



JUNEAU COUNTY ALL HAZARDS MITIGATION PLAN UPDATE

Prepared with the assistance of the North Central Wisconsin Regional Planning Commission



JUNEAU COUNTY ALL HAZARDS MITIGATION PLAN UPDATE

prepared for:

Juneau County Emergency Management

by:

North Central Wisconsin Regional Planning Commission

adopted by Juneau County Board on:

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This update was prepared at the request and under the supervision of the Juneau County Emergency Management Committee and its Emergency Management Director by the North Central Wisconsin Regional Planning Commission (NCWRPC). For more information, contact:

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TABLE OF CONTENTS

Part I – Update Planning Process

Introduction	1-1
Disaster Mitigation Act of 2000	1-1
Five Parts of an All Hazards Mitigation Plan Update	1-2
Development of the All Hazards Mitigation Plan Update	1-2
Key Elements of the Update to the 2012 Plan.....	1-3
All Hazards Mitigation Plan Update Taskforce	1-3
Local Government Involvement	1-4
Neighboring Community Involvement.....	1-6
Local and Regional Agency Involvement.....	1-7
Public Review Process and Adoption.....	1-8
Incorporated Plans, Studies, Reports and Technical Data	1-9
Contact Information.....	1-10

Part II – Planning Area

Introduction	2-1
General Geography	2-1
Location	2-1
Civil Divisions	2-2
Topography	2-4
Climate	2-4
Demographic and Economic Profile.....	2-5
Population and Households.....	2-5
Seasonal Population	2-7
Employment.....	2-8
Land Use/Land Cover and Development Patterns.....	2-9
Forestry and Agriculture.....	2-10
Residential Development	2-10
Commercial and Industrial Development.....	2-11
Surface Water	2-11
Floodplain	2-13
Wetlands	2-17
Other Land Cover /Uses	2-17
Future Growth and Development in Juneau County.....	2-17
Public Facilities and Services.....	2-19
Transportation.....	2-19
Utilities	2-20
Emergency Services and Facilities.....	2-21
Critical Facilities.....	2-22
Inventory & Value of Structures / Property in Juneau County.....	2-26

Part III – Risk Assessment

Introduction	3-1
Hazard Identification	3-1
Hazard Analysis	3-2
Tornados	3-4
Wild Fire	3-10
Flooding / Dam Failure	3-14
Winter Storms /Extreme Cold	3-24
Severe Thunderstorm / High Wind / Lightning / Hail	3-28
Drought / Extreme Heat	3-31
Hazardous Materials Incident	3-35
Mass Casualty Incident	3-39

Part IV – Mitigation Strategy

Introduction	4-1
Progress Report 2012 - 2017	4-1
Local Hazard Mitigation Goals	4-4
Prioritization of Strategies	4-5
Mitigation Action Plan	4-6
Flooding / Dam Failure	4-6
Severe Storms - Tornado/High Wind/Lightning/Hail	4-15
Winter Storms / Extreme Cold	4-21
Drought / Extreme Heat	4-23
Hazardous Materials Incident	4-25
Mass Casualty Incident	4-27
Wild Fire	4-29

Part V – Plan Maintenance Procedures

Introduction	5-1
Plan Update Adoption	5-1
Plan Update Implementation	5-1
Plan Update Monitoring, Evaluation and Maintenance	5-3

Tables

Table 1 – Geographical Size by Civil Division	2-2
Table 2 – Population of Adjacent Counties	2-5
Table 3 – Population and Households	2-6
Table 4 – Estimated Seasonal Population	2-7
Table 5 – Prominent Employers in Juneau County	2-8
Table 6 – Economic Impact of Catastrophic Event on Industry in Juneau County	2-9
Table 7 – Generalized Land Use in Juneau County	2-10
Table 8 – FEMA Community Status Book Report	2-14

Table 9 – Equalized Value by Civil Division.....	2-26
Table 10a – Inventory & Value of County Owned Properties.....	2-27
Table 10b-d – Inventory & Value of City Owned Properties	2-27
Table 10e-j – Inventory & Value of Village Owned Properties.....	2-29
Table 10k – Inventory & Value of Town Owned Properties	2-31
Table 11 – Tornado Wind and Damage Scale	3-4
Table 12 – Reported Tornadoes in Juneau County	3-6
Table 13 – Probability of Intensity for Given Tornado in Juneau County.....	3-9
Table 14 – DNR Large Classified Dams in Juneau County.....	3-18
Table 15 – Approximate Values of Structures in Floodplains	3-22
Table 16 – Juneau County Hazardous Materials Incidents	3-36
Table 16a – Trucks Carrying Haz Mat at Interchanges	3-37
Table 16b – Top Hazardous Commodities on Rail in Juneau County	3-37
Table 17 – Bench Mark for Progress 2012 - 2017 Plan	4-2
Table 18 – Summary of Mitigation Strategies	4-32

Maps

Map 1 – Location Map.....	2-3
Map 2 – Generalized Land Use.....	2-12
Map 3 – Surface Water & Watersheds	2-15
Map 4 – Floodplains & Dams.....	2-16
Map 5 – Transportation	2-23
Map 6 – Utilities	2-24
Map 7 – Select Critical Facilities	2-25
Map 8 – Tornado Vulnerability	3-8
Map 9 – Wildfire Vulnerability	3-12
Map 10 – Flood Vulnerability	3-21

Appendices

Appendix – Meeting Notices	Attachment A
Appendix – Resolutions of Plan Adoption	Attachment B

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INTRODUCTION

Part I of the Juneau County All Hazards Mitigation Plan (AHMP) Update describes and documents the process used to develop the Plan Update. This includes how it was prepared and who (committee, organizations, departments, staff, consultants, etc.) was involved in the update process. It also describes the local government involvement, the time period in which the update was prepared, and who to contact to answer questions and make recommendations for future amendments to the Plan.

DISASTER MITIGATION ACT OF 2000

The development of the Juneau County All Hazards Mitigation Plan Update is a response to the passage of the Disaster Mitigation Act of 2000 (DMA2K). On October 30, 2000, DMA2K was signed into law by the U.S. Congress in an attempt to stem the losses from disasters, reduce future public and private expenditures, and to speed up response and recovery from disasters. This Act (Public Law 106-390) amended the Robert T. Stafford Relief and Emergency Assistance Act. The following is a summary of the parts of DMA2K that pertain to local governments and tribal organizations:

- The Act establishes a new requirement for local governments and tribal organizations to prepare an All Hazards Mitigation Plan in order to be eligible for funding from FEMA through the Pre-Disaster Mitigation Assistance Program and Hazard Mitigation Grant Program.
- The Act establishes a requirement that natural hazards such as tornados, floods, wildfires need to be addressed in the risk assessment and vulnerability analysis parts of the All Hazards Mitigation Plan. Manmade types such as hazardous waste spills are encouraged but not required to be addressed.
- The Act authorizes up to seven percent of Hazard Mitigation Grant Program funds available to a state after a federal disaster to be used for development of state, local, and tribal organization All Hazards Mitigation Plans.
- The Act establishes November 1, 2004 as the date by which local governments and tribal organizations are to prepare and adopt their respective plans in order to be eligible for the FEMA's Hazard Mitigation Grant Program and Pre-Disaster Mitigation Program.
- If a plan is not prepared by November 1, 2004, and a major disaster is declared, in order for a local government or tribal organization to be

eligible to receive funding through the Hazard Mitigation Grant Program, they must agree to prepare an All Hazards Mitigation Plan within one year.

- In addition, by not having an All Hazards Mitigation Plan, local governments and tribal organizations cannot utilize funding through the Pre-Disaster Mitigation Grant Program.
- All Hazards Mitigation Plans must be updated every five years.

THE FIVE PARTS OF AN ALL HAZARDS MITIGATION PLAN UPDATE

The Juneau County All Hazards Mitigation Plan Update was categorized into five parts in order to address FEMA's local mitigation plan requirements. The five parts are as followed:

Part I:	Update Planning Process
Part II:	Planning Area
Part III:	Risk Assessment
Part IV:	Mitigation Strategy
Part V:	Plan Maintenance Process and Adoption

DEVELOPMENT OF THE ALL HAZARDS MITIGATION PLAN UPDATE

The Juneau County Emergency Management Department received a Planning Grant at the beginning of 2016 to update its All Hazards Mitigation Plan through the Pre-Disaster Mitigation Grant Program (PDM).

In early 2016, the North Central Wisconsin Regional Planning Commission (NCWRPC) finalized a work agreement with Juneau County, and began preparation of the All Hazards Mitigation Plan Update at the request of the County Emergency Management Director in July of 2016.

The update process included regular Task Force Committee meetings as well as extensive involvement from the local units of government within Juneau County and the counties surrounding Juneau. A variety of local and regional agencies were involved in the development of the Plan Update at various stages, and extensive opportunity for public participation was provided including public informational meetings and hearings. All sections of the Plan Update report were reviewed and analyzed by the planning team at subsequent meetings and revised as established in the design of the update process for this Plan.

The remainder of this chapter expands on and provides more detail on key aspects of the update development process.

KEY ELEMENTS OF THE UPDATE TO THE 2012 PLAN

The major enhancements to the Juneau County All Hazards Mitigation Plan develop through this update are as follows:

- ✓ Review of Recommended Revisions - The final Crosswalk for the previous plan approval listed a number of "recommended revisions" which were addressed in this update through the experience of subsequent plan adoptions from other counties.
- ✓ Chapter 2 expands on the community profile information with more detailed planning area description, inventory of existing and future buildings, infrastructure and critical facilities, and analysis of land use and development trends.
- ✓ Addition of economic impact modeling of the cumulative effects of job loss (due to hazard event) in the top industry sectors of the County.
- ✓ Review and update of risk assessment - The risk assessment was updated with documentation on recent hazard events, as well as additional estimation of potential dollar losses to vulnerable structures with methodology. The priority level of hazards facing the County was also reviewed and updated.
- ✓ Review and update of Mitigation Strategy - The mitigation strategies chapter begins with a complete progress report on the strategies from the 2012 plan, establishment of new set of strategies for next five-year cycle and an updated prioritization of projects.

ALL HAZARDS MITIGATION PLAN UPDATE TASKFORCE

The Juneau County All Hazard Mitigation Plan Update was prepared under the authorization of the Juneau County Emergency Management Committee:

- Alan K. Peterson, Chair (County Board Chair)
- Chris Zindorf
- Lynn A. Willard

This Committee of the County Board delegated oversight of the update process to the County's Local Emergency Planning Committee or LEPC which consists of a broad cross section of government, agency and interest group representatives from across the County. Periodic meetings were held with the NCWRPC staff, the County Emergency Management Staff (Director Gervase Thompson and Dave Butler), and the LEPC (dba Mitigation Planning Task Force) to provide guidance and input on the types of hazards to be considered, appropriate

mitigation strategies, and to review draft reports. Task Force members and their representation are as follows:

- Lynn Willard - Chair; New Lisbon Fire, County Board
- Alan K. Peterson - County Board Chair
- Gervase Thompson - County Emergency Management Director
- Ed Brooks - Wisconsin Assembly Representative
- Scott Wilhorn - County Board
- Brent Oleson - County Sheriff
- Barbara Theis, R.N. - County Health Officer
- Melissa Gillaume-Cappaert - Wisconsin Dept. of Natural Resources
- Mary Crowley - Mile Bluff Medical Center
- Chad Nichols - Wisconsin Dept. of Natural Resources
- Dawn McCluskey- Allied Cooperative
- Michelle Tischer - American Red Cross
- Dennis Weiss - County Highway Commissioner
- Scott Menard - County HazMat
- SMSgt. Matt Davies - Wisconsin National Guard, Volk Field
- Dave Butler - County Emergency Management

LOCAL GOVERNMENT INVOLVEMENT

There were a number of opportunities for the local units of government within the County to become involved in the update process. All incorporated jurisdictions participated in the original plan as well as this update through one or more of these opportunities.

In August of 2016 a hazard mitigation issues survey was sent to each town (unincorporated areas) chairperson and clerk requesting which hazards are a concern, input on past and future mitigation measures, and to document other information that could be incorporated into the All Hazards Mitigation Plan Update. Responses were received from 10 of 19 towns. A significant amount of information was gleaned from these questionnaires and incorporated into the planning document.

Some of the primary issues identified in the survey results include the following:

- Presence of extensive woodlands: high wind and wildfire (dead tree removal and brushing)
- Blockage of roads and downed power lines (high wind and winter storm)
- Road washouts: flooding
- Dam Failure
- Presence of extensive recreational facilities: campgrounds, state/county parks, RV parks, resorts and camps
- Culverts (upgrading, enlarging) / ditching / building up roads
- Need for generators, sand bags, shelters and better early warning

All incorporated areas of the County have participated in this plan update or, for those split between Juneau and another county, in the plan of their primary county. The Cities of Mauston, Elroy and New Lisbon; and the Villages of Camp Douglas, Hustler, Lyndon Station, Necedah, Union Center and Wonewoc were extensively involved in the development of this Plan Update through a formal process. City and Village officials were introduced to the update process by NCWRPC staff and walked through an exercise to develop plan elements specific to each City and Village. The City of Wisconsin Dells is included in the plan of their primary county (Sauk).

Dates and participants for each of the local government meetings were as follows:

<i>City of Elroy Special Meeting May 23, 2017</i>	Mark Steward Mark Saemisch Shawn Thompson Tony Green Shawn Kuester Peter Wollschlager Dave Lind Jonathan Brock Raye Walz	City Administrator Wastewater Elroy Police Police Chief Elroy Electric Utility Water / Wastewater Water Elroy Electric Utility Elroy Area Fire-Ambulance
<i>City of Mauston Special Meeting May 31, 2017</i>	Nathan Thiel Michael Zilisch Kim Hale Rob Nelson	City Administrator Police Chief Fire Chief Public Works
<i>Village of Wonewoc Special Meeting May 31, 2017</i>	Randall Field Scott Jennings Julie Ott	Wonewoc Fire Village President Police Chief
<i>Village of Union Center Special Meeting May 31, 2017</i>	Chad Rick Dennis Laubscher Robin Laubscher	Police Chief Public Works Village Clerk
<i>City of New Lisbon Special Meeting June 2, 2017</i>	Lisa Vinz Brent Granger Lynn Willard	City Clerk Police Chief Fire Chief
<i>Village of Hustler Board Meeting June 12, 2017</i>	Dean Duescher Robert Nelson Rick Cook Ross Farbo Margie Lowe JoAnn Cook	Village President Village Treasurer Village Trustee Village Trustee Village Trustee Village Trustee

*Village of Necedah
Board Meeting
June 12, 2017*

Roger Herried
Scott Carter
June Gill
Mary Alice Lasswell
James Seebruck
Maribeth Stivers
Charlie Krupa

Village Administrator-Clerk
Village President
Village Trustee
Village Trustee
Village Trustee
Village Trustee
Village Trustee

*Village of Lyndon Station
Teleconference
August 21, 2017*

Lori Scully

Village Clerk

*Village of Camp Douglas
Teleconference
August 28, 2017*

Tammi Landowski

Village Clerk

A wide variety of issues and concerns were discussed at each individual community meeting, and a significant amount of information was gleaned from these discussions and incorporated into the planning document. One of the most common points of discussion was flooding which may have been a result of the persistent flooding and high groundwater problems plaguing much of the County over the course of the summer of 2017. Topographical features and numerous streams limit the points of entry and exit. Washouts of key roads/bridges can cut off all or parts of communities for emergency access or evacuation. The rail system and, to a lesser degree, the Interstate were identified as real concerns for most communities, particularly with the variety and quantity of hazardous chemicals being transported, and the potential to ignite wildfires. Wildfire is another area of concern for the majority. Sheltering issues were brought up by many, indicating perhaps that the County's new sheltering plan needs outreach and promotion. Shelter related concerns included fairgrounds/mass events, campgrounds, trailer parks, and warming/cooling.

The participants provided information on hazards that have significance to the area, discussed critical facilities and provided mitigation strategy ideas for the Plan Update.

NEIGHBORING COMMUNITY INVOLVEMENT

One of the requirements of the update process was to include neighboring communities. In previous plans, the NCWRPC experienced low attendance in response to invitations to county emergency management staff from surrounding counties. As a result, NCWRPC staff e-conferenced during the update process with staff from Adams, Sauk, Vernon, Monroe, Jackson and Wood counties. Ideas were exchanged about All Hazards Mitigation planning processes and strategies between the various counties.

LOCAL AND REGIONAL AGENCY INVOLVEMENT

Another requirement of the update process was to involve local and regional agencies that have a role in hazard mitigation activities, and agencies that have the authority to regulate development, as well as businesses, academia, and other private and non-profit interests. Although many of these categories are satisfied by the Plan Taskforce (see above), to further meet this objective and provide an opportunity for greater participation in the planning process, the NCWRPC invited a diverse group of stakeholders to discuss potential hazard mitigation strategies.

The meeting was held on May 31, 2017 at the Mauston Public Works Facility in Mauston. Agencies and organizations represented include the following:

- Alyson Horkan, Juneau County Health Department
- Mark Schoen, Alliant Energy
- Mary Crowley, Mile Bluff Medical Center
- Larry Dudzinski, Juneau ARES/RACES
- Matt Stanek, Heritage Manor
- Doug Bellile, Sand Ridge Secure Treatment Center
- Mark Donnelly, Juneau County Zoning
- Matt Davies, Volk Field
- Gervase Thompson, Juneau County Emergency Management
- Darryl Landeau, North Central WI Regional Planning Commission

A number of other agencies were invited but chose not to attend.

During the meeting, the Plan Update and its components were introduced to the attendees. Mitigation strategy ideas were solicited and a number of ideas were discussed at length with the group. Part IV of the Plan was revised based on the meeting.

The meeting resulted in good discussion on a diverse range of topics spanning all four phases of emergency management. The agencies were most concerned about the impact of long term power outage and maintaining critical utility services such as water, sewer and power. Significant discussion revolved around occurrence of a major event which would require activation of the Emergency Operations Center or EOC and involve most if not all of the agencies and departments to some degree. A high level of interagency coordination is needed as local resources are limited and a number of major facilities are located within the County. Volk Field is a national training center, so in addition to the significant number of base personnel, there could be nearly 1,000 additional people on site. Sand Ridge has an average inmate population of about 350. Volk Field is a regional staging area for statewide emergency response, so significant resources are based there; however, a major disaster would likely

encompass an area larger than Juneau County needing to draw on those resources as well. Such an event would likely involve a need for emergency shelter. The County has a new sheltering plan that again revolves around extensive interagency coordination. The Health Department is working on public education to help residents be better prepared in a disaster as far as where to go and what to do, including information on food and water safety. The area amateur / HAM radio operators are ready to provide assistance when normal channels of communication are down.

PUBLIC REVIEW PROCESS AND PLAN ADOPTION

Opportunities for public comment were provided to review the Plan Update during the drafting stage and prior to Plan Update approval. See APPENDIX A for copies of public meeting notices. A copy of draft Plan Update elements were made available on the Internet during the planning process. Links that open an email submission form to the County Emergency Management Director or NCWRPC Staff were provided for questions or comments. The final Plan Update document will remain on the Internet until the next draft update is posted for review. The public can continue to submit questions or comments at any time via the email link. (See Contact Information, below, for web addresses.)

County Emergency Management Committee meetings are always open to the public (unless entering into legal closed session), and the public can bring questions or comments regarding this Plan Update to any regular meeting. Meeting schedules can be obtained by checking the County website, contacting the County Clerk's Office or the Emergency Management Director (see Contact Information, below).

A public informational meeting on the draft update was held at the Juneau County Service Center Building on May 31, 2017. Notices were distributed to each local unit of government and posted in the local newspapers. No written comments were submitted, but several individuals attended the meeting as follows:

- Carin Leach, Lemonweir
- Susan Kosinski, Necedah
- Ellen Carter, Finley
- Terry Taft, Necedah

The meeting resulted in good discussion on a range of topics. Some of the key comments from those in attendance revolved around structures in floodplain, training for new local officials, and update of local resident information. Many structures located within mapped floodplain areas are actually built up above the flood elevation, and the maps may not accurately reflect this. There is a need for regular training and exercises on emergency preparation and response in Juneau County for new town officers. The need for more regular update of

information on special needs of residents associated with each fire number was discussed.

A public meeting was held by the County Emergency Management Committee, see APPENDIX A for meeting details. No one from the public attended and thus no public comments were received. In addition, no written comments were submitted. Following Committee approval, the County Board adopted the plan update at a subsequent meeting, see the resolution in APPENDIX B for details on this meeting. A brief overview of the update process and resulting updated plan was provided by Staff, and there was some general discussion by the Board.

The Cities of Elroy, Mauston and New Lisbon, and the Villages of Camp Douglas, Hustler, Lyndon Station, Necedah, Union Center and Wonewoc were asked to adopt the Plan Update for their jurisdictions at their own properly posted and open public meeting, see APPENDIX B for the County and other local units resolutions of adoption.

INCORPORATED PLANS, STUDIES, REPORTS AND TECHNICAL DATA

Many plans, reports, and technical data sources were referenced and incorporated into the Juneau County All Hazards Mitigation Plan Update. These sources include but are not necessarily limited to the following:

Wisconsin Department of Natural Resources, North Central Wisconsin Regional Planning Commission and Juneau County geographic information system databases provided much of the base data for the mapping and analysis within the Update. Statistical reports and data from the US Census and Wisconsin Departments of Administration, Revenue and Workforce Development were used for the demographic background in Part 2 of this Update. Land use data in Part 2 was obtained from the Juneau County Comprehensive Plan.

Wisconsin Department of Natural Resources Wetlands Inventory and Dams Database were used to identify and map wetlands and dams within the County for Maps and Tables in Parts 2 and 3 of this Plan. NFIP DFIRM flood zone maps for Juneau County provided the mapping of 100-year floodplain areas in Part 2 and for the flooding risk assessment in Part 3.

NOAA National Climatic Data Center severe weather event data was used extensively for the risk assessment in Part 3, as well as the 2013 Natural Hazard Assessment for Juneau County by the National Weather Service. The wildfire section of the risk assessment was based on the Wisconsin Department of Natural Resources' fire occurrence database and statewide Communities At Risk (CAR) assessment.

Other plans, reports, and documents were reviewed by staff during the update process including but not limited to the State of Wisconsin Hazard Mitigation Plan; the Hazard Analysis for the State of Wisconsin, the Wisconsin Repetitive Loss Report, the Juneau County Zoning Ordinance, the Juneau County Land and Water Resource Management Plan, the 2010 LTPO Preparedness in Wisconsin report, the 2013 Commodity Flow Study for Juneau County, and the 2016 Juneau County Mass Care Sheltering Plan. Although some of these may not have been directly incorporated, the review provided valuable insight and direction to the update process.

CONTACT INFORMATION

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Juneau County Emergency Management
Juneau County Justice Center, Rm 1130
200 Oak Street
Mauston, WI 53948



River Rescue

Go to:

www.co.juneau.wi.gov/emergency-managment.html

www.ncwrpc.org/juneau/hazard/index.html

www.emergencymanagement.wi.gov/mitigation/default.asp

www.readywisconsin.wi.gov/

www.fema.gov/hazard-mitigation-planning

INTRODUCTION

Part 2 of the Juneau County All-Hazard Mitigation Plan Update provides general geographical information on Juneau County including demographic and economic characteristics. The general development patterns of the County are described in terms of current land use and future development trends.

In addition to developing an understanding of the planning area, this chapter represents the beginning stages of assessing vulnerability by inventorying the numbers, types and values of existing buildings, infrastructure and critical facilities within each participating jurisdiction in the planning area. This overall summary of each jurisdiction's vulnerability to hazards describes the potential impact on the community.

Land use and development trends are analyzed to project the number and type of potential future buildings, infrastructure and critical facilities within each jurisdiction so that mitigation options can be considered in future land use decisions.

The resulting information is an important element of the update process, since sound alternative mitigation strategies cannot be formulated and evaluated without an in-depth knowledge of the relevant conditions in the study area.

GENERAL GEOGRAPHY**LOCATION**

Juneau County is located in central Wisconsin (See Map 1). The largest urban area is the City of Mauston which is located in the south-central area of the County within the I-90/94 corridor. This corridor has cultivated several other incorporated areas including the Village of Camp Douglas, the City of New Lisbon and the Village of Lyndon Station. The City of Wisconsin Dells is encroaching into the southeast corner of the County, along the corridor as well, but is covered under Columbia County's mitigation plan. Other incorporated areas in Juneau County include the Village of Necedah in the northern half of the County and the Village of Hustler, the City of Elroy, the Village of Union Center and the Village of Wonewoc which are situated in the southwestern corner of the County. The County is bounded on the north by Wood County, on the east by Adams, on the south by Columbia and Sauk, and on the west by Vernon, Monroe and Jackson.

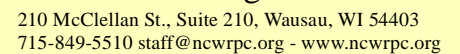
Juneau County lies 146 miles northwest of Milwaukee; 142 miles southwest of Green Bay; 69 miles east of La Crosse and 78 miles north of Madison. Major metropolitan areas outside of Wisconsin with transportation linkages to Juneau County are Chicago, 218 miles southeast; Minneapolis-St. Paul, 195 miles northwest; and Duluth, 254 miles north.

CIVIL DIVISIONS

There are 29 municipalities (19 towns, 6 villages, and 4 cities) in the Juneau County planning area. The City of Mauston is the county seat. These units of government provide the basic structure of the decision-making framework. The County has a total surface area of about 804 square miles, of which 4.8 % is water. The area and proportion of the County within each civil division is presented in Table 1. The County recently rectified some ambiguity in its boundaries with Adams County due to the river and flowages between them which may explain some variation in comparing data sets on land area.

