on updates to the floodplain standards as needed to ensure that the local regulations are consistent with FEMA requirements.

CAPABILITY ASSESSMENT: MELLEN SCHOOL DISTRICT

Planning and Regulatory

Capability Type	In Place	Department/Staff Responsible
Capital Improvements Plan	Y	Superintendent
Climate Change Adaptation Plan	N	
Community Wildfire Protection Plan	N	
Comprehensive Plan	Y	School Board
Continuity of Operations Plan	Y	School Board
Forest Comprehensive Land Use Plan	Y	School Forest Team
Economic Development Plan	N	
Land & Water Resource Management Plan	N	
Local Emergency Operations Plan	Y	Safety Team
Stormwater Management Plan	N	
Transportation Plan	Y	Superintendent
Acquisition of land for open space and public recreation use	N	
Building Code	Y	Maintenance
Fire Code	Y	Maintenance
Flood Insurance Rate Maps	N	
Floodplain Ordinance	N	
Subdivision Ordinance	N	
Shoreland Zoning Ordinance	N	
Zoning Ordinance	N	
National Flood Insurance Program	N	

How can planning and regulatory capabilities be expanded and improved to reduce risk?

- Incorporate hazard mitigation into the Capital Improvements Plan.
- Cooperation between City of Mellen and Mellen School District.

Administrative and Technical

Capability Type	Yes	No	Department/Staff Responsible
Administrative			
Planners with knowledge of land development and land management practices		X	
Engineer/professional trained in building/infrastructure construction practices		X	
Planners with an understanding of natural and/or human-caused hazards		X	
Emergency Manager	X		Superintendent
Floodplain Administrator		X	
Land Surveyors	X		PineRidge Surveying
Scientists familiar with the hazards of the community	X		Forestry Dept, Land and Water Conservation, Health and Human Services
Personnel skilled in Geographic Information System (GIS) and/or FEMA's HAZUS		X	GIS Coordinator, Emergency Management, Sheriff Department
Technical			
Grant Writing	X		Superintendent
Hazard Data and Information	X		Contractor
GIS Analysis		X	
Mutual Aid Agreements		X	

How can administrative and technical capabilities be expanded and improved to reduce risk?

- Explore potential professional development opportunities.
- Training and capacity for staff to prepare/respond to hazards.
- Cooperation between City of Mellen and Mellen School District.

Financial

Capability Type	Yes	No	Department/Staff Responsible
Funding Resource			
Authority to levy taxes	X		School Board
Capital Improvements Project Funding	X		School Board
Community Development Block Grant		X	
Federal Funding Programs (Non-FEMA)	X		Administrator
Water/Sewer Fees		X	
Gas/Electric Fees		X	
Stormwater Utility Fees		X	
Impact Fees for Development		X	
State Funding Programs	X		Administrator
Private or Nonprofit Grant Programs	X		Administrator

How can financial capabilities be expanded and improved to reduce risk?

- Exploration of diverse funding opportunities.

Education and Outreach

Capability Type	Yes	No	Agency/Department/Staff Responsible
Program/Organization			
Community Newsletters	X		Public Communications
Local News – Newspaper/Radio	X		Administrator
Organizations that Represent/Advocate for/Interact with Underserved and Vulnerable Communities	X		Home & School Association
Social Media	X		Public Communications
Website	X		Public Communications
Hazard Awareness Campaigns (such as Firewise, StormReady, Severe Weather Awareness Week, school programs, public events, FEMA September National Preparedness Month, Cleansweep)		X	

How can education and outreach capabilities be expanded and improved to reduce risk?

- Explore funding opportunities for student and staff learning opportunities.

Appendix C: Report on Previous Mitigation Actions

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Report on Previous Mitigation Actions *Designates an action that supports the NFIP.

Hazard Type	Mitigation Measures	Costs of Project	Responsible Management	Project Timetable	Project Priority	Community(ies) Benefitting	Report on Action
All Hazards	1. Coordinate with County Emergency Manager, city and county emergency personnel, and representatives from nursing homes, schools, and hospitals to assess storm safety procedures/ emergency care procedures.	Annual budget offset by grant funding	ACEM Dept./ Police Department/ Fire Department	Ongoing	Low	City of Ashland VI of Butternut Mellen, Glidden, Town of Jacobs	Deleted. County Emergency Management coordinated with the County Health to assess storm safety/emergency care, including coordination of a tabletop exercise. Action replaced with a more specific action in the next planning cycle.
All Hazards	2. Host community education classes or other forms of outreach on family disaster planning, supply kits, weather education, and community emergency response.	Annual budget offset by grant funding	Parks & Recreation Department/ Fire Department /Police Department ACEM Dept./ Police Department/ Fire Department	Biannual - early winter and summer	Medium	City of Ashland Ashland Co.; CI of Mellen; VI of Butternut and TNs of Agenda, Ashland, Chippewa, Gingles, Gordon, Jacobs, LaPointe, Marengo, Morse, Peeksville, Sanborn, Shanagolden, and White River	Ongoing. City participates in Fire Prevention Week and EMS Week. Ongoing. Done annually as part of awareness weeks. County hosted weather spotter classes and severe weather awareness classes with UW-Madison Extension.
All Hazards	3. Maintain a public transportation system to move people around during emergency or evacuate areas in a disaster.	\$100,000 Grant funding	Administration/ Fire Department/ Police Department/	Ongoing	Medium	City of Ashland	Deleted. Coordination and planning with BART/Lakeshore Bus Company/Lac du Flambeau Transit/school districts for incident coverage continues. The Town of La

Hazard Type	Mitigation Measures	Costs of Project	Responsible Management	Project Timetable	Project Priority	Community(ies) Benefitting	Report on Action
							Pointe gained ownership of the Madeline Island Ferry Line in spring 2024. Action replaced with a more specific, countywide action in the next planning cycle.
All Hazards	4. Train Emergency Response personnel and Emergency Response Team in NIMS. Organize and bringing NIMS compliance up to date.	\$12,000 Annual budget offset by grant funding	ACEM Dept./ Fire Department/ Police Department	Ongoing	High	Ashland Co.; CIs of Ashland and Mellen; VI of Butternut and TNs of Agenda, Ashland, Chippewa, Gingles, Gordon, Jacobs, LaPointe, Marengo, Morse, Peeksville, Sanborn, Shanagolden, and White River	Ongoing. Occurs as needed with new personnel and as requirements are updated.
All Hazards	5. Ensure that GIS mapping is available to emergency operations personnel and is routinely updated.	\$15,000 Annual budget offset by grant funding	Public Works Department Ashland County GIS	Ongoing	Low	City of Ashland: Ashland County	Ongoing. City of Ashland contracts out GIS work. New action item for Ashland County.
All Hazards	6. Establish public access television station to be available in emergencies.	\$10,000 Annual budget offset by grant funding	Information Technology Department	1-2 years	High	City of Ashland	Not completed. Due to lack of capacity. Carry forward.
All Hazards	7. Equip public access television studio to be available in emergencies.	\$30,000 Grant funding	Information Technology Department	1-2 years	High	City of Ashland	Not completed. Due to lack of capacity. Carry forward.

Hazard Type	Mitigation Measures	Costs of Project	Responsible Management	Project Timetable	Project Priority	Community(ies) Benefitting	Report on Action
All Hazards	8. Establish 3-1-1 System.	Unknown	Information Technology Department/ACSO	Unknown	Medium	City of Ashland	Not completed. Due to lack of capacity. Carry forward.
All Hazards	9. Construct an Emergency Operations Center (EOC) for Police and Fire Department.	\$5,000,000 Grant funding	Fire Department/ Police Department	1-5 years	High	City of Ashland	Completed. Add new action item to make back up EOC operational.
All Hazards	10. Create and adopt an Emergency Operations Plan (EOP) for the City of Ashland.	\$150,000 Grant funding	Administration	1-2 years	High	City of Ashland	Not completed. Due to lack of capacity and staff turnover. Carry forward.
All Hazards	11. Complete GIS mapping for problematic areas.	Annual budget	Public Works Department	Ongoing	Medium	City of Ashland	Ongoing. GIS mapping is updated as needed.
All Hazards	12. Increase municipal fuel storage capacity for emergency operations.	\$100,000 Capital budget or grant funding	Public Works Department	1-2 years	Medium	City of Ashland	Ongoing. Capacity is evaluated on an ongoing basis.
All Hazards	13. Adopt a Post Disaster Recovery Ordinance.	\$500 Annual budget offset by grant funding	Administration	1-2 years	Medium	City of Ashland	Not completed. Due to lack of capacity. Carry forward.
All Hazards	14. Provide airport with portable hangars for equipment and storage, fuel storage, and refueling capabilities; ensure security and properly maintained runways.	\$500,000 Grant funding	JFK Memorial Airport Staff & Commission	1-5 years	Medium	City of Ashland	Not completed. Due to lack of capacity. Carry forward.
All Hazards	15. Continue enforcement of the city's ordinances to guide development away from hazardous areas.	\$50,000 Annual budget	Department of Planning & Development	Ongoing	High	City of Ashland	Ongoing. Enforced by City Planning & Zoning Department.
All Hazards	16. Develop a plan to allow for the continuity of municipal operations that will ensure the essential functions of an organization that can operate during and after an emergency incident. Plan to include	\$5,000 Annual budget offset by grant funding	City of Ashland	1-2 Years	High	City of Ashland	Not completed. Due to lack of capacity. Carry forward.

Hazard Type	Mitigation Measures	Costs of Project	Responsible Management	Project Timetable	Project Priority	Community(ies) Benefitting	Report on Action
	methods to maintain normal operating systems.						
All Hazards	17. Install methods to deter birds and wildlife at airport.	\$10,000 Annual budget offset by grant funding	JFK Memorial Airport Staff & Commission	Ongoing	Medium	City of Ashland	Not completed. Due to lack of capacity. Carry forward.
All Hazards	18. Improve roadways that currently do not allow safe access for emergency vehicles.	\$400,000 Capital or annual budget offset by grant funding	Ashland Public Works Department	Ongoing	Medium	City of Ashland	Ongoing. Emergency services personnel are included in the design process for all road improvements.
All Hazards	19. Develop an evacuation plan, including emergency shelters and evacuation routes for Ashland residents.	Annual budget offset by grant funding.	Fire Department/ Police Department/ ACEM Dept.	5 years	High	City of Ashland	Not completed. Due to lack of capacity. This could be a part of the Ashland County Strategic Plan. Carry forward.
All Hazards	20. Plan, design and construct an east-side loop in Ashland. Route would connect US Hwy 13 to the east side of Ashland, providing another access around Bay City Creek. Route is needed as it would serve as a detour route if existing routes across Bay City Creek are blocked.	\$10M Grant funding	Public Works Department	10-15 Years	Medium	City of Ashland	Not completed. Due to lack of capacity and funding. There is little access on the east side for disaster problems. Carry forward.
All Hazards	21. Ensure that the city continues to have access to multiple modes of transportation (rail, marine, highway, air).	Unknown. Annual budget offset by grant funding	Department of Planning & Development/ Public Works Department/ Administration/ JFK Memorial Airport/Harbor Master	Ongoing	Medium	City of Ashland	Ongoing. Multiple modes of transportation continue to be available.

Hazard Type	Mitigation Measures	Costs of Project	Responsible Management	Project Timetable	Project Priority	Community(ies) Benefitting	Report on Action
All Hazards	22. Perform a study to develop an emergency source of supply of potable water.	\$30,000 Grant funding	Public Works Department	1-5 years	High	City of Ashland TN of Jacobs	Not completed. Due to lack of capacity and funding. Carry forward. Not completed. Due to lack of capacity and funding. Carry forward.
All Hazards	23. Develop an emergency source of potable water supply.	\$250,000 Grant funding	Public Works Department	5-10 years	High	City of Ashland	Not completed. Due to lack of capacity. Carry forward.
All Hazards	24. Obtain computer systems and software to assist with emergency planning.	\$35,000 Annual budget offset by grant funding	Administration/IT Department/Fire Department/Police Department	1-2 years	High	City of Ashland	Partially completed. Carry forward.
All Hazards	25. Update website and review links (to include adding mitigation links) to the Ashland County Emergency Management websites.	Annual budget	ACEM Dept.	Ongoing	High	Ashland Co.; CIs of Ashland and Mellen; VI of Butternut and TNs of Agenda, Ashland, Chippewa, Gingles, Gordon, Jacobs, LaPointe, Marengo, Morse, Peeksville, Sanborn, Shanagolden, and White River	Ongoing. Website links are maintained and updated as needed.
All Hazards	26. Sirens: - City of Ashland x3 - City of Mellen x1		City of Ashland City of Mellen		Medium Medium	City of Ashland City of Mellen	Deleted. A tornado siren was proposed in 2019. City utilizing other technologies. Deleted. 2 new, more specific actions are included in Mellen's updated action plan. In the next planning cycle, the city will determine if warning siren

Hazard Type	Mitigation Measures	Costs of Project	Responsible Management	Project Timetable	Project Priority	Community(ies) Benefitting	Report on Action
	Sanitary District of TN of Jacobs/Glidden x1		TNs of Peeksville, Jacobs, Shanagolden, and Gordon		Medium	TNs of Peeksville, Jacobs (Glidden), Shanagolden and Gordon	testing needs to be revised/implemented, as well as consider implementing a cell phone warning system. Deleted. Fire Department owns siren. 2 new, more specific actions included in the updated county action plan. In the next planning cycle, the town will look into how the siren can be activated by dispatch, as well as look into the purchase of a new siren and software.
All Hazards	27. NOAA weather radios for rural populations.	\$25/unit	ACEM & ACPH Depts.	As grants available	Medium-High	Ashland Co.; CIs of Ashland and Mellen; VI of Butternut and TNs of Agenda, Ashland, Chippewa, Gingles, Gordon, Jacobs, LaPointe, Marengo, Morse, Peeksville, Sanborn, Shanagolden, and White River	Ongoing. NOAA weather radios are distributed as devices are available.
All Hazards	28. Explore an emergency notification system to alert residents to potential emergency situations.	\$10,000	ACEM Dept./ ACSO Communications Center	As grants available	High	Ashland Co. CIs of Ashland and Mellen; VI of Butternut and TNs of Agenda, Ashland, Chippewa, Gingles, Gordon,	Completed. Ashland County instituted CodeRED but no longer uses it as it was not cost-effective or well-received. During the next planning period, the county will again work to implement an emergency alert system.

Hazard Type	Mitigation Measures	Costs of Project	Responsible Management	Project Timetable	Project Priority	Community(ies) Benefitting	Report on Action
						Jacobs, LaPointe, Marengo, Morse, Peeksville, Sanborn, Shanagolden, and White River	
All Hazards	29. Continue to improve coverage and interoperability for first responder communication systems.	Unknown. Potential grant funding.	ACSO	Ongoing	Medium	Ashland Co.; CIs of Ashland and Mellen; VI of Butternut and TNs of Agenda, Ashland, Chippewa, Gingles, Gordon, Jacobs, LaPointe, Marengo, Morse, Peeksville, Sanborn, Shanagolden, and White River	Ongoing. During the planning period, Bayfield County and Ashland County dispatch merged. Propagation maps are in progress.
All Hazards	30. Establish a “511-type” system for Ashland County for travelers to send in information on roads, etc.	\$100,000 grant funding	Ashland County Highway Dept.	1-5 years	High	Ashland Co.; CIs of Ashland and Mellen; VI of Butternut and TNs of Agenda, Ashland, Chippewa, Gingles, Gordon, Jacobs, LaPointe, Marengo, Morse, Peeksville, Sanborn, Shanagolden, and White River	Deleted. Not completed due to lack of capacity and because a state-level system already exists.

Hazard Type	Mitigation Measures	Costs of Project	Responsible Management	Project Timetable	Project Priority	Community(ies) Benefitting	Report on Action
All Hazards	31. Develop and distribute seasonal transportation specific safety information.	\$5,000 grant funding	Ashland County Highway Dept./ ACEM Dept./	1-5 years	High	Ashland Co.; CIs of Ashland and Mellen; VI of Butternut and TNs of Agenda, Ashland, Chippewa, Gingles, Gordon, Jacobs, LaPointe, Marengo, Morse, Peeksville, Sanborn, Shanagolden, and White River	Completed. Ashland County Highway Department and Ashland County Sheriff's Department have a Facebook page for sharing information. Informational billboards were also used.
All Hazards	32. Purchase Spill Response Kits in 55 gallon barrels. Put one kit in each satellite Highway Shop.	\$25,000 grant funding	Ashland County Highway Dept.	Ongoing	Medium	Ashland Co.; CIs of Ashland and Mellen; VI of Butternut and TNs of Agenda, Ashland, Chippewa, Gingles, Gordon, Jacobs, LaPointe, Marengo, Morse, Peeksville, Sanborn, Shanagolden, and White River	Deleted. Not complete due to feasibility and funding. Small kits are available at individual locations.
All Hazards	33. Formalize intergovernmental agreements between the Highway Dept. and the municipalities.	Annual budget	Ashland County Highway Dept./ACEM Dept., municipalities	Ongoing	Medium /High	Ashland Co.; CIs of Ashland and Mellen; VI of Butternut and TNs of Agenda, Ashland, Chippewa, Gingles, Gordon,	Ongoing. During the planning period, the Ashland County Highway Commissioner met with towns to discuss agreements.

Hazard Type	Mitigation Measures	Costs of Project	Responsible Management	Project Timetable	Project Priority	Community(ies) Benefitting	Report on Action
						Jacobs, LaPointe, Marengo, Morse, Peeksville, Sanborn, Shanagolden, and White River	
Coastal Erosion and Landslides	34. Develop a grading ordinance that specifies grades for new construction.	\$500 Annual budgets	Department of Planning & Development/Public Works Department	1-2 years	High	City of Ashland	Completed. An ordinance has been adopted.
Coastal Erosion and Landslides	35. Create a dredge spoil basin to permit harbor dredging to occur.	\$600,000 Grant funding	Department of Planning & Development/Public Works Department/Administration/Harbor Master	1-5 years	High	City of Ashland	Not completed due to lack of capacity. Carry forward. To be completed within the next 5 years.
Coastal Erosion and Landslides	36. Evaluate options for updating zoning ordinances on coastal and inland waterways focusing on 92F and transitional soils. Educate the community on this concern.	Annual budget	AC LCD, P&Z	5 years	Medium	Ashland Co.; CIs of Ashland and Mellen; VI of Butternut and TNs of Agenda, Ashland, Chippewa, Gingles, Gordon, Jacobs, LaPointe, Marengo, Morse, Peeksville, Sanborn, Shanagolden, and White River	Not completed for county due to lack of capacity and awareness. Carry forward. Deleted for Cities of Ashland & Mellen and Village of Butternut due to lack of capacity.
Coastal Erosion and Landslides	37. Add rip rap (rock) to Madeline Island to protect roads/stabilize shorelines from	Unknown	AC HWY	5 years	High	Madeline Island (TN LaPointe)	Ongoing. Riprap was added along STH H. There are more projects to complete within the next 5 years.

Hazard Type	Mitigation Measures	Costs of Project	Responsible Management	Project Timetable	Project Priority	Community(ies) Benefitting	Report on Action
	coastal erosion from high water, high wind, and wave inundation.						
Drought and Dust Storms	38. Complete water conservation, usage tracking, and savings outreach measures.	Unknown, as funding available	Public Works Departments	5 years	High	CI of Ashland, CI of Mellen, VI of Butternut, Sanitary District TN of Jacobs	Ongoing. City of Ashland: Repairs have been made to the water system. Leak detection meters have been installed. City of Mellen: New meters were installed. Educational outreach has occurred. Sanitary District: Ongoing.
Flooding and Dam Failure	39. Complete capital improvement plans to prioritize local roads that are routinely exposed to flooding.	Annual budget	CI Ashland Public Works Department Ashland Co. Highway Dept.	1-2 years	High	City of Ashland TNs of Agenda, Ashland, Chippewa, Gingles, Gordon, Jacobs, LaPointe, Marengo, Morse, Peeksville, Sanborn, Shanagolden, and White River	Deleted. No longer applicable to the City of Ashland. Ongoing.
Flooding and Dam Failure	40. *Work with FEMA to complete countywide floodplain mapping update. Incorporate floodplain mapping in city and county GIS.	Unknown. Annual budgets offset by grant funding	Ashland County Zoning Department	1-2 years	High	Ashland Co.; CIs of Ashland and Mellen; VI of Butternut and TNs of Agenda, Ashland, Chippewa, Gingles, Gordon, Jacobs, LaPointe,	Partially completed. Carry forward. Mapping completed by FEMA in 2018, but data has not been incorporated in GIS systems as it is not yet available.

Hazard Type	Mitigation Measures	Costs of Project	Responsible Management	Project Timetable	Project Priority	Community(ies) Benefitting	Report on Action
						Marengo, Morse, Peeksville, Sanborn, Shanagolden, and White River	
Flooding and Dam Failure	41. Incorporate soils mapping in city and county's GIS.	Unknown	City of Ashland Public Works Department/ County Land Conservation and County Zoning	1-2 years	High	Ashland Co.; CIs of Ashland and Mellen; VI of Butternut and TNs of Agenda, Ashland, Chippewa, Gingles, Gordon, Jacobs, LaPointe, Marengo, Morse, Peeksville, Sanborn, Shanagolden, and White River	Ashland County: Completed. County uses soils data available through the NRCS Web Soil Survey. City of Ashland: Not completed due to lack of staffing. Carry forward. City of Mellen: Deleted. City uses county GIS information.
Flooding and Dam Failure	42. Replace non-code compliant water lines and fire hydrants.	\$20 M grant funding	Public Works Department	15 years	High	City of Ashland	Partially completed. Carry forward. Progress has been made over the last 5 years.
Flooding and Dam Failure	43. Upgrade and make inspections of City water intake pipe in Lake Superior.	\$300,000 grant funding	Public Works Department	5 years	High	City of Ashland	Partially completed. Carry forward. Replacement will be completed in 2026.
Flooding and Dam Failure	44. *Review/ Update/Adopt a stormwater management ordinance.	Unknown. Annual budget	Public Works Department	1-2 years	Medium	City of Ashland	Completed. City adopted UDC.
Flooding and Dam Failure	45. Perform routine bridge inspection and maintenance.	Annual budget	Wisconsin DOT/Ashland County Highway Department & municipalities	Ongoing	Medium	Ashland Co.; CIs of Ashland and Mellen; VI of Butternut and TNs of Agenda, Ashland, Chippewa, Gingles, Gordon,	Deleted. Action is a capability. Inspection and maintenance are performed routinely.

Hazard Type	Mitigation Measures	Costs of Project	Responsible Management	Project Timetable	Project Priority	Community(ies) Benefitting	Report on Action
						Jacobs, LaPointe, Marengo, Morse, Peeksville, Sanborn, Shanagolden, and White River	
Flooding and Dam Failure	46. Replacement of lead water services at all public properties	\$1,000,000 grant funding	Public Works Department	As funding available	High	City of Ashland	Completed.
Flooding and Dam Failure	47. Continue to monitor POWTS (Private Onsite Wastewater Treatment Systems).	Unknown Annual budget	Ashland County Zoning Department	Ongoing	High	Ashland Co.; CIs of Ashland and Mellen; VI of Butternut and TNs of Agenda, Ashland, Chippewa, Gingles, Gordon, Jacobs, LaPointe, Marengo, Morse, Peeksville, Sanborn, Shanagolden, and White River	Deleted. Action is a capability. Monitoring is performed routinely.
Flooding and Dam Failure	48. Complete investments, testing and maintenance of water and sewer systems to ensure they are operating within health standards and codes.	Unknown Annual budget	Public Works Department	Ongoing	High	City of Ashland	Ongoing.
Flooding and Dam Failure	49. * Educate residents about the National Flood Insurance Program (NFIP).	Annual budgets; offset by grant funding	ACEM Dept./ City of Ashland Department of Planning & Development; BR EM	Annually	Low	Ashland Co.; CIs of Ashland and Mellen; VI of Butternut and TNs of Agenda, Ashland, Chippewa, Gingles, Gordon, Jacobs, LaPointe,	Ongoing. Occurs annually.

Hazard Type	Mitigation Measures	Costs of Project	Responsible Management	Project Timetable	Project Priority	Community(ies) Benefitting	Report on Action
						Marengo, Morse, Peeksville, Sanborn, Shanagolden, and White River	
Flooding and Dam Failure	50. Review potential strategies to manage growth and flooding issues on Caville Road.	Unknown. As grants available	Town of Sanborn Board	Ongoing	Low	Town of Sanborn	Ongoing.
Flooding and Dam Failure	51. Purchase a sandbag filler and waste blocks.	\$40,000; As grants available	Ashland Co & local municipalities	1-5 years	High	Ashland Co.; CIs of Ashland and Mellen; VI of Butternut and TNs of Agenda, Ashland, Chippewa, Gingles, Gordon, Jacobs, LaPointe, Marengo, Morse, Peeksville, Sanborn, Shanagolden, and White River	Deleted. Due to lack of need.
Flooding and Dam Failure	52. *Work with local municipalities to conduct flood evaluations.	Unknown	ACEM Dept./ AC HWY, AC P&Z, local municipalities	Ongoing	Medium	Ashland Co.; CIs of Ashland and Mellen; VI of Butternut and TNs of Agenda, Ashland, Chippewa, Gingles, Gordon, Jacobs, LaPointe, Marengo, Morse, Peeksville, Sanborn, Shanagolden, and White River	Ongoing. In May 2023, an addendum was added to the Ashland County Hazard Mitigation Plan. The addendum describes vulnerability factors that apply to high-risk watersheds of Ashland County and describes goals and strategies for addressing fluvial erosion hazards and degraded hydrology.