Table 1: Geographical Size by Civil Division				
Minor Civil Division	Area in square miles			Area as % of County
	Total area	Water area	Land area	
Armenia town	77.72	11.69	66.02	9.67%
Camp Douglas village	1.01	0	1.01	0.13%
Clearfield town	35.76	0	35.76	4.45%
Cutler town	54.07	2.05	52.02	6.72%
Elroy city	1.98	0	1.98	0.25%
Finley town	38.58	0.3	38.28	4.80%
Fountain town	30.76	0	30.76	3.83%
Germantown town	45.01	11.81	33.2	5.60%
Hustler village	0.69	0	0.69	0.09%
Kildare town	28.17	0.5	27.67	3.50%
Kingston town	56.96	2.62	54.35	7.08%
Lemonweir town	42.22	0.05	42.17	5.25%
Lindina town	32.9	0.03	32.86	4.09%
Lisbon town	28.22	0.05	28.17	3.51%
Lyndon town	29.21	1.5	27.71	3.63%
Lyndon Station village	1.99	0	1.99	0.25%
Marion town	24.41	0.95	23.46	3.04%
Mauston city	4.8	0.4	4.4	0.60%
Necedah village	3.1	0.31	2.79	0.39%
Necedah town	82.82	4.56	78.26	10.30%
New Lisbon city	2.9	0.19	2.72	0.36%
Orange town	35.08	0.01	35.06	4.36%
Plymouth town	34.53	0.02	34.5	4.29%
Seven Mile Creek town	36.42	0	36.41	4.53%
Summit town	36.93	0.01	36.91	4.59%
Union Center village	0.75	0	0.75	0.09%
Wisconsin Dells (part)	0.44	0	0.44	0.05%
Wonewoc village	1.11	0	1.11	0.14%
Wonewoc town	35.47	0.02	35.46	4.41%
Juneau County	804.03	37.1	766.93	100.00%

Source: U.S. Census, 2010 and & NCWRPC, 2016



TOPOGRAPHY

Juneau County is split between the Wisconsin Central Plain and the Western Upland. The northeastern three-quarters of the County is part of the Central Plain. This area was part of a glacial lake basin and is characterized by flat or gently undulating topography, except for an occasional sandstone butte. The buttes typically rise above the surrounding plain between 100 to 300 feet, with a maximum elevation of 1,262 feet at Sheep Pasture Bluff.

The basin slopes gradually to the southeast. Elevations range from about 980 feet in the northwest corner to about 840 feet in the southeast at the Wisconsin River. The basin has extensive areas of wetlands resulting from flat topography, slowly permeable layers of silt or clay and a high water table.

The southwestern quarter of the County is part of the Western Uplands. This is an unglaciated, hilly area which is mostly well drained. Steep sandstone escarpments mark the northern and eastern boundaries of this area. The hill valleys are typically 200 to 350 feet below the ridgetops and are long and V-shaped with relatively narrow bottoms. In this area, the highest elevation is 1,380 feet at Johnson Hill.

Surface drainage is toward the Wisconsin River. The Lemonweir, Little Yellow and Yellow rivers drain most of the plain area. The Baraboo River is the main tributary in the upland area.

CLIMATE

Juneau County has a continental climate that is characterized by long, cold, snowy winters; warm summers; and springs and falls that are often short. From late fall through spring, the weather changes every few days because of air masses that are part of pressure systems moving eastward and northeastward over the northern states.

In winter, the average temperature is about 20 degrees F., and the normal minimum temperature is about 10 degrees. The lowest temperature on record is -43 degrees, which occurred in 1951. The greatest number of days at or below 0 degrees was 57 in 1978. In summer, the average temperature is about 69 degrees and the normal maximum temperature is about 80 degrees. The highest recorded temperature is 107 degrees, which occurred in 1948. The greatest number of days at or above 90 degrees was 37 in 1955.

Average total annual precipitation is 33.46 inches. Of this, about 70% usually falls in April through September. The heaviest 1-day rainfall on record was 5.22 inches on July 15, 2010. Thunderstorms occur on about 39 days each year. Hail falls on an average of two days a year. Average seasonal snowfall is 47.5 inches, with 89.5 inches (2007-8) being the greatest total on record.

Prevailing winds are southerly in the summer and westerly in the winter. Average wind speed is highest in the spring at about 10 miles per hour

DEMOGRAPHIC AND ECONOMIC PROFILE

POPULATION AND HOUSEHOLDS

The official state 2015 population estimate for Juneau County shows a population of 26,987 people for the County. This represents a 1.21 percent increase from the 2010 Census reported population of 26,664 people, which matches the State of Wisconsin. Since 2000, the population of Juneau County has increased by 10.98 percent or by 2,671 people. If the growth rate continues at the current level, there will be approximately 27,644 people in Juneau County in 2025 and 28,317 people in 2035.

Table 2: Population of Adjacent Counties				
County	2010	2015	# Change	%Change
Adams	20,875	20,857	- 18	- 0.1%
Columbia	56,833	57,028	195	0.3%
Jackson	20,449	20,735	286	1.4%
Juneau	26,664	26,987	323	1.2%
Monroe	44,673	45,494	821	1.8%
Sauk	61,976	62,207	231	0.4%
Vernon	29,773	30,049	276	0.9%
Wood	74,749	74,965	216	0.3%
Wisconsin	5,686,986	5,753,324	66,338	1.2%

Source: U.S. Census, 2010, WisDOA, 2015 and NCWRPC, 2016

Population concentrations and trends are important when prioritizing hazard mitigation strategies. Mauston City is one of the most densely populated and developed areas in the County. The other cities and villages in the County are also notable areas of population concentration. However, the towns of Germantown, Lemonweir, Lyndon, and Necedah also have significant population numbers. Map 2 (below) shows areas of residential population concentrations in the County. Overall population density of the County is 34.8 persons-per-square-mile and ranges from a high of 1,006 in the City of Mauston to a low of 1.7 in the Town of Kingston.

Between 2010 and 2015, most communities within Juneau County have experienced an increase in their population base (refer to Table 3). The greatest amount of growth occurred in Germantown with an 8.91 percent increase between 2010 and 2015. The towns of Armenia, Fountain, Kildare and Necedah also had significant growth. Some communities have experienced minor declines in growth. The City of Wisconsin Dells figures are skewed due to the relatively small numbers involved.

Table 3: Population and Households of Minor Civil Divisions						
Minor Civil Division	2010	2015	2010	2015	'10-'15 % Population	'10-'15 % Households
	Population	Population	Households	Households		
Armenia town	699	733	302	327	4.86%	8.28%
Clearfield town	728	735	304	316	0.96%	3.95%
Cutler town	326	331	142	151	1.53%	6.34%
Finley town	97	97	40	43	0.00%	7.50%
Fountain town	555	568	231	241	2.34%	4.33%
Germantown town	1,471	1,602	678	766	8.91%	12.98%
Kildare town	681	700	262	287	2.79%	9.54%
Kingston town	91	89	43	44	-2.20%	2.33%
Lemonweir town	1,743	1,759	714	751	0.92%	5.18%
Lindina town	718	714	286	295	-0.56%	3.15%
Lisbon town	912	916	375	392	0.44%	4.53%
Lyndon town	1,384	1,398	541	581	1.01%	7.39%
Marion town	426	426	200	207	0.00%	3.50%
Necedah town	2,327	2,377	887	956	2.15%	7.78%
Orange town	570	575	223	233	0.88%	4.48%
Plymouth town	597	598	245	253	0.17%	3.27%
Seven Mile Creek town	358	355	155	157	-0.84%	1.29%
Summit town	646	654	250	263	1.24%	5.20%
Wonewoc town	687	690	270	279	0.44%	3.33%
Camp Douglas village	601	607	244	261	1.00%	6.97%
Hustler village	194	195	84	90	0.52%	7.14%
Lyndon Station village	500	491	220	230	-1.80%	4.55%
Necedah village	916	919	376	400	0.33%	6.38%
Union Center village	200	198	95	96	-1.00%	1.05%
Wonewoc village	816	809	359	371	-0.86%	3.34%
Elroy city	1,442	1,399	590	596	-2.98%	1.02%
Mauston city	4,423	4,499	1,779	1,925	1.72%	8.21%
New Lisbon city	2,554	2,553	631	677	-0.04%	7.29%
Wisconsin Dells city (part)	2	0	1	0	-100.00%	-100.00%
Juneau County	26,664	26,987	10,527	11,188	1.21%	6.28%

Source: U.S. Census, 2010 and NCWRPC, 2016

The median age in Juneau County is 44.1, and characterizes it as relatively old in comparison to the State's median age of 38.8. The County has been identified as a retirement area resulting from being a vacation spot for many seasonal homeowners. Location of seasonal housing is a strong indicator in terms of retirement location. In Juneau County, about 21.6 percent of all housing units

have been identified as seasonal/recreational, compared to 7 percent for the State of Wisconsin.

SEASONAL POPULATION

The impact of this seasonal population cannot be overlooked when planning for hazards. Table 4 shows potential seasonal residents by municipality estimated based on seasonal housing data presented in the 2014 American Community Survey. Determining when and for how long these seasonal residents will be in the County is problematic, but the numbers give some indication of what weekend or other peak period population levels might be.

Table 4: Estimated Seasonal Resident Population		
Minor Civil Division	Seasonal Housing Units	Estimated Seasonal Population
Armenia town	242	542
Clearfield town	154	376
Cutler town	141	338
Finley town	72	156
Fountain town	38	95
Germantown town	827	1,877
Kildare town	172	447
Kingston town	21	52
Lemonweir town	65	170
Lindina town	23	56
Lisbon town	26	64
Lyndon town	142	389
Marion town	112	245
Necedah town	643	1,665
Orange town	82	231
Plymouth town	70	168
Seven Mile Creek town	75	172
Summit town	32	72
Wonewoc town	29	78
Camp Douglas village	12	27
Hustler village	0	0
Lyndon Station village	65	188
Necedah village	29	83
Union Center village	6	16
Wonewoc village	4	10
Elroy city	8	20
Mauston city	78	193
New Lisbon city	19	45
Wisconsin Dells (part)	0	0
Juneau County Total	3,187	7,968

Source: U.S. Census, 2014 and NCWRPC, 2016

Another component of the seasonal population includes short-term accommodations such as campgrounds or hotel-style lodging. The scope of this

plan did not provide for a detailed inventory of accommodations, however the Juneau County Outdoor Recreation Plan identifies about 3,049 campsites including 13 at Allen Thompson Memorial Park in the City of Elroy, 300 at Castle Rock County Park near Mauston, 150 at Wilderness County Park in the Town of Armenia, 30 at Kennedy County Park near the City of New Lisbon and 673 private sites in various campgrounds across the County. In addition, there are hundreds of resort / motel type rooms within the County in various inns, motels, cabin resorts and bed & breakfasts.

EMPLOYMENT

The County's employment is more seasonal than the state as a whole, being significantly influenced by hospitality, tourism, agriculture, and seasonally based manufacturing. However, the Manufacturing Sector is still a major part of the County's economy. About one-fourth of the County's workers are employed in manufacturing industries and account for 31 percent of the total payroll. Only the Education and Health Services Sector accounts for more employment, comprising 29 percent of jobs in Juneau County. The leisure and hospitality sector represent 8.6 percent of the County's employment.

Table 5: Prominent Employers in Juneau County		
Employer Name	Location	Industry
Brunner Mfg Inc.	Mauston	Bolt Nut Screw Rivet & Washer Mfg
Festival Foods	Mauston	Supermarkets & Grocery Stores
Freudenberg-Nok	Necedah	Gasket Packing/Sealing Device Mfg
Juneau County	Mauston	General Government Support
Kwik Trip Inc.	Various	Gas Station / Convenience Stores
Leer Inc	New Lisbon	Electric Appliance Wholesalers
Legacy Power Conversion Sales	Necedah	Misc. Electric Equipment Mfg
MVP	Necedah	Real Estate Agents / Brokers
Mastermold	Mauston	Plastics Material & Resin Mfg
Mauston School District	Mauston	Elementary & Secondary Schools
Mile Bluff Medical Center	Mauston	General Medical & Surgical Hospitals
Necedah School District	Necedah	Elementary & Secondary Schools
New Lisbon Correctional Institution - DOC	New Lisbon	Correctional Facility
New Lisbon School District	New Lisbon	Elementary & Secondary Schools
Parker-Hannifin Refrigeration Specialties	Mauston	AC Refrigeration & Forced Air Heating
Sand Ridge Treatment Center - DHS	Mauston	Psychiatric & Substance Abuse Hospitals
Shopko	Mauston	Discount Dept. Stores
Volk Field - Dept. of Defense	Camp Douglas	National Security
Walker Stainless Equipment Co	New Lisbon	Plate Work Mfg
<i>Source: WisDWD 2013, WI Worknet 2013, NCWRPC 2016.</i>		

The manufacturing, education and health services are well represented on the list of top employers in the County, refer to Table 5. There are a number of notable manufacturers, with 100 or more employees located in Mauston and other areas of the County. Mauston is also home to two major facilities in the Mile Bluff Medical Center and the Sand Ridge Treatment Center, while several of the school districts serving the County have significant staff levels.

Identifying locations of large employment is important when prioritizing hazard mitigation strategies. Analyzing employment within the County confirms that Mauston is the primary employment and service hub in Juneau County, however, other places like Necedah, New Lisbon and Camp Douglas are also significant employment centers.

In addition to the seasonal swells in employment, the number of people working in a given locality fluctuates on a daily basis. Workers travel jobs within Juneau from surrounding counties and residents flow out of the County for employment. Overall about twice as many residents flow out of the County for work than workers flowing in from surrounding areas. The most significant connection is with Sauk County to the south with 1,800 Juneau residents traveling into Sauk for work while 421 Sauk County residents come into Juneau. Monroe County is also a notable link with 880 to 1,200 workers traveling between each county.

Economic Impact of Job Loss in Juneau County

To help determine the potential impact of a hazard occurrence on the economy of the County, EMSI economic modeling software was used to estimate the cumulative effects of job losses in the some of the top industry sectors of the County. A catastrophic, worst case, scenario is examined. Actual impacts would vary by degree of severity of the event. Table 6 shows a summary of the outcome of the analysis.

Table 6 Economic Impact of Catastrophic Event on Select Industry Sectors in Juneau Co.			
Sector	Multiplier	Potential Jobs Impacted	Earnings Lost
Metal Tank Manufacturing	1.24	468	\$ 31,517,522
All Other Metal Product Fabrication	1.09	255	\$ 11,075,626
Gasoline Stations w/ Convenience Stores	1.06	303	\$ 6,112,550
General Medical and Surgical Hospitals	1.14	478	\$ 28,373,585

Source: EMSI Economic Modeling Specialists and NCWRPC, 2016.

LAND USE/LAND COVER AND DEVELOPMENT PATTERNS

Land use is an important determinant in the potential impact a particular hazard may have, and in action which may be taken to mitigate the hazard impacts. An understanding of the amount, type, and spatial distribution of urban and rural land uses within the County is an important consideration in the development of a sound hazard mitigation plan.

Aerial photos were used by the NCWRPC to digitize a land use Geographic Information System (GIS) coverage of Juneau County. Map 2 shows the land use and development concentrations within the County. Table 7 shows the acreage and percent of each classification.

Table 7: Generalized Land Use In Juneau County		
Use	Acres	% of County
Agriculture	106,679	20.74%
Commercial	1,722	0.33%
Cranberry Bog	2,857	0.56%
Governmental/Institutional	3,949	0.77%
Industrial	785	0.15%
Open Lands	56,666	11.02%
Outdoor Recreation	6,106	1.19%
Residential	10,695	2.08%
Transportation	14,380	2.80%
Water	27,522	5.35%
Woodlands	282,918	55.01%
Total	514,280	100.00%

Source: NCWRPC, 2015

FORESTRY AND AGRICULTURE

The dominant land uses in Juneau County are forestry and agriculture. Land area in the County is approximately 55 percent forested, comprised of 282,918 acres of woodland. Agricultural land covers another 21 percent of the County's land area. According to UW-Extension, the main agricultural practices in the County are dairy farming but is very diversified with beef, sheep, bison, goat, and emu farms, complement forage and grain production. Specialty crops include cranberries, potatoes, grapes, blueberries, apples and Christmas trees. According to the U.S. Census of Agriculture, Juneau County has only lost five percent of its farmland since 1978.

The County is extensively forested throughout. Although ag-land is scattered across much of the County except the northwest corner, it is more heavily concentrated along and south of the I-90/94 corridor, as well as the Town of Armenia in the northeast corner.

RESIDENTIAL DEVELOPMENT

Land in residential development makes up about 2 percent of the total county area. Residential concentrations are scattered throughout the County (see "Population and Households" above). Much of the scattered rural development is related to direct recreational demand as various types of housing have clustered along streams and lakes.

There are a number of mobile home parks in the county. According to the U.S. Census, there were 3,114 mobile homes in 2015. This is about 21 percent of

housing units for the County compared to about 4 percent for the entire state. This is significant due to their vulnerability in natural hazards especially tornados. Map 8 displays the mobile home concentrations within the County.

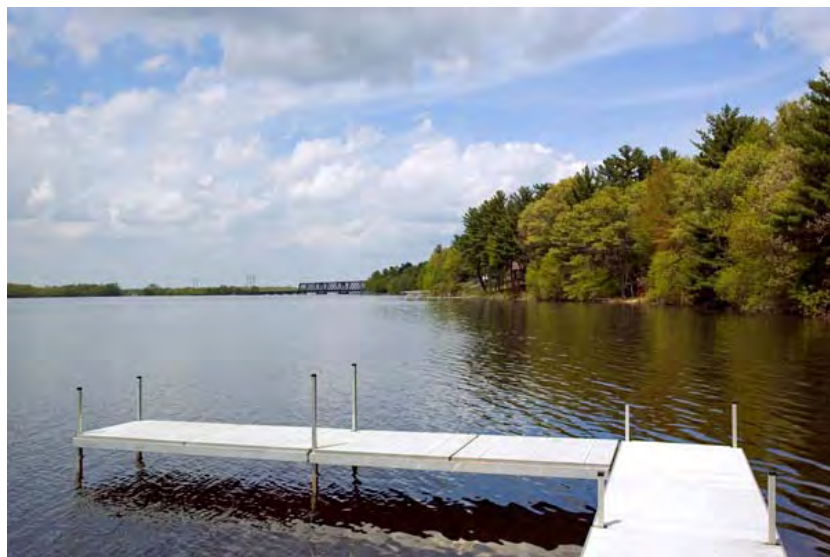
COMMERCIAL AND INDUSTRIAL DEVELOPMENT

Commercial and industrial development makes up only about 0.48 percent of the total area of the County. Land use for commercial and industrial development is also scattered throughout the County (see "Employment" above). There are six industrial parks located around the County. There are also designated business parks in Mauston and New Lisbon. Commercial activity is concentrated in these cities as well as the other cities and villages around the County.

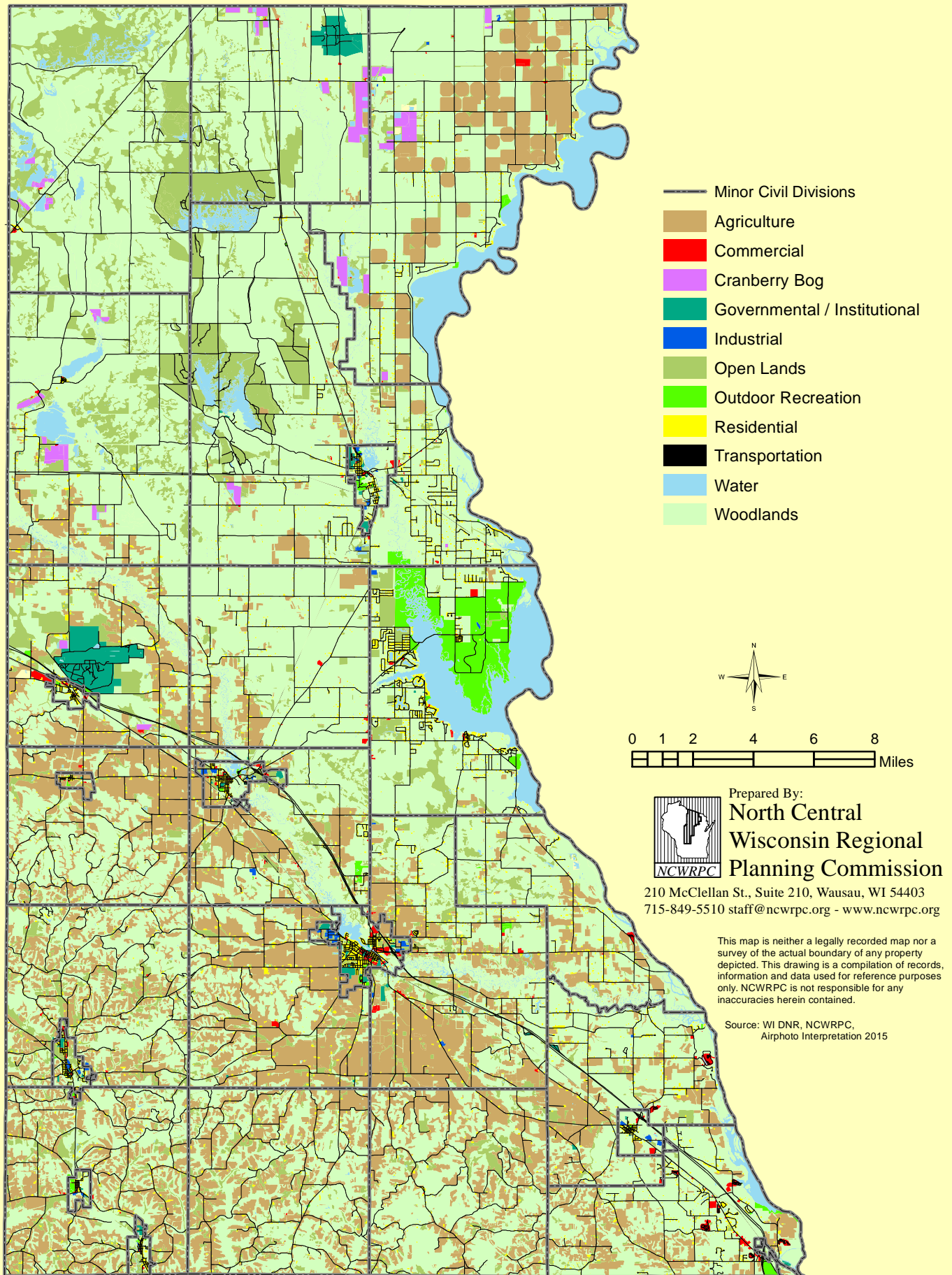
SURFACE WATER

Juneau County is within the Central and Lower Wisconsin River Basins. The basins are divided between ten main watersheds, refer to Map 3. In the Central Wisconsin River Basin, watersheds include Cranberry Creek, Lower Yellow River, and Wisconsin Rapids. In the Lower Wisconsin River Basin, watersheds include Beaver Creek, Crossman Creek/Little Baraboo River, Dell Creek, Little Lemonweir River, Lower Lemonweir River, and Seymour Creek/Upper Baraboo River.

The total surface water area of lakes and streams in Juneau County exceeds 27,000 acres. The many streams, rivers, and flowages in Juneau County furnish an abundant supply of surface water for power generation, irrigation, recreation, and fish & wildlife habitats. Juneau County has a total of about 57 lakes and 73 streams. Many lakes are impoundments to generate power, used for waterfowl, or as cranberry flowages. Nearly all of the lakes are used for recreation. The two largest lakes are Petenwell and Castle Rock; both are flowages on the Wisconsin River. Juneau County has about 378 linear miles of streams; all of which drain to the Wisconsin River.



Castle Rock Lake



Floodplains and wetlands are important subsidiary components to the surface water system as described below.

Floodplain

The primary value of floodplains is their role in natural flood control. Flood plains represent areas where excess water can be accommodated whether through drainage by streams or through storage by wetlands and other natural detention/retention areas. Specific areas that will be inundated will depend upon the amount of water, the distance and speed that water travels, and the topography of the area. If uninterrupted by development, the areas shown on a map as floodplains should be able to handle the severest (regional) flood, i.e. those that have a probability of occurring once every one hundred years.

There is a value in preserving and protecting these natural flood control areas from encroachment. First, by preventing development in the floodplain, the cost of building dikes, levies, or other man-made flood control devices will be saved. Second, for each structure that is constructed in a flood-prone area, that flood-prone area expands, potentially subjecting other structures originally built outside the delineated flood hazard area to the risk of flooding. Each new structure (or modification to existing) placed in the flood plain puts more life and property in danger.

Counties, cities, and villages are required to adopt reasonable and effective floodplain zoning ordinances. The requirement is found in section 87.30 of the Wisconsin Statutes and Chapter NR 116 of the Wisconsin Administrative Code. Floodplain zoning is designed to protect individuals, private property, and public investments from flood damage.

Floodplain zoning maps identify areas where major floods occur. Regulations prohibit development in the floodway, the most dangerous flood area. In other flood areas, the flood fringe, development that is built above flood levels and otherwise flood-protected is allowed if it is in accordance with local ordinances. For regulatory purposes, a floodplain is generally defined as land where there is a 1% chance of flooding in any year (also known as the 100-year floodplain).