Hazard Type	Mitigation Measures	Costs of Project	Responsible Management	Project Timetable	Project Priority	Community(ies) Benefitting	Report on Action
Flooding and Dam Failure	53. Actively search for funding options for dam control and maintenance around the dams.	Unknown	LWCD w/ Ashland Co Highway Dept., AC P&Z, WI DNR, as appropriate	Ongoing	Low	Ashland Co.; CIs of Ashland and Mellen; VI of Butternut and TNs of Agenda, Ashland, Chippewa, Gingles, Gordon, Jacobs, LaPointe, Marengo, Morse, Peeksville, Sanborn, Shanagolden, and White River	Completed. Hudson Dam District was created by Ashland County to help pay for dam control and maintenance. Deleted. Cities of Ashland and Mellen and Village of Butternut due to lack of capacity.
Flooding and Dam Failure	54. Cap unused/out of service wells to prevent contamination.	Annual budget	LWCD and municipalities	Ongoing	Medium-High	Ashland Co.; CI of Mellen; the VI of Butternut and TNs of Agenda, Ashland, Chippewa, Gingles, Gordon, Jacobs, LaPointe, Marengo, Morse, Peeksville, Sanborn, Shanagolden, and White River	Ongoing. County has a cost share program available to landowners.
Flooding and Dam Failure	55. Create well head protection plans.	Annual budget	CI of Mellen/ VI of Butternut/ TN of Jacobs (Glidden)	Ongoing	High	City of Ashland CI of Mellen; TN of Jacobs (Glidden)	Ongoing.
Flooding and Dam Failure	56. Do an assessment of what groundwater capacities, quality and flow direction are for future development.	Unknown. As grants available.	ACEM Dept./ LWCD/ AC P&Z, Superior Watershed	1-5 years	High	Ashland Co.; CIs of Ashland and Mellen; VI of Butternut and TNs	Not completed due to lack of capacity. Carry forward. County applied for the Wisconsin Geological and

Hazard Type	Mitigation Measures	Costs of Project	Responsible Management	Project Timetable	Project Priority	Community(ies) Benefitting	Report on Action
		(USFS, USGS, WI DNR, ACE)	Groundwater Association			of Agenda, Ashland, Chippewa, Gingles, Gordon, Jacobs, LaPointe, Marengo, Morse, Peeksville, Sanborn, Shanagolden, and White River	Natural History Survey to conduct a study in the Lake Superior watershed. Study to be conducted in the next few years.
Flooding and Dam Failure	57. *Will continue to explore if residents express interest in flood mitigation measures (e.g., buyouts, elevations, floodproofing, etc.) county-wide.	Annual budget	ACEM Dept.	Ongoing	Medium	Ashland Co.; CIs of Ashland and Mellen; VI of Butternut and TNs of Agenda, Ashland, Chippewa, Gingles, Gordon, Jacobs, LaPointe, Peeksville, Sanborn, Shanagolden, and White River	Ongoing. Projects have been implemented and are ongoing to mitigate flooding City of Ashland: Ongoing. Has updated wastewater pipes and completed green infrastructure projects. City of Mellen: Deleted. Defers to county.
Flooding and Dam Failure	58. Consider potential solutions to make North York Road safer for vehicular traffic.	TBD grant funded	Town of Ashland	1-5 years	High	Town of Ashland	Deleted. Due to lack of feasibility.
Flooding and Dam Failure	59. Complete recommended flood mitigation measures to forestall future flooding problems on Silver Creek Road.	TBD Grant funded (applying for a PDM project grant in 2012)	Town of Agenda and AC Highway Dept.	1-5 years	Medium	Town of Agenda	Completed. Ditching on road has been completed.
Flooding and Dam Failure	60. Update Road projects including: • Lake Drive culvert replacement • Fisher Road culvert replacement	\$171,000	Town of Morse	1-3 years	High-Very High	Town of Morse	Partially complete. Carry forward. Completed: Fisher Road (2019), Lake Galilee (2023),

Hazard Type	Mitigation Measures	Costs of Project	Responsible Management	Project Timetable	Project Priority	Community(ies) Benefitting	Report on Action
	• Minnie Creek Road culvert replacement • Lake Galilee dual culvert replacement • Sackett Road adding Meder Lake outlet culvert • Conley Road replace damaged culvert • Wrege Road replace undersized culvert						Sackett Road (2019), Wrege Road (2019). Scheduled: Lake Drive (2025-2026), Minnie Creek, Conley Road (2025-2026) New: Two Galilee Road culvert replacements in 2024
Flooding and Dam Failure	61. Update Road projects including: • East of Old Fort Rd/Casper Rd intersection – rip rap and raise roadbed 4” over existing culvert • Replace three 40’ culverts (with 2” larger plastic along with rip rap and raising road crown) at North Shore ½ mile northeast of Benjamin Blvd. intersection	\$30,000	Town of LaPointe	1-2 years	High	Town of LaPointe	Partially complete. Carry forward East of Old Fort Rd/Casper Rd intersection – rip rap and raise roadbed 4” over existing culvert project. The North Shore Road culverts were replaced in 2021-2022.
Flooding: Maritime Recreational/ Commercial	62. Maintain Ashland breakwater maintenance.	Federal funding \$450,000	US Coast Guard	July 2018	High	City of Ashland	Deleted. Not a city-level action.
Flooding: Maritime Recreational/ Commercial	63. Federal Navigation channel maintained by US ACOE into Chequamegon Bay.	Federal Funding	US Coast Guard	2023	Medium	City of Ashland	Deleted. Not a city-level action.
Flooding: Maritime Recreational/ Commercial	64. City of Ashland “KIYI” Dock” maintained by US ACOE adjacent to “Sooline Oredock”.	Federal Funding	Harbor Master	2023	High	City of Ashland	Ongoing.
Flooding: Maritime Recreational/ Commercial	65. City of Ashland “Soo Line Oredock” maintained by City of Ashland.	Municipality Funding	Harbor Master	2023	High	City of Ashland	Ongoing.

Hazard Type	Mitigation Measures	Costs of Project	Responsible Management	Project Timetable	Project Priority	Community(ies) Benefitting	Report on Action
Flooding: Maritime Recreational/ Commercial	66. Xcel Energy Ashland power plant channel/dock.	Private	Xcel	2023	Low	Xcel	Deleted. Not a county-level action.
Forest Fires and Wildfires	67. Install additional dry hydrants.	\$50,000 grant funding	Public Works Department/ Fire Department	As needed	Medium	City of Ashland	Ongoing. Occurs as needed. New action for Ashland County.
Forest Fires and Wildfires	68. Address blight in community by demolition of vacant, abandoned and substandard buildings.	Unknown. Annual budget or grant funding	Planning & Development Department	Ongoing	High	City of Ashland	Ongoing.
Forest Fires and Wildfires	69. Continue to enforce Property Maintenance Ordinance.	Annual budget	Planning & Development Department	Ongoing	High	City of Ashland	Deleted. Enforcement of the Property Maintenance Ordinance is a capability.
Forest Fires and Wildfires	70. Continue conducting the community fire prevention program activities.	Annual budget	USFS/DNR/Local Fire Departments/ ACEM, AC Dispatch	Ongoing	Medium	Ashland Co.; CIs of Ashland and Mellen; VI of Butternut and TNs of Agenda, Ashland, Chippewa, Gingles, Gordon, Jacobs, LaPointe, Marengo, Morse, Peeksville, Sanborn, Shanagolden, and White River	Deleted. Conducting community fire prevention program activities is a capability.
Forest Fires and Wildfires	71. Continue conducting FireWise Programs	Annual budget	USFS/ DNR/ Local Fire Departments	Ongoing	Medium	Ashland Co.; CIs of Ashland and Mellen; VI of Butternut and TNs of Agenda, Ashland, Chippewa, Gingles, Gordon,	Deleted. Continuing to conduct FireWise Programs is a capability.

Hazard Type	Mitigation Measures	Costs of Project	Responsible Management	Project Timetable	Project Priority	Community(ies) Benefitting	Report on Action
						Jacobs, LaPointe, Marengo, Morse, Peeksville, Sanborn, Shanagolden, and White River	
Forest Fires and Wildfires	72. Continue wildfire emergency operations training and interagency coordination initiatives.	Annual budget	USFS/ DNR/ Local Fire Departments	Ongoing	High	Ashland Co.; CIs of Ashland and Mellen; VI of Butternut and TNs of Agenda, Ashland, Chippewa, Gingles, Gordon, Jacobs, LaPointe, Marengo, Morse, Peeksville, Sanborn, Shanagolden, and White River	Deleted. Continuing wildfire emergency operations training and interagency coordination initiatives is a capability.
Forest Fires and Wildfires	73. Explore options for increasing the number of fire signs in the county (there are three currently).	Unknown	ACEM, USFS	2 years	Medium-High	Ashland Co.; CIs of Ashland and Mellen; VI of Butternut and TNs of Agenda, Ashland, Chippewa, Gingles, Gordon, Jacobs, LaPointe, Marengo, Morse, Peeksville, Sanborn, Shanagolden, and White River	Deleted. Need for additional signs does not exist at this time, will continue to evaluate.

Hazard Type	Mitigation Measures	Costs of Project	Responsible Management	Project Timetable	Project Priority	Community(ies) Benefitting	Report on Action
Forest Fires and Wildfires	74. Continue to cut back brush from the right-of-ways, especially in federal forests.	Unknown	Fire Departments Utilities	Ongoing	Medium	Ashland Co.; CIs of Ashland and Mellen; VI of Butternut and TNs of Agenda, Ashland, Chippewa, Gingles, Gordon, Jacobs, LaPointe, Marengo, Morse, Peeksville, Sanborn, Shanagolden, and White River	Ongoing. Revise in updated plan to include all roads.
Severe Temperatures	75. As part of a public information campaign, make severe temperature safety materials publicly available.	Annual budget	ACEM Dept.	Ongoing	Medium	Ashland Co.; CIs of Ashland and Mellen; VI of Butternut and TNs of Agenda, Ashland, Chippewa, Gingles, Gordon, Jacobs, LaPointe, Marengo, Morse, Peeksville, Sanborn, Shanagolden and White River	Ongoing. Materials are currently being updated. Added HHS to responsible management.
Storms: Hail, Lightning and Thunderstorms	76. As part of a public information campaign, make thunderstorm, hail and lightning safety materials publicly available.	Annual budget	ACEM Dept.	Ongoing	Medium	Ashland Co.; CIs of Ashland and Mellen; VI of Butternut and TNs of Agenda, Ashland, Chippewa, Gingles, Gordon,	Ongoing. Skywarn Spotter Training was offered at two locations in April 2024: Bad River Lodge & Casino and Butternut School Library. Severe Weather Awareness information available on county

Hazard Type	Mitigation Measures	Costs of Project	Responsible Management	Project Timetable	Project Priority	Community(ies) Benefitting	Report on Action
						Jacobs, LaPointe, Marengo, Morse, Peeksville, Sanborn, Shanagolden, and White River	website and Ashland County Sheriff's Office Facebook page.
Storms: Hail, Lightning and Thunderstorms	77. Ongoing maintenance to keep powerline right-of-way at least 20 feet clear.	Up to \$100,000 for	Price and Bayfield Electric Co-ops contractors to clear	Ongoing	High	PEC: TNs of Agenda, Chippewa, Gordon, Jacobs, Morse, Peeksville, Shanagolden BEC: TNs of Ashland, Gingles, Gordon, Marengo, Morse, Sanborn, Shanagolden, White River	Ongoing.
Storms: Tornadoes & High Winds	78. As part of a public information campaign, make tornado and high wind safety materials publicly available.	Annual budget	ACEM Dept.	Ongoing	Medium	Ashland Co.; CIs of Ashland and Mellen; VI of Butternut and TNs of Agenda, Ashland, Chippewa, Gingles, Gordon, Jacobs, LaPointe, Marengo, Morse, Peeksville, Sanborn, Shanagolden, and White River	Ongoing. Skywarn Spotter Training was offered at two locations in April 2024: Bad River Lodge & Casino and Butternut School Library. Severe Weather Awareness information available on county website and Ashland County Sheriff's Office Facebook page
Storms: Tornadoes & High Winds	79. Identify storm shelters for golf courses, campgrounds, parks and mobile home parks.	\$100,000 Grant funding	Police Department/ Fire Department	1-5 years	High	CI of Ashland	City of Ashland: Not completed due to lack of capacity. Carry forward.

Hazard Type	Mitigation Measures	Costs of Project	Responsible Management	Project Timetable	Project Priority	Community(ies) Benefitting	Report on Action
		Grant funding	Ashland Co EM with municipalities	5 years	Medium	Ashland Co.; CI of Mellen; TNs of Agenda, Ashland, Chippewa, Gingles, Gordon, Jacobs, LaPointe, Marengo, Morse, Peeksville, Sanborn, Shanagolden, and White River	Ashland County: Not completed due to lack of capacity. Carry forward.
Storms: Tornadoes & High Winds	80. Complete a warning siren study to determine number of necessary sirens to cover the community.	\$10,000 Grant funding	Police Department/Fire Department	1-5 years	High	CI of Ashland	Completed.
Storms: Tornadoes & High Winds	81. Implement findings of Warning Siren Study.	\$50,000 Grant funding	Police Department / Fire Department	1-5 years	High	CI of Ashland	Completed.
Storms: Winter	82. As part of a public information campaign, make winter and cold weather safety materials publicly available.	Annual budget	ACEM Dept.	Ongoing	Medium	Ashland Co.; CIs of Ashland and Mellen; VI of Butternut and TNs of Agenda, Ashland, Chippewa, Gingles, Gordon, Jacobs, LaPointe, Marengo, Morse, Peeksville, Sanborn, Shanagolden, and White River	Ongoing. Billboard in lobby, website has information that is continually updated.
Storms: Winter	83. Ensure right of way clearing on county roads and living snow fence to act as windbreak.	Annual budget	AC Highway	Ongoing	High	Ashland Co.; CIs of Ashland and Mellen; VI of Butternut and TNs	Partially complete. Revised in update to only include living snow fence. Right of way clearing is ongoing in winter.

Hazard Type	Mitigation Measures	Costs of Project	Responsible Management	Project Timetable	Project Priority	Community(ies) Benefitting	Report on Action
						of Agenda, Ashland, Chippewa, Gingles, Gordon, Jacobs, LaPointe, Marengo, Morse, Peeksville, Sanborn, Shanagolden, and White River	
Storms: Winter	84. Continually evaluate the salt/sand/wet agent mix of winter road agents for all communities to balance safety, cost, and environmental impacts.	Annual budget	AC Highway	Ongoing	Medium	Ashland Co.; CIs of Ashland and Mellen; VI of Butternut and TNs of Agenda, Ashland, Chippewa, Gingles, Gordon, Jacobs, LaPointe, Marengo, Morse, Peeksville, Sanborn, Shanagolden, and White River	Ongoing.
Utility Failure	85. Study on line load and loss.	\$30,000	Price Electric Co-Op	3 years	Medium	TNs of Agenda, Chippewa, Gordon, Jacobs, Morse, Peeksville and Shanagolden	Ongoing. Serves parts of Ashland County, including Butternut (subbing 1,000 kVA)

Hazard Type	Mitigation Measures	Costs of Project	Responsible Management	Project Timetable	Project Priority	Community(ies) Benefitting	Report on Action
Utility Failure	86. Obtain service map from Price and Bayfield Electric Co-ops.	Annual budget	ACEM Dept., Price and Bayfield Electric Co-ops	2012	High	PEC: TNs of Agenda, Chippewa, Gordon, Jacobs, Morse, Peeksville, Shanagolden BEC: TNs of Ashland, Gingles, Gordon, Marengo, Morse, Sanborn, Shanagolden, White River	Not completed due to lack of capacity. Carry forward. Added Xcel Energy in update.
Utility Failure	87. Work with utilities to place new local electrical distribution lines to be place underground where applicable.	Unknown. Annual budgets; offset by grant funding	Public Works/ Planning & Development Department	Ongoing	High	CI of Ashland	Ongoing. All new utilities are required to be underground.
Utility Failure	88. Upgrade wire, poles, arrestors, and cut outs to pinpoint outages from the Glidden substation to Forest Service.	\$525,000 Annual budget (self or contract)	Price Electric Co-Op	5 years	Medium	TN of Jacobs (Glidden)	Completed.
Utility Failure	89. Conduct a needs assessment to evaluate the needs, budget and begin project for emergency backup systems for community facilities around the county (to include emergency shelters). Explore possible options including backup generators, outdoor/mobile generator receiver panels, etc.	\$150,000 Annual or capital budget or grant funding	Public Works/ Parks & Recreation Department/ Police Department/ Library/JFK Memorial Airport	10 years	Medium	Ashland Co.; CIs of Ashland and Mellen; VI of Butternut and TNs of Agenda, Ashland, Chippewa, Gingles, Gordon, Jacobs, LaPointe, Marengo, Morse, Peeksville, Sanborn, Shanagolden, and White River	Ongoing. Grant funding is being pursued. Changed to high priority and added solar to mitigation measures.

Hazard Type	Mitigation Measures	Costs of Project	Responsible Management	Project Timetable	Project Priority	Community(ies) Benefitting	Report on Action
Utility Failure	90. Conduct a needs assessment to evaluate the needs, budget and begin project for emergency backup systems (computer or mechanical) for the city's water treatment plant.	\$120,000 Grant funding	Public Works Department	1-5 years	High	CI of Ashland	Partially completed. Carry forward.
Utility Failure	91. Evaluate the condition of older sewer infrastructure to ensure failures do not create cascading flooding issues.	Annual budget	Public Works Department	Ongoing	Medium	CI of Ashland	Ongoing.
Utility Failure	92. Update facility maintenance plan for wastewater.	Unknown	Public Works Department	1-3 years	High	CI of Ashland	Ongoing.
Utility Failure	93. Bury overhead power lines where feasible to increase reliability. Projects may include: - Odanah - Highbridge	Unknown \$26k for 4 miles	Bayfield Electric Co-Op	5 years	High	TN Sanborn TNs Ashland and Marengo	Deleted. Odanah removed in update, as not a viable option. An action to coordinate with power companies on feasibility and prioritization replaced this action in the next planning cycle.
Civil Disturbance/ Terrorism	94. Complete planning for civil disturbance, terrorism, and radiological emergencies.	\$15,000 Annual budgets or grant funding	Police Department /Fire Department	Ongoing	High	CI of Ashland	Ongoing.
Civil Disturbance/ Terrorism	95. Increase security measures in public buildings, including at Police Department and city administrative facilities.	\$50,000 Annual budgets or grant funding	Public Works/ Parks & Recreation/Police/ Fire Department/ Library/JKF Memorial Airport/ Administration/IT Department	1-2 years	High	CI of Ashland	Ongoing. PD is completed.
Civil Disturbance/ Terrorism	96. Obtain security alarms, fire alarms and video cameras for municipal facilities.	\$250,000	Public Works Department/IT Department	10-15 years	Medium	CI of Ashland	Ongoing. Progress is being made.

Hazard Type	Mitigation Measures	Costs of Project	Responsible Management	Project Timetable	Project Priority	Community(ies) Benefitting	Report on Action
		Annual budgets or grant funding Unknown	Public Works Departments	5 years	Medium	TN of Jacobs Sanitary District	Ongoing. Progress is being made.
Civil Disturbance/ Terrorism	97. Provide redundant municipal data systems for operation of municipal facilities and municipal operations.	\$225,000 Annual budgets or grant funding	IT Department	1-5 years	High	CI of Ashland	Completed. There are now fiber and wireless connections to all facilities.
Civil Disturbance/ Terrorism	98. Complete proper ventilation and mold elimination in public buildings.	\$20,000 (annually) Annual or capital budgets	Facilities Department	Ongoing	High	CI of Ashland	Completed.
Civil Disturbance/ Terrorism	99. Obtain surge protection at municipal facilities.	\$500,000 Grant funding	Public Works Department/IT Department	1-5 years	Medium	CI of Ashland	Completed.

Appendix D: Northwest Wisconsin Flood Impact Study Maps: Ashland County

On July 11-12, 2016, multiple rounds of severe thunderstorms impacted seven counties in northwest Wisconsin, including Ashland, Bayfield, Burnett, Douglas, Iron, Sawyer, and Washburn Counties, as well as the Bad River Band of the Lake Superior Chippewa. During a 24-hour period, there was historic heavy rainfall, with 8 to 12 inches of precipitation falling in some areas. The heavy rainfall caused flash flooding and widespread and severe damage to roads and infrastructure, homes, businesses, and public facilities. Travel across much of northwestern Wisconsin was not advised due to inundated roadways and washouts. The timing of these storms also coincided with the peak of tourist season. Regionwide, the flood event impacted over 350 homes and left behind tens of millions of dollars in public sector damage.

On July 12, 2016, a state of emergency was declared for the affected counties. On August 9, 2016, Presidential Disaster Declaration DR-4276 for public assistance was granted for the counties of Ashland, Bayfield, Burnett, Douglas, Florence, Iron, Sawyer, and Washburn, and the Bad River Band of the Lake Superior Chippewa.

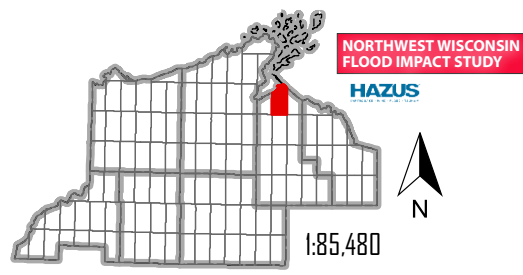
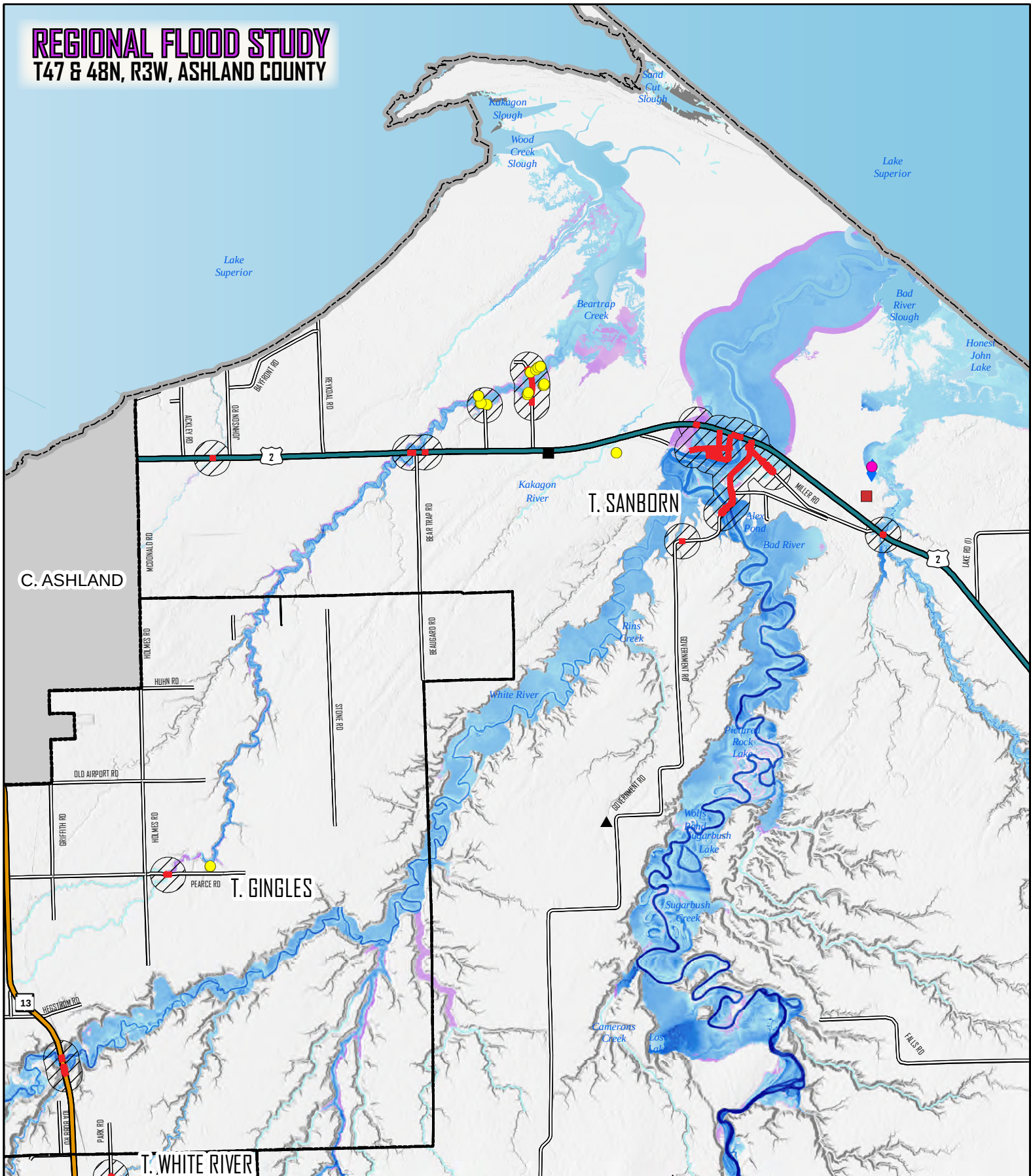
In 2018, the Northwest Wisconsin Flood Impact Study was completed by the Northwest Regional Planning Commission (NWRPC) for the counties of Ashland, Bayfield, Burnett, Douglas, Iron, Sawyer, and Washburn, all of which were impacted by DR-4276. As part of the study, NWRPC conducted a flood inundation analysis to estimate potential flood losses and identify structures, businesses, economic assets, and community infrastructure vulnerable to flooding.

Through this flood inundation analysis, two tables were generated, one table representing 100-year flood loss estimates and the other representing 500-year flood loss estimates (See Flooding and Dam Failure Hazard Profiles). The analysis concluded that an estimated 78 structures in Bayfield County would be impacted in a 100-year scenario and that an estimated 114 structures would be impacted by a 500-year scenario flood.

The full Northwest Wisconsin Flood Impact Study and links to interactive 100-year and 500-year flood event maps are located on the project webpage available at nwrpc.com/986/Map-Servers.

REGIONAL FLOOD STUDY

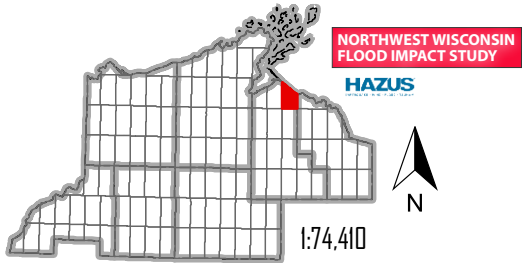
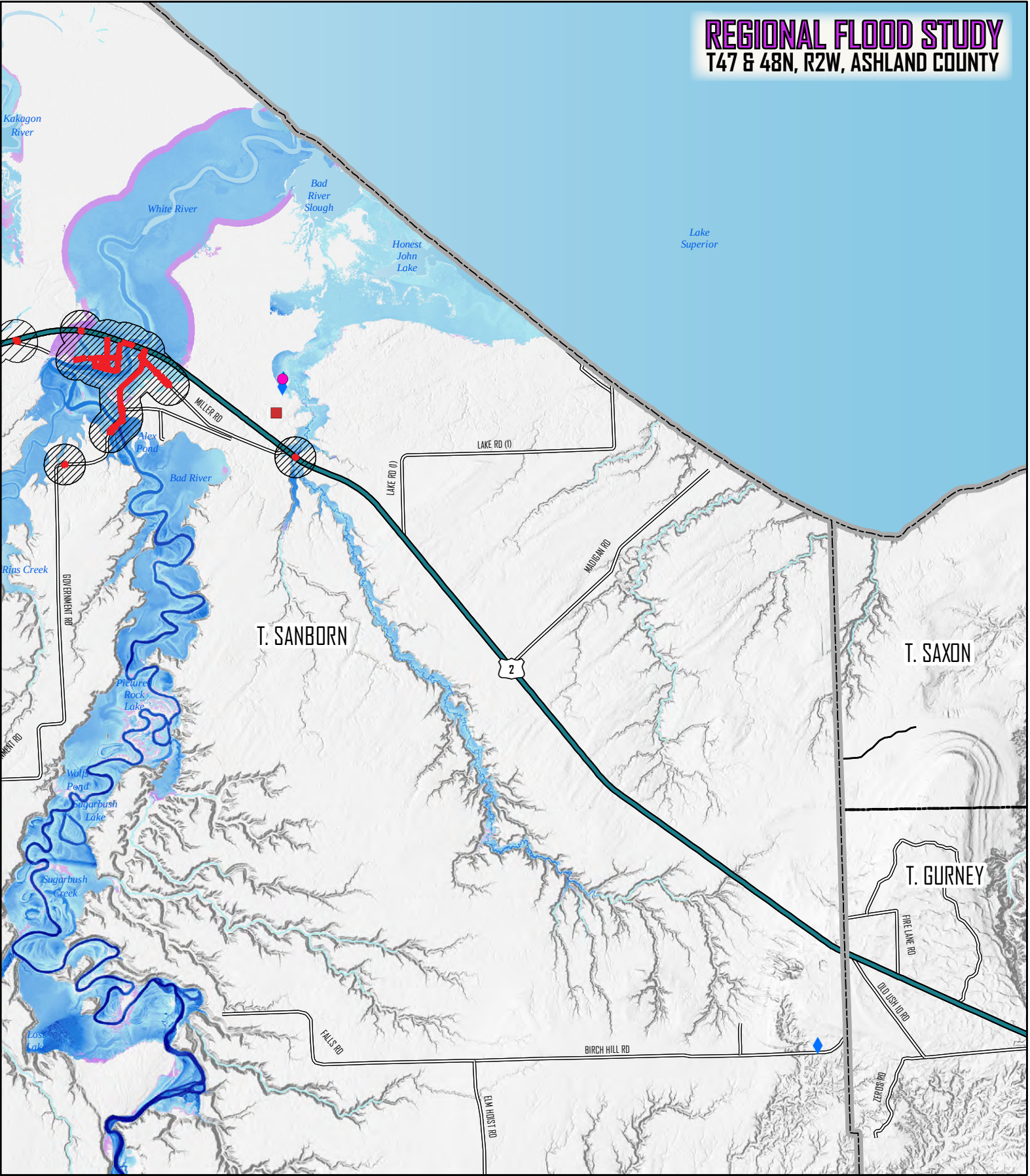
T47 & 48N, R3W, ASHLAND COUNTY



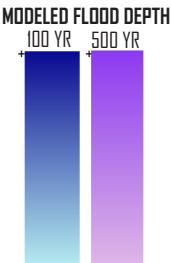
- | | | | |
|---|---|---|--|
| <p>POTENTIAL FLOOD IMPACTS</p> <ul style="list-style-type: none"> ● AGRICULTURE ● COMMERCIAL ● RESIDENTIAL ● GOVERNMENT ● INDUSTRIAL ● EDUCATIONAL ● OTHER ▨ POSSIBLE ROAD/BRIDGE IMPACT AREA ▨ POSSIBLE IMPACT SEGMENT | <p>MODELED FLOOD DEPTH</p> <div style="display: flex; align-items: center;"> <div style="width: 20px; height: 20px; background-color: #000080; margin-right: 5px;"></div> 100 YR <div style="width: 20px; height: 20px; background-color: #800080; margin-left: 10px; margin-right: 5px;"></div> 500 YR </div> | <p>CRITICAL FACILITIES</p> <ul style="list-style-type: none"> ■ EDUCATION ■ COUNTY GOVERNMENT CENTER ■ FIRE & EMS ■ HOSPITAL ■ LAW ENFORCEMENT ■ LOCAL GOVERNMENT ▲ DAM ⚡ SUBSTATION ◆ WASTEWATER TREATMENT | <p>BASE FEATURES</p> <ul style="list-style-type: none"> — U.S. HIGHWAY — STATE HIGHWAY — COUNTY HIGHWAY — LOCAL ROADS — STREETS — RIVERS & STREAMS — LAKES — CITIES & VILLAGES — TOWNS — COUNTY |
|---|---|---|--|

REGIONAL FLOOD STUDY

T47 & 48N, R2W, ASHLAND COUNTY



- POTENTIAL FLOOD IMPACTS**
- AGRICULTURE
 - COMMERCIAL
 - RESIDENTIAL
 - GOVERNMENT
 - INDUSTRIAL
 - EDUCATIONAL
 - OTHER
 - ▨ POSSIBLE ROAD/BRIDGE IMPACT AREA
 - ▨ POSSIBLE IMPACT SEGMENT



- CRITICAL FACILITIES**
- EDUCATION
 - COUNTY GOVERNMENT CENTER
 - FIRE & EMS
 - HOSPITAL
 - LAW ENFORCEMENT
 - LOCAL GOVERNMENT
 - ▲ DAM
 - ⚡ SUBSTATION
 - ◆ WASTEWATER TREATMENT

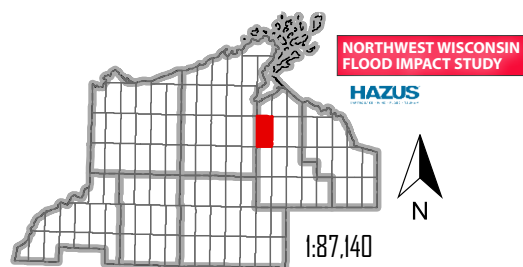
- BASE FEATURES**
- U.S. HIGHWAY
 - STATE HIGHWAY
 - COUNTY HIGHWAY
 - LOCAL ROADS
 - STREETS
 - RIVERS & STREAMS
 - LAKES
 - CITIES & VILLAGES
 - TOWNS
 - COUNTY

REGIONAL FLOOD STUDY
T45 & 46N, R4W, ASHLAND COUNTY

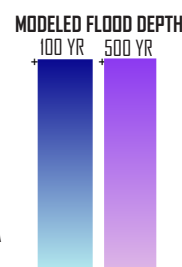
The map displays the following townships and roads:

- T. EILEEN**: Kelly Rd, Maple Ridge Rd, Pet Rd, Four Corners Store Rd, Indian Lake Rd, Ashland Bayfield Rd.
- T. GINGLES**: Tapani Rd, Charles Johnson Rd, Blackman Rd, Dark Corner Rd, Jolma Rd, Van Dine Rd.
- T. KELLY**: Deer Creek Rd, Schwiesow Rd, Salo Rd, Yonkovich Rd, Petrin Rd, Toddy Rd, Osredkar Rd, Wildcat Rd, Hader Rd, Lovers Lane Rd, Ryster Rd, Snake Trail Rd.
- T. WHITE RIVER**: Redinger Rd, Reindiger Rd, Hein Rd, Long Rd, Eader Rd, Hammen Rd, Sing Rd, Busch Lake Rd, Borden Rd, Spring Rd.
- T. LINCOLN**: Birn Lake, Indian Lake, Morgan Creek, Lake Three.
- T. MARENGO**: Reindiger Rd, Hein Rd, Long Rd, Eader Rd, Hammen Rd, Sing Rd, Busch Lake Rd, Borden Rd, Spring Rd.
- T. ASHLAND**: Brunsweller River, Moonshine Lake, Thornapple Creek, W Fire Lane Rd.
- T. MORSE**: Trout Brook, Spring Rd.
- T. GRANDVIEW**: Ashland Bayfield Rd.

Key roads shown include Highway 112 and Highway 13. The map also features various lakes and creeks, including White River, Rock Creek, Brunsweller River, and Moonshine Lake. Flood zones are indicated by red and yellow shading, and specific locations are marked with red dots and circles.

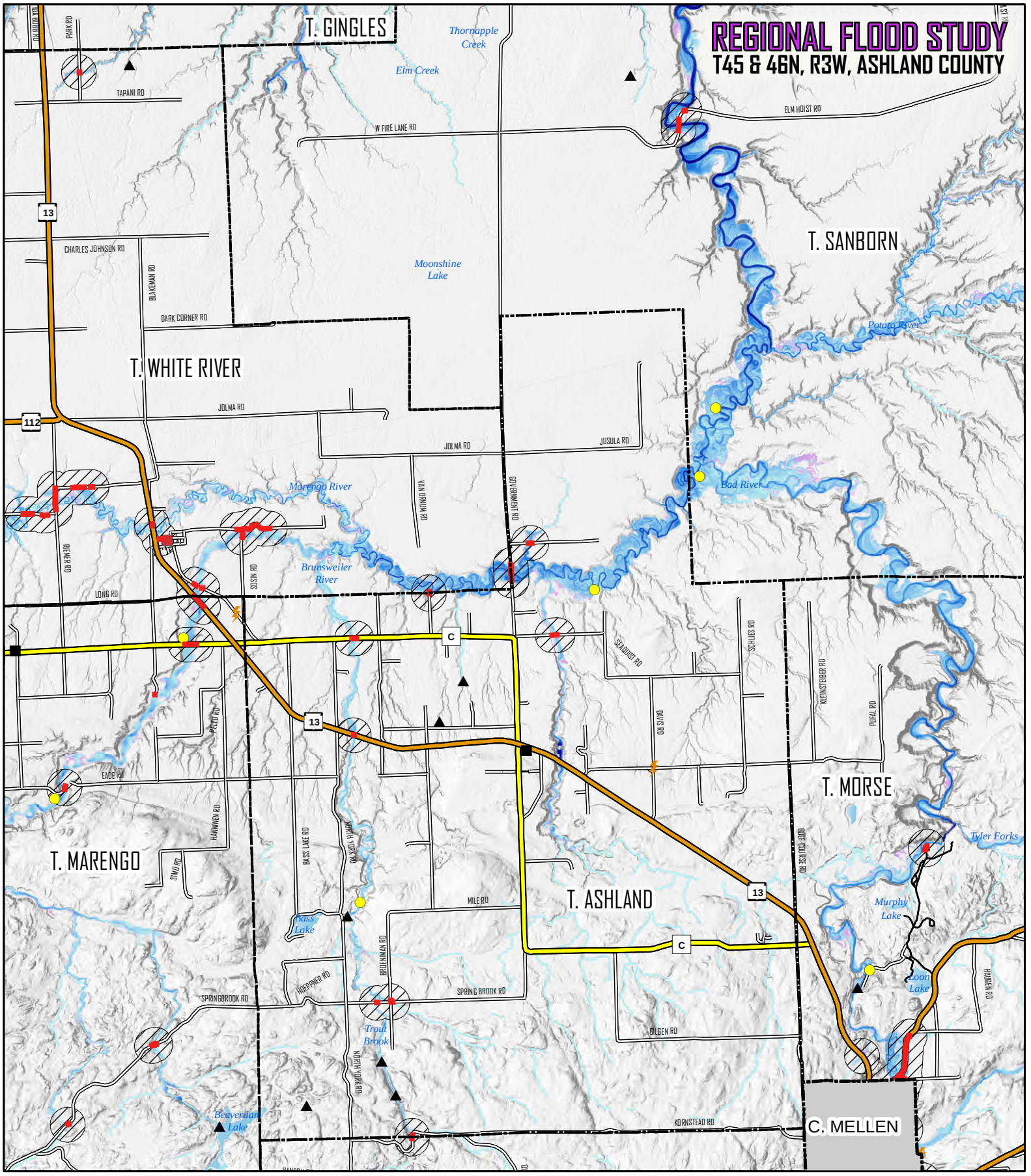


- POTENTIAL FLOOD IMPACTS**
- AGRICULTURE
 - COMMERCIAL
 - RESIDENTIAL
 - GOVERNMENT
 - INDUSTRIAL
 - EDUCATIONAL
 - OTHER
- ▨ POSSIBLE ROAD/BRIDGE IMPACT AREA
- ▬ POSSIBLE IMPACT SEGMENT

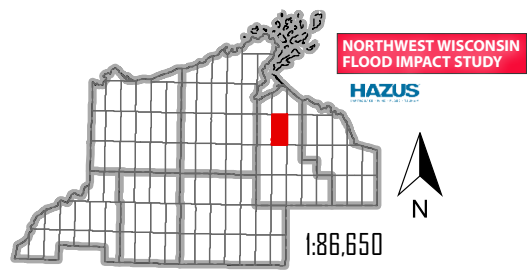


- CRITICAL FACILITIES**
- EDUCATION
 - COUNTY GOVERNMENT CENTER
 - FIRE & EMS
 - HOSPITAL
 - LAW ENFORCEMENT
 - LOCAL GOVERNMENT
 - DAM
 - SUBSTATION
 - WASTEWATER TREATMENT

- BASE FEATURES**
-  U.S. HIGHWAY
 -  STATE HIGHWAY
 -  COUNTY HIGHWAY
 -  LOCAL ROADS
 -  STREETS
 -  RIVERS & STREAMS
 -  LAKES
 -  CITIES & VILLAGES
 -  TOWNS
 -  COUNTY
- Page 292 of 334



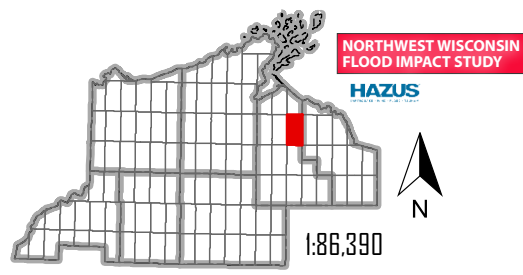
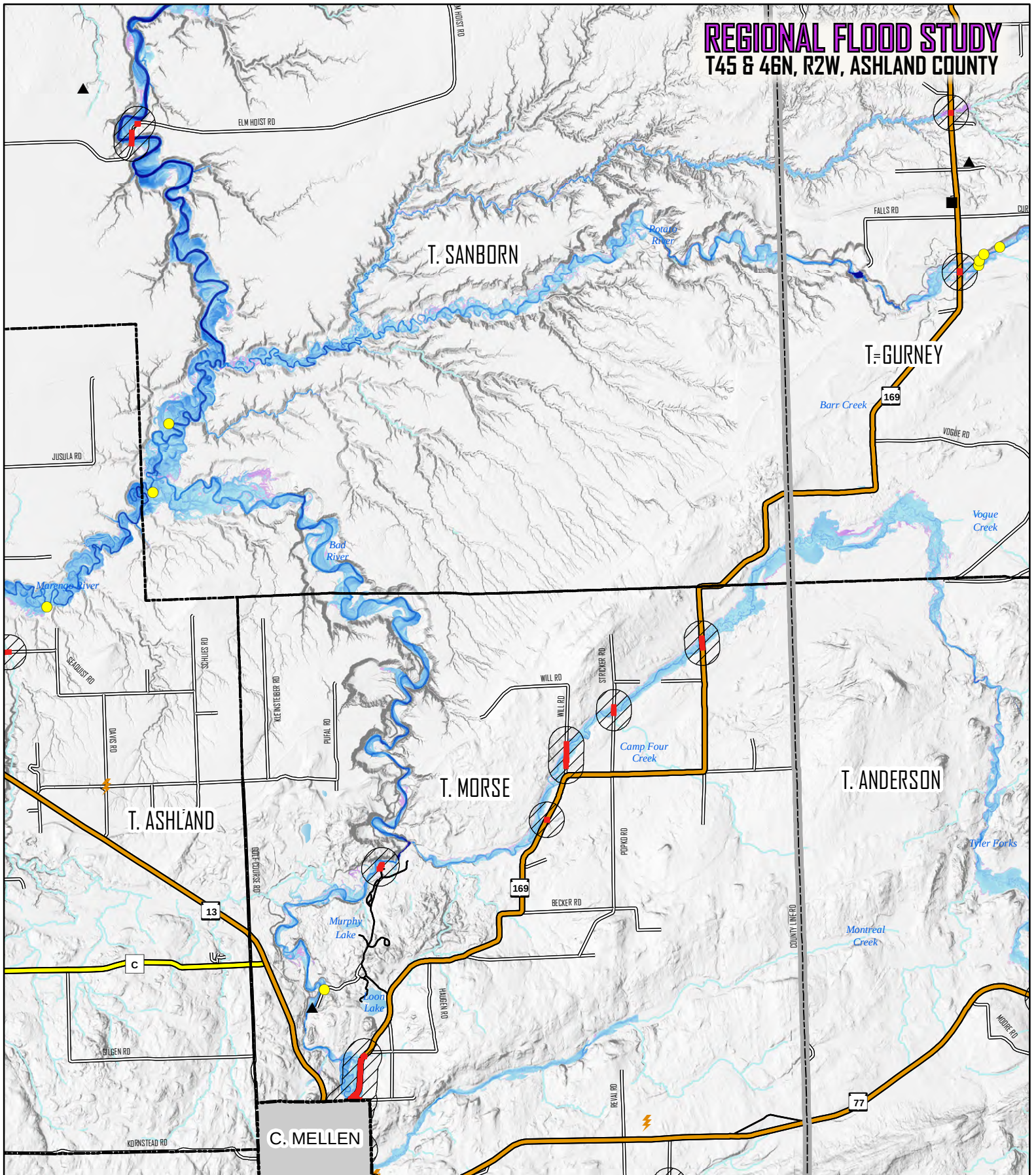
REGIONAL FLOOD STUDY
T45 & 46N, R3W, ASHLAND COUNTY



- | | | | |
|--|---|---|---|
| POTENTIAL FLOOD IMPACTS | MODELED FLOOD DEPTH | CRITICAL FACILITIES | BASE FEATURES |
| <ul style="list-style-type: none">● AGRICULTURE● COMMERCIAL● RESIDENTIAL● GOVERNMENT● INDUSTRIAL● EDUCATIONAL● OTHER | <ul style="list-style-type: none">100 YR500 YR | <ul style="list-style-type: none">■ EDUCATION■ COUNTY GOVERNMENT CENTER■ FIRE & EMS■ HOSPITAL■ LAW ENFORCEMENT■ LOCAL GOVERNMENT■ SUBSTATION■ WASTEWATER TREATMENT | <ul style="list-style-type: none">— U.S. HIGHWAY— STATE HIGHWAY— COUNTY HIGHWAY— LOCAL ROADS— STREETS— RIVERS & STREAMS— LAKES— CITIES & VILLAGES— TOWNS— COUNTY |
| <ul style="list-style-type: none">▨ POSSIBLE ROAD/BRIDGE IMPACT AREA— POSSIBLE IMPACT SEGMENT | | | |

REGIONAL FLOOD STUDY

T45 & 46N, R2W, ASHLAND COUNTY



POTENTIAL FLOOD IMPACTS

- AGRICULTURE
- COMMERCIAL
- RESIDENTIAL
- GOVERNMENT
- INDUSTRIAL
- EDUCATIONAL
- OTHER
- ▨ POSSIBLE ROAD/BRIDGE IMPACT AREA
- ▬ POSSIBLE IMPACT SEGMENT

MODELED FLOOD DEPTH

100 YR 500 YR

CRITICAL FACILITIES

- EDUCATION
- COUNTY GOVERNMENT CENTER
- FIRE & EMS
- HOSPITAL
- LAW ENFORCEMENT
- LOCAL GOVERNMENT
- ▲ DAM
- ⚡ SUBSTATION
- ◆ WASTEWATER TREATMENT

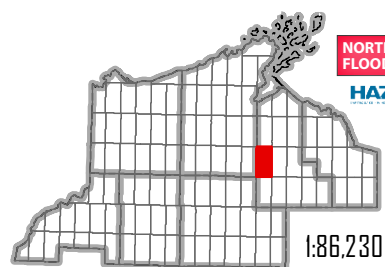
BASE FEATURES

- U.S. HIGHWAY
- STATE HIGHWAY
- COUNTY HIGHWAY
- LOCAL ROADS
- STREETS
- RIVERS & STREAMS
- LAKES
- CITIES & VILLAGES
- TOWNS
- COUNTY

REGIONAL FLOOD STUDY
T43 & 44N, R4W, ASHLAND COUNTY

The map displays the following townships and geographical features:

- Townships:** T. LINCOLN, T. GRANDVIEW, T. MARENGO, T. NAMAKAGON, T. GORDON, T. SPIDER LAKE, T. ASHLAND, T. MORSE, T. SHANAGOLDEN.
- Lakes and Creeks:** Beaver Lake, Whisky Creek, Tea Lake, Gilbert Lake, Toskis Creek, Mineral Lake, Camp Six Creek, Potter Lake, English Lake, Hardscrabble Creek, Edies Creek, Iron River, Dingdong Creek, Woodtick Lake, Dead Horse Slough, Little Lake, Cranberry Lake, Upper Clam Lake, Buffalo Lake, Range Line Lake, White Bass Lake, Muskies Springs Lake, Red Ike Creek, Hadley Lake, Chippewa Lake, Duck Lake, Mud Lake, West Twin Lake, East Twin Lake, Spider Lake, Moquah Lake, Brunsweiler River, McCarthy Creek, McCarthy Lake, Blaser Creek, Coffee Lake, Spruce Lake, Marengo River, Spring Self Brook Lake, Lake Three, Beaverdam Lake, John Frank Lake, Trout Brook, Rasmussen Rd, Hanson Rd, Wisard Rd, Snake Trl, Snake Trl, Forest Rd 152, Forest Rd 153, Forest Rd 154, Forest Rd 155, Forest Rd 156, Forest Rd 157, Forest Rd 158, Forest Rd 159, Forest Rd 160, Forest Rd 161, Forest Rd 162, Forest Rd 163, Forest Rd 164, Forest Rd 165, Forest Rd 166, Forest Rd 167, Forest Rd 168, Forest Rd 169, Forest Rd 170, Forest Rd 171, Forest Rd 172, Forest Rd 173, Forest Rd 174, Forest Rd 175, Forest Rd 176, Forest Rd 177, Forest Rd 178, Forest Rd 179, Forest Rd 180, Forest Rd 181, Forest Rd 182, Forest Rd 183, Forest Rd 184, Forest Rd 185, Forest Rd 186, Forest Rd 187, Forest Rd 188, Forest Rd 189, Forest Rd 190, Forest Rd 191, Forest Rd 192, Forest Rd 193, Forest Rd 194, Forest Rd 195, Forest Rd 196, Forest Rd 197, Forest Rd 198, Forest Rd 199, Forest Rd 200.
- Roads:** T43, 44N, R4W, Ashland County.
- Other Features:** Yellow line indicating a specific route or boundary, red dots indicating specific locations, blue lines indicating water bodies.