In order to participate in the Federal Emergency Management Agency's (FEMA) National Flood Insurance Program (NFIP), Juneau County and its incorporated cities and villages have a completed Flood Insurance Study and a Flood Insurance Rate Map (FIRM) that encompasses the County, see Table 8 for summary of NFIP status. This FIRM delineates the "A" Zones including the floodway and flood fringe which are those areas inundated by the 100-year flood within the County. FEMA has updated Juneau County's FIRM to digital standards. The digital FIRMs are referred to as DFIRM. The NCWRPC downloaded the DFIRM from FEMA's website for use in this plan. Although unofficial, the digital files indicate there are 58,889.4 acres of floodplain in

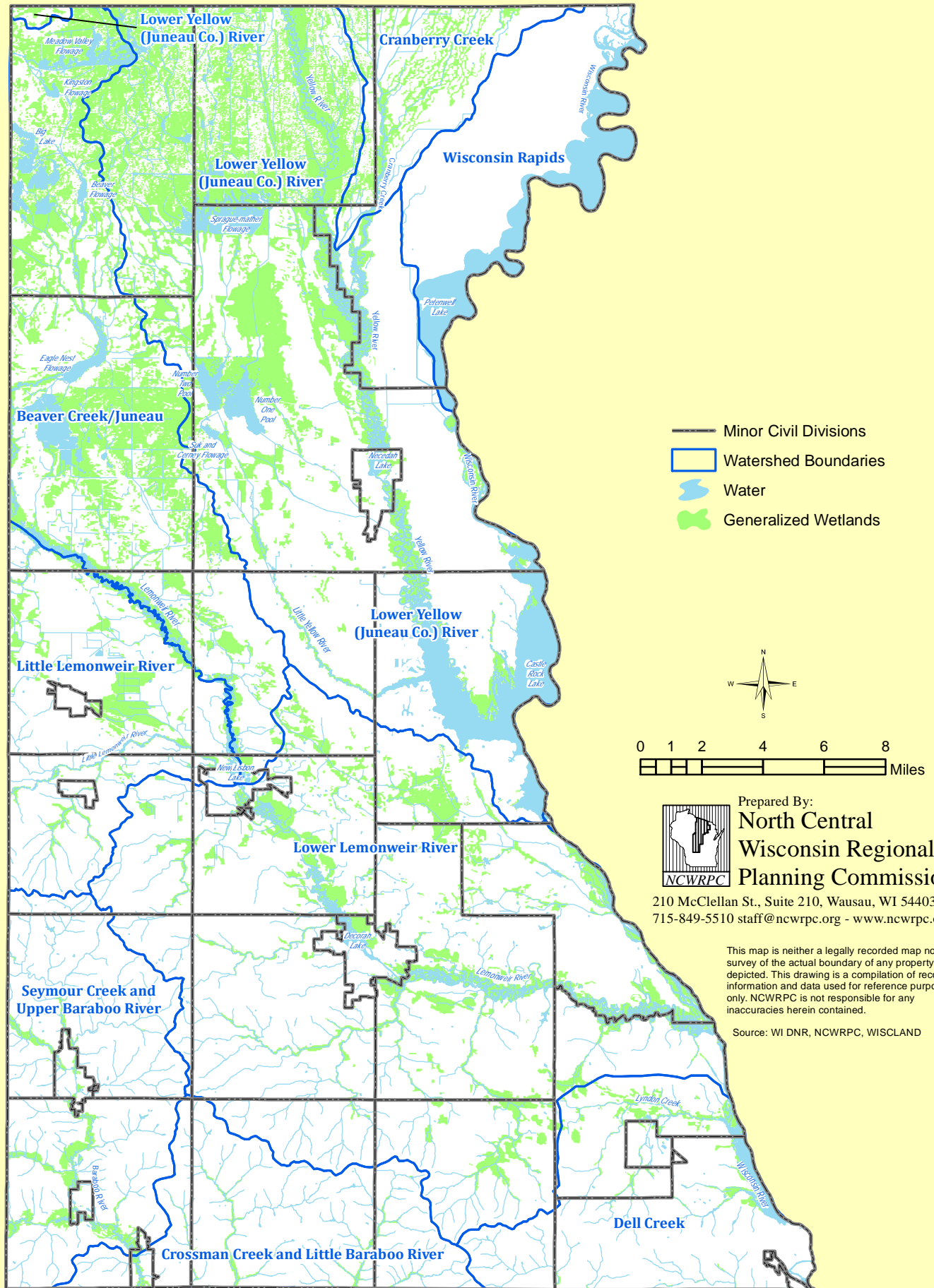
Juneau County, or 11.5 percent of the land area. Map 4 shows the approximate floodplains in Juneau County. Floodplains in Juneau are extensive in some areas, and flooding is a recurring problem. Currently, there are two repetitive loss structures, those with multiple flood insurance claims, in Juneau County.

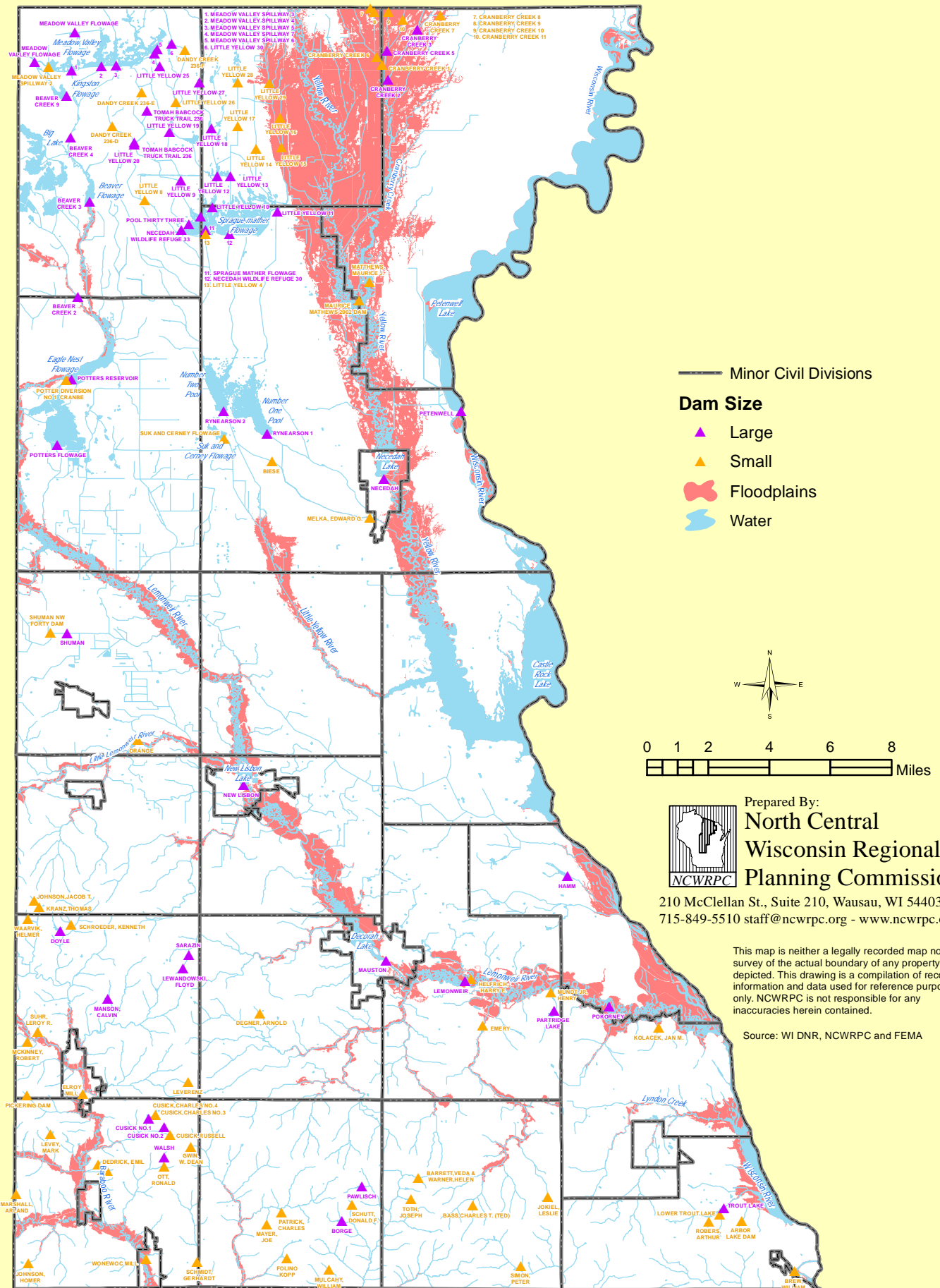
Table 8: FEMA Community Status Book Report Communities Participating in National Flood Insurance Program Wisconsin - Juneau County				
Community	Initial FHBM	Initial FIRM	Current Map	Program Entry
Juneau County	09/18/1981	9/18/1991	10/16/2012	9/18/1991
V. of Hustler	08/23/1974	9/18/1991	10/16/2012	8/24/2012
V. Lyndon Station*	05/24/1974	09/01/1986	10/16/2012	12/17/1986
V. of Necedah	01/09/1974	9/18/1991	10/16/2012	1/27/1992
V. of Union Center	11/15/1974	9/18/1991	10/16/2012	3/13/2013
V. of Wonewoc	12/07/1973	9/30/1988	10/16/2012	9/30/1988
C. of Elroy	06/07/1974	9/18/1991	10/16/2012	9/18/1991
C. of Mauston	12/17/1973	9/18/1991	10/16/2012	9/18/1991
C. of New Lisbon	12/17/1973	9/18/1991	10/16/2012	9/18/1991

Source: FEMA, 2016 *Withdrawn from participation.

The Biggert-Waters Flood Insurance Reform Act was signed into law in July, 2012. This act implemented significant reforms to the structure of flood insurance under the National Flood Insurance Program (NFIP). Then, on March 21, 2014, President Obama signed the Homeowner Flood Insurance Affordability Act of 2014 (HFIAA) into law amending the NFIP further. These new laws impact the various elements of the NFIP, including Insurance, Flood Mapping, Mitigation, and Floodplain management.

HFIAA repeals and modifies certain provisions of the Biggert-Waters Flood Insurance Reform Act, and makes additional program changes to other aspects of the program not covered by that Act. Many provisions of the Biggert-Waters Flood Insurance Reform Act remain and are still being implemented. The new law lowers the recent rate increases on some policies, prevents some future rate increases, and implements a surcharge on all policyholders. The Act also repeals certain rate increases that have already gone into effect and provides for refunds to those policyholders. Both of these laws are important to local floodplain managers and planners because rate structure increases may increase interest of policy holders that own floodprone properties in alternatives to mitigate both flood risk and flood insurance costs for those properties.





Wetlands

Wetlands perform many indispensable roles in the function of the hydrologic cycle and local ecological systems. In terms of hazard mitigation, they act as water storage devices in times of high water. Like sponges, wetlands absorb excess water and release it back into the watershed slowly, preventing flooding and minimizing flood damage. As more impermeable surfaces are developed, this excess capacity for water runoff storage becomes increasingly important.

The DNR has also identified the location of wetlands on their WISCLAND database. According to this, Juneau County has 100,606.22 acres, or 19.6 percent of its total area. Map 3 shows these wetland areas in Juneau County. There are concentrations of wetlands in Juneau County, particularly in the northwest associated with the Necedah National Wildlife Refuge and surrounding natural areas. Additional wetlands are associated with the floodplains discussed above, however, smaller wetlands are scattered throughout the County.

Eradication of wetlands can occur through the use of fill material. This can destroy the hydrological function of the site and open the area to improper development. The Wisconsin Department of Natural Resources (DNR) has promulgated minimum standards for managing wetlands.

OTHER LAND COVER/USES

Recreational lands including parks and outdoor sports facilities total about 6,106 acres or 1.2 percent of the County land area. Other lands may have recreational aspects, particularly woodlands. Governmental, public and institutional lands total about 3,949 acres or about 0.77% of the County land area. The transportation category is primarily the roadway travel corridors for federal, state, county and local highways and roads. Sometimes overlooked, transportation land use can be significant. In Juneau County, surface transportation facilities consume about 14,379 acres of land or about 2.8 percent of total land area. Note that this is almost six times as much land area as is used for commercial and industrial uses in the County.

FUTURE GROWTH AND DEVELOPMENT IN JUNEAU COUNTY

Juneau County's population has increased 1.21 percent over the last five years for a net gain of 323 residents. The County's rate of growth has declined from the very high rates observed during the previous decades. However, with the economy continuing to improve following the downturn, growth is expected to rebound. The County's rate of growth has been similar to the State's overall rate in the past. For example, the County grew about 9 percent during the past decade compared to the state's growth of 10% over this same period. By 2035, Juneau County will have grown to a population of about 28,317 in 2035, a gain of about 1,330 residents if the growth rate continues at its current level. This equates to approximately 536 additional structures (housing units), assuming consistent conversion and vacancy rates.

From a net growth perspective, residential migration into Juneau County has been responsible for most of its population growth because natural growth has been low (births vs. deaths). This growth pattern is reflective of an aging population and booming seasonal-to-permanent housing markets.

A market analysis of land use was conducted by UW-Extension that concluded that one of the largest land use trends was the secondary home market and with the economic recovery, this trend should continue and also influence the construction sector. The Towns of Armenia, Germantown, Kildare, Lyndon, and Necedah on the east side of the County are projected to see strong growth as the primary lakeshore/riverfront development areas. More retired persons are expected to migrate in to the County looking to convert vacation homes into permanent residences.

The urban areas such as the Cities of Mauston and Camp Douglas as well as the Village of Necedah will also likely see continued development due to employment opportunities and other local amenities.

New commercial and industrial development is expected to be gradual over time, paralleling population growth. The most significant concentrations of this development will likely be in the incorporated communities and the industrial and business parks in the area. These parks have significant space available and are mostly ready for development with sewer, water, gas, and electric utilities in place. New private sector construction/expansion projects include expansion of the hospital in Mauston and a number of retail and restaurant chain stores. Industrial expansion projects in Mauston include Mastermold and Brunner Manufacturing. In Wonewoc, a new Gunderson Clinic is being planned and Land o' Lakes is expanding production. In Elroy, a small retail, "box" chain is planning a new store, and Brunner Wire is building an expansion.

New infrastructure or public facilities will be somewhat minimal, excepting limited replacement of existing facilities. Despite a rebounding economy local government budgets are expected to remain constrained well into the future. These budget constraints will curtail local governments' ability to develop new facilities and result in a tendency to make do with existing infrastructure and delay expansion plans. Projects that are currently underway include planning for a rehabilitation of City Hall which includes the City's police department. Plans include adding a community center element as well as emergency shelter accommodations. A new fire department is also on the drawing board. In New Lisbon a new wastewater treatment plant and a new well are being constructed. In Elroy, they are planning an expansion of the City campground, and the electric utility is planning system upgrades including a solar array. Juneau County is constructing a new, 2-story office building in Mauston which will house human services, health department and the ADRC (aging and disability resource center).

As identified in the 2009 Juneau County Comprehensive Plan, there are a number of impediments to development in the County. The Necedah National Wildlife Refuge covers 73,928 acres, or 14 percent of the County. Camp Williams/Volk Field and the Hardwood Range are federally owned military lands and comprise 1.9 percent of the County. About a quarter of all lands in the County are publically owned, including right-of-ways. The Comp Plan also identified large amounts of wetlands and floodplains, as well as steep slopes and prime farmland as obstructions to development.

Any new buildings and facilities, including new housing units, will be subject to each hazard addressed in this Plan. Even best efforts to keep new building out of flood plain and dam shadow areas cannot guarantee new construction will be exempt from flooding due to the nature of flooding within the County.

The County's population is generally older, with a median age of 44 years, versus statewide median age of 39 years. Over the next few decades, the residential base will become even older, aging more quickly than the state as a whole. In fact, the number of persons 60 and older will likely exceed the population 19 and under by 2040. This will have implications affecting the demand for emergency services.

PUBLIC FACILITIES AND SERVICES

TRANSPORTATION

The transportation system of Juneau County provides the basis for movement of goods and people into, out of, through, and within the County. An efficient transportation system is essential to the sound social and economic development of the County and the Region. The analysis of transportation routes should be considered in the possible event of a disaster (See Map 5).

The principal highways serving the County are Interstate 90/94 and U.S. Highway 12. The Interstate connects Wisconsin Dells, Lyndon Station, Mauston, New Lisbon, and Camp Douglas, while U.S. Highway 12 serves as an alternative route. STHs 21 and 82 provide the main east-west routes, and state highways 80, 16, and 173 also serve the County. These highways link the County with neighboring communities and are vital to the manufacturing and tourism sectors of the County's economy.

Networks of county trunk highways collect traffic from rural land uses. These county highways serve an important role in linking the area's agricultural and timber resources to the County's major highways and population centers. Local roads provide access to local development, farming and forest areas, as well as to the County's recreation areas.

Aging and Disability Resource Center of Eagle Country coordinates transit service for elderly and disabled in the County. Vans and mini-buses provide

transportation for medical appointments, shopping, banking, and other business during the week for seniors. A volunteer driver network is also available for the elderly and those with disabilities. The City of Mauston has a subsidized shared-ride taxi service.

The Union Pacific Railroad, Canadian Pacific Railway, and the Canadian National all pass through Juneau County with interconnections at Camp Douglas, Necedah and New Lisbon. The Amtrak passenger train also travels through the County; there is a stop in nearby Wisconsin Dells.

There are five airports within Juneau County. The Volk Field Air National Guard Base is located near Camp Douglas. This field can accommodate most modern military aircraft on its single asphalt and concrete paved runway measuring 9,000 ft. The Mauston-New Lisbon Union Airport is jointly owned by its municipal namesakes. It is classified as a basic utility airport and has a 3,686 foot asphalt runway. The Necedah Airport is owned by the Village and is appropriate for small engine planes with its single 2,700 foot asphalt runway. Three Castle Airpark is located northwest of Wonewoc and is privately owned and operated, but open to the public. There is a 2,740 grass runway appropriate for small engines. Lastly, Eloy Municipal Airport is also privately owned, and its 2,550 foot gravel and turf runway is open to the public.

UTILITIES

Utility systems are important in hazard mitigation planning because of the dependency on water, wastewater treatment, gas service, electricity, and communications. Because of this reliance and vulnerability to hazards, utility systems must be identified for this Plan, see Map 6.

The protection of the public water supply facilities from potential contamination from hazards such as flooding is a consideration for hazard mitigation planning. There are 10 water suppliers for domestic and commercial use, including each city and village and the Wisconsin Air National Guard Volk Field.

The protection of the wastewater facilities is an important consideration for hazard mitigation planning because of their potential to contaminate nearby waterbodies in the event of high water. Also of concern during periods of flooding is the threat of damage to infrastructure and associated facilities. There are twelve wastewater treatment centers in the County; the 10 public and 2 serving private developments.

Natural gas service is provided to much of the County by Alliant Energy, Wisconsin Gas Company and Madison Gas & Electric.

The infrastructure of electric and telephone lines should be considered in the events of high wind, ice storms, tornados, flooding, and fire. Alliant Energy and Oakdale Electric Cooperative provide Juneau County with electric service. As of

2001, an independent company, American Transmission Company (ATC), owns, maintains, and operates the major transmission facilities located in the State of Wisconsin, including Juneau County. The general locations of the major electrical transmission facilities, owned by ATC are shown on Map 6. There are several companies providing telephone service in the County including Frontier and Charter.

Nationwide, cellular telephones account for more than half of all 911 calls. Service coverage is based upon the handset receiving a direct line-of-sight signal from a system provider's antenna on a tower. Limitations for receiving a signal include topography and the thickness & type of building materials. Signals generally cannot travel well in dense forest cover, over tall hills, or through thick or multiple cement walls. Cell service coverage within Juneau County is very good, however, there remain some areas where service can be spotty.

EMERGENCY SERVICES AND FACILITIES

The type and location of public emergency services are an important consideration in hazard mitigation planning, because of the potential direct involvement of such facilities in certain hazard situations. The location of fire stations, police departments, and ambulance services in Juneau County are shown on Map 7. Juneau County operates the 911-call center providing dispatch for virtually all of the emergency services discussed below.

There are eight fire departments that serve the local units of governments in Juneau County. All of the departments rely on volunteers for this service. Additionally, the Volk Field Air National Guard Base in Camp Douglas is home to the Volk Field Combat Readiness Training Center Fire Department which employs career firefighters. The Department of Natural Resources also has two fire protect units: the Babcock Fire Response Unit and the Necedah Fire Response Unit. Four departments are located outside the County – the Cities of Reedsburg and Wisconsin Dells and the villages of LaValle and Lyndon. Juneau County also has a HazMat Team located at Camp Douglas (Volk Field), and there is also a New Lisbon Fire Department HazMat Team.

There are seven ambulance/EMS service providers within the County, including the Village of Lyndon Station, the Village of Wonewoc, the City of New Lisbon, the Village of Necedah, the City of Elroy, the City of Mauston, and the Village of Camp Douglas. There are also several outside stations that provide service within the County.

The Juneau County Sheriff's Department provides service to all of the towns as well as the villages of Hustler and Union Center. The Sheriff's Department's office is located in the City of Mauston. The Villages of Necedah, Camp Douglas, Lyndon Station, and Wonewoc as well as the cities of Mauston, Elroy, and New Lisbon operate and maintain their own law enforcement units.

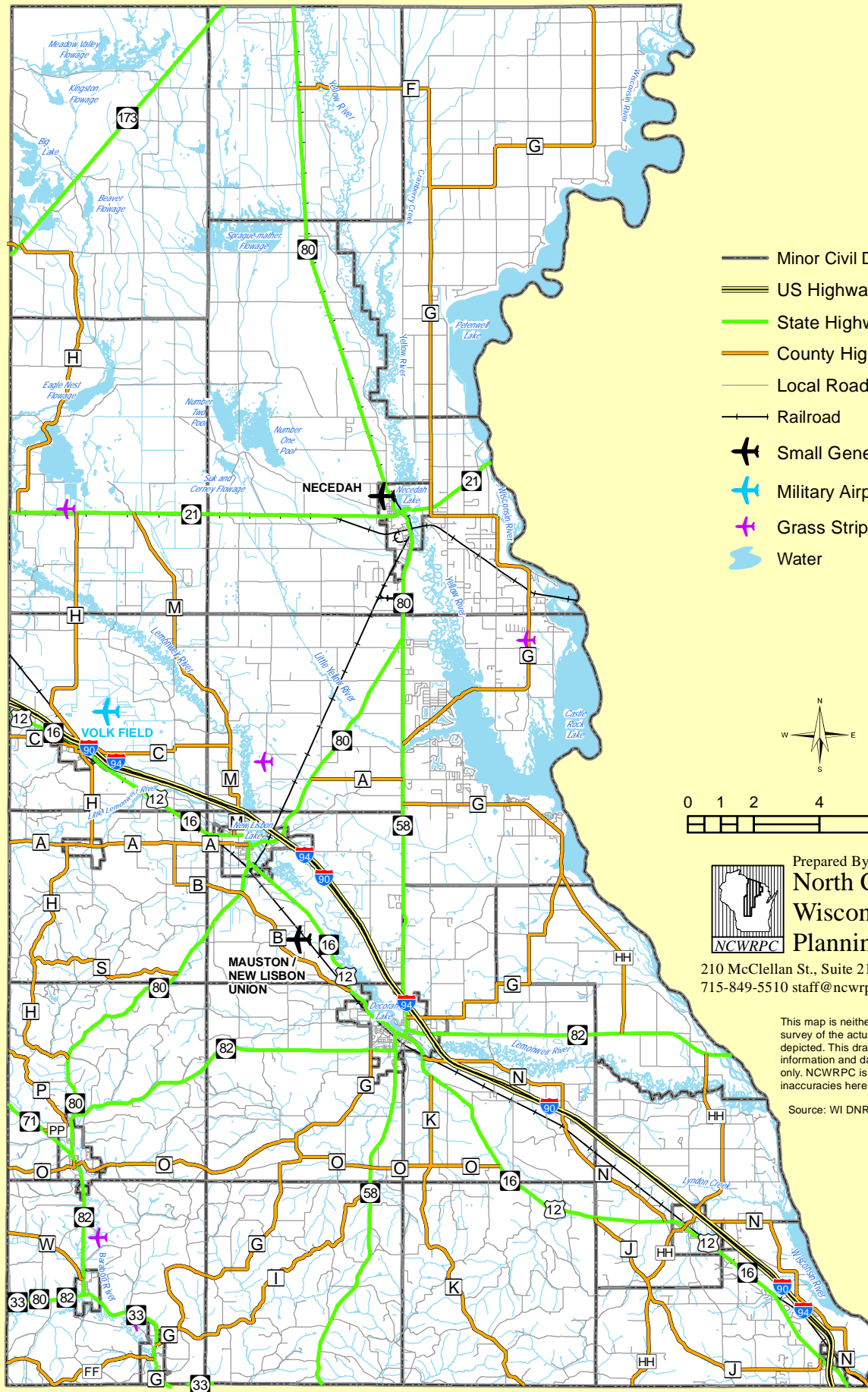
The American Red Cross maintains agreements with the owner/operators of various facilities around the County to act as shelters in the event of an emergency. Schools and churches are the most common shelter facilities. Juneau County is part of southwest chapter of the American Red Cross with ten other counties. The chapter's administrative office is located in Madison, but a volunteer disaster action team is maintained locally.

CRITICAL COMMUNITY FACILITIES

In addition to emergency service facilities, other community facilities are also important in hazard mitigation planning. Government administration buildings serve as the headquarters that link to resources in helping solve potential problems. Hospitals are very important for knowing where injured residents have to be transported and as to how many people each hospital can handle if a hazard would breakout.

There are six hospitals and clinics located throughout the County. The main hospital is the Mile Bluff Medical Center. Outlying clinics include the Elroy Family Medical Center, the Gundersen Clinic, Mile Bluff Clinic, Necedah Family Medical Center, and the New Lisbon Clinic.