**NORTHWEST WISCONSIN
FLOOD IMPACT STUDY**

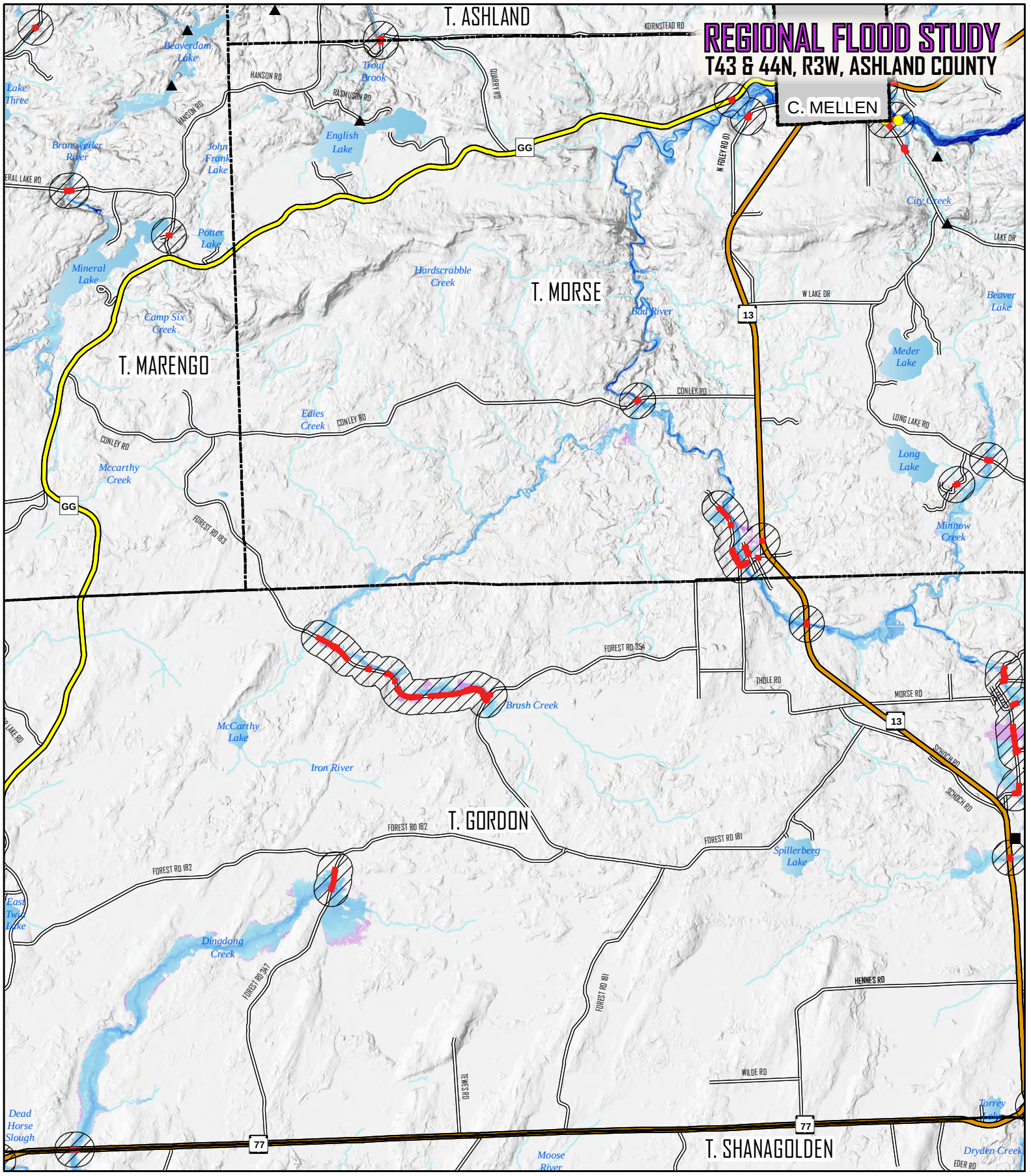
HAZUS



 AGRICULTURE
 COMMERCIAL
 RESIDENTIAL
 GOVERNMENT
 INDUSTRIAL
 EDUCATIONAL
 OTHER
 POSSIBLE ROAD/BRIDGE IMPACT AREA
 POSSIBLE IMPACT SEGMENT

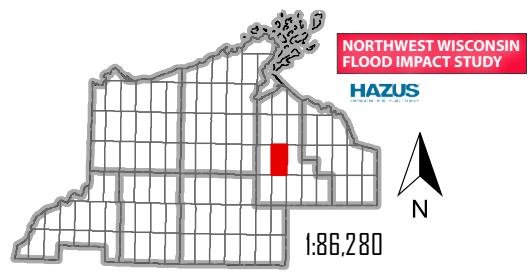
- EDUCATION
- COUNTY GOVERNMENT CENTER
- FIRE & EMS
- HOSPITAL
- LAW ENFORCEMENT
- LOCAL GOVERNMENT
- DAM
- SUBSTATION
- WASTEWATER TREATMENT

 U.S. HIGHWAY
 STATE HIGHWAY
 COUNTY HIGHWAY
 LOCAL ROADS
 STREETS
 RIVERS & STREAMS
 LAKES
 CITIES & VILLAGES
 TOWNSHIP BOUNDARY

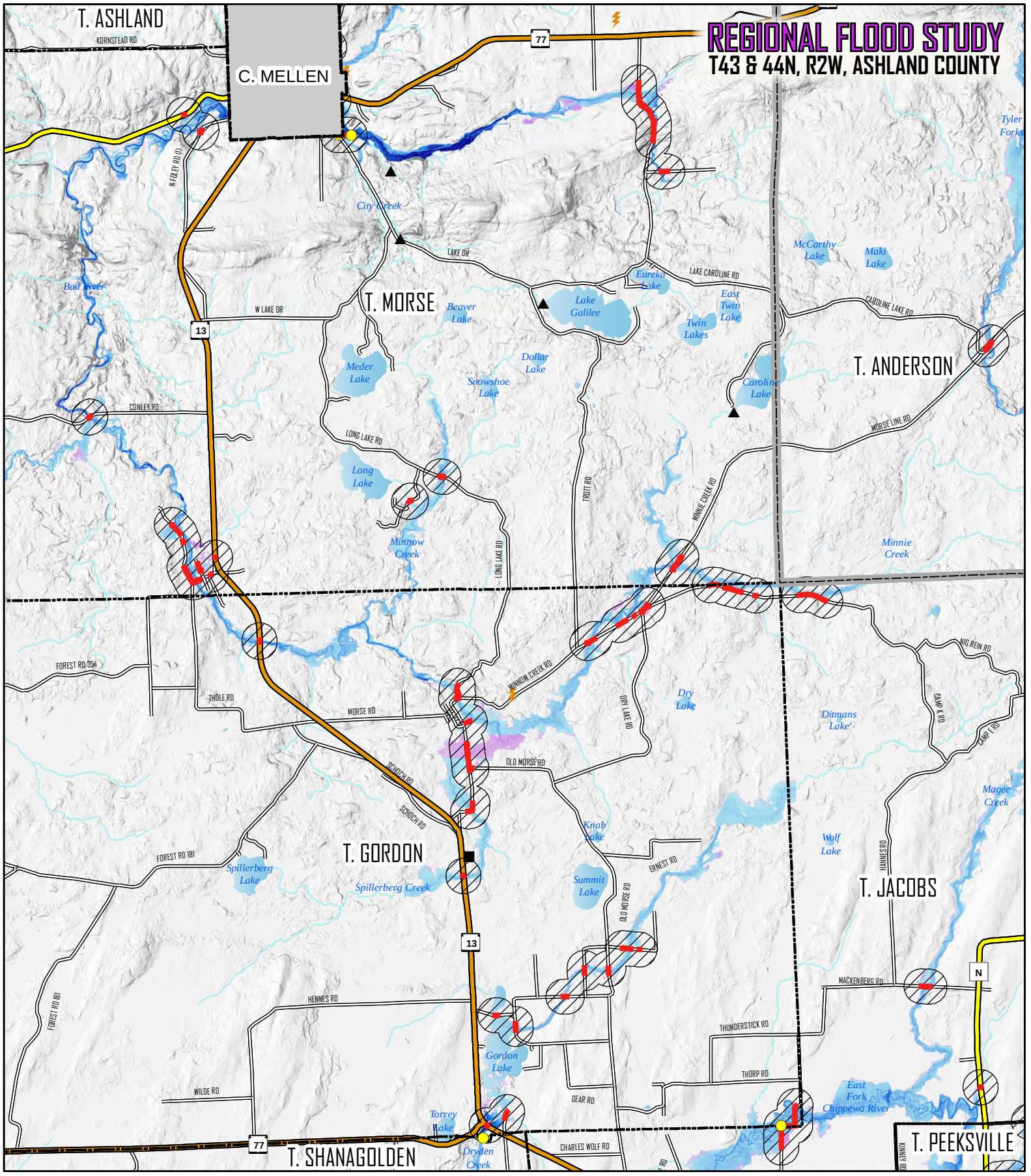


REGIONAL FLOOD STUDY
T43 & 44N, R3W, ASHLAND COUNTY

C. MELLEN

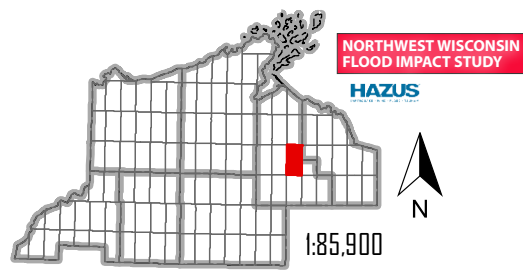


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|---|---|---|---|
| POTENTIAL FLOOD IMPACTS | MODELED FLOOD DEPTH | CRITICAL FACILITIES | BASE FEATURES |
| <ul style="list-style-type: none">● AGRICULTURE● COMMERCIAL● RESIDENTIAL● GOVERNMENT● INDUSTRIAL● EDUCATIONAL● OTHER▨ POSSIBLE ROAD/BRIDGE IMPACT AREA▨ POSSIBLE IMPACT SEGMENT | <ul style="list-style-type: none">100 YR500 YR | <ul style="list-style-type: none">■ EDUCATION■ COUNTY GOVERNMENT CENTER■ FIRE & EMS■ HOSPITAL■ LAW ENFORCEMENT■ LOCAL GOVERNMENT▲ DAM⚡ SUBSTATION◆ WASTEWATER TREATMENT | <ul style="list-style-type: none">— U.S. HIGHWAY— STATE HIGHWAY— COUNTY HIGHWAY— LOCAL ROADS— STREETS— RIVERS & STREAMS— LAKES— CITIES & VILLAGES— TOWNS— COUNTY |



REGIONAL FLOOD STUDY

T43 & 44N, R2W, ASHLAND COUNTY



- POTENTIAL FLOOD IMPACTS**

 - AGRICULTURE
 - COMMERCIAL
 - RESIDENTIAL
 - GOVERNMENT
 - INDUSTRIAL
 - EDUCATIONAL
 - OTHER
 - ▨ POSSIBLE ROAD/BRIDGE IMPACT AREA
 - ▨ POSSIBLE IMPACT SEGMENT
- MODELED FLOOD DEPTH**

100 YR 500 YR
- CRITICAL FACILITIES**

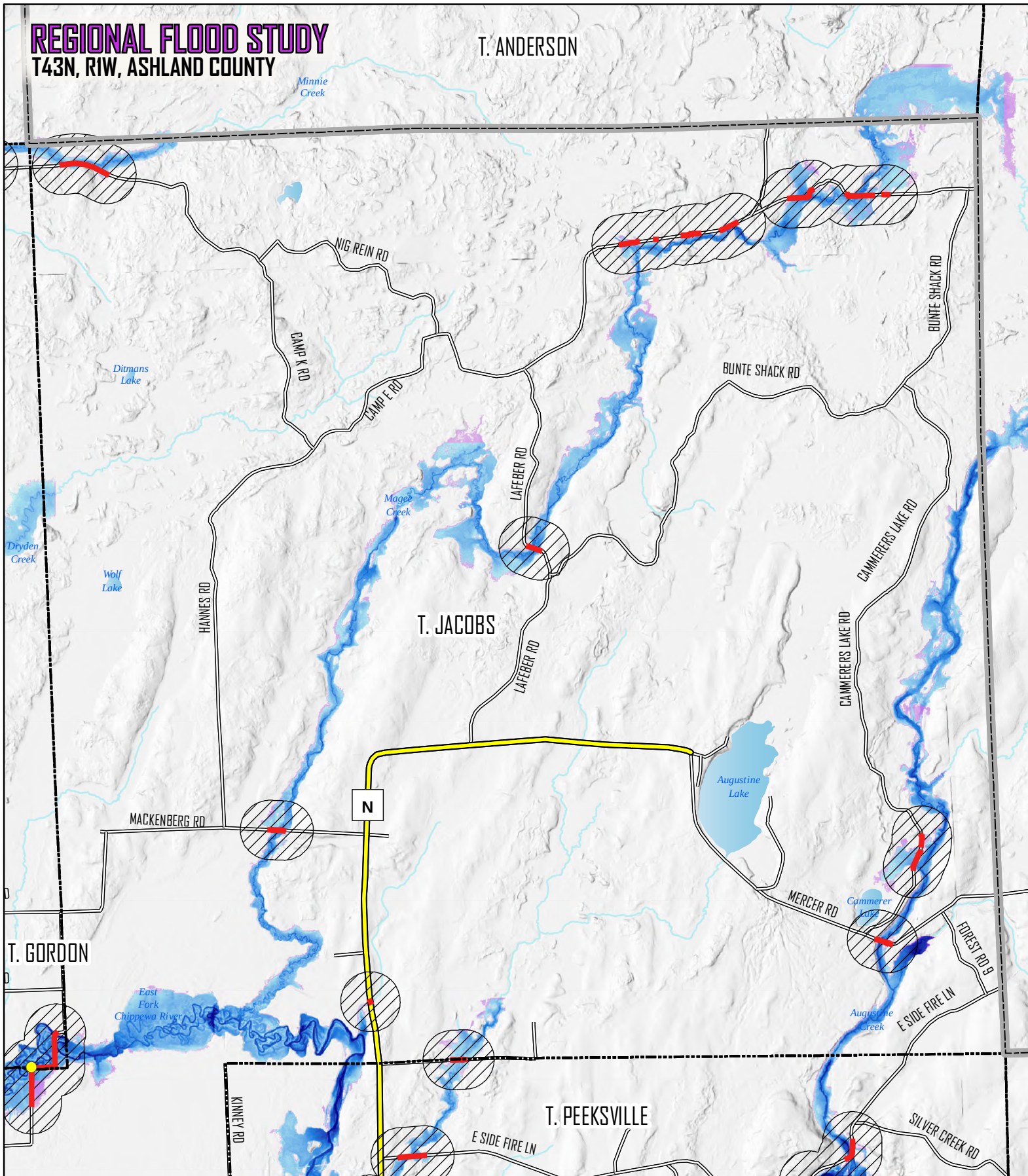
 - EDUCATION
 - COUNTY GOVERNMENT CENTER
 - FIRE & EMS
 - HOSPITAL
 - LAW ENFORCEMENT
 - LOCAL GOVERNMENT
 - ⚡ SUBSTATION
 - ◆ WASTEWATER TREATMENT
- BASE FEATURES**

 - U.S. HIGHWAY
 - STATE HIGHWAY
 - COUNTY HIGHWAY
 - LOCAL ROADS
 - STREETS
 - RIVERS & STREAMS
 - LAKES
 - CITIES & VILLAGES
 - TOWNS
 - COUNTY

REGIONAL FLOOD STUDY

T43N, RIW, ASHLAND COUNTY

T. ANDERSON

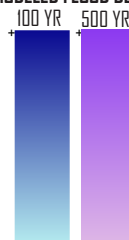


**NORTHWEST WISCONSIN
FLOOD IMPACT STUDY**
HAZUS

POTENTIAL FLOOD IMPACTS

- AGRICULTURE
- COMMERCIAL
- RESIDENTIAL
- GOVERNMENT
- INDUSTRIAL
- EDUCATIONAL
- OTHER
- ⊘ POSSIBLE ROAD/BRIDGE IMPACT AREA
- ⚡ POSSIBLE IMPACT SEGMENT

MODELED FLOOD DEPTH



CRITICAL FACILITIES

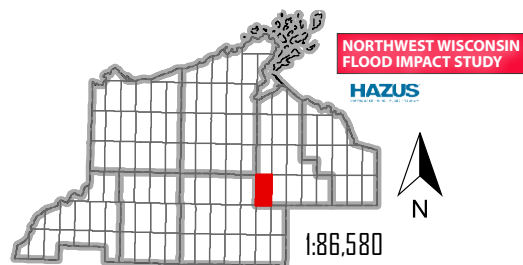
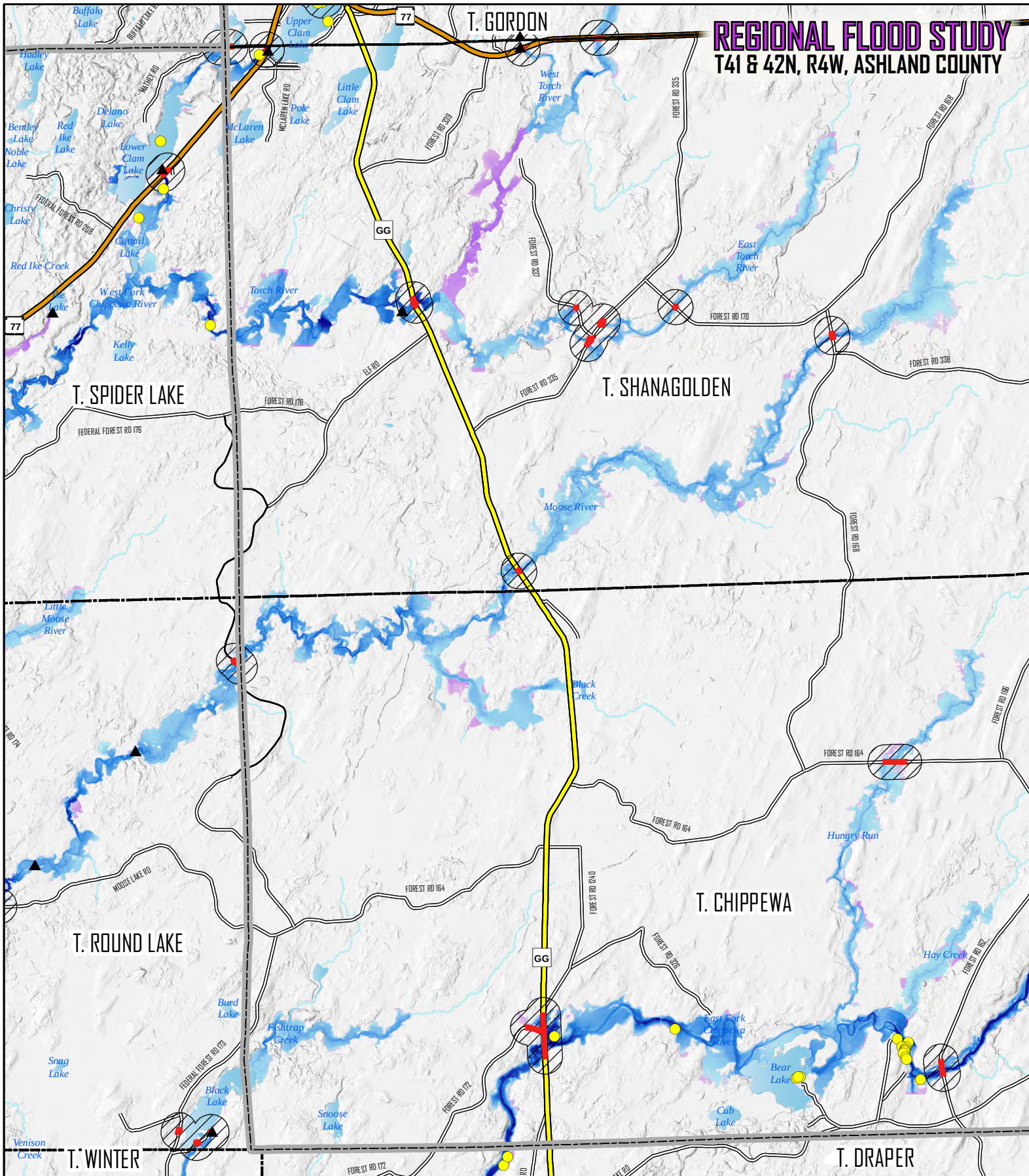
- EDUCATION
- COUNTY GOVERNMENT CENTER
- FIRE & EMS
- HOSPITAL
- LAW ENFORCEMENT
- LOCAL GOVERNMENT
- ▲ DAM
- ⚡ SUBSTATION
- ◆ WASTEWATER TREATMENT

BASE FEATURES

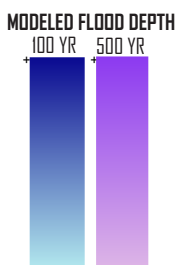
- U.S. HIGHWAY
- STATE HIGHWAY
- COUNTY HIGHWAY
- LOCAL ROADS
- STREETS
- RIVERS & STREAMS
- LAKES
- CITIES & VILLAGES
- TOWNS
- COUNTY

REGIONAL FLOOD STUDY

T41 & 42N, R4W, ASHLAND COUNTY



- POTENTIAL FLOOD IMPACTS**
- AGRICULTURE
 - COMMERCIAL
 - RESIDENTIAL
 - GOVERNMENT
 - INDUSTRIAL
 - EDUCATIONAL
 - OTHER
 - POSSIBLE ROAD/BRIDGE IMPACT AREA
 - POSSIBLE IMPACT SEGMENT

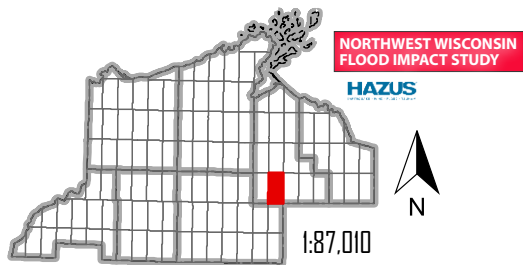
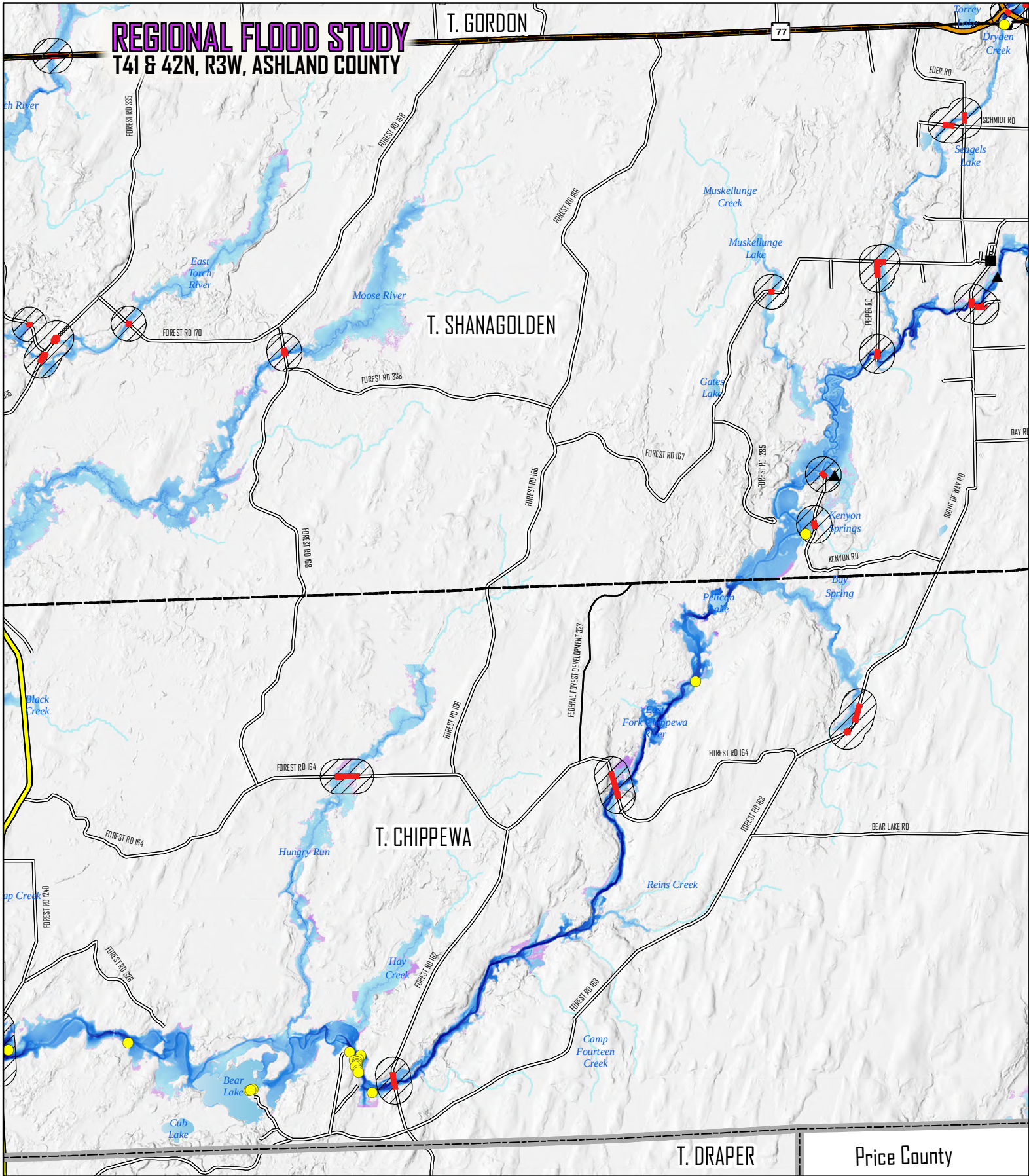


- CRITICAL FACILITIES**
- EDUCATION
 - COUNTY GOVERNMENT CENTER
 - FIRE & EMS
 - HOSPITAL
 - LAW ENFORCEMENT
 - LOCAL GOVERNMENT
 - SUBSTATION
 - WASTEWATER TREATMENT

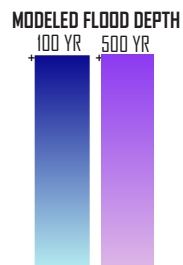
- BASE FEATURES**
- U.S. HIGHWAY
 - STATE HIGHWAY
 - COUNTY HIGHWAY
 - LOCAL ROADS
 - STREETS
 - RIVERS & STREAMS
 - LAKES
 - CITIES & VILLAGES
 - TOWNS
 - COUNTY

REGIONAL FLOOD STUDY

T41 & 42N, R3W, ASHLAND COUNTY



- POTENTIAL FLOOD IMPACTS**
- AGRICULTURE
 - COMMERCIAL
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- ▨ POSSIBLE ROAD/BRIDGE IMPACT AREA
- ▬ POSSIBLE IMPACT SEGMENT