Heritage Manor in Elroy is the primary nursing home within the County. Fair View home is based in Mauston while Crest View operates in New Lisbon. Nursing homes are vulnerable, because of the high level of assistance needed with the residents that live there. In addition, there are a number of assisted living facilities within the County. The schools are another facility that are important, since hundreds of the County's children are there for most of the year. Map 7 shows the location of selected types of critical community facilities within Juneau County.



- Minor Civil Divisions
- US Highways
- State Highways
- County Highways
- Local Roads
- Railroad
- ✈ Small General Aviation
- ✈ Military Airport
- ✈ Grass Strip (Private)
- Water



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Miles

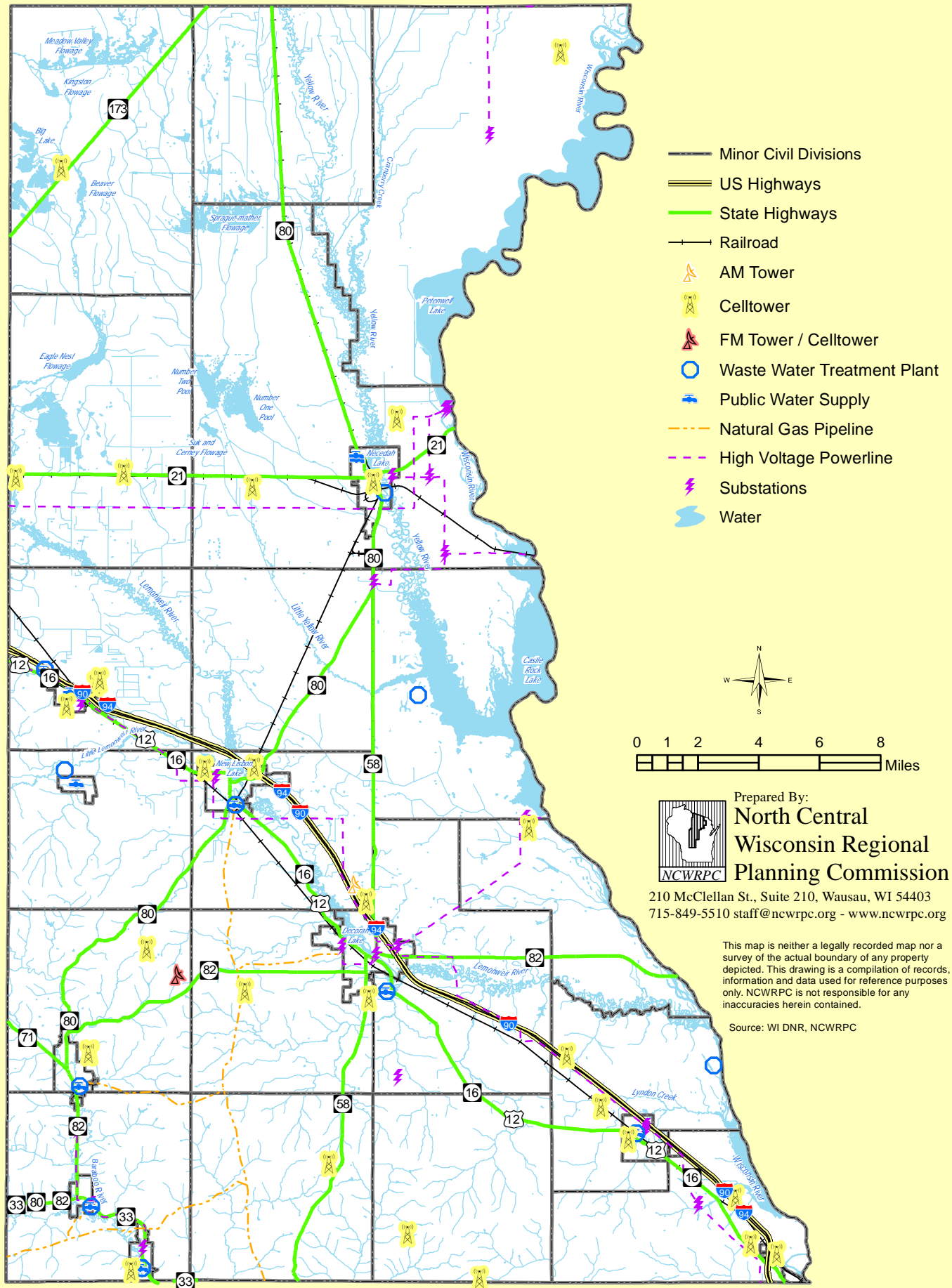


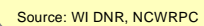
Prepared By:
**North Central
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This map is neither a legally recorded map nor a survey of the actual boundary of any property depicted. This drawing is a compilation of records, information and data used for reference purposes only. NCWRPC is not responsible for any inaccuracies herein contained.

Source: WI DNR, NCWRPC and Wis DOT





INVENTORY & VALUE - STRUCTURES & PROPERTY IN JUNEAU COUNTY

The value of the real estate and personal property in a community reflects the upper end of the potential for property damages in each community. The annual equalized value of each municipality represents the Department of Revenue estimate of market value (Agricultural land is included at Use Value) of all taxable property. Property tax levies of jurisdictions are apportioned to each municipality on the basis of equalized value. Table 9 lists each municipality's total equalized values for real estate, personal property, and all property and the percent each municipality represents of the county total.

Table 9: Equalized Value by Civil Division (2014)				
MCD	Real Estate	Personal Property	Total	% Total
Armenia town	\$ 126,934,100	\$ 477,600	\$ 127,411,700	6.56%
Clearfield town	\$ 63,066,200	\$ 134,500	\$ 63,200,700	3.25%
Cutler town	\$ 30,579,100	\$ 909,400	\$ 31,488,500	1.62%
Finley town	\$ 16,695,500	\$ 187,800	\$ 16,883,300	0.87%
Fountain town	\$ 33,107,600	\$ 127,700	\$ 33,235,300	1.71%
Germantown town	\$ 329,091,400	\$ 2,779,500	\$ 331,870,900	17.08%
Kildare town	\$ 67,057,900	\$ 272,500	\$ 67,330,400	3.47%
Kingston town	\$ 3,538,600	\$ 71,700	\$ 3,610,300	0.19%
Lemonweir town	\$ 110,517,100	\$ 1,733,600	\$ 112,250,700	5.78%
Lindina town	\$ 48,605,000	\$ 150,000	\$ 48,755,000	2.51%
Lisbon town	\$ 60,840,800	\$ 824,800	\$ 61,665,600	3.17%
Lyndon town	\$ 106,189,700	\$ 899,300	\$ 107,089,000	5.51%
Marion town	\$ 48,518,300	\$ 115,600	\$ 48,633,900	2.50%
Necedah town	\$ 172,011,500	\$ 5,132,600	\$ 177,144,100	9.12%
Orange town	\$ 36,659,500	\$ 45,000	\$ 36,704,500	1.89%
Plymouth town	\$ 52,472,800	\$ 79,900	\$ 52,552,700	2.71%
Seven Mile Creek town	\$ 29,854,000	\$ 28,700	\$ 29,882,700	1.54%
Summit town	\$ 47,827,100	\$ 64,500	\$ 47,891,600	2.47%
Wonewoc town	\$ 42,308,800	\$ 275,800	\$ 42,584,600	2.19%
Camp Douglas village	\$ 19,731,200	\$ 489,700	\$ 20,220,900	1.04%
Hustler village	\$ 9,432,200	\$ 107,400	\$ 9,539,600	0.49%
Lyndon Station village	\$ 22,484,000	\$ 694,900	\$ 23,178,900	1.19%
Necedah village	\$ 39,850,700	\$ 1,456,100	\$ 41,306,800	2.13%
Union Center village	\$ 9,628,600	\$ 707,300	\$ 10,335,900	0.53%
Wonewoc village	\$ 21,520,000	\$ 401,900	\$ 21,921,900	1.13%
Elroy city	\$ 47,232,600	\$ 1,493,100	\$ 48,725,700	2.51%
Mauston city	\$ 191,271,700	\$ 11,794,800	\$ 203,066,500	10.45%
New Lisbon city	\$ 68,720,600	\$ 2,665,500	\$ 71,386,100	3.67%
Wisconsin Dells city	\$ 433,000	\$ -	\$ 433,000	0.02%
Juneau County	\$1,856,179,600	\$ 34,121,200	\$1,890,300,800	100%
Source: WisDOR 2014 Totals may not add due to rounding.				

The valuation of property in a community reflects the potential for property damages across the community. However, only taxable properties are included in this valuation. Tax exempt government properties are not included. With

Juneau County owning many critical facilities that are needed in times of disaster, the potential for damages to these structures could be devastating for the county. In Table 10a, the county owned critical facilities are listed with the general location they are in and the value of the facilities. Estimates for local government facilities are given in the remainder of Table 10.

Table 10a Value of County Owned Properties		
Name	Value*	Location
Courthouse	\$8,516,187	Mauston
Courthouse Annex	\$5,657,108	Mauston
Hickory Street Center	\$5,903,237	Mauston
Justice Center	\$22,355,050	Mauston
Landfill	\$712,875	Mauston
Highway Department	\$12,964,961	Various Locations
Necedah Barn	\$727,307	Necedah
New Lisbon Salt Shed	\$407,922	New Lisbon
Wonewoc Barn	\$298,706	Wonewoc
Tower Sites	\$312,632	Various Locations
Forestry/Parks/Zoning	\$1,842,125	Mauston
Park Facilities	\$3,346,104	Various Locations
Meal / Other Remote Sites	\$217,409	Various Locations
Total	\$63,261,623	Above Locations

*=Includes insured buildings, contents, and property in the open.

Source: Statement of Values Local Property Insurance Fund, 2016.

Table 10b Value of City of Elroy Owned Properties	
Property	Value*
City Hall	\$1,060,514
Library	\$2,641,585
City Park	\$1,693,303
Elroy Commons	\$698,432
Wastewater Treatment Plant	\$5,461,544
Museum	\$1,697,784
Public Works Facility	\$663,880
Water Booster Stations (2)	\$434,151
Wellhouses (2)	\$1,665,320
Water Treatment Plant	\$1,219,416
Reservoir	\$794,664
Liftstation	\$270,592
Electric Dept./Powerhouse	\$1,258,360
Misc. Other	\$199,817
Total	\$19,759,362

*includes insured buildings, contents and property in the open.

Source: Local Government Property Insurance Statement of Values, 2016.

Table 10c Value of City of Mauston Owned Properties	
Property	Value*
City Hall	\$3,096,207
Parks and Recreation	\$1,291,351
Pump Houses (3)	\$1,001,126
Wastewater Treatment Facilities	\$2,988,364
Liftstation	\$291,607
Library	\$4,301,250
Water Tower	\$961,069
North Road Farm	\$517,863
Public Works Facility	\$3,357,063
Visitor Information Center	\$64,495
Misc. Other	\$4,264,339
Total	\$22,134,734

**includes insured buildings, contents and property in the open.*

Source: Local Government Property Insurance Statement of Values, 2016.

Table 10d Value of City of New Lisbon Owned Properties	
Property	Value*
Library	\$1,961,411
Parks and Recreation	\$831,160
Cemetery	\$11,575
City Hall	\$1,292,720
Fire Station	\$1,460,244
City Garage	\$1,877,728
Water System	\$1,035,262
Municipal Pool	\$1,110,422
Wastewater Treatment Plant	\$8,655,041
Lift Stations (12)	\$1,058,908
Electric Shop	\$476,270
Public Works	\$699,872
Misc. Other	\$3,018,646
Total	\$23,489,259

**includes insured buildings, contents and property in the open.*

Source: Local Government Property Insurance Statement of Values, 2016.

Table 10e Value of Village of Camp Douglas Owned Properties	
Property	Value*
Village Hall	\$500,000
Water System	\$500,000
Wastewater Treatment System	\$1,000,000
Library	\$750,000
Misc. Other	\$100,000
Total	\$2,850,000

**includes insured building, contents and property in the open.
Source: NCWRPC estimate, 2017.*

Table 10f Value of Village of Hustler Owned Properties	
Property	Value*
Village Hall	\$494,150
Water System	\$494,150
Wastewater Treatment System	\$988,300
Museum	\$680,000
Total	\$2,656,600

**includes insured building, contents and property in the open.
Source: Local Government Property Insurance Statement of Values and
NCWRPC estimate, 2017.*

Table 10g Value of Village of Lyndon Station Owned Properties	
Property	Value*
Village Hall /Fire Station	\$2,000,000
Water System	\$500,000
Wastewater Treatment System	\$1,000,000
Misc. Other	\$100,000
Total	\$3,600,000

**includes insured building, contents and property in the open.
Source: NCWRPC estimate, 2017.*



Lyndon Station FD

Table 10h Value of Village of Union Center Owned Properties	
Property	Value*
Village Hall	\$500,000
Water System	\$500,000
Wastewater Treatment System	\$1,000,000
Misc. Other	\$100,000
Total	\$2,100,000

**includes insured building, contents and property in the open.
Source: NCWRPC estimate, 2017.*

Table 10i Value of Village of Necedah Owned Properties	
Property	Value*
Village Hall / Fire Station	\$2,000,000
Library	\$2,000,000
Parks and Recreation	\$1,000,000
Public Safety Building (Police/Amb.)	\$1,500,000
Wastewater Treatment Plant	\$5,000,000
Public Works Facility	\$600,000
Water Treatment Plant	\$1,200,000
Wellhouses (2)	\$1,500,000
Reservoir	\$800,000
Liftstation	\$250,000
Water Tower	\$950,000
Misc. Other	\$200,000
Total	\$17,000,000

**includes insured buildings, contents and property in the open.
Source: NCWRPC Estimate, 2017.*

Table 10j Value of Village of Wonewoc Owned Properties	
Property	Value*
Village Hall	\$500,000
Water System	\$500,000
Wastewater Treatment System	\$1,000,000
Library	\$750,000
Misc. Other	\$100,000
Total	\$2,850,000

**includes insured building, contents and property in the open.
Source: NCWRPC estimate, 2017.*

Table 10k: Value of Town Owned Properties		
Municipality	Property	Value*
Armenia town	Town Hall	\$550,000
Clearfield town	Town Hall	\$550,000
Cutler town	Town Hall	\$550,000
Finley town	Town Hall/Garage/Recycle Bldg	\$412,812
Fountain town	Town Hall	\$550,000
Germantown town	Town Hall	\$1,102,296
	Town Park	\$149,664
	Town Maint. Bldg/Shop/Garage	\$650,556
Kildare town	Town Hall	\$550,000
Kingston town	Town Hall	\$550,000
Lemonweir town	Town Hall	\$163,526
Lindina town	Town Hall	\$550,000
Lisbon town	Town Hall	\$550,000
Lyndon town	Town Hall/Park	\$161,595
Marion town	Town Hall	\$550,000
Necedah town	Town Hall	\$550,000
Orange town	Town Hall	\$550,000
Plymouth town	Town Hall	\$550,000
Seven Mile Creek town	Town Hall	\$550,000
Summit town	Town Hall	\$550,000
Wonewoc town	Town Hall	\$803,832
*includes insured building, contents and property in the open.		
Source: Local Government Insurance Policy Declarations and NCWRPC estimate, 2016.		



Mobile Incident Command Post

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INTRODUCTION

Analyzing the hazards in a community is an important and critical step in the mitigation planning process. Before mitigation strategies can be determined, a risk assessment must be made. Part III of Juneau County All-Hazards Mitigation Plan Update will focus on the following:

- Identification of all types of natural hazards that may affect Juneau County; and
- An analysis of the hazards identified as pertinent to Juneau County.

The Hazard Analysis will consist of:

- Background Information;
- History of previous occurrences of hazard events;
- An assessment of the County's vulnerability to future events; and
- An estimate of future probability and potential losses from the hazard.

HAZARD IDENTIFICATION

The process of identifying those hazards that should be specifically addressed in the Juneau County All-Hazards Mitigation Plan Update was based on consideration of a number of factors. The process included a review of past hazard events to determine the probability of future occurrences and threat to human safety and property damage.

Worksheets from the Wisconsin Guide to All-Hazards Mitigation Planning were used by the Planning Taskforce to evaluate and rank the listing of possible hazards to help identify which hazards should be included in the Plan Update according to threat to human safety and possible damage to property. After review of the hazard scoring exercise results, the Committee decided to move flooding up to number three in rank behind tornado and wildfire because flooding is such a persistent problem in the County although not as potentially devastating as a tornado or wildfire.

The resulting priority ranking of hazards accepted by the Committee is as follows:

1. Tornado
2. Wild Fire
3. Flood / Dam Failure
4. Winter Storms / Extreme Cold
5. Severe Thunderstorms High Wind / Lightning / Hail
6. Drought / Extreme Heat
7. Hazardous Materials Incidents
8. Mass Casualty Incidents (ie: Civil Disorder / Terrorism / Pandemic / accidents & other events)

This Plan Update focuses on natural hazards that have or could cause disasters that can be mitigated on a local level. Technological or manmade hazards include things like pandemic, transportation incidents, civil disturbances, war, terrorism and other mass casualty events. Juneau County already has extensive planning for these types (i.e. "mass casualty") of occurrences, so they are addressed on a more general level in this planning process. Low magnitude earthquakes occur in Wisconsin every few years, but none have exceeded a magnitude of 3.9, which would have vibrations similar to the passing of a semi-truck, therefore, earthquakes are not covered in this plan. Juneau County does not have avalanche, coastal hazard, hurricane, tsunami or volcano issues and conditions for landslide, subsidence or expansive soil problems are not significant in the County.

HAZARD ANALYSIS

The hazard analysis for each hazard included in this Plan Update is broken down into four components, as follows:

1. Background on Hazard - The next step after identifying a hazard is to define the hazard and give some general background behind it. This can include occurrence of the hazard within the County or State. This section may also give some indication of the risk to public health and safety and to personal and public property.

2. History of Hazard - Past experience of disasters is an indication of the potential for future disasters for which Juneau County would be vulnerable. A review of past occurrences for each identified hazard in Juneau County was completed.

Some disasters have had damages that exceeded the capabilities of local communities and state agencies. Federal assistance is then requested. Federal assistance may be offered through a variety of programs. Assistance may be directed to agricultural producers, individuals and families, businesses, or local governments. There have been 13 natural disasters in Juneau where Presidential Declaration was requested from 1971-2016. They include the following:

- 1976 - Drought - Presidential Emergency Declared
- 1978 - Flooding - Presidential Disaster Declaration
- 1990 - Flooding - Presidential Disaster Declaration
- 1992 - Flooding - Presidential Disaster Declaration
- 1993 - Flooding - Presidential Disaster Declaration
- 2000 - Severe Storms/Flooding/Tornado - Presidential Disaster Declaration
- 2001 - Severe Storms/Flooding - Presidential Disaster Declaration
- 2004 - Severe Storms/Flooding - Presidential Disaster Declaration
- 2008 - Flooding - Presidential Disaster Declaration

2009 - Blizzard
2010 - Flooding - Presidential Disaster Declaration
2010 - Blizzard
2016 - Flooding - Presidential Disaster Declaration

It should be noted that this significantly underestimates the number of hazards that have occurred in Juneau County. Almost every year there are significant weather events or disasters that cause thousands of dollars in damage for which no Federal disaster assistance is requested. Major indicators of hazard severity are the deaths, injuries, and economic losses resulting from natural hazards and disasters.

The National Oceanic and Atmospheric Administration (NOAA) publishes the National Weather Service (NWS) data describing recorded weather events and resulting deaths, injuries, and damages. From January 1, 1950 to December 31, 2015, NOAA reported 367 severe weather events for Juneau County.

Note that since the earlier NOAA data is somewhat incomplete, this report focuses on the 10-year period from 2006 to 2015 for hazard analysis purposes. Other sources of data are used to supplement the NOAA data. These sources included other plans and reports, documents from the Juneau County Emergency Management Department, past local newspaper articles, the Wisconsin Department of Natural Resources (DNR), Wisconsin Emergency Management (WEM), and the National Weather Service.

3. Vulnerability Assessment For Hazard - For each hazard identified, a summary of the impact that may be felt by the community is given. When possible, existing buildings, infrastructures, and critical facilities located in the hazard areas are identified. Critical facilities are community buildings that are especially important to the health and welfare of the population following hazard events. Examples of such facilities include hospitals, police & fire stations, town halls, and shelters.

Because this is a multi-jurisdictional plan, FEMA requires that the plan assess each jurisdiction's risks where they vary from the risks facing the entire planning area. This section of the plan will identify variations in vulnerability for specific municipalities where they occur.

4. Future Probability and Potential Dollar Losses from Hazard - The historic data and vulnerability assessment for each hazard is used to project the potential future probability of that hazard occurring in the County and the potential damages in dollars that might be reasonably expected. This section sets the benchmark to mitigate for each hazard.

HAZARD ANALYSIS: TORNADOS**Background on Tornado Hazard:**

A tornado is a relatively short-lived storm composed of an intense rotating column of air, extending from a thunderstorm cloud system. It is nearly always visible as a funnel, although its lower end does not necessarily touch the ground. Average winds in a tornado, although never accurately measured, are between 100 and 200 miles per hour, but some tornados may have winds in excess of 300 miles per hour.

A tornado path averages four miles, but may reach up to 300 miles in length. Widths average 300 to 400 yards, but severe tornados have cut swaths a mile or more in width, or have formed groups of two or three funnels traveling together. On average, tornados move between 25 and 45 miles per hour, but speeds over land of up to 70 miles per hour have been recorded. Tornados rarely last more than a couple of minutes in a single location or more than 15 to 20 minutes in a ten-mile area.

Table 11 Tornado Wind and Damage Scale		
Tornado Scale	Wind Speeds	Damage
EF0	65 to 85 MPH	Some damage to chimneys, TV antennas, roof shingles, trees, and windows.
EF1	86 to 110 MPH	Automobiles overturned, carports destroyed, trees uprooted
EF2	111 to 135 MPH	Roofs blown off homes, sheds and outbuildings demolished, mobile homes overturned.
EF3	136 to 165 MPH	Exterior walls and roofs blown off homes. Metal buildings collapsed or are severely damaged. Forests and farmland flattened.
EF4	166 to 200 MPH	Few walls, if any, standing in well-built homes. Large steel and concrete missiles thrown far distances.
EF5	OVER 200 MPH	Homes leveled with all debris removed. Schools, motels, and other larger structures have considerable damage with exterior walls and roofs gone. Top stories demolished

Source: National Weather Service

Tornados are classified into six intensity categories, EF0-EF5. This scale is an updated or "enhanced" version of the Fujita Tornado Scale (or "F Scale"). The scale estimates wind speeds within tornados based upon the damage done to buildings and structures. It is used by the National Weather Service in investigating tornados and by engineers in correlating building design and construction standards against anticipated damage caused by different wind speeds.

Wisconsin lies along the northern edge of the nation's maximum frequency belt for tornados, known as "Tornado Alley". Tornado Alley extends northeast from Oklahoma into Iowa and then across to Michigan and Ohio. Winter, spring and fall tornados are more likely to occur in southern Wisconsin than in northern counties. Tornados have occurred in Wisconsin every month except February.

History of Tornados in Juneau County:

Juneau County has had 2 verified tornados from 2006 to 2015. These tornados are documented along with 23 other historic tornados in Table 12. The most recent was on May 22, 2011 when severe thunderstorms developed along a cold front as it moved through western Wisconsin. These severe thunderstorms produced three confirmed tornadoes. One of these tornadoes was on the ground for almost 65 miles as it tracked from eastern Monroe County, across northern Juneau County, through southern Wood County and into Portage County before dissipating. Total damages were in excess of 6 million dollars.

This tornado entered into Juneau County southwest of Mather and then tracked northeast across the Necedah Wildlife Refuge between Mather and Finley damaging numerous trees. As the tornado approached Finley, it grew in size and was nearly a half mile wide as it crossed County Road F east of Finley. In this area, numerous trees were snapped or blown down with some of them landing on nearby homes. At a cranberry business east of Finley, all of the outbuildings and sheds were demolished and tossed into nearby fields and a loading deck platform and trucks were heavily damaged. Thick wooden power poles in this area were snapped or sheared off over a half mile long stretch. The tornado then weakened as it moved northeast toward the Wood-Juneau County line with damage to trees and some minor roof and siding damage. Total damages across Juneau County from this tornado were estimated to be \$4.4 million.

The other tornado within the study period also occurred in 2011, when a cold front pushed east into Wisconsin during the late afternoon and evening hours of April 10. Severe thunderstorms developed along the cold front and produced very large hail and three tornadoes over portions of western and central Wisconsin. A National Weather Service storm survey team confirmed an EF1 tornado south of Necedah. The tornado first touched down near the intersection of Paradise Lane and 25th Street and produced EF0 damage. Then it briefly produced EF1 damage for about 3/4 of a mile from T Lane through Padre Pio

Drive. A mobile home was rolled over and pine trees were snapped. The tornado continued east-northeast and produced EF0 damage to pine trees around County Road G before ending near the Wisconsin River.