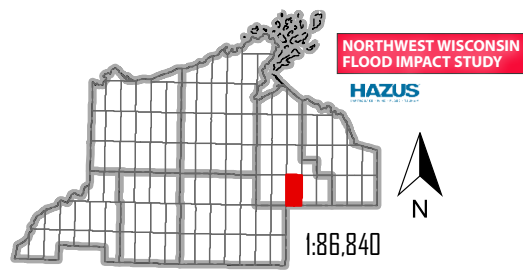
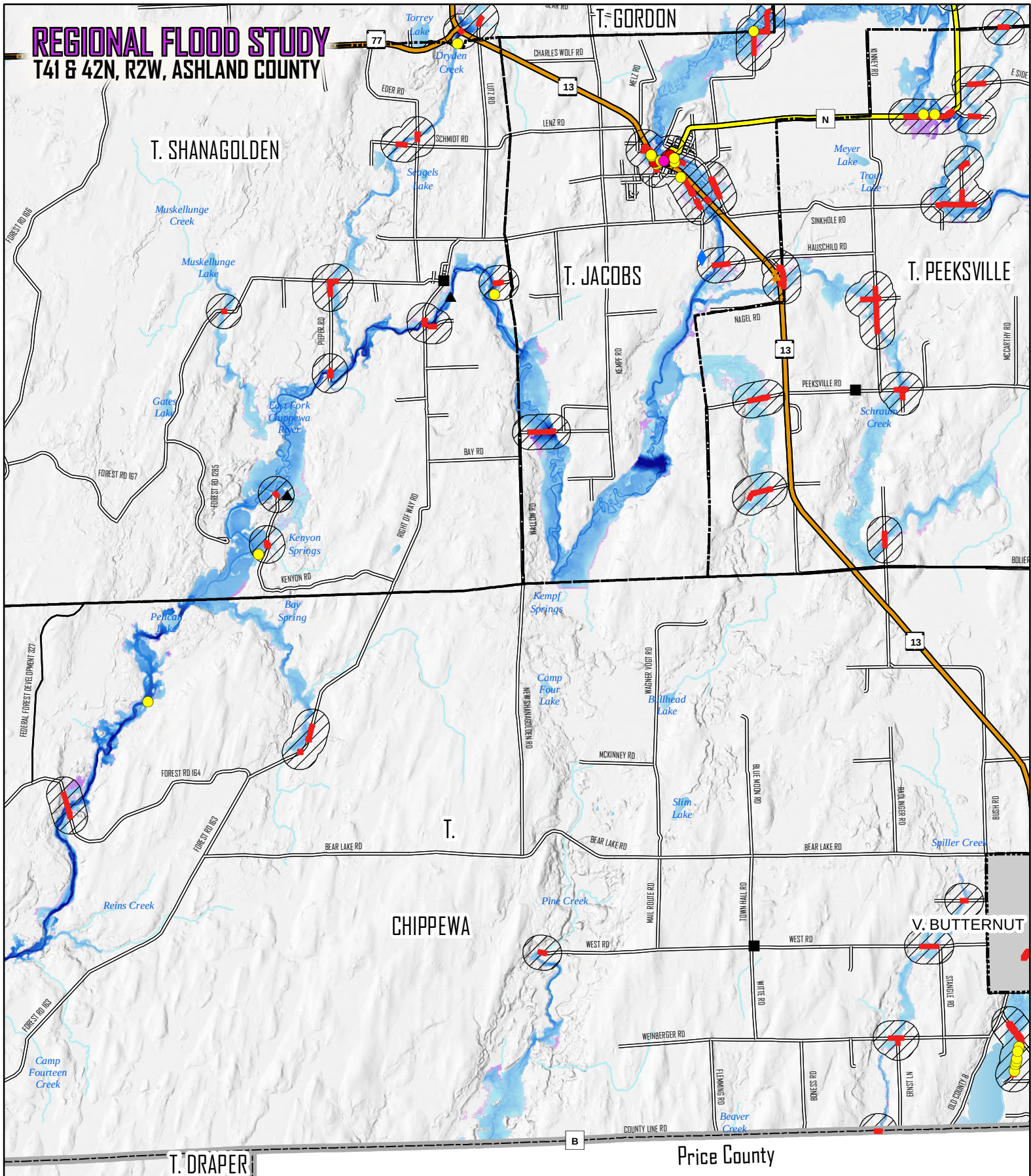


- CRITICAL FACILITIES**
- EDUCATION
 - COUNTY GOVERNMENT CENTER
 - FIRE & EMS
 - HOSPITAL
 - LAW ENFORCEMENT
 - LOCAL GOVERNMENT
 - DAM
 - SUBSTATION
 - WASTEWATER TREATMENT

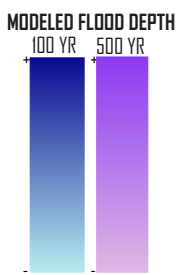
- BASE FEATURES**
-  U.S. HIGHWAY
 -  STATE HIGHWAY
 -  COUNTY HIGHWAY
 -  LOCAL ROADS
 -  STREETS
 -  RIVERS & STREAMS
 -  LAKES
 -  CITIES & VILLAGES
 -  TOWNS
- Page 300 of 334**

REGIONAL FLOOD STUDY

T41 & 42N, R2W, ASHLAND COUNTY

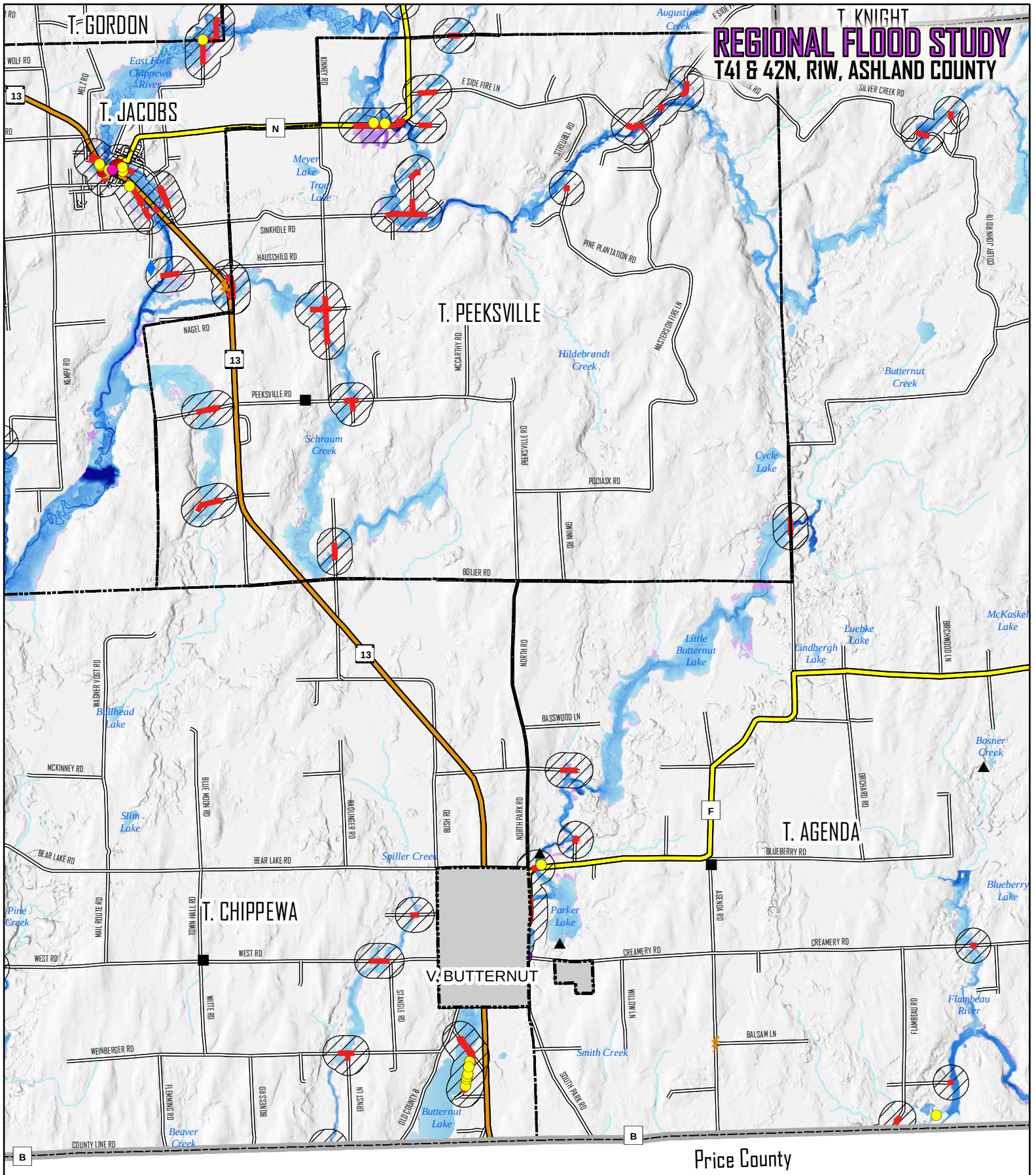


- POTENTIAL FLOOD IMPACTS**
- AGRICULTURE
 - COMMERCIAL
 - RESIDENTIAL
 - GOVERNMENT
 - INDUSTRIAL
 - EDUCATIONAL
 - OTHER
 - ▨ POSSIBLE ROAD/BRIDGE IMPACT AREA
 - ▬ POSSIBLE IMPACT SEGMENT



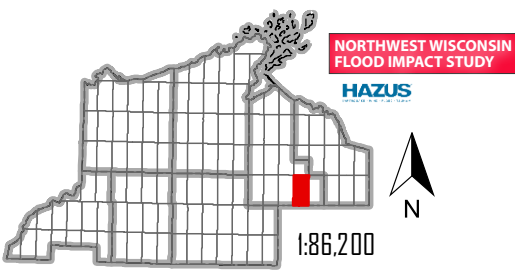
- CRITICAL FACILITIES**
- EDUCATION
 - COUNTY GOVERNMENT CENTER
 - FIRE & EMS
 - HOSPITAL
 - LAW ENFORCEMENT
 - LOCAL GOVERNMENT
 - ▲ DAM
 - ⚡ SUBSTATION
 - ◆ WASTEWATER TREATMENT

- BASE FEATURES**
- U.S. HIGHWAY
 - STATE HIGHWAY
 - COUNTY HIGHWAY
 - LOCAL ROADS
 - STREETS
 - RIVERS & STREAMS
 - LAKES
 - CITIES & VILLAGES
 - TOWNS
 - COUNTY



REGIONAL FLOOD STUDY

T41 & 42N, RIW, ASHLAND COUNTY



- POTENTIAL FLOOD IMPACTS**

 - AGRICULTURE
 - COMMERCIAL
 - RESIDENTIAL
 - GOVERNMENT
 - INDUSTRIAL
 - EDUCATIONAL
 - OTHER
 - ▨ POSSIBLE ROAD/BRIDGE IMPACT AREA
 - ▨ POSSIBLE IMPACT SEGMENT
- MODELED FLOOD DEPTH**

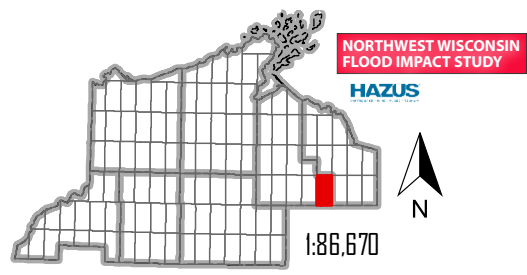
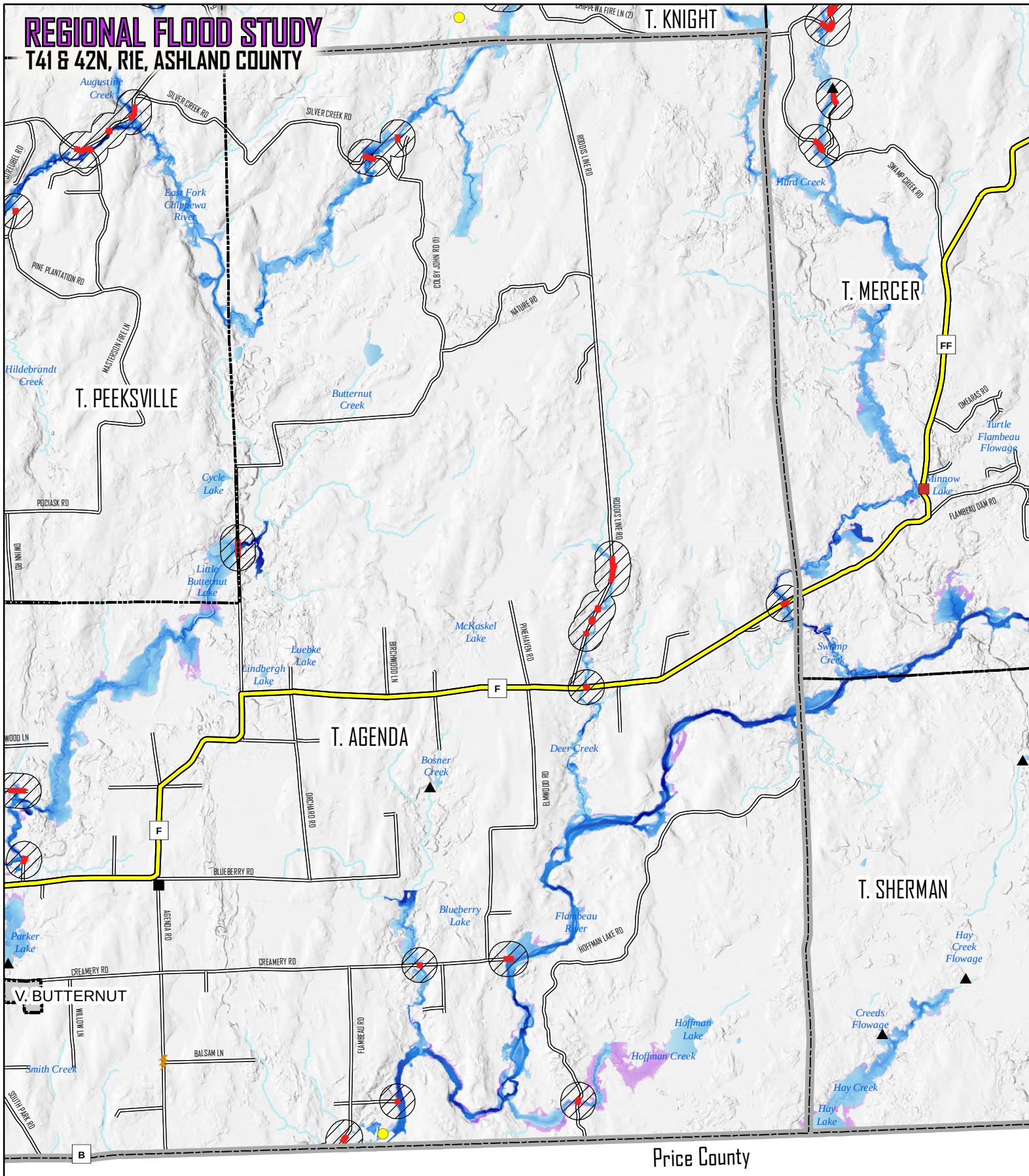
100 YR 500 YR
- CRITICAL FACILITIES**

 - EDUCATION
 - COUNTY GOVERNMENT CENTER
 - FIRE & EMS
 - HOSPITAL
 - LAW ENFORCEMENT
 - LOCAL GOVERNMENT
 - ▲ DAM
 - ⚡ SUBSTATION
 - ◆ WASTEWATER TREATMENT
- BASE FEATURES**

 - U.S. HIGHWAY
 - STATE HIGHWAY
 - COUNTY HIGHWAY
 - LOCAL ROADS
 - STREETS
 - RIVERS & STREAMS
 - LAKES
 - CITIES & VILLAGES
 - TOWNS
 - COUNTY

REGIONAL FLOOD STUDY

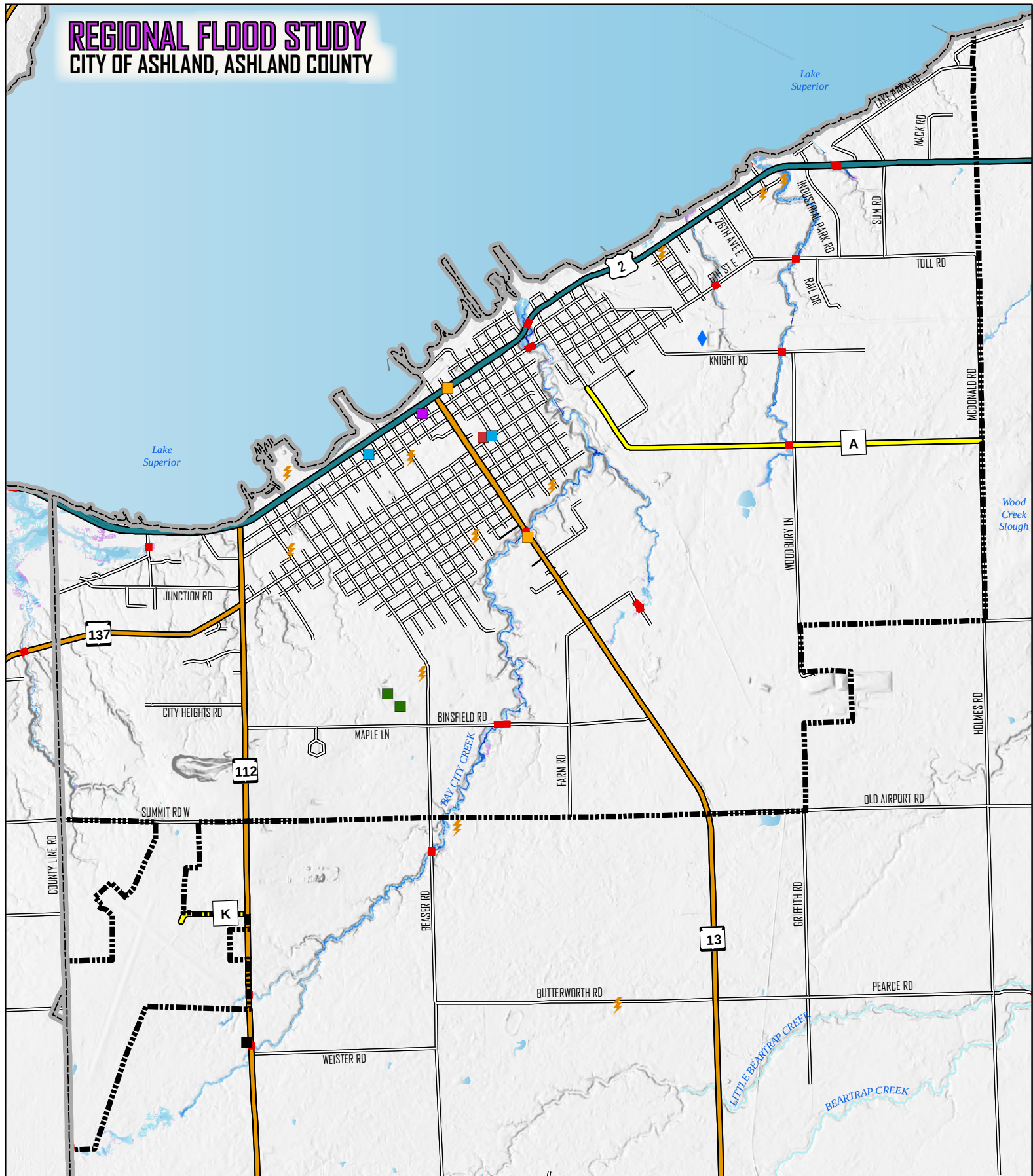
T41 & 42N, R1E, ASHLAND COUNTY



POTENTIAL FLOOD IMPACTS ● AGRICULTURE ● COMMERCIAL ● RESIDENTIAL ● GOVERNMENT ● INDUSTRIAL ● EDUCATIONAL ● OTHER ▨ POSSIBLE ROAD/BRIDGE IMPACT AREA ▨ POSSIBLE IMPACT SEGMENT	MODELED FLOOD DEPTH 100 YR 500 YR	CRITICAL FACILITIES ■ EDUCATION ■ COUNTY GOVERNMENT CENTER ■ FIRE & EMS ■ HOSPITAL ■ LAW ENFORCEMENT ■ LOCAL GOVERNMENT ▲ DAM ⚡ SUBSTATION ◆ WASTEWATER TREATMENT	BASE FEATURES — U.S. HIGHWAY — STATE HIGHWAY — COUNTY HIGHWAY — LOCAL ROADS — STREETS — RIVERS & STREAMS — LAKES — CITIES & VILLAGES — TOWNS — COUNTY
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REGIONAL FLOOD STUDY

CITY OF ASHLAND, ASHLAND COUNTY



NORTHWEST WISCONSIN
FLOOD IMPACT STUDY

HAZUS

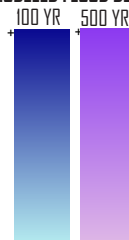


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MODELED FLOOD DEPTH



CRITICAL FACILITIES

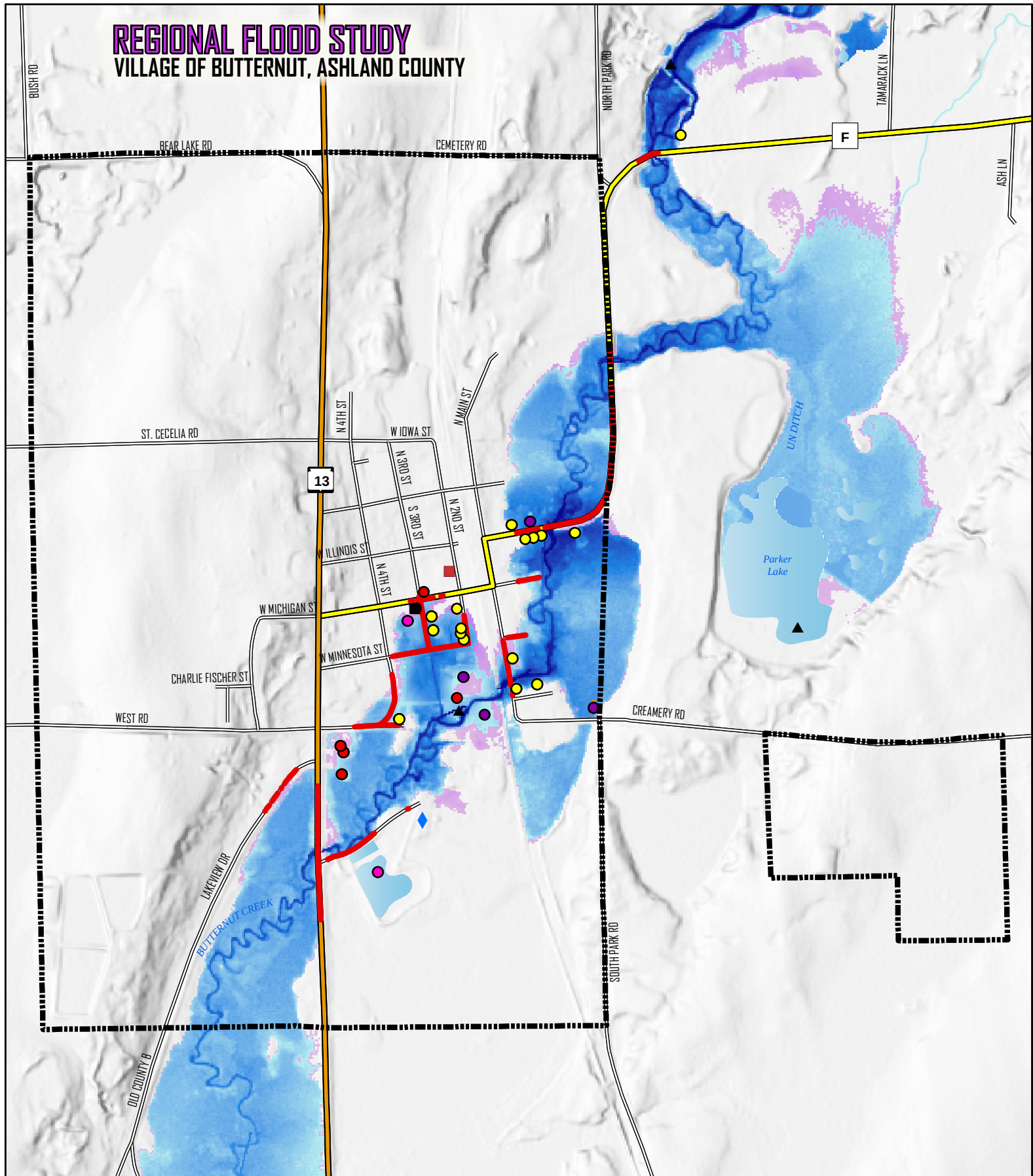
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BASE FEATURES

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- COUNTY HIGHWAY
- LOCAL ROADS
- STREETS
- RIVERS & STREAMS
- LAKES
- CITIES & VILLAGES
- TOWNS
- COUNTY

REGIONAL FLOOD STUDY

VILLAGE OF BUTTERNUT, ASHLAND COUNTY



NORTHWEST WISCONSIN
FLOOD IMPACT STUDY

HAZUS

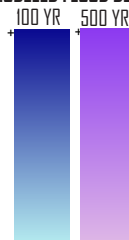


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MODELED FLOOD DEPTH



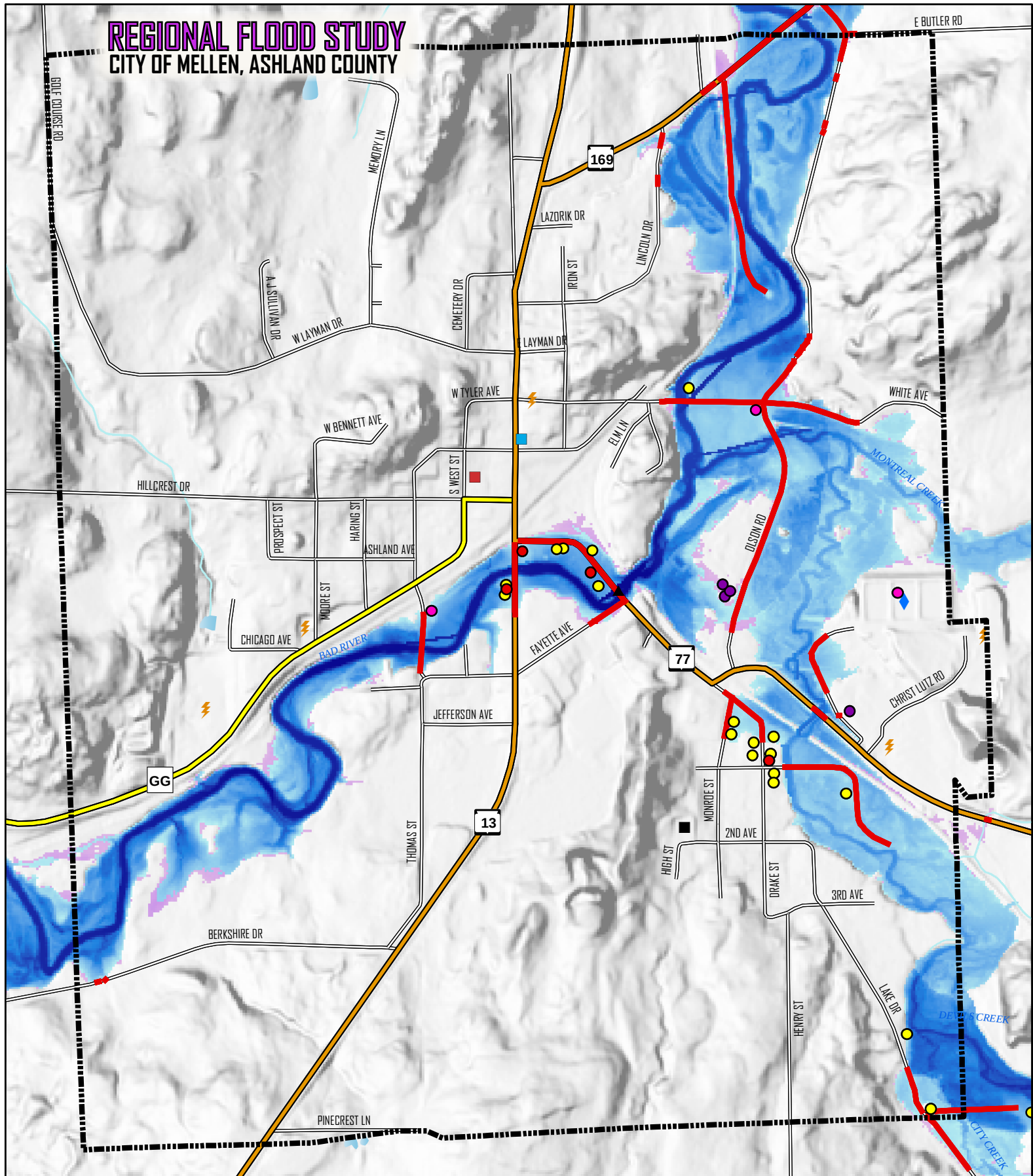
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BASE FEATURES

- U.S. HIGHWAY
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- COUNTY HIGHWAY
- LOCAL ROADS
- STREETS
- RIVERS & STREAMS
- LAKES
- CITIES & VILLAGES
- TOWNS
- COUNTY

REGIONAL FLOOD STUDY CITY OF MELLEN, ASHLAND COUNTY



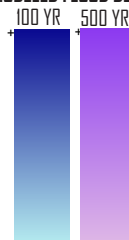
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HAZUS



POTENTIAL FLOOD IMPACTS

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MODELED FLOOD DEPTH



CRITICAL FACILITIES

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- ◆ WASTEWATER TREATMENT

BASE FEATURES

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- ▬ RIVERS & STREAMS
- ▬ LAKES
- ▬ CITIES & VILLAGES
- ▬ TOWNS
- ▬ COUNTY

Appendix E: Natural Flood Management & Climate Resilient Infrastructure

DRAFT

HAZARD MITIGATION PLAN ADDENDUM

A Strategy for Natural Flood Management and Climate Resilient Infrastructure in Ashland County

The purpose of this addendum is to incorporate pre-disaster mitigation strategies focused on Natural Flood Management into the Ashland County Hazard Mitigation plan.¹ This plan addendum has two sections:

- Section I describes vulnerability factors that apply to high-risk watersheds of Ashland County.
- Section II describes goals and strategies for addressing fluvial erosion hazards and degraded hydrology.