Table 12 Reported Tornadoes In Juneau County							
Date	Time CST	Location	Length (Miles)	Width (Feet)	Deaths	Injuries	F- EF Scale
4/19/57	1530		21.1	300	1	0	F4
5/4/64	2000		7.7	100	0	0	F2
5/4/64	2030		1	27	0	0	F1
5/7/64	1450		3.3	30	0	1	F2
5/8/64	1715		23.5	150	0	0	F2
3/31/67			2	200	0	0	F1
8/9/79	1736		2.7	50	0	0	F2
8/29/79	2000		0	33	0	1	F1
3/30/82	1405	Central Juneau	8	33	0	2	F1
7/3/83	1800	Central Juneau	1	50	0	0	F1
7/3/83	1804	Central Juneau	1	50	0	8	F3
7/3/83	1815	Central Juneau	0.3	10	0	0	F0
7/3/83	1915	Central Juneau	0.3	10	0	0	F0
10/16/84	2030	Southern Juneau	17	100	0	3	F2
8/12/85	1840	New Lisbon	17	880	2	22	F2
5/8/88	1608	Central Juneau	5	73	0	1	F1
5/8/88	1615	Central Juneau	0.7	20	0	0	F1
10/8/92	1430	Southern Juneau	2	100	0	0	F1
6/1/00	1500	NEW LISBON	6.5	100	0	0	F1
6/23/04	1820	NEW LISBON	2	40	0	0	F1
8/18/05	1603	NECEDAH	6	25	0	0	F1
4/10/11	1714	NECEDAH	4.37	150	0	0	EF1
5/22/11	1638	MATHER	19.32	800	0	0	EF2
Source: NOAA Storm Events Database, 2017 - Injuries and deaths are for entire track.							

Outside the study period, tornado was listed as contributing factor in the Presidential Disaster Declaration that included Juneau County in 2000. On June 1, a tornado touched down just north of New Lisbon and tracked southeast before lifting just north of Mauston. Damage consisted of sheared or blown down trees, barns and sheds demolished, garages heavily damaged, and some light structural damage to homes. There were no reports of injuries or deaths, but damage was estimated at about \$550,000. Hardest hit were homes and farms along 8th Avenue north of New Lisbon, along Meredith Road north of Mauston, and along Highway 58 north of Mauston. There was also downburst (microburst)

wind damage south and west of New Lisbon along Highway 80 and County Roads B and A. Downburst wind damage was also seen along Interstate 90/94 between Camp Douglas and New Lisbon with hundreds of trees blown down or sheared off. Juneau and Monroe County (where a separate tornado touched down) were declared federal disaster areas due to the extensive storm damage.

Another notable tornado occurred on August 12, 1985 when an F-2 hit New Lisbon. Two people were killed and 22 injured. Approximately 35 mobile homes were destroyed and other structures were damaged. Damage was estimated at about \$2.5 million.

While the May 2011 tornado was the most costly in terms of dollars, and the August 1985 tornado was the deadliest, the largest tornado in terms of scale strength was the 1957 F-4 tornado which also had one reported death associated with it. Other tornadoes with injuries associated occurred in 1964 (1), 1979 (1), 1982 (2), 1983 (8), 1984 (3), and 1988 (1).

Tornado Vulnerability Assessment:

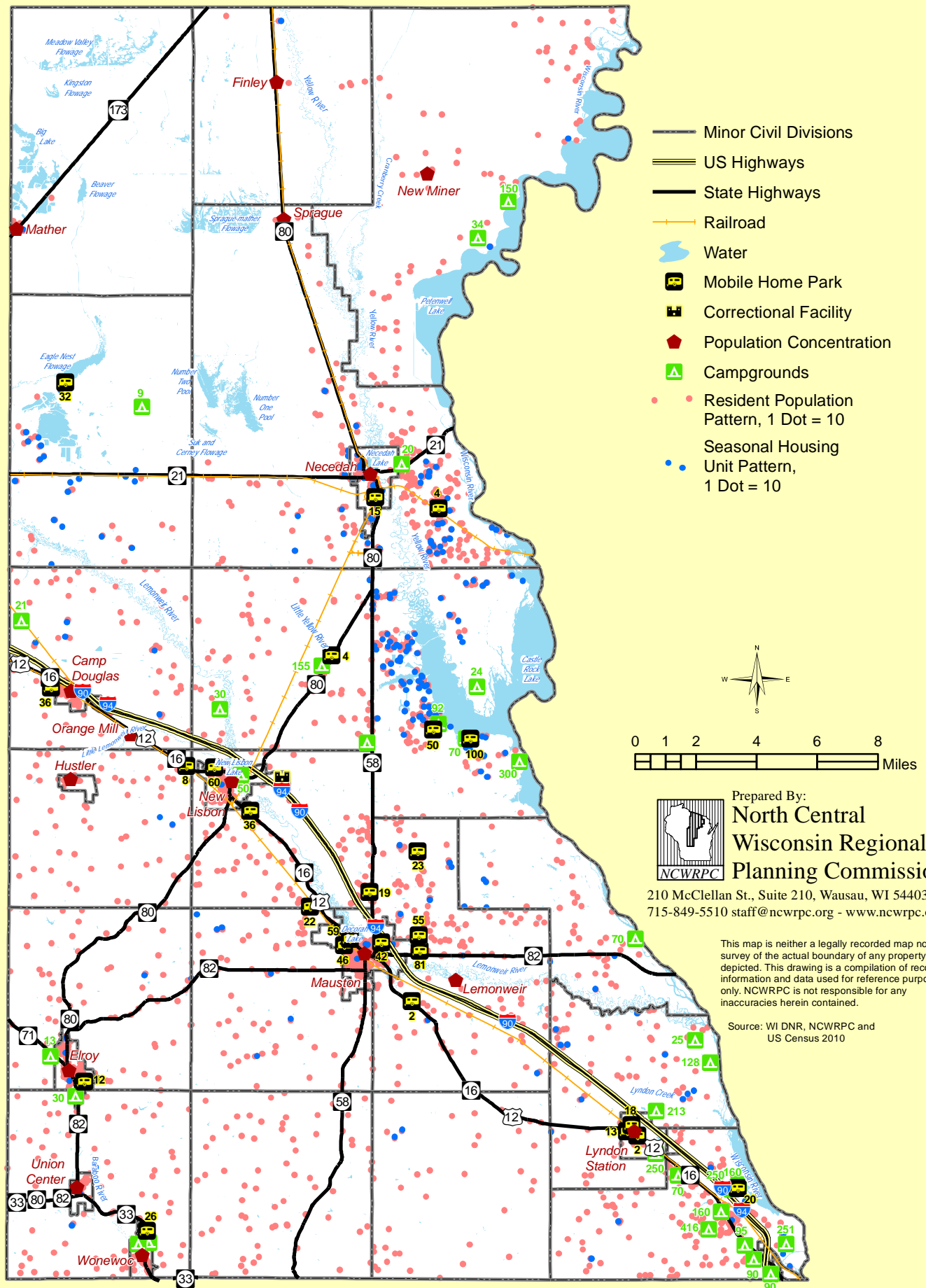
Though Juneau County is mostly a rural county, there are concentrations of population scattered throughout. Subdivisions, rural unincorporated communities, and the various cities and villages can be regarded as more vulnerable because these areas pose more of a threat to human safety and property damage in more concentrated areas. Map 8 illustrates these areas within the County.

Mobile homes are of significant concern in assessing the hazard risks from tornadoes. In general, it is much easier for a tornado to damage and destroy a mobile home than standard constructed houses and buildings. Since 21 percent of Juneau County's housing units are mobile homes, vulnerability to health and safety along with property damage is much greater. Research by the NWS shows that between 1985 and 1998, 40 percent of all deaths in the nation from tornadoes were in mobile homes, compared to 29 percent in permanent homes, and 11 percent in vehicles.

The 2015 figures from the U.S. Census indicate there are 3,114 mobile homes in Juneau County. While mobile homes are scattered throughout the County, many are concentrated in mobile home parks. Map 8 also displays the location of the mobile home parks within the County.

In addition to mobile homes, there are many other areas vulnerable to tornadoes such as campgrounds. Like mobile homes parks, campgrounds are of concern in the County because often times there is a concentration of people in them and there is little shelter provided. Map 8 also shows the location of campgrounds in the County.

The following is a list of things that may be affected by a tornado. Much of this list can be referenced in Part II.



- Community facilities – hospitals, schools, "prisons/jails"
- Public Service - police and fire departments
- Utilities - power lines, telephone lines, radio communication
- Transportation – debris clean-up
- Residential – nursing homes, mobile home/parks, garages, trees and limbs, siding, windows
- Businesses – signs, windows, siding, billboards
- Agricultural - buildings, crops, livestock

Based on review of the historic events of tornados, there are no specific areas in the County that have unusual risks. The events are relatively uniform and a countywide concern. However, during the city/village planning meetings for this Plan Update, Elroy, Lyndon Station, Necedah, New Lisbon, Union Center, and Wonewoc identified tornados as a major vulnerability concern due to potential impacts on local electric utilities, shelter concerns (mobile homes/parks in particular), early warning issues, and past experiences.

Future Probability and Potential Dollar Losses – Tornados:

Based on the historic data presented here (frequency of past events), Juneau County can expect a tornado about once every 5 years on average. This equates to a probability of 0.2 or about a 20 percent chance in a given year. Table 13 indicates the probability of tornados of a specific magnitude. However, these probabilities are slightly skewed by several instances of multiple tornado events occurring on the same day. The County has not experienced a tornado since 2011.

Table 13						
Probability of Intensity for any given Tornado in Juneau County						
Tornado Scale	F/EF0	F/EF1	F/EF2	F/EF3	F/EF4	F/EF5
Number of Reported Tornados*	2	12	7	1	1	0
Probability of Occurrence	9%	52%	30%	4%	4%	<1.0%

Source: Nat'l Weather Service & NCWRPC – *Based on historical data from 1957 to 2015.

Historic data is again used to estimate potential future dollar losses due to tornado. Estimated damages resulting from various tornados in Juneau County range from \$0 to \$4.4 million. On average, Juneau County might expect damages of \$2.2 million per tornado based on the study period of 2006 to 2015. However, going back to 1957, only two of the 23 historic tornados resulted in damages exceeding \$2 million; one was at \$1/2 million, 7 were at \$1/4 million, and the rest were \$100,000 or less. Over the next ten-year period, tornado losses in Juneau County could approach \$4.4 million.

HAZARD ANALYSIS: WILD FIRE**Background on Wild Fire Hazard:**

Wildfire refers to uncontrolled, wild, or running fires occurring on forest, marsh, field, cutover, or other lands or involving farm, city, or village property and improvements incidental to the uncontrolled, wild, or running fires occurring on forest, marsh, field, cutover, or other lands.

Wildfires can occur at any time the ground is not completely snow covered. The season length and peak months may vary appreciably from year to year. Land use, vegetation, amount of combustible materials present and weather conditions such as wind, low humidity and lack of precipitation are the chief factors for fire season length.

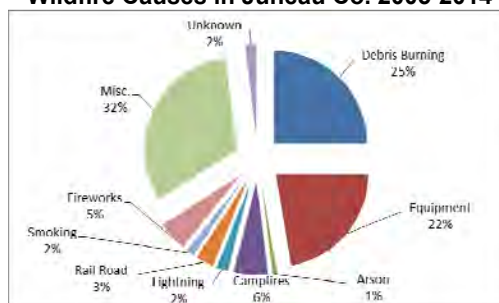
History of Wildfire in Juneau County:

The Wisconsin DNR maintains a database of wild fire data. This data represents the most comprehensive source of information for analyzing fire trends in an area such as Juneau County. However, the data is only current through 2014, so the 10-year span from 2005 through 2014 is used for analysis. Between 2005 and 2014, there was an average of 40 fires that have burned 58 acres, annually. The typical fire in Juneau County burns about 1.4 acres.

April is the leading month for fire in Juneau with 27% of the total number of fires between 2005 and 2014. However, fires have occurred in each month of the year in Juneau. The Town of Necedah experienced the most fires between 2005 and 2014 with 82, and led total acres burned with 117. Several communities within the County had no wildfires over the study period and thus no area burned.

The chart below breaks down the causes of wildfire within Juneau County between 2005 and 2014 as classified by the WDNR. The principle cause of wildfire in Juneau County and Wisconsin as a whole is debris burning which resulted in 100 or 25% of wildfires within the County. Equipment is the next leading category at 22% and includes vehicle, motor and other machinery related causes except railroad. Miscellaneous includes a variety of factors such as power lines, structure fires, and improper ash disposal. Arson resulted in less than 1% of wildfires. Lightning, the only natural cause of fire, was responsible for only 8 of the fires or about 2%.

Wildfire Causes in Juneau Co. 2005-2014



Source: WDNR

A small central Wisconsin wildfire destroyed six buildings southeast of Necedah on May 2, 2015. Dry conditions across central Wisconsin helped to fuel the fire that started on a warm afternoon. The fire destroyed three houses and three outbuildings. None of the houses were occupied and were only used for storage. The fire burned about 4 acres. Damage estimate was over \$150,000.

An April 13, 2015 wildfire near Necedah burned 336 acres before being extinguished by the Wisconsin DNR and four local fire departments. The fire was likely started by a passing train and then spread quickly by winds that gusted close to 30 mph. Flames from the fire approached a factory, which was evacuated as a precaution. The smoke spread over a residential neighborhood prompting officials to evacuate about 44 homes. No structures were burned, but one fire fighter was treated for smoke inhalation. State Highway 80 south of Necedah was closed due to the fire. Damage estimate was over \$57,000.

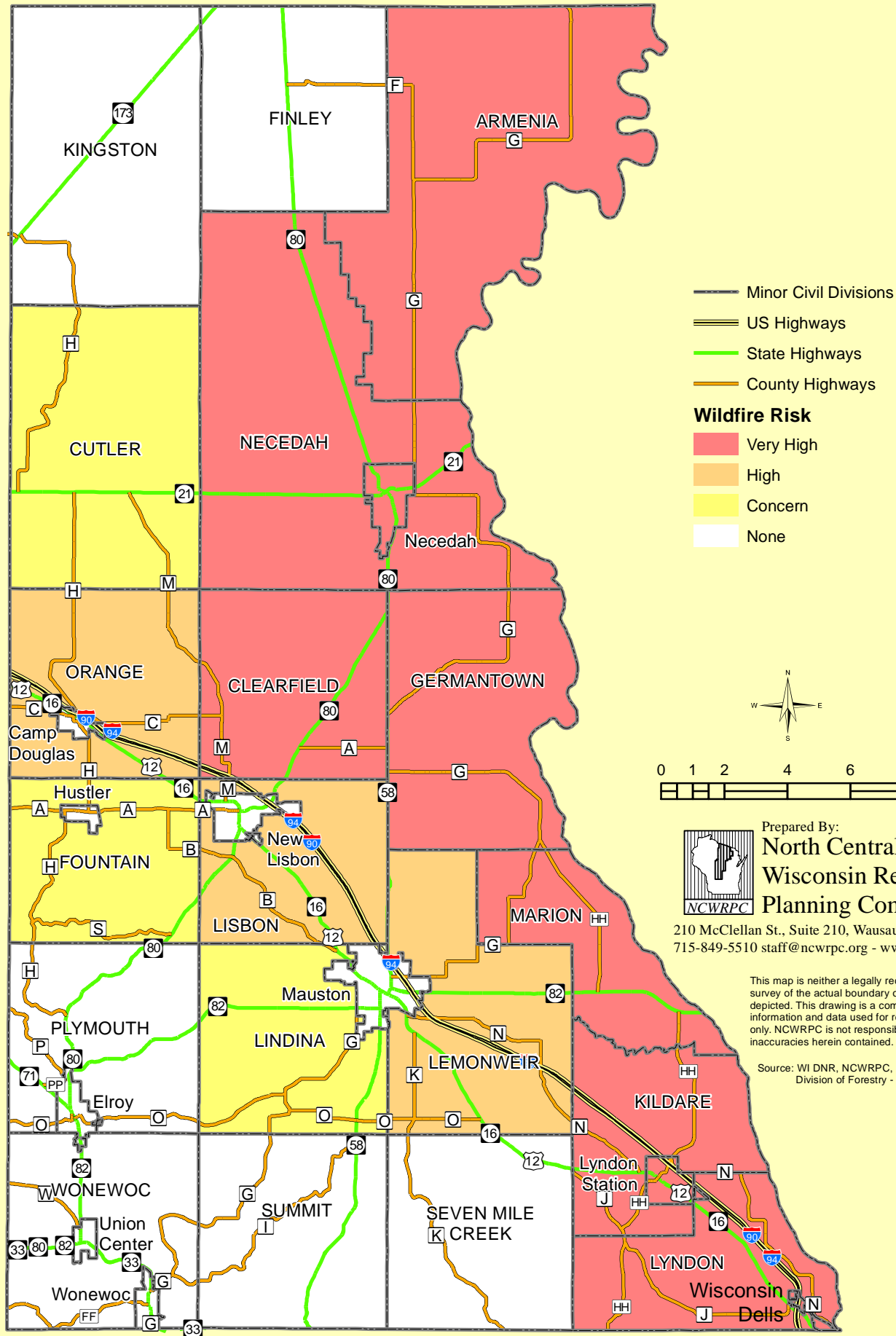
Dry conditions were enhanced by windy and unseasonably warm weather during the weekend of April 21 through April 22 of 2007. As a result, a number of wildfires occurred, including near Necedah. The fires were contained within a few hours and did not affect any buildings or homes.

In 2005, Juneau County's next door neighbor, Adams County, experienced one of the largest wildfires in Wisconsin history. Known as the Cottonville Fire, the fire began on May 5 when debris burning in a fire pit got out of control. Approximately 3,410 acres were burned covering an area 1.5 miles wide and 7 miles long. Weather conditions were ideal for fire: warm and windy with very low humidity. Like much of Juneau, Adams County is part of Wisconsin's "sand country" where the dominant vegetation includes grass, pine and scrub oak, which are all known to burn quickly and intensely. Fire spread quickly to the tops of the pine trees.



Cottonville Fire (Adams Co.), 2005

Losses included 9 primary homes, 21 seasonal homes, and 60 outbuildings. Damage was sustained to 15 other homes. Evacuation of 200 residents was required. Firefighting efforts were massive with 5 aircraft (1 from Minnesota DNR), 200 WDNR personnel from across the state, 30 volunteer fire departments and law enforcement from State Patrol, Juneau, LaCrosse and Vernon County Sheriffs and Onalaska Police. The fire took 11 hours to bring under control and several days for mop-up. The courts set restitution at over \$1.4 million indicating the level of damages.



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This map is neither a legally recorded map nor a survey of the actual boundary of any property depicted. This drawing is a compilation of records, information and data used for reference purposes only. NCWRPC is not responsible for any inaccuracies herein contained.

Source: WI DNR, NCWRPC,
 Division of Forestry - Sep 2008

Wildfire Vulnerability Assessment:

Juneau County has 282,918 acres of forestland, or 55 percent of the total land area, scattered throughout the County. The potential for property damage from fire increases each year as more recreational and retirement homes are developed on wooded land.

The trend toward introducing more human development into fire prone areas has brought about the term wildland urban interface or WUI. The WUI identifies areas where structures and human development meet or intermingle with undeveloped wildlands. It is within these areas where wildfire poses the greatest risk to human lives and property.

The WDNR has completed a statewide evaluation of fire risk, referred to as the CAR or Communities At Risk assessment, see Map 9. This assessment uses extensive DNR geo-databases to analyze and map hazardous woodland fuel types and the degree of the intermixing of development with wildlands. The maps identify the level of risk for each community on a scale of very high, high, moderate, or low, and also have a community of concern designation. Over half of Juneau County is rated very high (Armenia, Necedah - town and village, Clearfield, Germantown, Marion, Kildare, Lyndon and Lyndon Station) or high (Camp Douglas, Lisbon and Lemonweir). Cutler, Fountain and Lindina are designated as communities of concern.

WDNR reports on the Cottonville Fire indicate that the loss of buildings was due, in part, to a lack of access (long, narrow driveways) and a lack of defensible space (free of fuels that can transmit fire to the structure and allow firefighters to safely operate).

Campgrounds are also a concern because of campfires. Juneau County has a significant number of campgrounds. Locations of the campgrounds are shown on Map 8.

Future Probability and Potential Dollar Losses – Wildfire:

Wild fires are relatively common occurrences in Juneau County. Over the 10 year period of analysis, there has been an average of 40 fires per year in the County. In other words, the probability is 1.0 or 100% chance of wildfire each year. However, these fires are typically contained rapidly and remain small, so that each has a minimal impact. The probability of a fire becoming more substantial, like Cottonville, might be estimated at (less than) 10% per year or 0.1.

Because of the relatively small impact of typical individual fires in the County, loss data is not tracked. This makes it difficult to develop an estimate of potential future dollar losses. However, based on the limited damage figures available, it could be estimated that the average cost of a "typical" wildfire in Juneau might be

around \$100,000. Based on this general estimate, over the next ten-year period, wildfire losses in Juneau County could approach \$4 million. With 40 fires per year, the County should expect some fires to "get out of hand" and likely approach or exceed the \$1.4 million in damages of the Cottonville Fire.

HAZARD ANALYSIS: FLOODING/DAM FAILURE

Background on Flood Hazard:

There are a variety of classifications for flooding including coastal, dam or levee failure, flash, lake, riverine, stormwater and urban/small stream. Juneau County has the potential for all these types except coastal flooding. The following descriptions of the types of flooding are compiled from various FEMA and other notable hazard planning sources:

Coastal – Different from other types of flooding which relate to movement of water through a watershed, coastal flooding is due to the effect of severe storm systems on tides resulting in a storm surge. Primarily known as an ocean-based event, the Great Lakes coastal areas can also be affected.

Dam or levee Failure – More of a technology related hazard than a natural hazard, various factors can result in the failure of the structural technology that is a dam, thus causing flooding of areas downstream of the dam often similar in effect to flash flooding.

Flash – Involves a rapid rise in water level moving at high velocity with large amounts of debris which can lead to damage including tearing out of trees, undermining buildings and bridges, and scouring new channels. Dam failure, ice jams and obstruction of the waterway can also lead to flash flooding. Urban /built-up areas are increasingly subject to flash flooding due to removal of vegetation, covering of ground with impermeable surfaces and construction of drainage systems.

Lake – Prolonged wet weather patterns can induce water-level rises that threaten lakeshore areas.

Riverine – Also known as overbank flooding, this is the most common type of flooding event. The amount of flooding is a function of the size and topography of the watershed, the regional climate, soil and land use characteristics. In steep valleys, flooding is usually rapid and deep, but of short duration, while flooding in flat areas is typically slow, relatively shallow, and may last for long periods.

The cause of flooding in rivers is typically prolonged periods of rainfall from weather systems covering large areas. These systems may saturate the ground and overload the streams and reservoirs in the smaller sub-basins that drain into larger rivers. Annual spring floods are typically due to the melting of snowpack.

Stormwater – Water from storm event that exceeds the capacity of local drainage systems, either man-made or natural, can result in flooding. Inadequate storm sewers and drainage systems are often the primary factor resulting in this type of flooding.

Urban and Small Stream – Locally heavy rainfall can lead to flooding in smaller rivers and streams. Streams through urban or built-up areas are more susceptible due to increased surface runoff and constricted stream channels.

Major floods in Juneau County are most common in June; however, they can occur from May through September. Occasionally, intense rainfall or consecutive thunderstorms leads to flash flooding in Juneau County. As most of the county's terrain is relatively flat, ponding of water rather than true flash flooding is more common. While flooding does occur after the snowmelt, these events typically occur in Juneau County after heavy rain patterns.

Flooding is a significant hazard in Juneau County, particularly because it borders the Wisconsin River. As described in Part II, there are approximately 378 miles of streams in Juneau County within ten main watersheds. Four are part of the Central Wisconsin River Basin, while six are a part of the Lower Wisconsin River Basin.

Floodplains exist along the Wisconsin River and the tributaries that feed into it. These floodplains are narrow along tributaries and lakes but extensive throughout the County. Floodplains are described in Part II and shown on Map 4 of this plan. The Federal Emergency Management Agency (FEMA) identifies these floodplains on Digital Flood Insurance Rate Maps (DFIRMs) as downloaded by the NCWRPC from FEMA's website.

There are 118 dams in Juneau County. These dams serve many useful purposes including agricultural uses, providing recreational areas, electrical power generation, erosion control, water level control and flood control. According to the DNR, Juneau County has 48 large dams (including the Petenwell Dam), which have a structural height of over 6 feet and impounds 50 acre-feet or more (See Map 3 and Table 14). The other 69 are regarded as small dams, while one has not been classified. The Wisconsin DNR regulates all dams on waterways to some degree, however the small dams are not stringently regulated for safety purposes. The federal government has jurisdiction over large dams that produce hydroelectricity. Petenwell Dams a major producer of hydroelectricity in Juneau County.

A dam can fail for a number of reasons such as excessive rainfall or melting snow. It can also be the result of poor construction or maintenance, flood damage, weakening caused by burrowing animals or vegetation, surface erosion, vandalism or a combination of these. Dam failure can happen with little warning

resulting in loss of life and significant property damage in an extensive area downstream of the dam.

The WDNR assigns hazard ratings to large dams within the state. When assigning hazard ratings, two factors are considered: existing land use and land use controls (zoning) downstream of the dam. Dams are classified into three categories that identify the potential hazard to life and property downstream should the dam fail. A high hazard indicates that a failure would most probably result in the loss of life. A significant hazard indicates a failure could result in appreciate property damage. A low hazard exists where failure would result in only minimal property damage and loss of life is unlikely. For Juneau County, there are two dams that have a high hazard rating: Mauston and Petenwell. Six dams have a significant rating: Rynearson 1, Ryearson 2, Pool Thirty Three, Sprague Mather Flowage, Potters Flowage, and the Orange Dam while the rest are rated low.

History of Flooding in Juneau County:

Flooding was the principal cause of damage in ten of the thirteen Presidential Disaster Declarations in Juneau County from 1976 to 2016. The most recent declaration as of this plan occurred in 2016 and included most of west central Wisconsin. Heavy rain resulted in flooding that caused numerous road and culvert washouts throughout the southern half of the County. Public sector damages exceeded \$108,000, however individual losses were low at an estimated \$8,000. Damage to public infrastructure resulted in a Presidential Disaster Declaration for ten Wisconsin counties, including Juneau.