List of common acronyms

- FEH - Fluvial Erosion Hazards
- MRW - Marengo River Watershed
- NFM - Natural Flood Management
- STF - Slow the Flow

Problem Statement

Severe storms in 2016 and 2018 resulted in widespread culvert blockages and road failures across Ashland County. These types of infrastructure damages were driven by fluvial erosion—the power of flowing water to move sediment and debris. Fluvial erosion hazards (FEHs) are areas such as eroding ravines, gullies, and incised stream channels where flood flows are concentrated and energized. In addition to causing significant erosion, these features strip the landscape of its natural capacity to store and slow the flow of water, often compounding damages downstream. Mitigating FEHs by repairing degraded hydrology will help break the cycle of repetitive flood damages at road-stream crossings.

Background

Natural flood management (NFM) emphasizes strategic hydrologic restoration practices within a catchment (i.e., drainage) area to mitigate FEHs and restore the landscape's natural ability to capture, store, infiltrate, and slowly release runoff. NFM practices focus on restoring headwater wetlands and reconnecting streams and floodplains, especially to slow the flow in the upper portions of catchments. NFM can be combined with structural improvements, such as culvert upgrades and water level control structures, to reestablish flood storage and improve the movement of water, sediment, and debris under a range of flow conditions.

Recognizing the potential benefits of NFM, the Ashland County Emergency Management Office secured a Pre-Disaster Mitigation grant from the Federal Emergency Management Agency (FEMA) in 2019. The Phase I NFM Assessment project, *Rebuilding Natural Infrastructure in Ashland County*, aimed to:

1. Identify and characterize vulnerable infrastructure and fluvial erosion hazards (FEH).
2. Synthesize assessment data to describe and scope recommended FEH mitigation practices and identify potential target areas for implementation.
3. Engage stakeholders to solicit input on project activities, finalize recommendations, and append the Ashland County Hazard Mitigation Plan.

¹ This plan addendum serves as the primary deliverable for the 2019 FEMA Pre-Disaster Mitigation Advance Assistance Grant: Goal 3, Task 3. The full Ashland County Hazard Mitigation Plan is available at: https://co.ashland.wi.us/emergency_management

A Phase II NFM Assessment project, the *Marengo Watershed Strategic Floodplain and Wetland Restoration project*, is currently underway to improve the accuracy of flood models for the Marengo River Watershed (MRW) and develop tools to evaluate the benefits and costs of recommended hydrologic restoration, i.e., NFM, and road-stream crossing design practices. The Phase II NFM Assessment project is building upon the data generated for the MRW and funded by a grant from the Great Lakes Restoration Initiative and will be completed in 2023. More details are available at: <https://no.floods.org/marengo>

Natural Flood Management (NFM) Assessments define the flood related vulnerabilities, risks, and impacts that can be mitigated with nature-based solutions such as hydrologic restoration actions that are designed to the extent possible to return wetland, stream, and floodplain hydrology to natural and self-regulating conditions. Key elements and phases of a NFM assessment include:

1. Assessment of fluvial erosion hazards and degraded landscape conditions.
2. Assessment of hydrologic conditions, flood storage, and flows.
3. Prioritization of locations where NFM can mitigate hazards and restore hydrology.

See **Appendix 2** for more information on NFM assessment methods.

Addendum Preparation, Adoption and Maintenance.

The Ashland County Emergency Management Office oversaw all aspects of the FEMA grant and completion of the NFM assessment. The work was facilitated as follows.

A Project Team was convened to oversee the NFM Assessment work and help develop recommendations for an addendum to the Ashland County Hazard Mitigation Plan. The Project Team included:

- Dorothy Tank, Ashland County Emergency Management
- MaryJo Gingras, Ashland County Land and Water Conservation Department
- Jason Laumann; Clement Larson, Northwest Regional Planning Commission
- Faith Fitzpatrick; Eric Dantoin; Julia Prokopec; U.S. Geological Survey
- Kyle Magyera, Wisconsin Wetlands Association

The Project Team's work was supported by a technical advisory team and other policy experts who met regularly over the course of 3 years to help work through and validate assessment methods and explore program integration opportunities. Contributors included but were not limited to:

- Brittany Goudos-Weisbecker, Ashland County Land Information Department
- Matt Erickson, Ashland County Highway Department
- Mike Pero; Seth Hackbarth Ashland County Land Water Conservation Department
- Tom Hollenhorst, Environmental Protection Agency Research Lab – Duluth, MN
- Brandon Krumwiede, National Oceanic and Atmospheric Administration
- Kevin Stark; Kevin Benck; Andy Robertson, St. Mary's University of MN GeoSpatial Services
- Kevin Brewster, Superior Rivers Watershed Association
- Chris Collier, Trout Unlimited
- Chris Ester, U.S. Forest Service
- Stacy Dehne, Wisconsin Department of Agriculture, Trade, and Consumer Protection
- Shawn Haseleu; Jon Simonsen; Lacey Hill Kastern WI Department of Natural Resources
- Michael Ostrenga; David Deblaey, Dennis Danowski; WI Department of Transportation
- Robyn Fennig, Wisconsin Emergency Management
- Erin O'Brien; Jennifer Western Hauser; Stephanie Rockwood; Tracy Hames; Wisconsin Wetlands Association

The Project Team also consulted with Mike Kline of Fluvial Matters, LLC to utilize his experience developing and implementing similar assessment methods as Vermont's Rivers Program Director.

The Ashland County Emergency Management Office developed and carried out an extensive community engagement plan to ensure that project methods and data helped county and town road managers better understand flood and erosion hazards, design effective projects, and secure funding for flood risk reduction work. Key activities and audiences included but were not limited to:

- Fall 2020 – Community interviews with local road managers and town chairs.
- Oct. 28, 2021 – Informational workshop – project update
- May 12, 2022 – Natural Flood Management and Culvert Workshop

On September 15, 2022, a follow-up to the *NFM and Culvert Workshop* was held with an expanded group of collaborators to interact with and validate vulnerability and hazard data produced during the Phase I NFM assessment. This workshop was the first of several to be hosted for the Phase II NFM Assessment project that will improve the accuracy of flood models for the MRW and develop tools to evaluate the benefits and costs of hydrologic restoration practices recommended as part of this NFM plan addendum.

Section I. Vulnerabilities driven by fluvial erosion hazards and degraded hydrology

The Phase I NFM Assessment validated that the condition of the landscape and disruptions to watershed hydrology are major drivers of infrastructure damages across Ashland County. To support prioritization of nature-based solutions, a Fluvial Erosion Hazards (FEH) Vulnerability Screening Framework was developed to map hazards, rank erosion vulnerability factors, and analyze links to repetitive loss infrastructure and high-risk road crossings. These crossings were identified utilizing data from the Great Lakes Road Stream Crossing Inventory method and disaster aid records.

The FEH Vulnerability Screening Framework consists of four screens that can help planners, engineers, and natural resources, emergency, and road managers pinpoint specific processes and hazards associated with erosion, deposition, and channel change. These are described below and based on factors that influence fluvial erosion, such as exposure to unstable, erosion-prone landforms and the presence of steep valleys and ravines. The GIS-based vulnerability screens facilitate an evaluation of the sensitivity of stream corridors and wetlands to FEHs and help identify locations where FEHs may lead to the loss of flood storage and fundamental hydrologic processes upstream of culverts, bridges, and critical road segments.

Individual FEH vulnerability screens are discussed on pages 5-8. See [Figure 7](#) (page 9) for a final summary of the factors analyzed within the FEH Vulnerability Screening Framework. See [Appendix 3](#) to learn more about how stream corridors were ranked by sensitivity to specific and cumulative FEH vulnerabilities.

Hazards include fluvial erosion hazards (FEHs) and flood hazards. FEHs are areas such as eroding ravines, gullies, and incised streams where flood flows are energized and produce significant erosion, sediment, and debris. Flood hazards commonly refer to areas impacted by inundation under varying climate scenarios and are the focus of a Phase II NFM Assessment.

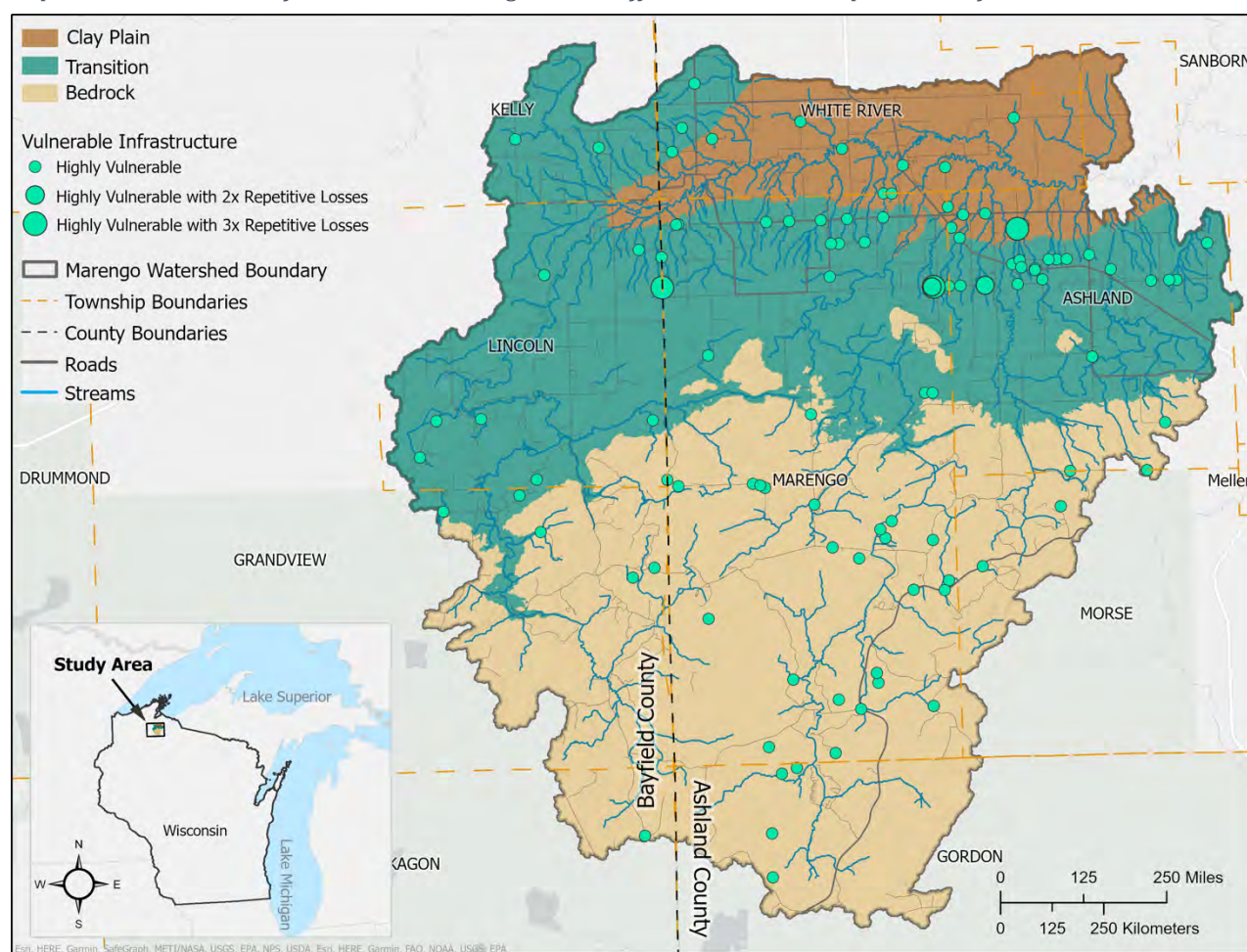
Vulnerability indicates the exposure and sensitivity of the stream network to hazards that may lead to the loss of flood storage and/or the formation of road failure mechanisms including scour, blockages, woody debris, and overtopping.

Risk is the combined exposure to hazards and degree of vulnerabilities upstream of a road crossing and will be evaluated in the Phase II NFM Assessment.

Watershed context — unstable, erosion-prone landforms

Wisconsin's Lake Superior Basin is predisposed to flash floods due to steep terrain, unique soils, and geologic history. Along and immediately south of the coastline, a large swath of clay soils known as the clay plain contributes to rapid runoff during intense storms and snowmelt due to low infiltration rates. Less well known but perhaps even more consequential, is the “transition area” where the extensive clay deposits meet and mix with coarse materials and sandy soils. The transition area corresponds to the ancient shores of Glacial Lake Duluth and is extremely sensitive to ravine and gully erosion because of the higher likelihood for confined flows. Both the transition area and clay plain become hazardous and produce flashy runoff during intense rainfall which activates and worsens conditions that contribute to road failures from excess sediment and debris. More information about the transition area and clay plain can be found in a Slow the Flow White Paper and the Marengo River Watershed Action Plan.²

Figure 1. Vulnerable road crossings in relation to major landform settings in the Marengo River Watershed. Repetitive losses and infrastructure damages intensify around erosion-prone landforms.



² Wisconsin Department of Natural Resources (2022). *Review and Recommendations for Slow the Flow Practices in Wisconsin's Lake Superior Basin*. <https://dnr.wisconsin.gov/topic/GreatLakes/Learn.html>

Superior Rivers Watershed Association (2023). Marengo River Watershed Partnership Project Watershed Action Plan. <https://www.superiorrivers.org/the-marengo-river-watershed-partnership-project/>

Excess Erosion

Vulnerability Screen #1: Headwater Incision Potential

Tributaries in the narrow, steep valleys of headwater catchments are sensitive to channel incision or vertical erosion, a downcutting process that carves a channel deep into the valley bottom. The resulting V-shaped, entrenched channel produces more stream power and large pulses of high-energy flows and sediment and debris loads.

Ashland County has plentiful headwater wetlands and streams, but many are impacted by features causing erosion-induced drainage. Incised channels, eroding ravines, and gullies act like drains when they bisect wetlands, lowering the water table and compromising the ability of headwater wetlands to intercept, retain, and slowly release water.

Headward extension of ravines and gullying during floods can lead to repeated and irreversible loss of flood storage provided by wetlands and floodplains. Headwater catchments with a high sensitivity to incision are a major source of scour, sediment, and debris that causes failures of downstream road crossings.

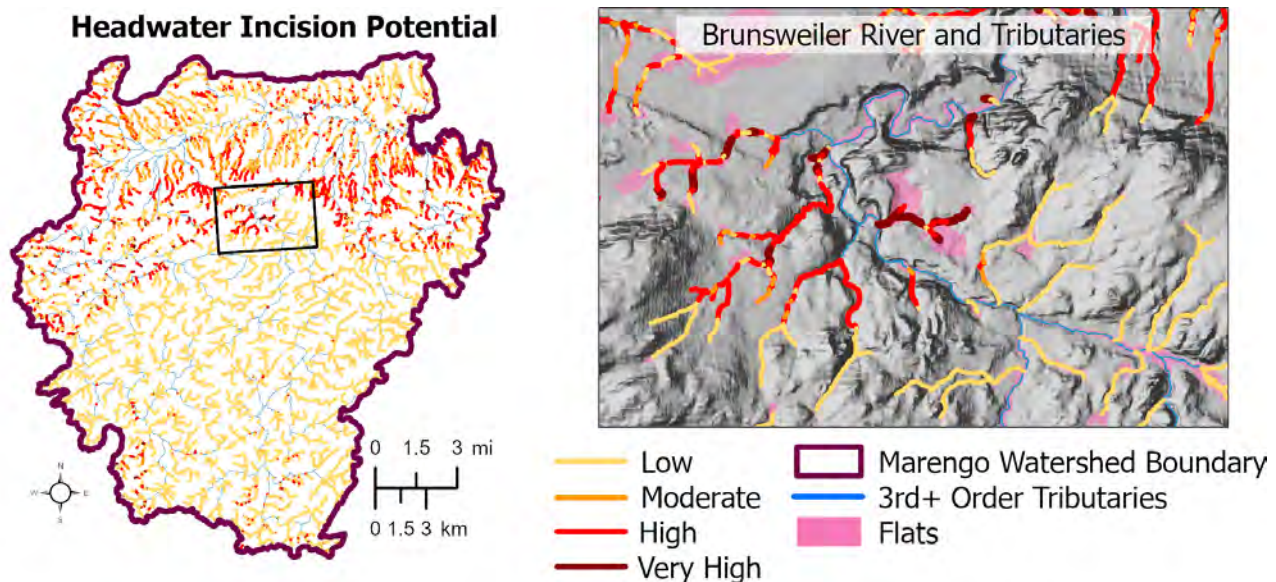


A ravine is extending upslope into a headwater wetland, causing erosion-induced drainage and the loss of flood storage capacity.

Photo: WI Wetlands Association

In the Marengo River Watershed, 25% of headwater channels scored 'high' or 'very high' for headwater incision potential.

Figure 2. Headwater Incision Potential (HIP) vulnerability screen indicates headwater streams and wetlands that are sensitive to excess erosion and the loss of flood storage.



Vulnerability Screen #2: Landslide Potential

Extreme precipitation events can lead to landslides and mass wasting, the large-scale failure of valley sides, bluffs, and streambanks. Consequences that can occur in response to large floods or other disturbances include:

- Production of more sediment and woody debris that plugs and causes overtopping at culverts downstream.
- Burial of wetlands and loss of floodplain storage for future floods.
- Burial of spawning habitat and loss of roughness features that slow the flow and create habitat complexity.

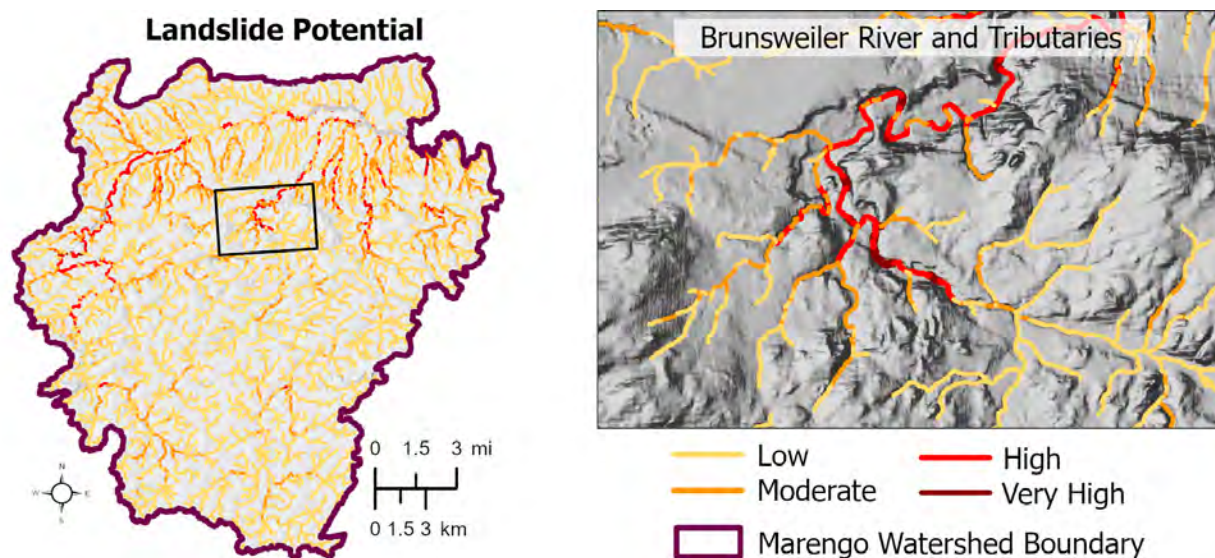
The FEH Landslide Potential Screen can be used to detect where post-flood landscape changes have occurred or may occur in the future. Hydrologic restoration within the catchments of surface and subsurface flows draining to unstable bluffs can help reduce the likelihood of slope failures. Though not the focus of the Phase 1 NFM Assessment, the FEH Landslide Potential Screen can be utilized to identify properties at-risk to unstable bluffs and valley sides.



Extensive bluff failures occurred during the 2016 and 2018 floods. Many bluffs are still unstable and contributing large amounts of sediment and debris. Photo: WI Wetlands Association

In the Marengo River Watershed, 8% of all channels scored 'high' or 'very high' for landslide potential, most of which are along the main stem of the Marengo River and large tributaries like the Brunseweiler River and Silver Creek.

Figure 3. Landslide (LP) vulnerability screen identifies areas that are sensitive to mass wasting and potential bluff and valley side failures.



Excess Deposition

Vulnerability Screen #3: Coarse Sediment Deposition and Channel Change

Incision and landslides displace flows, sediment, and debris. This causes a buildup of excess material on floodplain surfaces where stream gradients begin to flatten within the tributary network. Excess deposition raises the height of floodplains, restricting the ability of water to spill out of the channel and interact with and regenerate floodplains. The confinement of flows, even during smaller storms, and changes in the type and location of stream and river channels has consequences that include:

- Burial of wetlands and loss of floodplain storage for future floods.
- Increases in chute-like, entrenched channels that cause incision and limit the connectivity between streams and floodplains.
- Increased flashiness of flood flows and magnitude of downstream flood sizes.
- Increased sediment and debris loads that are unable pass through undersized culverts and bridges in the tributary network.
- Higher potential for valley side failures as channels migrate around excess sediment, erode the toe of bluffs, and form new flow paths during floods.

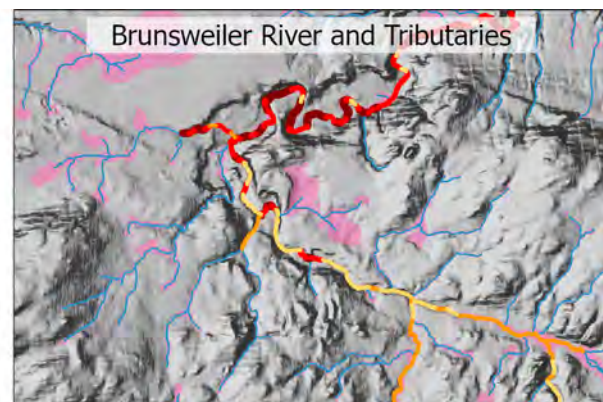
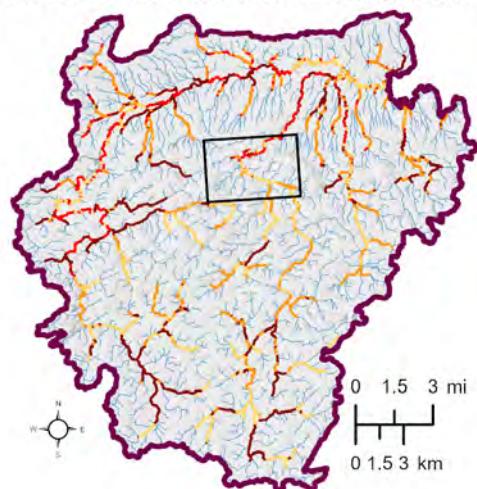


Excess sediment and debris from a 2016 flood-related bluff failure buried floodplain wetlands.
Photo: WI Wetlands Association

In the Marengo River Watershed, 55% of large channels (3rd order or higher) scored 'high' or 'very high' for coarse sediment deposition and channel change.