In 2010, a stationary front set up across central Wisconsin on the evening of September 22nd. As an unusually moist air mass flowed over this boundary, heavy rain developed and fell repeatedly across the area during the evening and overnight hours. Soils were abnormally wet for this time of year, therefore the extreme rainfall amounts that fell caused significant widespread flooding and flash flooding. The Yellow, Lemonweir and Wisconsin Rivers along with their tributaries flooded, which caused road closures, evacuations, and damage to some roads, homes and businesses. People were evacuated from a campground east of Mauston along the Lemonweir River, while a dozen campers, campsites and sheds were ruined. In Necedah, water rose onto the property of several businesses, while homes on the east side of town were evacuated. Five homes and 2 businesses incurred major damage, while 14 homes and 1 business reported minor damage. Some specific road closures included County Roads G and F, and 11th Street, as well as County Roads HH and N near Lyndon Station. There was \$900,000 in estimated property damage.

On June 7, 2008, a warm front extended west to east across the Upper Mississippi River Valley, producing thunderstorms and excessive rainfall. As the storms congealed into a larger scale line of thunderstorms, they continued to move over the same areas, which led to significant flash flooding through the

evening and overnight. Heavy rainfall continued on June 8, enhancing already dangerous flooding conditions across parts of southwest Wisconsin. Many roads were closed due to water over the roadways, mudslides, or partial washouts. Flash flooding hit parts of southern Juneau County hard with water over several roads and some mudslides. Many creeks rose very rapidly as well. Homes along Lincoln, Lake, South Brooklyn, and Franklin streets were evacuated after the river broke its banks on the afternoon of June 8th in the City of Mauston. About 16 families were displaced in Wonewoc as well. Mudslides began to occur along Highways 82 and 80. Sections of the Elroy-Sparta State bicycle trail were also damaged and caused a closure. There was concern about high water in Mauston as well, especially along the Lemonweir River.

Severe storms again resulted in flooding (and disaster declaration) in 2001 and 2000. Flash flooding was reported near Grand Marsh by the NCDC in 1997 with \$30,000 in damages.

The Flood of 1993 was one of the worst flood events experienced by Juneau County, the state, and entire Midwest. The flooding in Juneau County was a result of several compounding factors including heavy rains and flooding in the fall of 1992. During the winter, Partridge Lake Dam in Juneau County washed out. In the Spring of 1993, the area experienced above average amounts of precipitation. The already saturated ground caused flooding from early June throughout July. Fortunately, before the flood peaks arrived on the Wisconsin River in Juneau County, the Petenwell and Castle Rock Reservoirs were drawn down. This created additional storage capacity that helped ease flow and lowered discharges downstream.

West of the Wisconsin River in the County, there was substantial flooding in a majority of the townships. The City of Mauston, the Village of Wonewoc School District, and numerous homes all experienced flooding and water damage. Standing water plagued the area for months afterward. Juneau County received approximately \$226,934 in disaster disbursements. The major impacts from flooding were to agriculture lands public roadway washouts. In Juneau County, the ASCS provided emergency financial assistance to approximately 200 farmers. Agricultural disaster assistance funded upwards of 1.3 million, while nearly 11 million dollars was estimated in crop losses. High groundwater eroded road bases and caused excessive runoff that washed out culverts and embankments or stripped gravel surfaces off of town roads. In the private sector, the three most common problems were groundwater in basements, failing septic systems, and polluted wells.

Major flooding also occurred in 1973 affecting a large portion of the County with flooding along the entire length of the Mississippi River resulting in a disaster declaration. Flood crest at Wisconsin Dells was 20.7 feet compared to 18.2 feet in 1993. Other notable flooding includes 1967 and 1965 with crests measured at Wisconsin Dells of 19.2 and 19.0 feet respectively.

Table 14: Large Dams in Juneau County			
Official Name	Size	Hazard Rating	EAP Year
Mauston	Large	High	2016
Petenwell	Large	High	2015
Meadow Valley Spillway 6	Large	Low	2012
Meadow Valley Spillway 7	Large	Low	2012
Meadow Valley Spillway 3	Large	Low	2012
Meadow Valley Flowage	Large	Low	2012
Meadow Valley Spillway 5	Large	Low	2012
Meadow Valley Spillway 4	Large	Low	2012
Meadow Valley Flowage	Large	Low	2012
Shuman	Large	Low	2003
Hamm	Large	Low	2002
Partridge Lake	Large	Low	1995
Necedah	Large	Low	1993
Gnirk Family Trust	Large	Low	N/A
Cranberry Creek 2	Large	Low	N/A
Beaver Creek 9	Large	Low	N/A
Little Yellow 18	Large	Low	N/A
New Lisbon	Large	Low	N/A
Necedah Wildlife Refuge 30	Large	Low	N/A
Doyle	Large	Low	N/A
Borge	Large	Low	N/A
Potters Reservoir	Large	Low	N/A
Little Yellow 25	Large	Low	N/A
Necedah Wildlife Refuge 33	Large	Low	N/A
Beaver Creek 4	Large	Low	N/A
Little Yellow 12	Large	Low	N/A
Little Yellow 11	Large	Low	N/A
Beaver Creek 3	Large	Low	N/A
Pawlisch	Large	Low	N/A
Necedah Wildlife Refuge 33	Large	Low	N/A
Little Yellow 19	Large	Low	N/A
Little Yellow 30	Large	Low	N/A
Little Yellow 9	Large	Low	N/A
Little Yellow 13	Large	Low	N/A
Little Yellow 10	Large	Low	N/A
Walsh	Large	Low	N/A
Cusick No.2	Large	Low	N/A
Little Yellow 20	Large	Low	N/A
Trout Lake	Large	Low	N/A
Sarazin	Large	Low	N/A
Beaver Creek 2	Large	Low	N/A
Cusick No.1	Large	Low	N/A
Little Yellow 27	Large	Low	N/A
Rynearson 1	Large	Significant	N/A
Rynearson 2	Large	Significant	N/A
Pool Thirty Three	Large	Significant	N/A
Sprague Mather Flowage	Large	Significant	N/A
Potters Flowage	Large	Significant	N/A

Prior to the construction of the reservoirs at Petenwell and Castle Rock, large-magnitude floods were recorded on the Wisconsin River in September 1911, July 1912, September 1938 and September 1941. A maximum discharge of 72,200

cubic feet per second (cfs) was recorded on September 14, 1938, on the Wisconsin River near Wisconsin Dells just south of the Juneau County line.

Juneau County has not experienced a dam failure with any loss of life or substantial property damage. However, there have been notable incidences of threatened failure in the area. The Town of Rome avoided dam blowouts with the help of many volunteer sandbaggers during the June 2002 flooding when the Lake Camelot dam came within an inch of failure; Lake Arrowhead dam came within seven inches of failure; and Sherwood was about four inches away from failure.

In 2006, the Tri-Lakes dams were again threatening failure. The Kingsway Dam on Upper Lake Camelot is the uppermost dam in a series of dams. Failure of this dam could ultimately lead to failure of 3 other dams downstream and close State Highway 13 as well as various County and local roads. Rapid draw down of the lakes prevented the dam failure and allowed repair of a failing drain system.

Flood Vulnerability Assessment:

Flood events in the County have caused substantial property and infrastructure damage in the past and have the potential to cause future damage, since a significant number of structures still exist in the floodplain. Looking at past events, the following have been significantly impacted by flooding:

- Infrastructure – flooded public facilities and schools
- Utilities - down electric lines/poles/transformers, telephone lines, lost radio communication
- Roadways – washouts, inundated roadways, debris clean-up
- Residential structures – flooded basements, damaged septic systems
- Businesses – loss of commerce
- Agriculture - inundated cropland

To assess the vulnerability of the Juneau County area to flooding hazards, basic inventory data described in Part II must be analyzed. For this purpose, consideration should be given to structures (specifically critical facilities), infrastructure, and cropland.

One of the first reports to reference in assessing vulnerability to structures during flooding is the Wisconsin Repetitive Loss Report. The Repetitive Loss Report provides information to the status of repetitive loss properties by community. FEMA classifies a repetitive loss structure “when more than one flood insurance claim of at least \$1,000 is made within a ten-year period”. The information is used as a floodplain management tool and to supplement information provided by communities for flood mitigation grants administered by WEM. According to the report, there are just two repetitive loss structures currently listed with Juneau County, one is in the Village of Lyndon Station and the other is in the Village of

Wonewoc. Both structures are residential. Data is limited to protect the privacy of owners.

Since there are limited repetitive loss structures, structures within floodplains were analyzed to get a more accurate picture of the potential flood vulnerability in the County, see the methodology outlined below. The floodplain boundaries within Juneau County are shown on Map 4. Table 15 shows the number of structures in each municipality identified as "vulnerable to flooding" according to proximity to floodplains. There were a total of 662 structures identified in the designated floodplain boundaries, see Map 10.

Methodology – Structures within Floodplains:

- 1. NCWRPC downloaded the new DFIRM floodplain maps from the FEMA website into a GIS coverage for the County.*
- 2. A building point cover was digitized from 2015 digital aerial photography of the floodplain areas.*
- 3. The floodplain coverage was then combined with the building point coverage to identify those structures within the floodplain boundary.*
- 4. Total structures with the floodplain were then tabulated by municipality.*
- 5. Average Values from US Census data were used to determine the total value for the identified vulnerable structures by municipality.*

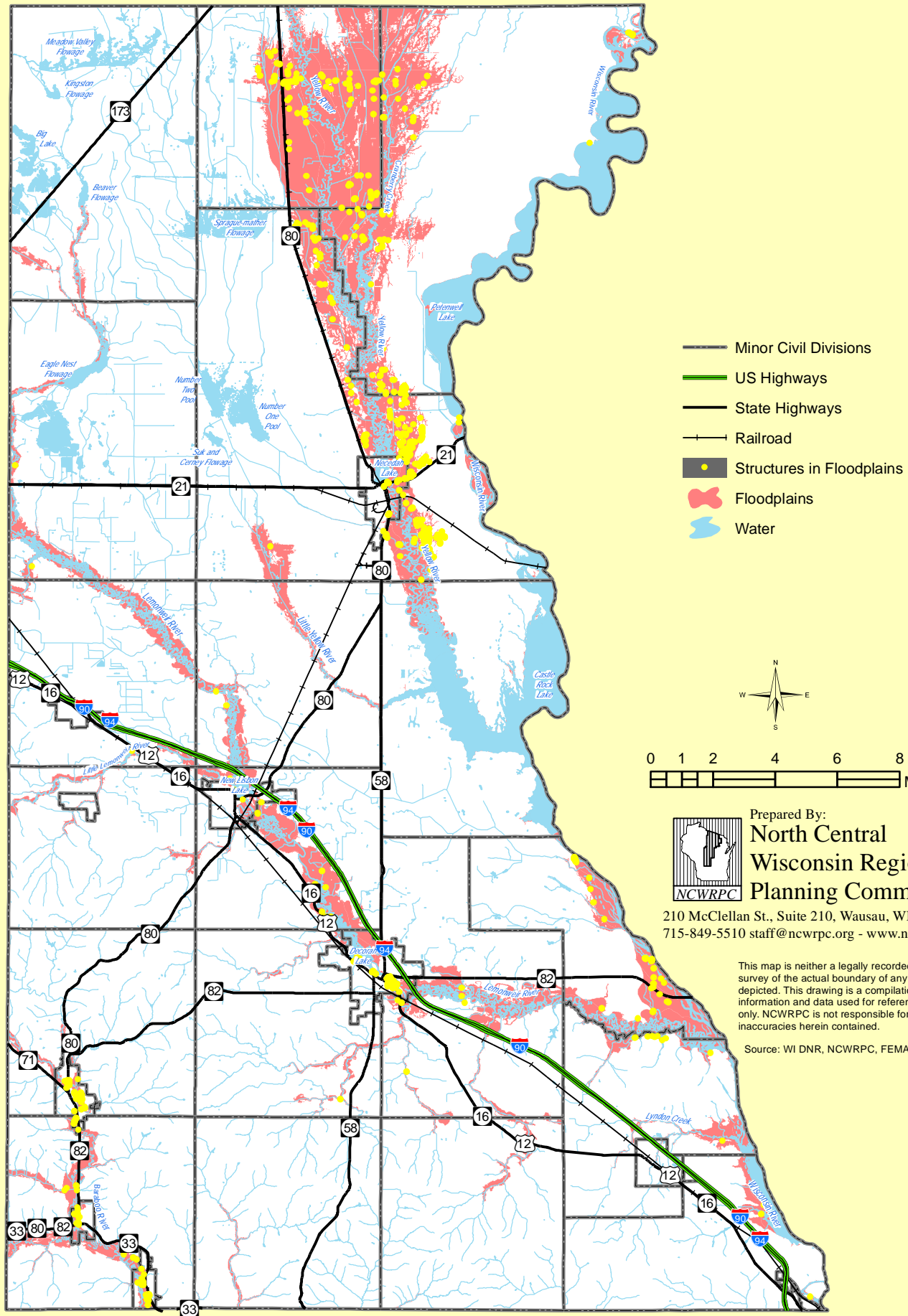
Flooding in Juneau County is often felt beyond the floodplain boundaries due to factors such as topography and high groundwater. The drainage (surface runoff) network in the County is poorly defined. During periods of extended rainfall and/or snowmelt, a general condition of flooding exists throughout the communities. During this time, basements and roadways suffer considerable damage.

In addition to structural damage from flooding, there would be significant damages to public roadways, particularly to roadway surfaces, culverts and bridges. Flooding would inundate or close roadways due to washouts from a period of a few days up to as much as three months. Such interruptions in the County transportation network cause travel delays through detours. Businesses are often impacted by this restriction in access.

Businesses can be forced to close due to septic system problems and other issues resulting from flooding and the high water table. Tourism is an important industry in the County and several campgrounds, lodges, and restaurants may be affected by flooding.

The agriculture industry is a sector that can face substantial losses during a flood. Flood conditions can leave farmers with the following economic setbacks:

- Delayed planting (reduced growing season)
- Prevention of fields from being seeded



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Source: WI DNR, NCWRPC, FEMA

Table 15 Improvement Value - Structures in Floodplain, Juneau County			
Municipality	Number	Total Value	Average Value
Armenia Town	76	\$ 112,200	\$ 8,527,200
Camp Douglas Village	0	\$ 89,700	\$ -
Clearfield Town	2	\$ 123,800	\$ 247,600
Cutler Town	2	\$ 125,000	\$ 250,000
Elroy City	60	\$ 81,600	\$ 4,896,000
Finley Town	98	\$ 103,100	\$10,103,800
Fountain Town	0	\$ 186,800	\$ -
Germantown Town	0	\$ 117,700	\$ -
Hustler Village	0	\$ 85,000	\$ -
Kildare Town	10	\$ 128,000	\$ 1,280,000
Kingston Town	0	\$ 33,800	\$ -
Lemonweir Town	6	\$ 130,000	\$ 780,000
Lindina Town	1	\$ 149,700	\$ 149,700
Lisbon Town	16	\$ 139,500	\$ 2,232,000
Lyndon Town	3	\$ 140,600	\$ 421,800
Lyndon Station Village	0	\$ 104,200	\$ -
Marion Town	39	\$ 145,000	\$ 5,655,000
Mauston City	38	\$ 99,800	\$ 3,792,400
Necedah Village	25	\$ 95,300	\$ 2,382,500
Necedah Town	229	\$ 119,600	\$27,388,400
New Lisbon City	2	\$ 89,000	\$ 178,000
Lyndon Town	3	\$ 140,600	\$ 421,800
Lyndon Station Village	0	\$ 104,200	\$ -
Marion Town	39	\$ 145,000	\$ 5,655,000
Mauston City	38	\$ 99,800	\$ 3,792,400
Necedah Village	25	\$ 95,300	\$ 2,382,500
Necedah Town	229	\$ 119,600	\$27,388,400
New Lisbon City	2	\$ 89,000	\$ 178,000
Orange Town	1	\$ 159,600	\$ 159,600
Plymouth Town	0	\$ 191,000	\$ -
Seven Mile Creek Town	0	\$ 142,200	\$ -
Summit Town	0	\$ 175,400	\$ -
Union Center Village	13	\$ 86,300	\$ 1,121,900
Wisconsin Dells City	0	N/A	N/A
Wonewoc Village	31	\$ 75,300	\$ 2,334,300
Wonewoc Town	10	\$ 154,800	\$ 1,548,000
Juneau County	662	\$ 120,857	\$73,448,200

Source: US Census 2015 and NCWRPC, 2017

- Seed and agricultural chemicals washing out of fields
- Rotting of plants due to excess moisture
- Areas where planted crops left in the fields due to excessive moisture
- Crops not reaching full maturity or stunted growth
- Requirements by farmers to expend higher amounts of money on additional soil amendments
- Lower quality (nutritional value) of harvestable crops as a feed source.

Reductions in quantity can result in loss of revenues from cash crops and increased expenses for purchasing the needed livestock feed from outside sources. Additionally, reductions in crop quality result in lower prices received for cash crops and increased amounts spent for nutritional supplements to animal feed, which need to be added even in much of the purchased feed.

Economic losses to farmers can generate a ripple effect to the local community as well. Reduction in farm income will curtail the farmers' ability to purchase new equipment and make other improvements. Farmers will have less money to spend at farm dealers, farm supplies, building/hardware suppliers, fertilizer, feed and seed dealers, and other agribusiness and retail establishments. The State itself will have reduced tax revenues. Farmers will have less money to save and invest, and suffer still more increases in debt load.

The forest products industry is affected similarly to agriculture. Forestlands become too wet for logging operations and many water logged tree plantations suffer high mortality rates. Mill inventories become very low, resulting in increased prices for consumers.

The areas considered to have a higher risk for impact from flooding include those communities with structures in floodplains as shown in Map 10.

Future Probability and Potential Dollar Losses – Flood:

Based on the historic data presented here (frequency of past events), Juneau County can expect a significant flood event about every 4 years on average. This equates to a probability of 0.40 or about a 40 percent chance in a given year.

Due to the significant number of dams and particularly large dams with high hazard ratings, dam failure is an important hazard event to plan for in Juneau County. However, based on past experience, the actual probability of a major dam failure is very low.

Historic data is again used to estimate potential future dollar losses due to flood. On average, Juneau County might expect property and crop losses of \$2.4 million on average, per flood occurrence based on the study period of 2004 to 2013. Over the next ten-year period, flood losses in Juneau County could

approach 9.63 million. However, there is always the chance that a more significant flood will occur like 1993 with greater potential for damage.

HAZARD ANALYSIS: WINTER STORMS / EXTREME COLD

Background on Winter Storms/Extreme Cold Hazard:

A variety of weather phenomena and conditions can occur during winter storms. For clarification, the following are National Weather Service descriptions of winter storm elements:

Heavy snowfall – the accumulation of six or more inches of snow in a 12-hour period or eight or more inches in a 24-hour period.

Blizzard – the occurrence of sustained wind speeds in excess of 35 miles per hour accompanied by heavy snowfall or large amounts of blowing or drifting snow.

Ice Storm – an occurrence where rain falls from warmer upper layers of the atmosphere to the colder ground, freezing upon contact with the ground and exposed objects near the ground, with accumulations of ¼" or greater.

Freezing drizzle/freezing rain – the effect of drizzle or rain freezing upon impact on objects that have a temperature of 32 degrees Fahrenheit or below.

Sleet – solid grains or pellets of ice formed by the freezing of raindrops or the refreezing of largely melted snowflakes. This ice does not cling to surfaces.

Wind chill – an apparent temperature that describes the combined effect of wind and low air temperatures on exposed skin.

Winter storms can vary in size and strength and include heavy snowfall, blizzards, ice storms, freezing drizzle/freezing rain, sleet, wind chill, and blowing and drifting snow conditions. Extremely cold temperatures accompanied by strong winds can result in wind chills that cause bodily injury such as frostbite and death.

True blizzards are rare in Wisconsin. They are more likely to occur in the northwestern part of the state than in south-central Wisconsin, even though heavy snowfalls are more frequent in the southeast. However, blizzard-like conditions often exist during heavy snowstorms when gusty winds cause the severe blowing and drifting of snow. Heavy snow and ice storms have been part of nearly every winter in Juneau County.

Dangerously cold conditions can be the result of the combination of cold temperatures and high winds. The combination of cold temperatures and high

wind creates a perceived temperature known as "wind chill". Wind chill is the apparent temperature that describes the combined effect of wind and air temperatures on exposed skin. When wind blows across the skin, it removes the insulating layer of warm air adjacent to the skin. When all factors are the same, the faster the wind blows the greater the heat loss, which results in a colder feeling. As winds increase, heat is carried away from the body at a faster rate, driving down both the skin temperature and eventually the internal body temperature.

The National Weather Service issues wind chill advisories when wind chill readings of -20 to -34 degrees are expected. Wind chill warnings are issued when wind chill values are expected at or below -35 degrees. Extreme cold events are most likely during the months of January and February.

History of Winter Storms/Extreme Cold in Juneau County:

NOAA has reported 34 winter storm events for Juneau County between 2006 and 2015. All of these storms contained some form of snow, sleet, freezing rain, or ice conditions.

Most recently, a winter storm hit western Wisconsin on December 28 - 29, 2015 with heavy snow, sleet and strong winds. As the storm lifted north out of the Southern Plains states, snow moved into western Wisconsin during the late morning of the 28th. For parts of southwest Wisconsin, this snow was mixed with or completely changed over to sleet during the afternoon and early evening of the 28th. The heaviest snow fell during the late afternoon and early evening of the 28th with 1 to 2 inch per hour rates. This caused a rapid deterioration in road conditions causing travel to quickly become dangerous. By the time the snow ended on the 29th, totals across western Wisconsin ranged from 5 to 11 inches. The highest reported total was 11.5 inches near Black River Falls and Warrens (Monroe County). Snow observers reported around 6 inches of snow across Juneau County. The highest reported total was 6 inches in Union Center. Winds gusting into the 30 to 35 mph range created blowing and drifting snow.

Blizzard conditions were reported in Juneau County four times during the study period, including: February 24, 2007, February 17, 2008, December 11, 2010 and December 20, 2012.

In 2012, a strong area of low pressure moved out of the Central Plains into the Great Lakes region on December 19th and 20th. As this storm moved by, it produced a period of blizzard conditions during the morning and afternoon of the 20th as sustained north winds of 25 to 35 mph with higher gusts created poor visibility from falling and blowing snow. Accumulations reached winter storm criteria of 6 inches between midnight and 7 a.m. on the 20th. The Governor issued an executive order declaring a state of emergency before the storm; placing state emergency management, National Guard, State Patrol and other agencies on alert. National Guard troops were used to help rescue stranded

drivers in some areas. The strong winds created blizzard conditions across Juneau County during the morning and afternoon of the 20th. As a result of the blizzard, roads were closed, vehicles became trapped in the snow, some power outages occurred and all schools in the County were closed. The highest reported snow total was 9.0 inches in Mauston (other areas of the state received up to 15 inches).

Minor icing is a common factor with winter storms during the study period, but only one event was classified as a full ice storm during this time. On March 8, 2009, a low pressure system developed and moved into the Central Plains in the afternoon hours and spread a wintry mix of freezing rain, sleet and snow across portions of southwest and central Wisconsin. Ice accumulations of a half of an inch were reported. A National Weather Service observer measured a quarter of an inch of ice accumulation seven miles south of Mauston.

Snow fall totals of 6 to 10 inches were commonly reported with winter storm events over a 2 or more day period from 2006 to 2015. However, the potential for more significant snowfall exists. According to the National Weather Service, the all-time record one-day snow fall is 14.3 inches that occurred at Mauston on March 8, 1946. Between December 11 and 12, 2010, a powerful low pressure system tracked across the Upper Midwest and Great Lakes region. This storm brought heavy snow and blizzard conditions across portions of western and central Wisconsin. Juneau County was within a large area of the state that received about 20 inches of snow. In addition to the heavy snow, sustained wind speeds of 25 to 30 miles per hour with gusts up to 50 miles per hour caused whiteout conditions, widespread road closures, stranded motorists and power outages. Most roads were reported to be impassable and vehicles were stuck on roadways.

Between February 20 and 21, 2011, a winter storm came out of the southwest United States and brought snow, sleet and freezing rain to western Wisconsin. Snowfall amounts of 6 to 8 inches were common across the County by 8 a.m. on the 21st and total accumulations ranged from 8 to 10 inches across the southern part of the County up to 15 inches across the north. In addition to the precipitation, strong winds hit the area with sustained winds of 20 to 25 mph and gusts between 30 and 35 mph.

On February 17, 2008, a powerful winter storm moved from Missouri to lower Michigan. This system brought freezing rain initially during the early morning hours with some ice accumulation, but by mid-morning, precipitation changed to all snow and was accompanied by strong northwest winds gusting up to 30 to 35 mph. The combination of heavy snow and strong winds caused blizzard conditions generally along and east of a line from Cassville to Necedah Wisconsin. Parts of Juneau County received snowfall accumulations of around 1 foot.

Arctic cold outbreaks are common in the upper Midwest and sub-zero readings occur 19 times per winter on average depending on snow depth and other factors. Occasionally strong northwest winds will combine with cold outbreaks to create dangerous wind chill conditions. The coldest temperatures are usually in January and February with average lows in the single digits and record lows colder than -25 degrees. The all-time record low in Juneau County is -43 degrees (actual) set in 1951. The NOAA reports 10 extreme cold events between 2006 and 2015.

Most recently, wind chills of 35 to 45 below were common across western Wisconsin from January 27 to 28, 2014. These dangerous wind chills occurred behind a strong cold front that moved across the region on January 26. As temperatures fell behind the front, strong northwest winds started pushing the wind chills to 35 below or colder during the early morning of the 27th. Most locations then had wind chills of 35 below or colder into the morning of the 28th, which was when warmer air started to spread back across the area. All the schools across western Wisconsin were closed on both January 27th and 28th. Wind chills of 35 below or colder occurred across Juneau County from the morning of January 27th into the morning of the 28th. The lowest recorded wind chill was 38 below from the automated weather observing equipment at Volk Field.

In 2009, an arctic cold front over southern Canada moved southeast into the Ohio River valley in the evening hours of January 14th. This brought bitterly cold temperatures and wind chills across portions of southwest and central Wisconsin in the evening hours of January 14th through the morning hours of January 16th. Unofficial lowest wind chill values ranged from -37F at Necedah to -42F at Volk Field in the morning hours of January 15th.

Winter Storms / Extreme Cold Vulnerability Assessment:

Winter storms present a serious threat to the health and safety of affected citizens and can result in significant damage to property. Heavy snow or accumulated ice can cause the structural collapse of buildings, down power lines, motor vehicle accidents or isolate people from assistance or services.

The following is a list of things that may be adversely affected by a winter storm. Much of these community assets can be referenced in Part II.

- Infrastructure – operation of emergency services, operation of public facilities and schools
- Utilities – down power and telephone lines
- Transportation – automobile accidents, roadway plowing, salting/sanding
- Residential – roofs
- Businesses – commerce
- Agricultural - livestock

Based on review of the historic events of winter storms and extreme cold, there are no specific areas in the County that have unusual risks. Winter storms cover a broad area and are a region-wide concern. However, during the city/village planning meetings for this Plan Update, Hustler, Mauston and New Lisbon identified winter storm and/or extreme cold as a major vulnerability concern due to snow and ice removal demands and issues related to providing adequate warming shelter for residents in a major snow or ice storm where power may be out, possibly for extended periods.

The extreme cold weather can affect the entire County. The risk to public health includes the chance of getting frostbite and hypothermia, and motor vehicle accidents. Everyone is at risk for becoming injured in extreme cold weather, either because of a frail body or because of travel in a motor vehicle.

Future Probability & Potential Dollar Losses – Winter Storms/Extreme Cold:

Based on historical frequency, Juneau County can expect 3.4 significant winter storms per year on average. In other words the probability is 1.0 or a 100 % chance in a given year. For extreme cold temperatures, based on historical frequency, Juneau County can expect an occurrence every year on average. So again, the probability is 1.0 or a 100 % chance in a given year.

Estimating potential future losses for winter storms is difficult. Damages and losses are typically widespread. Auto accidents and additional snow removal time are typical impacts of winter storms, and such claims are not aggregated or tracked for monetary damage. Winter storms do have the potential to be extremely destructive, particularly in the case of ice storms. Potential future losses per incident might range from \$5,000 to \$2 million based on experiences from other counties.

HAZARD ANALYSIS: SEVERE THUNDERSTORM / HIGH WIND / LIGHTNING / HAIL**Background on Severe Thunderstorm Hazard:**

The National Weather Service definition of a severe thunderstorm is a thunderstorm event that produces any of the following: downbursts with winds of 58 miles per hour or greater (often with gusts of 74 miles per hour or greater), hail 1 inch (recently increased from ¾ inch) in diameter or greater or a tornado. Strong winds, hail, and lightning will be addressed in this section, however tornados will be referenced as a separate hazard.

Lightning results from discharge of energy between positive and negative areas separated by rising and falling air within a thunderstorm. This discharge heats the surrounding air to 50,000 degrees. Hail results as the warm rising air cools, forming ice crystals which are held by the updrafts until accumulating enough weight to fall. The hail size depends on strength of the updrafts keeping it up.

Thunderstorms frequency is measured in terms of incidence of thunderstorm days or days on which thunderstorms are observed. Wisconsin averages between 30 and 50 thunderstorm days per year depending on location. A given county may experience ten or more thunderstorm days per year. The southwestern area of the state normally has more thunderstorms than the rest of the state.

History of Severe Thunderstorms in Juneau County:

The NOAA database has reported 41 severe storm events for Juneau County between 2006 and 2015. These storms typically contain some form of heavy rain, strong winds, and lightning. About 19 significant hail events, typically related to a severe thunderstorm, were listed during this time period. There were also three notable lightning incidents identified.

Most recently, a complex of thunderstorms developed over Minnesota during the evening hours of July 12, 2015. As these storms move southeast during the early morning hours of the 13th, they strengthened over central Wisconsin and started producing damaging winds. A reporting station near Necedah measured a 62 mph wind gust and trees were blown down.

On September 2, 2011, severe thunderstorms produced damaging winds during the morning hours across portions of southwest and central Wisconsin. Numerous trees and power lines were down across the area, and over 10,000 residents lost power and schools were either delayed for two hours or closed in these areas. Several trees were blown down near Sandstone Estates with one falling on trailer. NOAA reported damage estimate was \$26,000

On May 22, 2011, severe thunderstorms that produced 3 damaging tornadoes across southwestern Wisconsin also generated baseball size hail just east of Mauston. Hail damage estimate was about \$25,000.

On October 26, 2010, a low pressure system deepened over northern Minnesota and set the Wisconsin state record for the lowest recorded barometric pressure. This system was responsible for high winds across portions of southwest and central Wisconsin in the morning hours of October 26th and the daytime hours of the 27th. Numerous trees blown were blown down; some power lines also came down causing power outages across western and central Wisconsin. Sporadic damage to roofs and buildings also occurred. Several trees were reported down across the A peak gust of 61 mph was reported near Necedah and Volk Field had a gust of 56 mph.

On September 22, 2010, a stationary front set up across central Wisconsin in the evening. As an unusually moist air mass flowed over this boundary, heavy rain developed and fell repeatedly across the area during the evening and overnight hours. Soils were abnormally wet for this time of year, therefore the extreme

rainfall amounts that fell caused significant widespread flooding and flash flooding. Buffalo, Trempealeau, Jackson, Taylor, Clark, and Juneau counties were included in a federal disaster declaration as a result. The storm total rainfall at Volk Field was 3.26 inches, while 2.90 inches fell near Necedah.

In June 2010, thunderstorms developed along a cold front and moved over central Wisconsin in the evening hours of June 12th. Lightning from the thunderstorms struck an oak tree and killed a dozen cows on a farm near County Highway N.

In June 2008, a warm front extending east to west across the Upper Mississippi River Valley was the focus for a significant severe weather event on June 7. The event produced four tornadoes, numerous reports of wind damage and large hail. On Sunday, June 8, the warm front was lingering across the region, but a cold front was quickly tracking east out of the northern Plains. Showers and storms redeveloped during the day in the vicinity of the warm front, while a line of storms developed out ahead of the cold front, with these tracking across the region Sunday night. The severe weather activity, aside from heavy rain, was not as widespread compared to Saturday, June 7. Two individuals were struck by lightning in the Town of Germantown. One of the victims did require treatment for the minor injuries.

On August 23 and 24, 2006, Hail as large as baseballs, along with thunderstorm wind gusts as high as 75 mph, were reported across southwest Wisconsin. Waves of hail repeatedly moved over the same areas, especially along the Interstate 94 corridor. There was substantial damage to corn and soybean fields, as well as cranberry plants. Cranberry crop loss was projected at 50 percent in some areas. The hail also shattered windshields of numerous vehicles, broke windows and damaged roofs and siding of homes. Total crop damage totaled close to 14 million dollars, with damage to vehicles and homes totaling nearly 3 million dollars. Within Juneau County, NOAA damage estimates totaled \$235,000 in property damage and \$365,000 in crop damage.

Severe Thunderstorm Vulnerability Assessment:

The National Weather Service can forecast and track a line of thunderstorms that may be likely to produce severe high winds, hail, and lightening but where these related hazards form or touch down and how powerful they might be, remains unpredictable. The distribution of thunderstorms and related hazard events have been widely scattered throughout the County.

Many thunderstorm events (without tornados) have caused substantial property and infrastructure damage, and have the potential to cause future damage. In order to assess the vulnerability of the Juneau County area to thunderstorms and related storm hazards, a review of the past events indicate significant impacts to:

- Infrastructure – hospitals, schools, street signs, police and fire departments
- Utilities - electric lines/poles/transformers, telephone lines, radio communication
- Transportation – debris clean-up
- Residential - mobile homes, garages, trees and limbs, siding, windows
- Businesses – signs, windows, siding, billboards
- Agricultural - buildings, crops, livestock
- Vehicles – campers, boats, windshields, body, paint

Based on review of the historic patterns of thunderstorms associated with high wind, hail, or lightening, there are no specific municipalities that have unusual risks. The events are relatively uniform and a countywide concern. However, during the city/village planning meetings for this Plan Update, Hustler, Necedah and New Lisbon identified severe thunderstorm as a major vulnerability concern due to potential damages from high winds including impact on local electric utilities.

Future Probability and Potential Dollar Losses - Severe Thunderstorms:

Based on historical frequency, Juneau County can expect 4.1 thunderstorm events per year on average. In other words, the probability is 1.0 or a 100% chance of multiple storms in a given year. The probability of a thunderstorm with damaging hail in Juneau County is also at 1.0 or 100% chance with about 1.9 incidents in a given year. There is not enough data available regarding lightning events to indicate probability.

According to the NCDC, historic thunderstorm events with associated high wind and reported damages averaged \$4,779 in property damage per incident and \$1,000 in reported crop damage. Historic thunderstorm events with associated hail that reported property damage averaged \$39,114 and \$52,142 in reported crop damage. Historic thunderstorm events with associated lightening that reported property damage averaged \$10,750. Losses in Juneau County associated with severe thunderstorms could approach \$1.9 million over the next ten-year period.

HAZARD ANALYSIS: DROUGHT / EXTREME HEAT**Background on Drought / Extreme Heat Hazard:**

A drought is an extended period of unusually dry weather, which may be accompanied by extreme heat (temperatures which are 10 or more degrees above the normal high temperature for the period). There are basically two types of drought in Wisconsin: agricultural and hydrologic. Agricultural drought is a dry period of sufficient length and intensity that markedly reduces crop yields. Hydrologic drought is a dry period of sufficient length and intensity to affect lake

and stream levels and the height of the groundwater table. These two types of drought may, but do not necessarily, occur at the same time.

Droughts, both agricultural and hydrologic, are relatively common in the state. Small droughts of shortened duration have occurred at an interval of about every ten years since the 1930's.

Extended periods of warm, humid weather can create significant risks for people, particularly the elderly who may lack air conditioning or proper insulation or ventilation in their homes. Animals are also at risk during extended periods of heat and humidity. The National Weather Service issues a Heat Advisory when the Heat Index ranges from 105 to 114 degrees daytime and remains at or above 80 degrees at night, during a 24-hour period. The heat index combines the effects of heat and humidity to better reflect the risk of warm weather to people and animals. When heat and humidity combine to reduce the amount of evaporation of sweat from the body, outdoor activity becomes dangerous even for those in good shape. The index measures the apparent temperature in the shade. People exposed to the sun would experience an even higher apparent temperature. A heat index of 105 is considered dangerous and prolonged exposure can result in heat stroke, exhaustion and cramps. People should be reminded to use extreme caution when the heat index is between 95 and 105. A heat index of 95 occurs when the temperature is 90 degrees and the relative humidity is 50 percent.

History of Drought / Extreme Heat in Juneau County:

NOAA reports indicate that much of Wisconsin including Juneau County was under drought conditions between 2004 and 2013. At one point, the Governor had declared a state of emergency to get assistance to the state's agricultural sectors. The extended dry conditions posed serious challenges for farmers from drought stressed crops to issues providing feed for livestock.

Beginning in 2013, improved rainfall across the Midwest gradually relieved the drought in Wisconsin. Nationally, however, what is being tagged as the 2012-2015 North American Drought has affected over 80% of the U.S. as well as parts of Canada and Mexico, and drought continues to affect parts of the country. This drought is on track to exceed the 1988-89 drought, which also affected Wisconsin/Juneau County, as the costliest natural disaster in U.S. history.

Juneau County experienced the 1988-1989 drought with the rest of the Midwest. It was characterized not only by below level precipitation, but also persistent dry air and above normal temperatures. Stream flow measuring stations in the state indicated a recurrence interval of between 75 and 100 years. The drought occurred early in the growing season and resulted in a 30-60% crop loss, with agricultural losses set at \$1.3 billion for the state. No statistics were available for the amount of crops lost in Juneau County, but 52 percent of the state's 81,000 farms were estimated to have losses of 50 percent or more, with 14 percent

estimated having losses of 70 percent or more. Some rural wells went dry, and water conservation was instituted in the rural areas

The drought of 1976-1977 was most severe in a wide band stretching from north to south across the state. Stream flow measuring stations recorded recurrence intervals from 10 to 30 years. Agricultural losses during this drought were set at \$624 million. Juneau County was one of 64 counties that were declared federal drought areas and deemed eligible for assistance under the Disaster Relief Act.

According to the National Weather Service, Juneau County has been affected by a number of heat waves over the years (16 since 1982 with 3 documented fatalities). The warmest temperature (actual) on record in Juneau County was 107 degrees F set on August 24, 1948.

The NOAA database has two recent listings for extreme heat events. The most recent was in 2012 when a hot air mass settled over Wisconsin in early July, bringing highs of 100 degrees or hotter to central Wisconsin from July 2 through July 9. Relative humidity was low, but heat indices still managed to reach the 100 to 110 range. Volk Field recorded a peak heat index of 113 on July 5th. One person died from heat related causes during the evening of July 9th. The person lived in a house which did not have air conditioning and was taking a medication that did not allow the body to sweat. An average of 3 to 4 people a day were treated for heat related illnesses.

In 2011, warm and humid air invaded western Wisconsin on July 17th and remained in place for the next three days. A number of people were treated for heat related illnesses. Afternoon heat indices routinely topped out between 110 and 120. Within Juneau, the highest recorded heat index was 114 at Volk Field on the 18th with a dew point of 85. Little relief occurred at night, as overnight lows remained above 75 degrees. Most of the counties across western Wisconsin opened cooling centers.

Drought / Extreme Heat Vulnerability Assessment:

Droughts can have a dramatic effect on Juneau County. The County has nearly 107,000 acres of farmland or 21% of its land area dedicated to farming. With agriculture being a critical sector of the County's economy, droughts have disastrous effects. Even small droughts of limited duration can significantly reduce crop growth and yields, adversely affecting farm income. More substantial events can decimate croplands and result in total loss, hurting the local economy.

Irrigation can draw water that otherwise would naturally go to aquifers or surface waters. Drought can exacerbate the problem when high withdrawal rates versus little precipitation deplete waterbodies and aquifer supplies, therefore decreasing drinking water supplies, drying streams, and hindering aquatic and terrestrial wildlife. During severe droughts, some wells - mainly private wells - will go dry.

Another significant area of impact from drought includes the tourism sector of the economy. Campgrounds and other outdoor/recreational operations report a downturn in business as potential patrons remain at home.

Droughts can trigger other natural and man-made hazards as well. They greatly increase the risk of wildfires because of extreme dryness. In addition, the loss of vegetation in the absence of sufficient water can result in flooding, even from average rainfall, following drought conditions.

The following is a list of things that may be adversely affected by a drought. Much of these community assets can be referenced in Part II.

- Infrastructure – municipal water supplies
- Surface water –groundwater reserves, recreation, and wildlife
- Forests
- Agricultural - crops, livestock

The areas most susceptible to drought conditions would be agricultural towns. Agricultural land is scattered throughout the County but largely the Towns of Armenia, Orange, Fountain, Plymouth, Wonewoc, Lisbon, Lindina, Summit, Lemonweir, Seven Mile Creek, Kildare and Lyndon.

According to the Wisconsin Emergency Management, excessive heat has become the most deadly hazard in Wisconsin in recent times. Extreme heat can happen anywhere within Juneau County affecting everyone, however the elderly and young are the ones with the highest risk of getting heat related injuries, which can lead to death. Ways to prevent injuries include wearing light-colored clothing, drinking plenty of water, slowing down, and not staying in the sun for too long.

Future Probability and Potential Dollar Losses – Drought/Extreme Heat:

Based on the historic data presented here (frequency of past events), Juneau County can expect a drought every ten years on average, which is a probability of 0.10 or a 10 percent chance in a given year. Significant severe drought is somewhat less common, affecting Wisconsin once about every 15 years.

Drought is another hazard lacking good loss figures at the county level. However, a look at aggregate data for two major droughts can give some indication of potential impact. The two major droughts in Wisconsin resulted in losses of \$9.6 million (1976-77) to \$18 million (1987-88) per county on average.

Normally, central Wisconsin is known for its cold winters, however, extreme heat waves will affect Juneau County in the future. Juneau County can expect a heat wave once every 5 years or a 20 percent chance in a given year based on the historic data presented.

HAZARD ANALYSIS: HAZARDOUS MATERIALS INCIDENTS**Background on Hazardous Materials Incidents Hazard:**

This type of hazard occurs with the uncontrolled release or threatened release of hazardous materials from a fixed site or during transport that may impact public health and safety and/or the environment.

Under the Emergency Planning and Community Right to Know Act (EPCRA), a hazardous material is defined as any chemical that is a physical hazard or health hazard [defined at 29 CFR 1910.1200(c)] for which the Occupational Health and Safety Administration (OSHA) requires a facility to maintain a Material Safety Data Sheet (MSDS). Under EPCRA there is no specific list of hazardous materials. An extremely hazardous substance (EHS) is defined as one of 356 substances on the United States Environmental Protection Agency list of extremely hazardous substances, identified at 40 CFR Part 355.

EPCRA of 1986 also known as SARA Title III, brings industry, government and the general public together to address emergency planning for accidental chemical releases. The emergency planning aspect requires communities to prepare for hazardous chemical releases through emergency planning. This provides essential information for emergency responders. The community right-to-know aspect increases public awareness of chemical hazards in their community and allows the public and local governments to obtain information about these chemical hazards.

Counties in Wisconsin, including Juneau County have a Local Emergency Planning Committee (LEPC) that is set up in accordance with the federal legislation and is responsible for implementation of EPCRA at the county level. The County Emergency Management Director is a member of the LEPC to ensure continuity and coordination of emergency response planning.

To meet the requirements of Title III of EPCRA, the LEPC developed the County Hazardous Materials Response Plan. This plan establishes policies and procedures for responding to hazardous material incidents. The LEPC is required to review, test, and update the plan every two years. Methods for notification and reporting an incident are outlined in the plan. This plan also works in conjunction of the County Emergency Response Plan (ERP) where alert to the public, communications, and response procedures are outlined. The plan is tested through tabletop, functional and full-scale exercises and actual response situations.

To provide a high level of hazardous materials response capabilities to local communities, Wisconsin Emergency Management contracts with 22 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. Juneau County is located in the Southwest Taskforce area. 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 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.

History of Hazardous Materials Incidents in Juneau County:

Juneau County hazardous materials response incidents since 2006 are shown in Table 16. These have been primarily small, low hazard spills. In most cases these incidents were quickly resolved by the County team.

Table 16	Juneau County Hazardous Materials Incidents
Date	Description
05/05/08	New Lisbon: Crop Duster Crash - 600 lbs aviation fuel
08/22/09	Armenia: Crop Duster Crash - 150 gallons insecticide
09/03/09	Camp Douglas: Possible Reptile Poison - regional team called in to test substance before clean-up.
12/18/09	CTH K & St. Clair Rd: LPG Truck Roll Over - standby
01/23/11	Mauston: WI River Coop Tank Leak - 26,000 lbs liquid feed
10/23/11	Necedah: Car Accident - leaking mineral oil
04/25/13	Seven Mile Creek: Truck Rollover - 2 tons dry fertilizer road cleared and ditch pumped out
<i>Source: Juneau County Emergency Management, 2017</i>	

Hazardous Materials Incidents Vulnerability Assessment:

In 2013, the Juneau County LEPC sponsored a detailed Hazardous Materials Commodity Flow Study. This Study inventoried the risk factors that make hazardous materials incidents a keen concern in Juneau County, which are reviewed below:

Fixed Facilities

The Commodity Flow Study identified 38 facilities within the County meeting reporting the requirements for one or more hazardous chemicals. These are sites that have hazardous substances present at any one time in amount equal to or exceeding the chemical-specific threshold planning quantity (TPQ).

Highway

Trucks carry the bulk of hazardous materials to and through the County. Regular shipments of gasoline, propane, acid and other substances are delivered across Wisconsin. Every roadway in the County is a potential route for hazardous material transport, but major transportation routes are Interstate 90/94, US12/16, and State Highways 21, 58, 80, 82 and 173 (see Map 5).

The Commodity Flow Study monitored traffic at key locations and counted trucks with Hazardous Warning Placards. The locations of the intersections and the total number of trucks with hazardous materials are seen in Table 16a.

Table 16a – Number of Trucks Carrying Hazardous Materials at Intersections in County	
Intersection	# of Trucks
State Hwys. 21 & 80	53
State Hwy. 82 & I90/94	39
US Hwy 12/16 & North Road	4
State Hwys 80/82 & 71	18
State Hwys 80/82 & 33	16
Interstate 90/90 (various points)	295

Source: Juneau Co. Commodity Flow Study, 2013.

Railroad

Three major freight railroads operate in Juneau County, including Canadian National (CN), Canadian Pacific (CP) and Union Pacific (UP). Track routing can be seen on Map 5. Rail stations and junctions include: New Lisbon Junction, Marquis Energy Spur (Necedah), CN-UP Junction Loop (Necedah), Camp Douglas Junction, and Volk Field Siding. All three railroads transport a wide range of hazardous materials through the County, see Table 16b. Although trucks transport most of the hazardous materials in the state and the U.S., rail can carry significantly larger loads of hazardous materials.

Table 16b – Top Hazardous Commodities Transported on Rail In Juneau County by Carrier			
Material	CN	CP	UP
Petroleum Crude Oil		X	
Alcohols		X	
Environmentally Hazardous Substances (Liquid)		X	
Molten Sulfur		X	X
Hot Asphalt		X	X
Potassium Hydroxide	X		
Chlorine	X		
Sodium Hydroxide	X		
Hydrochloric Acid	X		X
Ethanol-Gasoline	X		
Sulfuric Acid			X
Ferric Chloride Acid			X

Source: Juneau Co. Commodity Flow Study, 2013.

Obtaining detailed information for emergency planning from the railroads can be difficult, but the study cited 4,000 rail car loads of hazardous materials moving through the County annually from one carrier and "significantly more than that" on another. Carloads were not mentioned for the third carrier.

Pipeline

No major pipelines directly traverse Juneau County, but the Enbridge Petroleum Pipeline comes in close proximity, particularly at the northeast corner, as it runs through neighboring Adams County. Approximately 1.5 million barrels per day move through this pipeline. There have been significant incidents with this pipeline at varying points along its track through Wisconsin, including a leak of 176,000 gallons of crude oil in Rusk County in 2007. Groundwater contamination was the primary consequence of that spill.

A high capacity natural gas main owned by Northern Natural Gas enters the County from the south and branches out to the distribution network at Elroy, Mauston, New Lisbon, Union Center and Wonewoc. A variety of gas utilities use this network to service customers. According to the Commodities Flow Study, natural gas pipelines while not common are not rare either and can be very dangerous. Large amounts of explosive gas can escape quickly from a breach.

A hazardous materials incident can have far reaching impacts, however, those communities which are traversed by major highways, rail or pipeline are susceptible to a higher risk, refer to Maps 5 and 6.

Future Probability & Potential Dollar Loss – Hazardous Materials Incidents:

Based on the historic data presented here (frequency of past events), Juneau County can expect about a minor hazardous material release about every 1.4 years on average, which is a probability of 0.7 or a 70 percent chance in a given year.

There is insufficient data to determine the probability of a major incident. However, with the number of verified trucks carrying hazardous materials and major freight rail lines moving through the County, the chances appear to be significant for a catastrophic hazardous materials incident occurring at some point in Juneau County.

As with the probability, there is limited historic data to base an estimate of potential dollar losses from HazMat incidents. However, based on occurrences statewide, damages range from \$100 to \$10.5 million per incident. The higher end of the range is not impossible in Juneau County.



HAZMAT Exercise

HAZARD ANALYSIS: MASS CASUALTY INCIDENTS**Background on Mass Casualty Incidents Hazard:**

A mass casualty incident is any situation in which emergency medical personnel and the scene are overwhelmed by the number and severity of fatalities and/or injuries. Juneau County Emergency Management defines a mass casualty incident as one involving upwards of 35 victims requiring transport by emergency medical services.

For purposes of this study, the Mass Casualty Incidents section will focus on the following situations that are likely to result in mass casualties should they occur:

- *Civil Disorder*
- *Terrorism*
- *Pandemic*
- *Transportation Accidents*
- *Other Unanticipated Events (such as building collapse)*

It is important to note that any of the hazards addressed in this plan could lead to a mass casualty incident.

Civil disorder, also known as civil unrest or civil strife, is a broad term that used by law enforcement to describe one or more forms of disturbance caused by a group of people. Civil disturbance is typically a symptom of, and a form of protest against, major socio-political problems; the severity of the action coincides with public expression(s) of displeasure. Examples of civil disorder include, but are not necessarily limited to: illegal parades; sit-ins and other forms of obstructions; riots; sabotage; and other forms of crime. They can be planned or spontaneous demonstration to the public and the government, but can escalate into general chaos.