Figure 4. The Coarse Sediment and Channel Change (CSCC) vulnerability screen identifies areas that are sensitive to excess deposition that can significantly disrupt floodplain and wetland functions.

Coarse Sediment and Channel Change



Vulnerability Screen #4: Hydrologic Alteration



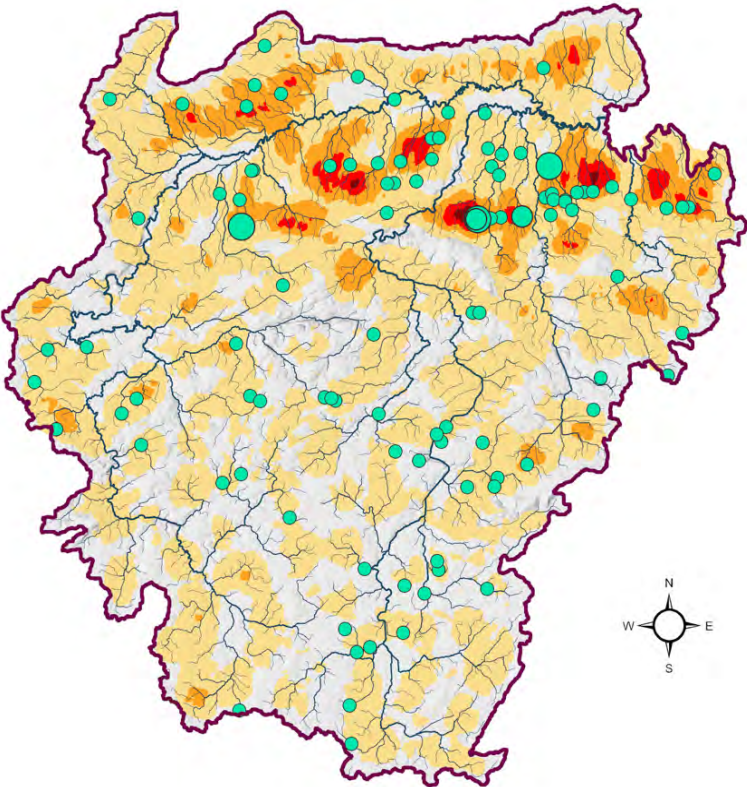
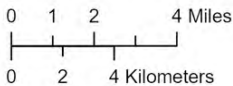
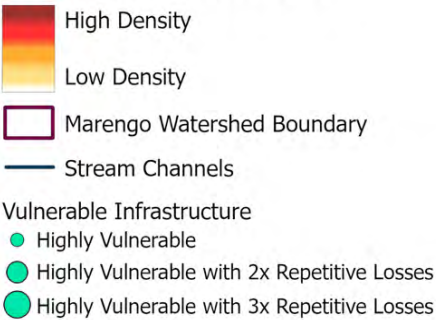
Steep road ditches and undersized culverts can activate headcutting and accelerate the loss of flood storage. Photo: WI Wetlands Association

While there are many forms of human-induced hydrologic alteration, in the Phase 1 NFM Assessment the project team looked at the density of roadside and agricultural ditches because it provides a reliable indicator for where storage and hydrologic functions may be altered and leading to FEH challenges. Historic watershed alterations like these amplify the potential consequences of FEHs by accelerating their formation and further compromising the ability of the landscape to store and slow the flow of water. Refer to [Figure 6](#) (page 9) for examples of additional historic watershed alterations that were not evaluated in this assessment but also significantly changed hydrology in Ashland County’s watersheds.

As more data becomes available, future NFM assessments could incorporate additional stressors such as channelization, levees, embankments, and other harmful flow obstructions.

Figure 5. Headwater catchments sensitive to stream incision and degraded hydrology can be a major source of excess water, sediment, and debris to downstream infrastructure.

Headwater Incision Potential with Hydrologic Alteration



Relationship of hydrologic alteration to other FEH screening tools

While Phase 1 NFM Assessment looked solely at human-made ditches in the hydrologic alteration screening tool, hydrologic conditions are actually influenced by a combination of soils, topography, and geology, climate stressors, and human actions. More importantly, fluvial erosion hazards are simultaneously caused by and contribute to hydrologic alteration.

Large-scale land conversions including tree clearing, ditching, and beaver removal activated unnatural gully cycles in the late 1800s and early 1900s. As shown in [Figure 7](#), under headwater incision potential, consequences of gully cycles include but are not limited to loss of headwater storage potential, increased runoff, and more. Headwater incision can cascade into complex downstream problems, contributing to landslides, excess deposition, and culvert blockages. These feedback loops amplify over time resulting in what is often referred to as an “unraveling” of the watershed.

Figure 6. *Legacy impacts that fuel degraded hydrology and FEHs*

- Forest clearcut and extensive logging in late 1800s, early 1900s
- Log transport that widened and changed the form of stream channels
- Beaver removal and subsequent failure of unmaintained beaver dams and ponds
- Ditching and conversion of wetlands to uplands and different land uses
- Road construction, paved and unpaved, and ditching
- Loss of roughness features, washed away by extreme runoff (pools, boulders, woody debris)
- Leftover debris from prior road failures, causing flow obstructions and constrictions

Figure 7. *Summary of the Fluvial Erosion Hazards (FEH) Vulnerability Screening Framework*

1. Headwater incision potential (HIP) screen
2. Landslide potential (LP) screen
3. Coarse sediment deposition and channel change (CSDCC) screen
4. Hydrologic alteration screen

FEH Vulnerability Screens	Excess Erosion		Excess Deposition
	Headwater Incision Potential	Landslide Potential	Coarse Sediment Deposition & Channel Change
Processes	stream incision, gully, gully, headcutting	bluff & bank failures,	bars, avulsions, lateral migration
Consequences	loss of headwater storage, dried wetlands, large release of carbon, more downstream landslides & increased runoff and magnitude of flood sizes	loss of floodplain storage, buried wetlands, disconnected floodplains, large release of carbon, more sediment & debris	loss of floodplain storage, disconnected floodplains, disruptions to and conflicts with lateral migration, unnatural channel types

Opportunities	headcut & grade control, flow dispersal; ditch, debris, & beaver management; culvert upgrades	headwater incision repair, ravine/bluff stabilization, floodplain reconnection; culvert upgrades	floodplain reconnection, culvert upgrades
Hydrologic Alteration			
Stressors	ditching, wetland loss & degradation	headwater incision; ditching, wetland loss & degradation	headwater incision; landslides; ditching, wetland loss & degradation

Cumulative FEH Vulnerability

After applying each individual FEH vulnerability screen, the GIS-based analytical framework produces a cumulative vulnerability score for specific channel segments of the tributary network. The cumulative FEH score reflects the *likely* sensitivity, exposure, and adaptive capacity of each stream segment to flood-driven erosion, deposition, and channel change/migration processes. See [Appendix 3](#) for more details on the scoring approach and criteria.



Delfield Road, Town of Ashland, is highly vulnerable to upstream headwater incision, landslides, and excess deposition. Photo: WI Wetlands Association

Cumulative FEH vulnerability scores characterize the condition of the landscape upstream of vulnerable road crossings and help signal whether there is a need for hydrologic restoration within the catchments of transportation and other community assets. There is also value in reviewing the results of each FEH vulnerability screen individually because stream corridors that score highly vulnerable for just one screen may still be priority for NFM interventions.

Below is a summary of the cumulative FEH vulnerability scores and results from categorizing stream corridors by their level of vulnerability to the combined effects of headwater incision, landslides, excess deposition and channel change, and hydrologic alteration.

- **Expected** corridors shown in dark purple are highly likely to experience excess incision, landslides, and deposition during floods and in response to other disturbances. These corridors are a driver of road failure mechanisms and the loss of flood storage and hydrologic functions.
- **Possible:** corridors shown in light purple may experience some landscape change, depending on the location and intensity of heavy precipitation and runoff.
- **Minimal** corridors shown in orange are more likely to tolerate excess runoff and erosion and deposition related impacts. Infrastructure damages may still occur depending on the size, orientation, and alignment of structures.

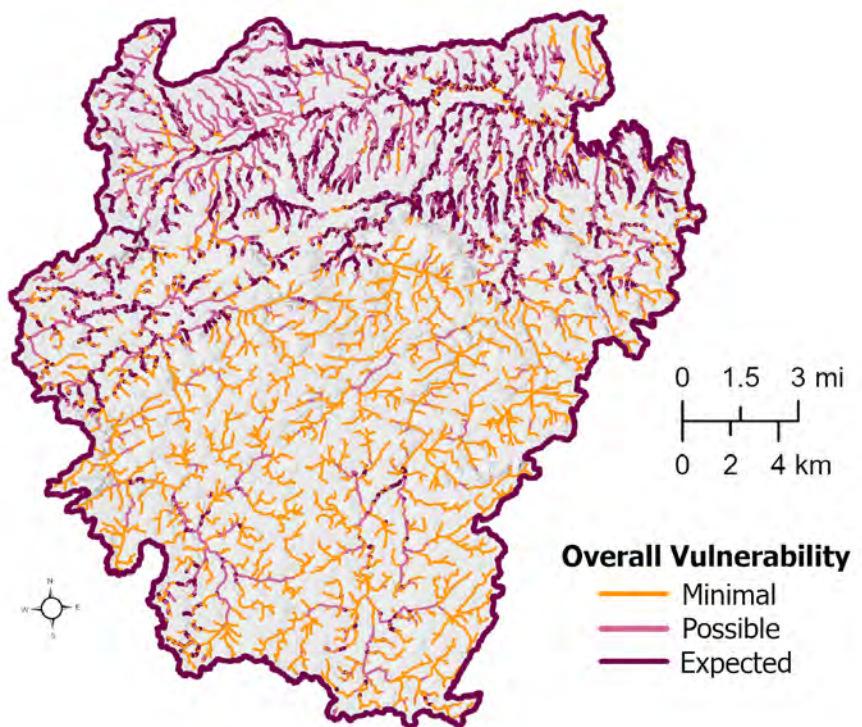


Figure 8. Cumulative Vulnerability of the Tributary Network to Fluvial Erosion Hazards and Degraded Hydrology

Cumulative FEH vulnerability scores can be used to justify where pre-disaster mitigation and disaster aid investments are most urgent. Mitigating FEHs along ‘expected’ and ‘possible’ corridors is necessary for the long-term recovery of the fundamental hydrologic conditions, connections, and functions that enable watersheds and infrastructure to adapt to a range of flow conditions and climate stressors.

In the Marengo River Watershed, 52% of the tributary network is highly vulnerable to future flood damages caused by fluvial erosion hazards and degraded hydrology. Of all stream corridors, 18% were scored in the “expected” and 34% in the “possible” category for cumulative FEH vulnerability.

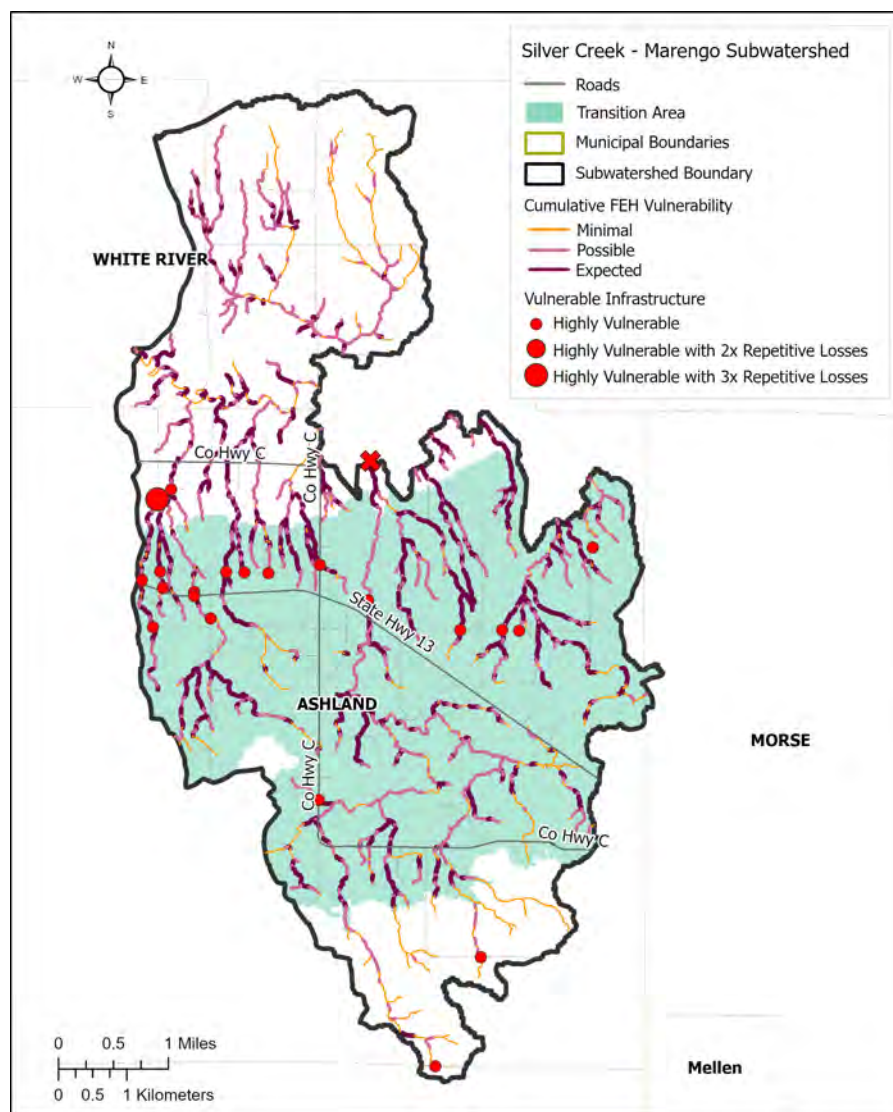
Ongoing consultation with farmers, landowners, road managers, and town and tribal officials is critical for verifying the location and severity of vulnerabilities and urgency for interventions that mitigate FEHs and repair hydrology. Field reconnaissance can also support NFM/infrastructure project scoping and design.

NFM Target Areas and Prioritization (“Think Upstream”)

Cumulative and individual FEH vulnerability scores alone do not indicate high priorities for where NFM interventions are needed to repair degraded hydrology and FEHs. Farmers, landowners, road managers, and others with local knowledge will be needed to help determine opportunities, the cost-effectiveness and feasibility of NFM projects, and other objectives that can be addressed with NFM, e.g., nutrient management. Considerations for prioritizing and selecting NFM projects include:

- Target headwater catchments highly vulnerable to incision and hydrologic alteration. See [Figure 5](#), page 8.
- Target edge-of-field and transitional agricultural lands that support reconnection of streams, floodplains, and wetlands *without* disrupting farm operations and farmland productivity.
- Improve highly vulnerable road crossings that limit the movement of flows, sediment, and debris and disrupt connectivity between streams and floodplains near the transportation corridor.

Figure 9. NFM target areas are the catchments of highly vulnerable road-stream crossings. Especially stream-wetland corridors impacted by headwater incision within or upstream of the transition area of subwatersheds like Silver Creek.



The Phase II NFM Assessment will develop a watershed-scale flood (H&H) model and hydrologic conditions screening framework to understand flows and current and potential storage within the catchments of culverts, bridges, and critical road segments (“culvertsheds”).

Section II. Goals and Strategies

Maintaining and restoring floodplain and wetland functions can increase the landscape’s capacity to cope with more frequent and intense storms. The goals and strategies below are designed to help reduce future storm-related disruptions, damages, costs, and recovery times to the watersheds and infrastructure of Ashland County. Collaborating with other county departments and partners to mitigate the risks of fluvial erosion hazards and degraded hydrology can also help address priorities and climate adaptation strategies identified in other plans such as the Ashland County Land and Water Management Plan, Marengo River Watershed Partnership Project Watershed Action Plan and the Lake Superior Collaborative’s Action Plan.³

Goal #1. Assess flood risks, vulnerabilities, and restoration opportunities

The purpose of this goal is to expand on and replicate vulnerability assessment efforts conducted through the Phase I NFM Assessment in the Marengo River Watershed (MRW) to better understand and address flood hazards and hydrologic stressors throughout Ashland County’s watersheds.

Strategies

Strategies to achieve this goal emphasize data collection, modeling, and the development and use of screening tools to ensure that future vulnerability assessments and flood risk reduction efforts are strategically located, cost effective, and informed by prior learning. Understanding and addressing hazards that contribute to repetitive loss culverts and vulnerable transportation infrastructure factor prominently in this work.

1. Complete additional phases of NFM assessment in the Marengo River Watershed to establish baseline data to develop watershed models, support the design and construction of hydrologic restoration practices, and measure and track the benefits of NFM projects. Coordinate geomorphic assessment and hydrologic monitoring efforts with collaborators including but not limited to the U.S. Geological Survey, WI Department of Natural Resources, Mashkiiziibii (Bad River) Natural Resources Department, and Superior Rivers Watershed Association.



Headwater incision is major driver of cumulative FEH vulnerabilities and degraded natural infrastructure. NFM assessments can help detect where FEHs are impairing the capacity of the landscape to store and slow the flow of flood waters. *Photo: WI Wetlands Association*

³ Ashland County Land and Water Resource Management Plan 2020-2029. https://co.ashland.wi.us/index.asp?SEC=7C0565B3-D990-4045-A0A9-FF414A1B8B6F&Type=B_BASIC

Superior Rivers Watershed Association (2023). Marengo River Watershed Partnership Project Watershed Action Plan.

<https://www.superiorrivers.org/the-marengo-river-watershed-partnership-project/>

Lake Superior Collaborative Action Plan 2021-2025. <https://lakesuperiorcollaborative.org/>

2. Create watershed-scale culvert inventories using the Great Lakes Road Stream Crossing Inventory (GLRSCI). The GLRSCI is a standardized method that enables consideration of structural risk factors, aquatic organism passage, and upstream hydrologic conditions. Collaboration with towns, neighboring counties, and the Mashkiiziibii (Bad River) Tribe is necessary where watersheds extend across boundaries.
3. Replicate multi-phased NFM assessments in other high-risk watersheds with vulnerable infrastructure identified through watershed-scale culvert inventories. Completing additional NFM assessments will help ensure that decision support tools accurately reflect the unique conditions of Ashland County's steep and low-gradient watersheds.
4. Collaborate on the development and implementation of an interactive, web-based vulnerability and project prioritization screening tool to inform local decision-making and the visualization of hazards, vulnerabilities, risks, and restoration opportunities. This tool can display NFM assessment data from the Marengo River Watershed and evolve to include data generated for other watersheds in the county. It can also be integrated with other web mappers that support the Great Lakes Road Stream Crossing Inventory and WisDOT Resiliency Tool.



An interdisciplinary team of collaborators evaluates structural risk factors and FEH vulnerabilities at a road-stream crossing. Photo: WI Wetlands Association

Goal #2. Support implementation of NFM to reduce flood risks and damages

The purpose of this goal is to enable the use of assessment data collected under Goal #1 to help identify, plan, and implement NFM practices in high-risk watersheds. This approach emphasizes a headwaters down approach as a cost-effective way to deliver high-impact projects with limited funding, engineering capacity, and watershed acreage to work with.

Strategies

Strategies will emphasize installing adaptive practices that address existing hazards, account for future conditions, and reverse or prevent development of new hazards and vulnerabilities. A variety of low-tech practices to reestablish headwater storage and floodplain connectivity upstream of critical infrastructure will be emphasized to help address vulnerabilities that are widespread across the County (see Section 1 on vulnerabilities).

1. Develop NFM Catchment Implementation Plans (CIPs) for the catchments of repetitive loss and/or high-risk culverts. NFM CIPs can describe NFM target areas, or locations where hydrologic restoration and infrastructure improvements can be implemented to build resilience and mitigate fluvial erosion hazards and degraded hydrology in advance of and/or during the recovery phases following a disaster.⁴

⁴ Natural Flood Management Catchment Implementation Plans (CIPs) are an adapted version of the watershed flood recovery plans described in the Colorado Watershed Flood Recovery 2013-2018 publication. NFM CIPs can proactively summarize pre- and post-disaster intervention needs, project concepts, cost estimates, and potential design and engineering services, and permitting support needs.

2. Promote and support collaborative efforts that help road managers and the Land and Water Conservation Department evaluate the use and benefits of NFM and recruit farmers and other landowners to participate in NFM projects.
3. Implement NFM practices in high-risk catchments to rebuild headwater storage and reconnect floodplains. See Appendix 4 for examples of practices that can be utilized to ‘slow the flow’ by mitigating FEHs and restoring natural and self-regulating hydrologic conditions and connections.

Goal #3. Build capacity for NFM initiatives

The purpose of this goal is to suggest actions Ashland County can take to ensure the local structural supports are present to realize more locally-led, catchment-scale NFM initiatives.

Strategies

Strategies emphasize leveraging Ashland County’s limited resources through actions designed to improve coordination and collaboration; maintain or increase current staffing levels, increase funding for assessment, design, and construction, and accelerate the review and approval of projects that improve the health and resilience of catchments and stream corridors.

1. Plan and host at least one field day annually for local, state, tribal, and federal decision makers. This event can showcase successful NFM projects, generate demand for new projects, and improve understanding of the problems that NFM can address in Ashland County’s watersheds.
2. Collaborate with partners to secure long-term funding for a NFM coordinator that can help support and accelerate investments into NFM and climate resilient infrastructure projects. This position can facilitate NFM project scoping and design, grant proposal preparation, and landowner recruitment and coordination in catchments with high-impact restoration opportunities.
3. Work with the Lake Superior Collaborative and Slow the Flow Workgroup to increase technical assistance programming for the hydrologic and hydraulic (H&H) modeling, engineering and design, and permitting needed for hydrologic restoration in mapped floodplains.
4. Subcontract with partners that can support the County and towns with grant proposals, project management, partner facilitation, engineering and design, and the monitoring and evaluation of NFM and infrastructure projects, e.g., Superior Rivers Watershed Association, Trout Unlimited, Wisconsin Wetlands Association.



An interdisciplinary team of collaborators discusses design concepts for a catchment-scale NFM project. Photo: WI Wetlands Association

Goal #4. Increase investments from disaster aid funding programs

The purpose of this goal is to ensure that Ashland County towns have the information and support needed to successfully compete for funding from state and federal disaster and transportation aid programs.

Strategies

Strategies will include the development of local policy frameworks, adoption of standardized data collection and record-keeping protocols, quantification of the costs and benefits of NFM practices, and improved relationships with various funding entities.

1. Standardize data collection and record keeping protocols that help the county and towns to acquire, track, and assemble the information needed to complete required cost-benefit analyses and maximize reimbursement from FEMA Public Assistance and other disaster aid programs.
2. Provide technical support and training that increase the ability of road managers and local officials to easily incorporate NFM and vulnerability data into the planning, design, construction, and maintenance of new and existing infrastructure. These training can support selection of high-impact actions that target the root causes of problems and build resilience at larger scales.
3. Develop a model ordinance for the potential implementation of codes and standards that towns can voluntarily adopt to improve the capacity of road crossings to tolerate floods. Locally adopted codes and standards can demonstrate that towns are taking consistent actions during or before the time of a disaster. A model ordinance could address policy options such as:
 - Utilizing standardized data collection forms for culvert inventories, maintenance records, and damage assessments.
 - Adopting design standards that facilitate the construction and maintenance of climate resilient road crossings in highly vulnerable landscape settings (See Goal 6, page 17).
 - Coordination protocols between the county, towns, tribes, FEMA, WEM, and WisDOT.
 - Best practices for using NFM in conjunction with road operations and maintenance and emergency and permanent repairs within the public right-of-way to mitigate FEHs and extend the use and life of transportation assets (e.g., ditch/debris management, etc.).

Goal#5. Diversify funding sources used for flood risk reduction efforts

The purpose of this goal is to increase investments in NFM based on the flood risk reduction and ecosystem service benefits that can be achieved by restoring hydrology.

Strategies

Strategies will emphasize the establishment of interdepartmental goals related to hazard mitigation, habitat restoration, water quality improvement, and climate adaptation and the pursuit of public and private investments from programs that support such priorities.

1. Develop interdepartmental coordination processes to identify NFM and infrastructure projects that address shared goals and priorities identified in various county and watershed-specific plans (County Comprehensive Plan, County Land and Water Resource Management Plan, Marengo River Watershed Action Plan). NFM projects sponsored by multiple county departments could be excellent projects to scope for the annual FEMA Building Resilient Infrastructure and Communities (BRIC) funding cycle.

2. Collaborate federal, state, tribal, and nongovernmental entities to utilize NFM assessment data to scope hydrologic restoration and infrastructure projects in NFM target areas identified for the Marengo River Watershed and other high-risk watersheds (Goal 1, Strategy 3). This coordination can help with the selection of interagency projects that address multiple priorities including flood resilience, aquatic organism passage, and nutrient management.
3. Explore and pursue long-term funding sources, such as NRCS Regional Conservation Partnership Program (RCPP), Great Lakes Restoration Initiative, Great Lakes Protection Fund, and other climate resilience funding programs that support NFM initiatives that help manage farmlands and fields on a landscape level with active engagement from agricultural and forestry collaborators.

Goal#6. Design and install climate resilient culverts and bridges

The purpose of this goal is to reduce road infrastructure failures, create climate resilient infrastructure, and further facilitate the restoration of stream channels and floodplains.

Strategies

Strategies emphasize using known technology for minimizing culvert failures and existing information for identifying catchments, stream corridors, and sites that are vulnerable to existing and increasing flood flows. These strategies can be utilized in combination with NFM interventions and pre- and post-disaster mitigation actions to prepare for more frequent and hazardous floods.

1. Wherever feasible, utilize climate resilient road infrastructure standards to design and install culverts and bridges at highly vulnerable and repetitive-loss sites. This approach can extend the life of transportation assets and reduce long-term road operations and maintenance costs by:
 - Reestablishing and maintaining the stream's least-erosive form/condition
 - Accommodating the natural stream profile/width and safe passage of flood flows, sediment, wood, and aquatic organisms
 - Embedding the road crossing structure into the natural stream gradient
 - Creating alignment between the stream and inlet/outlet of the culvert or bridge

See Appendix 5 for resources that can be utilized to create climate resilient road crossings.

2. As part of the design process, evaluate stream gradient and the vulnerability of the culvert's catchment ("culvertshed") to flood flow increases from upstream hydrologic conditions and fluvial erosion hazards (FEH) that cause blockages, scour, and overtopping. Utilize watershed-scale NFM assessments and FEH and road-stream crossing inventories as part of this process. See Goal 1, page 13.
3. For high-risk catchments and road crossings, implement additional design features including but not limited to: stable overflow areas, increased structure opening, i.e., flow capacity, headcut control, paved road surface, or concrete structures as appropriate to minimize future culvert failures and disperse flows into disconnected floodplains and wetlands.



A climate resilient road-stream crossing created on a town road, designed with the USFS Stream Simulation Methodology. Photo: Trout Unlimited

Appendix 1. Definitions

- Catchment – the small drainage area nested within a larger watershed such as the Marengo River that influences the movement of water, sediment, and debris to a specific resource point. Catchments could include the tributaries and landforms upstream of a culvert or bridge.
- Culvertshed – the catchment of a specific road crossing.
- Fluvial erosion hazards (FEHs) - areas such as eroding ravines, gullies, and incised stream channels where flood flows are concentrated and energized.
- Floodplains – the flat area, along a valley bottom, connected to a stream or river channel by overbank flows and deposition, i.e., a plain that floods.
- Geomorphic processes – the conditions, interactions, and functions that produce and shape landforms such as ravines, depressions, and flats.
- Gully - v-shaped erosion channel that forms in response to excess water and concentrated flow of runoff.
- Hazards - include fluvial erosion hazards (FEHs) and flood hazards. FEHs are areas such as eroding ravines, gullies, and incised streams where flood flows are energized and produce significant erosion, sediment, and debris. Flood hazards commonly refer to areas impacted by inundation under varying climate scenarios and are the focus of a Phase II NFM Assessment.
- Headcuts (aka knick points) - found at the top of a gully or incised channel where there is an abrupt change in elevation that creates a small waterfall or plunge pool in the channel. Headcuts initiate more gullying by advancing uphill to enlarge the length, size, and efficiency of the drainage network.
- Headwater – the small tributaries and wetlands in the upper portions of catchments. Usually 1st and 2nd order streams and associated wetlands; can be expanded to 4th order tributaries for restoration purposes.
- Headwater catchment – drainage area for the small tributaries that produce flows, sediment, and debris in the upper portions of the stream network. Includes perennial and ephemeral streams and wetlands and flats with high groundwater table and springs and seeps.
- Hydrologic processes – the conditions, connections, and functions that influence the distribution and movement of water.
- Incision – a natural process where the streambed is actively deepened, creating steep and unstable banks that channelize flows and restrict the ability of water to reach floodplains. Headcuts and gullying activate channel incision.
- Natural Flood Management - emphasizes strategic hydrologic restoration practices within a catchment (i.e., drainage) area to mitigate fluvial erosion hazards and restore the landscape's natural ability to capture, store, infiltrate, and slowly release runoff. NFM practices focus on restoring headwater wetlands and reconnecting streams and floodplains, especially to slow the flow in the upper portions of catchments.
- 'Slow the flow' - a watershed-scale hydrologic restoration approach that increases in-channel roughness and sinuosity, surface roughness, water storage in wetlands, and infiltration.
- Ravines – a steep-sided, narrow valley or hollow/gorge landform.
- Stream power (SSP) - a measure of the potential for the stream to change the geomorphic form of the bed and banks of a channel. Specific stream power is power per unit area of a channel – per field measured bankfull channel widths in the watershed.
- Vulnerability - indicates the exposure and sensitivity of the stream network to hazards that may lead to the loss of flood storage and/or the formation of road failure mechanisms including scour, blockages, woody debris, and overtopping.
- Risk - the combined exposure to hazards and degree of vulnerabilities upstream of a road crossing and will be evaluated in the Phase II NFM Assessment.
- Valley Bottom - flats along rivers and streams likely to be influenced by the active channel and formation of floodplain surfaces and wetland hydrology. Valley bottoms indicate the maximum area that can be influenced by hydrologic restoration.
- Flood storage - volume of surface water that depression or flat can retain.

Appendix 2. Overview of NFM Assessment Methods

A Natural Flood Management (NFM) Assessment is a large-scale, system-level approach for analyzing the ability of stream networks to cope with and adapt to fluvial erosion hazards (FEH), degraded hydrology, and other climate stressors. NFM assessments map and characterize hazards and vulnerabilities for the explicit purpose of identifying nature-based solutions upstream of vulnerable road-stream crossings and other community assets. Key elements and phases of a NFM assessment include:

1. Assessment of fluvial erosion hazards and degraded landscape conditions.
2. Assessment of hydrologic conditions, flood storage, and flows.
3. Prioritization of locations where NFM can mitigate hazards and restore hydrology.

In 2020, a pilot study was started to map and classify ephemeral and perennial streams and wetlands in terms of their sensitivity to fluvial erosion hazards. The GIS approach uses nationally available 10-meter resolution topology and extended stream network of 60-m valley segments to map fluvial process zones (FPZs) or stream corridors based on stream order, stream power, channel slope, presence of adjacent steep valley sides and headwater flats, and adjacent landform setting. Bankfull channel widths derived from rapid geomorphic assessment-based hydraulic geometry curves combined with flood frequency equations were used to calculate specific stream power for each stream corridor.

The resulting vulnerability maps provide a screening tool to identify ephemeral and perennial stream corridors (or FPZs) that are most sensitive to incision, gullyng and mass wasting along confined headwater channels as well as potential lateral migration and mass wasting for partially confined perennial streams. See Appendix 3 for more information about the FEH Vulnerability Screens.

Methods were developed from the Federal Highway Administration Vulnerability Assessment and Adaptation Framework, 3rd Edition⁵, existing FEH methodologies from Vermont, Indiana, and Colorado, and the risk assessment framework used for the Great Lakes Road Stream Crossing Inventory method.⁶

Highlights of the methods are described below. For more details on the approach and methods used in the Phase 1 NFM Assessment, contact:

- Faith Fitzpatrick, U.S. Geological Survey
- Clement Larson, Jason Laumann, Northwest Regional Planning Commission
- Kyle Magyera, Wisconsin Wetlands Association

Vulnerable Infrastructure Inventory

Vulnerable infrastructure sites were determined by repetitive loss data from federal, state, and local disaster aid records and the overall risk score assigned to each culvert or bridge inventoried with the Great Lakes Road Stream Crossing Inventory (GLSCI) method. Risk scores quantifies the level of risk by three categories: 1) likelihood of failure, 2) consequences of failure, and 3) current impacts to the aquatic ecosystem, i.e., erosion/sedimentation, fish passage barrier, changes to stream geomorphology. The relative weighting of each risk factor was determined by an interdisciplinary group of specialists involved in road stream crossing management across Wisconsin and Michigan using best professional judgement.

Road managers are encouraged to add these onto their own version of a risk rating system.

⁵ Federal Highway Administration (2017). Vulnerability Assessment and Adaptation Framework, Third Edition. FHWA-HEP-18-020. https://www.fhwa.dot.gov/environment/sustainability/resilience/adaptation_framework/

⁶ Great Lakes Road Stream Crossing Inventory. <https://great-lakes-stream-crossing-inventory-michigan.hub.arcgis.com/>

Field-Based Rapid Geomorphic Assessments

Stream corridors were mainly selected for rapid geomorphic assessments based on their potential for excess erosion and deposition and proximity to severe infrastructure damages from the 2016 and 2018 floods. The reaches included perennial and ephemeral channels and were measured in September 2020.

Generating Stream Network and Fluvial Process Zones

From the nationally available 10-m digital elevation dataset (NED) (USGS 1999; Artchuleta et al. 2017) a more detailed flow network was generated in ArcMap using ArcHydro tools with a starting drainage area of 0.1 km² in order to include headwater channels and ravines. The more detailed flow network was divided into 60-m segments in order to capture the heterogeneity in slope and valley confinement resulting from intersecting and adjacent glacial landforms and bedrock outcrops.

Characterizing Flows and Storage

Many of the headwater channels intersect large flats with current or potential wetland storage and to characterize this feature a hydrologic-related terrain raster was computed, using the Height Above Nearest Drainage (HAND) tool (Lamont et al. 2019; Lui et al. 2020) applied to the 10-m DEM data. The tool approximates the relative elevation difference between a 10-m DEM cell and the nearest streamline and can also help to identify natural floodplains or areas prone to overbank deposition. At the start of the Phase 1 NFM assessment, a watershed-scale flood (hydrologic and hydraulic – H&H) model was not available to map and characterize flood flows.

Specific stream power (SSP) was helpful for characterizing segments prone to erosion and deposition as well as changes in channel dimensions and lateral migration during floods. Stream power is a product of slope, streamflow and the weight of water; SSP is stream power divided by the width of the streamflow.

Excess Erosion and Deposition and Hydrologic Alteration Vulnerability Maps

The team used aerial photography, 2015 and 2019 county LiDAR-based hillshades maps and preliminary 2015-19 volumetric change analysis, the Great Lakes Road Stream Crossing Inventory, field-based rapid geomorphic assessment data, drone imagery, and other field reconnaissance after the 2016 and 2018 floods to verify comfort level with the extended stream network that better represented headwater channels, ravines, sensitivity factors, scores, and geomorphic attributes.

Multiple vulnerability screens were compiled to determine the exposure and sensitivity of stream corridors, i.e., fluvial process zones (FPZs) to: 1) landslides along ravines and steep valleys for all stream orders (sizes); 2) headwater incision into flats for stream orders 1 and 2, 3) coarse sediment deposition and channel change in stream order 3 or higher, and 4) hydrologic alteration due to ditching in all stream orders. Each FPZ could be scored low (1); moderate (2), high (4) or very high (5). FPZs with sensitivity scores of “very high” and “high” likely experienced geomorphic changes of incision, landslides, and/or coarse deposition during the 2016 and 2018 floods and were in the transition area.

A score of “moderate” was given for FPZs that might have experienced geomorphic changes based on their characteristics but also might be in the geospatial resolution error of a 10-m topological representation of the streamlines. A score of “low” indicates a low chance of geomorphic change for FPZs that were mainly in the bedrock landform setting. A headwater FPZ (1st and 2nd order channels) might have a high sensitivity to incision and landslides. Third order and higher FPZs might also have a high landslide and high coarse sediment deposition sensitivities in the form of bars and overbank sedimentation. Ditches hydrologically connected to the FPZs increase the potential for geomorphic change. Detailed matrixes of sensitivity factors and color-coded scores for mapping the FPZs are described in Appendix 3.

Appendix 3. Fluvial Erosion Hazards Vulnerability Screening Framework

Table 1. Sensitivity factors, scores, and Fluvial Process Zone (60-m segment) characteristics used in the FEH vulnerability screening framework. [SSP, Specific stream power, in W/m^2]

Factor	Score	General 60-m Segment (Fluvial Process Zone) Characteristics
Landslide Potential (all stream orders) [LP]	5 (very high)	SSP > 300 with steep valley sides in transition area.
	4 (high)	SSP > 60 with or without steep valley sides in transition area and clay plain.
	2 (moderate)	SSP > 10 with or without steep valley sides in transition area and clay plain, steep valley sides in bedrock.
	1 (low)	SSP < 10 with steep or no steep valley sides in transition and clay; no steep valley sides in bedrock.
Headwater Incision Potential (1 st and 2 nd order) [HIP]	5 (very high)	Steep headwater channel slope > 2%; channel connected to flat in transition area.
	4 (high)	Steep headwater channel slope > 1%, channel connected to flat in transition area and clay plain.
	2 (moderate)	Steep headwater channel slope > 1%; flat absent in transition area or clay plain
	1 (low)	Any bedrock channels or channel slope < 1% connected or not connected to flat in transition area or clay plain;
Coarse Sediment Deposition & Channel Change (3 rd order and higher) [CSDCC]	5 (very high)	SSP < 1,000 connected to flat in transition area.
	4 (high)	SSP < 1,000 connected to flat in clay plain.
	2 (moderate)	SSP variable but flats absent in transition area and clay plain; SSP < 60 and connected flats in bedrock.
	1 (low)	SSP > 300 and no connected flats in transition area and clay plain; Any bedrock channels with flats absent.
Hydrologic Alteration (all stream orders) [HA]	5 (very high)	Ditch density exceeds 3-km per sq. km density within a 200-m buffer of headwater channels.
	4 (high)	Any ditches present near headwater channels (within a 200-m buffer).
	2 (moderate)	Ditch presence or high density near non-headwaters channels.
	1 (low)	No identifiable ditches present.

Table 2. Vulnerability screens for landslide potential, headwater incision potential, and coarse sediment and channel change associated with fluvial process zones in the Marengo River watershed
[VH, very high, score of 5; H, high, score of 4; M, moderate, score of 2; L, low, score of 1; HAND, Height above nearest drainage]

Landform Setting	Landslide Potential (LP)						Headwater Incision Potential (HIP)				Coarse Sediment and Channel Change (CSCC)					
	Steep Valley or Ravine	Specific Stream Power (W/m2)					Headwater Flats (20%+ HAND)	Channel Slope (Stream Gradient)			Floodplain Flats (50+% HAND)	Specific Stream Power (W/m2)				
		>100 0	300 - 1000	61 - 300	10 - 60	<10		>2 %	1- 2%	<1%		<10	10 - 60	61 - 300	300 - 1000	>1000
Transition Area	Present	VH	VH	H	M	L	Present	VH	H	L	Present	VH	VH	VH	VH	H
	Absent	H	H	M	M	L	Absent	H	M	L	Absent	H	H	M	M	L
Clay Plain	Present	H	H	H	M	L	Present	H	H	L	Present	H	H	H	H	M
	Absent	H	H	M	L	L	Absent	M	L	L	Absent	H	M	M	L	L
Bedrock Surface	Present	M	M	M	M	L	Present	L	L	L	Present	M	M	L	L	L
	Absent	L	L	L	L	L	Absent	L	L	L	Absent	L	L	L	L	L

Appendix 4. Natural Flood Management Interventions and Practices

From 2020-2022, the Ashland County Land and Water Conservation Department (LWCD), along with several collaborators, evaluated varying in-stream, floodplain, and wetland conservation practices that can be utilized as nature-based solutions to flood and erosion hazards, nutrient management, and degraded habitat. Utilizing multiple practices, in collaboration with multiple landowners in different parts of catchments, can restore hydrology, result in net gains in floodplain and wetland functions, and extend the life and safe use of transportation infrastructure.

Contact the Ashland County LWCD for more information about the below practices, including their purpose and targeted outcomes, engineering, design, and permitting needs, and estimated project costs.

Examples of interventions and practices

- Climate resilient road-stream crossings that simulate natural flows, pass sediment and debris, and reconnect streams to their floodplains. See Appendix 5.
- 2-stage channels and channel reshaping to improve channel health and floodplain connectivity
- Headcut control to prevent headwater incision, gulying, and erosion-induced wetland drainage
- Large woody debris structures that treat headwater incision and rebuild geomorphic processes
- Grade stabilization to treat/mitigate channel incision and ravine and gully erosion
- Flow dispersal structures, e.g., level spreaders, that desynchronize and disperse flows into disconnected floodplains and wetlands
- Water level management to maintain and enhance hydrologic processes in catchments with high/extensive hydrologic alteration
- Ditch fills that restore wetland hydrology and rebuild flood storage capacity
- Floodplain notching, benching and reconstructions that increase access for flood flows to reach a greater extent of the valley bottom
- Berm, levee, and structural removals that remove flow obstructions between streams and floodplains
- Microtopography to create shallow depressions and increase groundwater interactions
- Revegetation to increase surface roughness through tree and shrub plantings
- On-farm practices that improve soil health and continuous living cover such as managed, conservation-oriented grazing and agroforestry (hazelnuts, other woody crops)

Appendix 5. Infrastructure Design Standards and Resources

Climate resilient road-stream crossings are designed to accommodate natural stream and floodplain functions including the maintenance of a stream's least-erosive morphology with the passage of flood flows, sediment, wood, and aquatic organisms. This approach increases resilience of the road crossing structure to current and future floods.

A basic principle is to design a channel through the crossing based on a nearby reference reach, then wrap a structure around it. The structure may have a full invert or an open bottom. Key steps for creating infrastructure that can tolerate floods and accelerate nature-based solutions are:

- Sizing the structure with a span width greater than or equal to the channel's bankfull width (BFW), to provide greater capacity to pass flood flows, sediment, and debris
- Setting the vertical profile of the structure to maintain or restore the natural slope of the stream
- Constructing and maintaining a natural streambed to prevent abrasion and premature failure, using a scour analysis to set the depth, size, and mobility of bed materials through the structure
- Aligning the structure with the stream, especially at the inlet, to maintain and enhance the passage of flood flows, sediment, and debris
- Checking hydraulic capacity to ensure the elevation of a flood, that has a 1% chance of being exceeded in each year, is at least 20% below the top of the culvert or bottom of bridge (i.e., $HW/D < 0.8$ at the 1% AEP aka the 100-yr average RI)
- Verifying stream banks and key pieces within the structure are stable across all expected flood flows while the bed is mobile at the appropriate flow

Resources on methods, design standards, and permitting

- U.S. Forest Service Stream Simulation Methodology.
https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fsm91_054564.pdf
- Natural Resources Conservation Service (NRCS) and WI Department of Agriculture, Trade, and Consumer Protection (DATCP) Stream Crossings. <https://www.nrcs.usda.gov/resources/guides-and-instructions/stream-crossing-no-578-conservation-practice-standard>
- Wisconsin Department of Transportation (WisDOT) Facilities Development Manual (*update in progress*). <https://wisconsindot.gov/pages/doing-bus/eng-consultants/cnslt-rsrcs/rdwy/fdm.aspx>
- Infrastructure Working Group – Wisconsin Initiative on Climate Change Impacts.
<https://wicci.wisc.edu/infrastructure-working-group/>
- Federal Highway Administration HEC26 - Culvert Design for Aquatic Organism Passage.
<https://www.fhwa.dot.gov/engineering/hydraulics/pubs/11008/hif11008.pdf>
- Minnesota Department of Transportation (MnDOT) Culvert Design Resources <https://mntransportationresearch.org/2019/02/07/new-culvert-design-manual-for-accommodating-fish-passage/>

Contact the DNR Transportation Liaison for more information about climate resilient design standards and the permit coordination process

<https://dnr.wisconsin.gov/topic/Sectors/Transportation.html>

Ref: 2025-119

COUNCIL AGENDA:
10.D. (5/27/2025)

SUBJECT: Approve Change Order No. 2 to Dreamland Contracting, LLC for the 2025 Kreher Park Campground Upgrades Project-Bathhouse Replacement (*Public Works*) Roll

RECOMMENDATION: Approval

DEPARTMENT OF ORIGIN: Public Works

CLEARANCES: City Administrator
Public Works Director

EXHIBITS: 1. Aerial View Map

EXPENDITURES REQUIRED: \$ 77,449.00 Approved Project Cost
\$ 33,057.80 Change Order No. 2
\$ 11,050.68 Construction Contingency (10%)
\$ 121,557.48 Revised Project Cost

AMOUNT BUDGETED: \$ 249,000.00 - Wisconsin Department of Natural Resources (WI DNR) Stewardship Grant
\$ 200,000.00 - American Rescue Plan Act Funds (ARPA)
\$ 54,272.00 - Total Fund 481 Parks & Grounds
\$ 503,272.00 - Total

APPROPRIATION REQUIRED: N/A

TREASURER'S CERTIFICATE: N/A

COMPLIANCE WITH CHAPTER 51: Section 51.26 (b) of Chapter 51, Ashland City Ordinances, permit the Mayor and/or Clerk to schedule items directly for Council action when a timely decision is needed by the City. The Mayor and/or City Clerk has chosen to direct this item directly to Council pursuant to the authority granted to them in Chapter 51, Ashland City Ordinances.

STATEMENT OF CONFORMANCE WITH COMPREHENSIVE PLAN: The proposed construction conforms to the goals and community values identified in the City of Ashland's Comprehensive Plan.

SUMMARY STATEMENT:

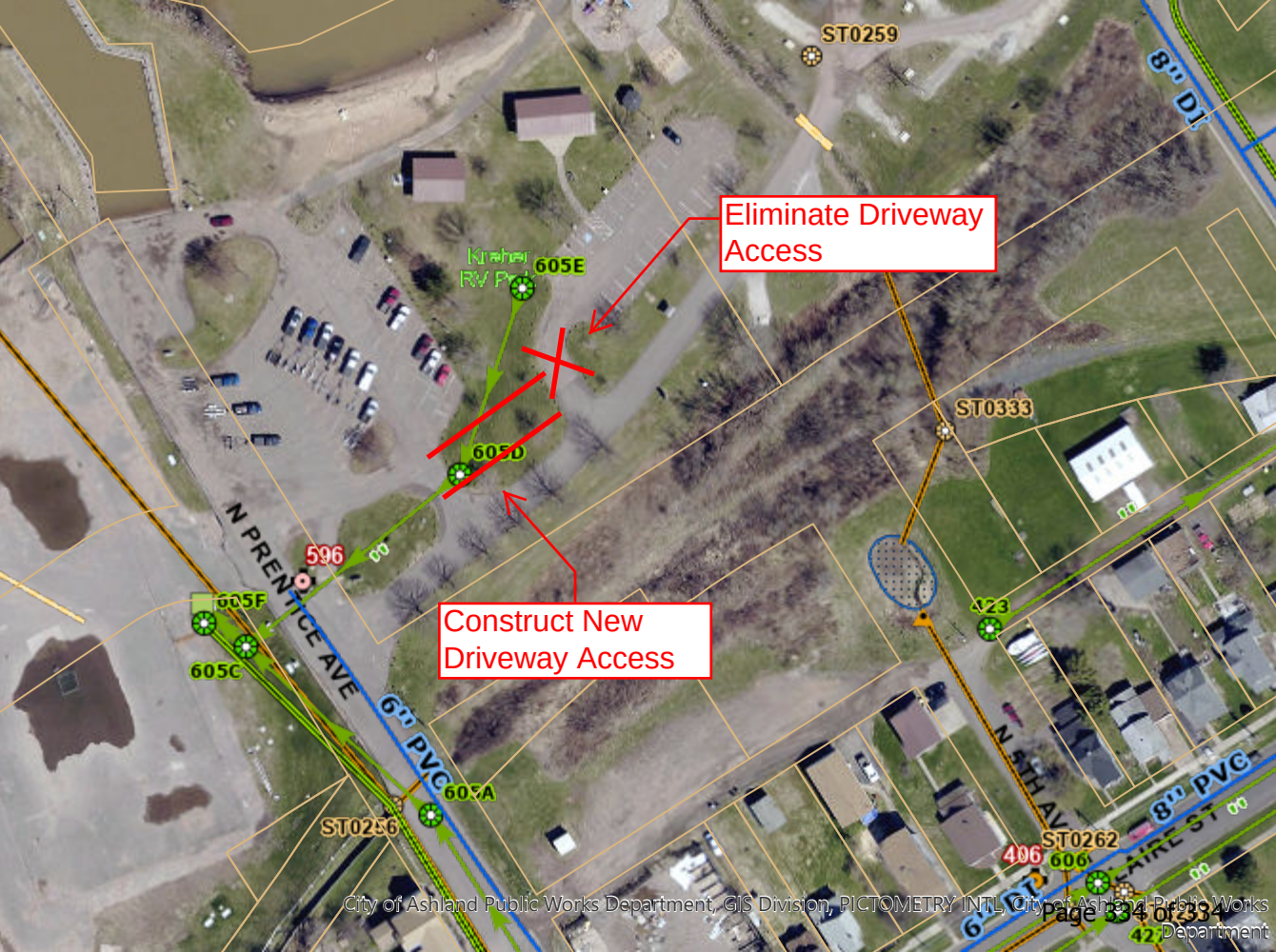
At the April 15, 2025 meeting, Council awarded a contract to Dreamland Contracting, LLC for the Kreher Park Campground Upgrades project. The bid consists of concrete foundation work, water/sewer line installation, coordination with a pre-cast building manufacturer, and associated restoration. This work will result in an upgraded bathhouse at the Kreher Park Campground.

At the December 10th, 2024 meeting the Council approved entering into an agreement with Huffcutt Concrete, LLC for a pre-cast building to replace the previous bathhouse. Staff negotiated a revised bathhouse design with Huffcutt that reduced the cost of the building to approximately \$325,000, which allowed for the budget to proceed with the second phase of the project, as described above.

Construction of the project is being managed by Niles Fetter, Civil Engineer-Streets. Niles has recommended Change Order No. 2 for the project to incorporate reconfiguration of the campground parking lots to make more efficient use of available space. Change Order No. 1 addressed issues with prevailing wage compliance and is within the amount of the previously approved project contingency, allowing for City Administrator approval.

Council approval of Change Order No. 2 is recommended to increase the approved project expenditure amount, and can then be prepared for City Administrator approval.

Niles is working with a parks design professional to estimate the cost of constructing a paved connector trail on the bluff above the campground, repaving the campground loop roads, and upgrading electrical service. Remaining project funds will support a portion of this work, but additional funding in the 2026 budget would be required to deliver the full scope.



Eliminate Driveway Access

Construct New Driveway Access