Terrorism is typically a preplanned targeting of an armed assault or a biological, chemical or explosive (potential WMD, Weapon of Mass Destruction) attack on a high value site or population concentration where a group or individual can maximize the number of human casualties or the amount of damage to a facility or organization. Juneau County has a number of potential targets.

Pandemic disease or illness, be it natural or man-caused, is a real concern for emergency managers and health care professionals. Though many of the illnesses that historically created major problems in Juneau County can now be successfully prevented or treated, others continue to pose a serious threat, such as H1N1 aka swine flu.

A transportation accident or incident involves the crash or malfunction of a vehicle or system, such as airplane/airliner, railroad train, bus (school or coach) which may involve loss of life, serious injury, property damage, fire and/or

explosion, and/or release of hazardous substances (See also: *Hazardous Materials Incidents* earlier in this section.)

History of Mass Casualty Incidents in Juneau County:

Mass casualty incidents are extremely infrequent in Juneau County. Historically, the closest thing to a mass casualty event in Juneau County has been confined to incidents such as public health emergencies and school bus crashes. For example, in 1992 a school bus with over 30 students slide off the road and overturned down a steep embankment. One person was injured, but the remainder had to be transported to the hospital to be checked. In 2006, 13 participants of a bicycle rally contracted a serious viral illness, nearly overwhelming Mile Bluff Medical Center.

Civil unrest or terrorist incident has no historical precedence in Juneau County, however, there have been a few suspicious or false alarm incidents that have involved some form of response. In 1995, a bomb scare led to the evacuation of the Juneau County Courthouse. The Fort McCoy bomb squad was called in to detonate a suspicious package. In 2001, another bomb threat lead to evacuation of the Courthouse and search of County facilities. In 2002, reports of mail containing white powdery substance led to HAZMAT screening for anthrax. There have also been instances of bomb threats at area schools (and one hotel) which were managed by county and local law enforcement agencies.

Although Juneau County Health Department has developed a management plan for addressing a pandemic disease outbreak, some strains can be highly contagious and a particular threat to certain groups such as pregnant women or people with health conditions. Major global influenza outbreaks have occurred four times in the last century: 1918, 1957, 1968 and 2009. The greatest loss occurred in 1918 when the Spanish Flu (H1N1) killed 20 to 40 million people (550,000 in the US) between 1918 and 1919. Approximately 8,400 died in Wisconsin, with 72 of those occurring in Juneau County. The 2009 "Swine Flu" was a new variant of that H1N1 virus.

Mass Casualty Incidents Vulnerability Assessment:

Although unprecedented in Juneau County, a mass casualty incident could result in a serious threat to life or property and could lead to economic, health or psychological affects that could last for years. A mass casualty incident can occur anywhere in the county. The likelihood of such an event is greater near transportation routes, such as major highways, railroad corridors and airports (specifically Volk Field), or population centers (cities and villages).

Citizens not directly involved in a mass casualty event may have their lives significantly disrupted. Their ability to work, enjoy recreation and in some cases, obtain necessities may be jeopardized. Disruption of infrastructure may occur during very severe events. Public utilities such as water, fuel and electricity may be temporarily unavailable, as well as public infrastructure for communication.

Civil disorder or a terrorist act may occur anywhere in the County. The Wisconsin Air National Guard Base at Volk Field outside Camp Douglas is a high-value military target, while other potential targets for terrorism include the two hydroelectric dams operated by the Wisconsin River Power Company on the Wisconsin River, fuel oil, gasoline and propane storage facilities, municipal utility infrastructure and various schools and churches.

Small pockets of groups with anti-government or anti-tax political leanings have been in Juneau County for decades. These groups have been quiet for many years, but these antigovernment political views quietly persist just below the surface of civil society. Quiet antiabortion and anti-family planning protests sponsored by a local church in Mauston have occurred for years, and occasionally anti-war protests have occurred outside the Volk Field Airbase.

Juneau County has significant potential exposure to a transportation-related mass casualty incident. The County is located under a major air corridor (between Chicago and Minneapolis), and is bisected by a number of major state, federal and Interstate highways and several railroads. Tens of thousands of people pass over and through Juneau County daily.

During the city/village planning meetings for this Plan Update, Camp Douglas, Hustler, Lyndon Station, Mauston and Necedah all some form of mass casualty event as a major vulnerability concern due to proximity to Volk Field, potential contamination of water supply, train derailment, or interstate crash.

Future Probability & Potential Dollar Loss – Mass Casualty Incidents:

There is insufficient data to determine the probability of future mass casualty incidents in Juneau County. However, historically such events have been extremely rare. Although rare events, the potential risk to life and property is very high, so it is important to mitigate against these risks and to be prepared to respond should they occur.

As with the probability, there is limited historic data to base an estimate of potential dollar losses from mass casualty incidents. Associated costs/damages would include emergency services, medical treatment, and restoration/reconstruction. Significant economic disruption could occur due to loss of business revenue, loss of work time and costs of treating injuries or illness.

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INTRODUCTION

Hazard mitigation is any action taken to reduce or eliminate the long-term risk to human life and property damage from natural hazards. This chapter describes the mitigation goals and actions to be taken by Juneau County and the local units of government within the county for each of the hazards identified in Part III – Risk Assessment. The intention is to reduce or avoid long-term vulnerability to the identified hazards.

Part IV of the Juneau County All Hazards Mitigation Plan Update will discuss the following factors in establishing the multi-jurisdictional mitigation strategies:

- Benchmark Progress of Previous Plan 2012-2017
- Review of Mitigation Goals
- Prioritize Identified Mitigation Strategies
- Establish Mitigation Action Plan

PROGRESS REPORT 2012 - 2017

Table 17 identifies the completed, deleted or deferred mitigation actions from the previous update in 2009. For each action recommendation, a brief status report is provided which describes the progress made on that measure. If an item remains unchanged, a description is provided as to why no action has been taken and whether that item is deferred to the new plan.

The table also provides the new status of each recommendation with regard to the updated plan alongside the previous timeframe target for comparison. Many of the recommendations are on-going efforts and are carried over as such in the updated action plan. Some have had significant progress or have been deferred, but are recommended for further action with new target date or on-going status. If the recommendation has been completed with no further specific action anticipated within the next five year planning period, it is shown as "completed" and will not appear in the updated action plan. In some cases, an incomplete action is not selected for various reasons (noted) and is shown as deleted. In a few cases, related recommendations are combined as indicated.

This progress report serves as a benchmark for progress in achieving the multi-jurisdictional mitigation goals of Juneau County and the local jurisdictions that participated in the Plan Update.

TABLE 17 BENCHMARK FOR PROGRESS 2012 - 2017 PLAN			
<i>2012-2017 Plan Measure</i>	<i>Progress Report</i>	<i>Original Status</i>	<i>New Status</i>
Acquire, raze, relocate or flood-proof at-risk structures.	In Elroy, 6 residences have been acquired and a flood wall built to protect electric utility building.	2012 to 2015 (1)	2018 to 2022 (1)
Provide better warning of impending flood events.	County utilizing Code Red, website and EM Facebook page. Still identified as a area of need by local units.	Continue 2012 to 2015 (2)	2018 to 2022 (2)
Educate and inform the public on flood hazards.	County EM staff attends Village and Towns Association meetings and interact with local officials during flooding and high water incidents.	Annually, 2012 to 2015 (3)	Annually: 2018 to 2022 (3)
Educate the public on flood proofing measures.	Information is disseminated through the EM Facebook page.	Annually, 2012 to 2015 (4)	Annually: 2018 to 2022 (4)
Review department responsibilities during a flood event.	EM, Sheriff, Highway and Public Health Departments all work closely in the Juneau County Preparedness Partners (JCPP) working group.	Annually, 2012 to 2015 (5)	Annually: 2018 to 2022 (5)
Conduct regular dam and berm inspections.	EM works closely with WI River Power Company on protective measures for Castle Rock and Petenwell Dams and other large dams in the area.	Annually, 2012 to 2015 (6)	Annually: 2018 to 2022 (6)
Develop a county-wide culvert maintenance program.	County and most local units do not have regular culvert maintenance programs. For Co Roads, Patrolman monitors and problems are addressed as they are identified.	2012 (7)	2019 to 2020 (7)
Develop more accurate floodplain maps.	Floodplain maps were updated in 2012.	2012 to 2013 (8)	<i>Completed.</i> (-)
Require stormwater catch basins in areas of new development.	No progress to date. Not seeing the kinds of development where this would apply around the County. Some municipalities have been installing for existing areas.	2012 to 2015 (9)	2018 to 2022 (8)
Develop a rural road sweeping program in areas prone to culverts becoming plugged.	No progress to date. Combined with maintenance programming in item 7, above.	2012 (10)	<i>Combined.</i> (7)
Collect and maintain more accurate flood damage data.	EM is keeping records and reports of flooding and flood damage incidents.	2012 to 2015 (11)	2018 to 2022 (9)
Annually review emergency response procedures.	On-going effort. Some municipalities may need to establish written response procedures and responsibilities, or update existing.	Annually, 2012 to 2015 (12)	Annually: 2018 to 2022 (10)
Encourage municipal participation in the NFIP.	On-going compliance in most municipalities. Lyndon Station is currently withdrawn from the program.	2012 to 2015 (13)	2018 to 2022 (11)
Review county storm water and erosion management plans.	Needs attention. Some municipalities have been actively working on stormwater management. County Land & Water Resources works on erosion control.	Annually, 2012 to 2015 (14)	Annually: 2018 to 2022 (12)
Replace aging sirens and control systems and expand coverage into new areas.	New centralized control system. Some municipalities have upgraded their sirens and added sirens for wider coverage.	2012 to 2015 (1)	2018 to 2022 (20)
Improve the Outdoor Warning System.	Combined with item above.	2012 to 2015 (2)	<i>Combined.</i> (20)
Install a County Emergency Alert System decoder/encoder unit w/ support equipment	The dispatch consoles are able to set off the sirens for many municipalities. System is tested on third Thursdays at 1 pm.	2012 (3)	<i>Completed</i> (-)
Provide the public NOAA weather radios at cost.	Program began in 2009. EM assists public in programming radios as requested. New funding needed to distribute more radios.	Continue 2012 to 2015 (4)	2019 to 2022 (22)

Table 17 Continued			
<i>2012-2017 Plan Measure</i>	<i>Progress Report</i>	<i>Original Status</i>	<i>New Status</i>
Promote tornado and severe storm awareness.	Info provided on County website & Facebook. Regular Storm Spotter training w/NOAA. Annual tornado drill.	Annually, 2012 to 2015 (5)	Annually: 2018 to 2022 (22)
Encourage the retrofitting of existing structures and construction of new structures to be more wind-resistant.	No progress to date.	2012 to 2015 (6)	2018 to 2022 (23)
Develop a county-wide tree trimming program for low to moderate income homeowners.	No progress to date.	2012 (7)	2018 to 2019 (24)
Identify mobile home parks in the county lacking public storm shelters and encourage construction of these facilities.	EM maintains a database of mobile home parks in the County. Lack of funding and insurance company requirements appear to be stumbling blocks.	2012 to 2015 (8)	2018 to 2022 (25)
Broadcast weather info to the traveling public when inclement weather strikes.	Utilizing "211" and EM Facebook page.	As required, 2012 to 2015 (1)	As needed 2018 to 2022 (28)
Promote winter hazard awareness.	Utilizing County EM Website and Facebook Page.	Annually, 2012 to 2015 (2)	Annually 2018 to 2022 (29)
Annually review various department winter storm and cold responsibilities.	Limited progress to date.	Annually, 2012 to 2015 (3)	Annually 2018 to 2022 (30)
Develop a program of sheltering travelers and residents displaced by a winter storm event.	County ADRC building has been used in the past to shelter travelers. Local churches have also opened to assist stranded travelers during snow storms.	2012 to 2015 (4)	2018 to 2021 (31)
Fund a study of burying select overhead power lines susceptible to winter storms.	Some lines are being buried by the larger utilities. Smaller, local utilities need assistance. Main ATC transmission lines remain overhead.	2012 to 2015 (5)	2018 to 2022 (32)
Increase public awareness of the danger of severe heat.	Utilizing County EM Website and Facebook Page.	As required, 2012 to 2015 (1)	As needed 2018 to 2022 (33)
Assess the state of the county's water supply and develop a comprehensive county-wide water use plan.	No progress to date.	2012 to 2015 (2)	2018 to 2022 (34)
Conduct regular exercises dealing with the evacuation of people threatened by a HAZMAT release.	On-going: Ethanol Plant Exercise - 2014; Railroad Train Accident Tabletop - 2015; Crude Oil Spill Functional Exercise - 2016.	Annually, 2012 to 2015 (1)	Annually 2018 to 2022 (35)
Create better maps which illustrate plume projections from HAZMAT storage facilities.	EM uses ALOHA and MARPLOT to project plume travel based on weather conditions.	2012 (2)	Completed (-)
Test more homes and businesses for radon gas exposure.	On-going: County Health Dept. providing Radon Test Kits to the public.	2012 to 2015 (3)	2018 to 2022 (37)
Continue to offer NIMS training to police, fire, EMS and other county and municipal personnel	NIMS training classes held periodically for emergency responders, public works, and other public officials.	As required, 2012 to 2015 (1)	2018 to 2022 (38)
Reference action plans for mass casualty events caused by...	County recently completed mass casualty plan.	2012 (2)	Completed (-)
Post designated fire evacuation routes in fire prone areas of the county.	Several rural towns have posted signs - Armenia, Germantown and Necedah.	2012 (1)	2019 to 2020 (41)
Develop evacuation protocols for fast-moving fires.	No progress to date.	2012 (2)	2019 to 2020 (42)
Promote a county-wide education program aimed at adult's safe use of fire in debris disposal and teaching outdoor burning regulations.	The Village and Town of Necedah and Town of Germantown have spearheaded wildfire protection planning in their areas which includes educational programming.	2012 to 2015 (3)	2018 to 2022 (43)

Table 17 Continued			
<i>2012-2017 Plan Measure</i>	<i>Progress Report</i>	<i>Original Status</i>	<i>New Status</i>
Educate fire inspectors on current fire prevention techniques and their employment in building construction.	On-going: Area Fire Inspectors attend code update training by Wisconsin Technical Colleges and the Department of Safety and Professional Services.	Annually, 2012 to 2015 (4)	Annually 2018 to 2022 (44)
Amend building codes to mandate fire retardant materials on new structures and renovation of older structures in fireprone areas.	This change would require state support to amend uniform building codes and is beyond the scope of this plan.	2012 to 2015 (5)	Removed (-)
Review response procedures to events involving civil disorder and terrorism.	County developing new plan in draft stage at this time.	Annually, 2012 to 2015 (1)	Annually 2018 to 2022 (39)

LOCAL HAZARD MITIGATION GOALS

The mitigation strategy is based on a set of goals to reduce or avoid long-term vulnerabilities to the hazards identified in the Risk Assessment. These goals were established by the Mitigation Planning Team during the development of the Plan Update based on the goals outlined in the previous plan. These goals represent the desired conditions to strive for through the mitigation efforts of the County and municipalities.

The mitigation goals for reducing or avoiding the long-term vulnerability of Juneau County are as follows:

- Protect the health, safety, and welfare of county residents and visitors, along with mitigating future loss of property from tornados.
- Protect the safety and property of residents from forest and wildfires.
- Lessen the impact floods have on people, property, and the environment.
- Eliminate the loss of life and reduce the risk of property damage in downstream areas that result from a dam failure.
- Create safety awareness in citizens and travelers of Juneau County to protect them during and after winter storm events or periods of extreme cold.
- Minimize the threat to human life and property damage caused by thunderstorms and associated hail, high wind and lightning.
- Minimize crop loss while maintaining water supplies during times of drought.
- Create safety awareness in citizens and travelers of Juneau County to protect them during periods of extreme heat.
- Protect people and natural resources from adverse effects of hazardous material incidents.
- Protect the health, safety, and welfare of county residents and visitors, along with mitigating future loss of property from mass casualty events.

PRIORITIZATION OF STRATEGIES

The Plan Update Taskforce considered a number of factors in identifying and ranking proposed mitigation strategies. The matrix, below, describes the factors incorporated into the prioritization process. The resulting priority of each strategy is shown in the summary Table 18.

Prioritization Factors for Juneau County Mitigation Strategies

<i>Strategy Prioritization Factor</i>	<i>Description of Factor Considerations</i>
Priority of Hazard Type	The ranking of hazard types, tornado, flooding, etc., accounts for threat to human safety and possible property damage and was carried over to groups of strategies by hazard type. Strategies believed to benefit multiple hazards (listed under "All Hazards") were valued higher.
Ease of Implementation	Strategies where existing staff and resources are adequate were valued higher than those where additional resources are necessary. Consideration was also given to strategies that meet other countywide goals or incorporated as part of another county project. Project timing was also a consideration as to when funding such as grant applications might be available and when various activities could be scheduled.
Perceived Cost versus Potential Benefit	Although a detailed cost-benefit analysis was deemed beyond the scope of this study, the Committee weighed the perceived costs of each strategy against the potential benefit anticipated. Proposals that seemed economically unfeasible were rejected.
Multi-jurisdictional Application	Strategies benefiting multiple jurisdictions were valued more than those pertaining to fewer jurisdictions.

Members of the Update Taskforce scored each strategy based on these prioritization factors and assigned a high, medium or low rating to reflect their relative level of priority for that strategy. A 3-point weighted scale was used to average the scores into the overall high, medium or low priority for the County or local units as shown in Table 18.

MITIGATION ACTION PLAN

The mitigation strategies are organized by hazard. For each hazard, goals were established as to what the County intends to achieve by implementing the specific action strategies and is based on the risk assessment findings. Each action strategy is then briefly described and followed by a discussion of the jurisdictions/agencies that will pursue the action including the proposed lead jurisdiction/agency.

Each section of this part is broken down as follows:

Goal:

Broad, long-term mitigation goals to reduce or avoid vulnerabilities to the identified hazard are stated.

Action:

Each action strategy proposed to aid in achieving the overall goal for the identified hazard is described. A given action strategy may be comprised of a number of related sub-actions.

Participating Jurisdictions:

The proposed lead agency or lead jurisdiction is identified along with a listing of the other agencies or jurisdictions that the recommended action applies to. This does not preclude other agencies or jurisdictions from participating in the action.

The chapter concludes with a summary of the recommended mitigation strategies shown in Table 18.

HAZARD: FLOODING / DAM FAILURE**Goals:**

Lessen the impact floods have on people, property, and the environment.

Eliminate the loss of life and reduce the risk of property damage in downstream areas that result from a dam failure.

Note: Actions denoted with an asterisk (*) relate to compliance with the NFIP.

Action 1:

Acquire, raze, relocate or flood-proof at-risk structures.*

Most of Juneau County's reported flooding problems stem from storm water runoff. Few, if any, problems have been reported from within the federally designated floodplain in the county. Many of the structures identified as being within the floodplain

are elevated above the regional flood level. According to FEMA accounting, there are only 250 structures that may be affected. About 200 of these structures are residential and 50 are other structures. To comply with NFIP, acquisition and razing on a voluntary basis should be considered when flood damage does occur and grant funding becomes available. Where not feasible or cost-effective, other flood proofing measures should be considered. An example of the application of this recommendation occurred in Elroy following the June 2008 flood when several structures were removed from the floodplain and a flood wall was erected to protect the electric utility. There is not substantial repetitive damage within the County, and there appears little political support or financial backing for this measure. Costs involved depend on the structures and their location. Better reporting and monitoring of flood events with damage assessments may guide future decisions in this area.

Participating Jurisdictions for Action 1:

Lead agencies will be towns and municipalities with at-risk structures, including but not limited to Elroy, Mauston, Necedah, Union Center and Wonewoc. Other jurisdictions, such as Juneau County, may participate in this recommendation if their structures / facilities become subject to concern over repetitive flooding.

Action 2:

Provide better warning of impending flood events.

This item was brought up by a number of communities during the planning meetings. However, Juneau County does not regularly experience rising waters that can be precisely gauged in order to provide adequate warning of an impending flood event. Most flooding within the county is caused by runoff. Heavy rains in a short period of time will cause flash flooding. Juneau County relies on The National Weather Service, Wisconsin Emergency Management and local weather spotters to determine the likelihood of flooding. Areas that typically flood are sometimes isolated to only a few properties within an area. Broad flood warnings are often not alarming to residents that may be affected.

This recommendation involved continued evaluation and development by Juneau County Emergency Management, working with area municipalities, to improve the dissemination of warnings with better means of delivering the message, as well as work to improve the forecast of which areas in the County are likely to be impacted by a flood event. Part of this effort could include implementing the following:

- Expand the ability to warn people by providing NOAA weather radios to the public at cost. This program was initiated in 2009 through Juneau County Emergency Management with over 200 radios distributed to county residents. Funding for this project was through a grant from FEMA, and additional grant funding would be needed to continue/expand the program.
- Improve the interoperability of two-way communications within county municipalities. This is an on-going effort.

- Continue to improve two-way radio coverage in the county. This process is ongoing as agencies apply for and receive grants with matching funding through the Wisconsin Office of Justice Assistance for replacement radios.

Participating Jurisdictions for Action 2:

Lead agency will be Juneau County Emergency Management. Participating jurisdictions will include: Juneau County, the Cities of Elroy, Mauston & New Lisbon, the Villages of Camp Douglas, Hustler, Lyndon Station, Necedah, Union Center & Wonewoc, and all Towns.

Action 3:

Educate and inform the public on flood hazards.

Due to the intermittent nature of flood events many people continue to be unaware or downplay the potential danger of flood damage. Years may pass without the occurrence of a major flood event and the collective memories of the population fade as people come and go. New development in itself may not cause new flood conditions but may alter existing drainage patterns adversely. Few people understand how flood warnings and rainfall reports that suggest the potential for a flood event relate to their own property. Juneau County Emergency Management should publicize the potential for flooding on an annual basis. Flyers, advertisements and Public Service Announcements would incur an estimated \$500, annually.

Participating Jurisdictions for Action 3:

Lead agencies will be Juneau County Emergency Management and Health Department. Participating jurisdictions will include: Juneau County, the Cities of Elroy, Mauston & New Lisbon, the Villages of Camp Douglas, Hustler, Lyndon Station, Necedah, Union Center & Wonewoc, and all Towns with flood-prone areas.

Action 4:

Educate the public on flood proofing measures.

Public awareness of flood proofing measures available is low. Some flood damage is preventable. Much of the flood damage experienced by homeowners during significant flood events in the County could have been avoided with proper drain tiling, sump pumps and landscape design. Also, only about 1% of residences in Juneau County are likely to be covered by flood insurance. Flood insurance is only available through the National Flood Insurance Program. Homeowners are unaware that flooding is often not covered by their insurance policy.

Public education materials and maps should be produced and brought together from Juneau County Emergency Management, Juneau County Land Information Service, Wisconsin Department of Natural Resources and other sources, working with area municipalities, to form a “library” of flood protection resources. Property owners should be encouraged to act to reduce their vulnerability to flood damage. Perhaps a

mitigation grant providing home and business owners at risk of flood damage a low-interest loan to reduce the potential for flood damage could be sought.

Participating Jurisdictions for Action 4:

Lead agency will be Juneau County Emergency Management. Participating jurisdictions will include: Juneau County, the Cities of Elroy, Mauston & New Lisbon, the Villages of Camp Douglas, Hustler, Lyndon Station, Necedah, Union Center & Wonewoc, and all Towns with flood-prone areas.

Action 5:

Review department responsibilities during a flood event and hold periodic training and exercises.

Departments that have emergency duties need to understand their roles and responsibilities during flood events and other emergencies. Departments may be unprepared if they have not developed and regularly reviewed their emergency action plans. Specifically, they may be inadequately prepared to respond to a flood event.

An annual review of department roles and responsibilities during flood events should be conducted as a part of the Juneau County Emergency Action Plan, see also Action 10. Juneau County Emergency Management will encourage and assist in the implementation of tabletop exercises with various county departments and municipal agencies that have flood response responsibilities. Costs for preparing and conducting these exercises would be roughly \$5000.00, with funding through existing budgets and possible mitigation grants.

Participating Jurisdictions for Action 5:

Lead agency will be Juneau County Emergency Management. Participating jurisdictions will include: Juneau County (appropriate departments), the Cities of Elroy, Mauston & New Lisbon, the Villages of Camp Douglas, Hustler, Lyndon Station, Necedah, Union Center & Wonewoc, and all Towns.

Action 6:

Conduct regular dam and berm inspections.

Juneau County has a number of earthen berms that are used to channel or detain water. These berms are generally quite sound and require little maintenance. They only come under load when the basins they surround are full. Visual inspections are performed but are not fully documented to lessen liability in the event of a berm failure. A notable exception to this is the inspection program of Wisconsin River Power Company and their inspection program of the earthen structures adjacent to the two hydroelectric dams on the Wisconsin River.

Juneau County Emergency Management should solicit the Wisconsin Department of Natural Resources to begin a regular cycle of berm inspections. Berms should be identified, cataloged and inspected on a two-year cycle. Inspections should also be

conducted subsequent to any significant flood event for damage. A documentation system should be developed to track inspections.

Participating Jurisdictions for Action 6:

Lead agency will be Juneau County Emergency Management in coordination with the Wisconsin Department of Natural Resources. Participating jurisdictions will include: Juneau County, Wisconsin DNR and Wisconsin River Power Company.

Action 7:

Develop a County-wide culvert maintenance program.



Washout Damage

It appears that inadequate culvert maintenance may be a contributing factor to on-going flooding problems in some areas of the County. Culverts are generally cleaned on an as-needed basis. Documentation is minimal and probably inadequate. The cost of documentation is negligible, but start-up costs for comprehensive culvert maintenance on a set schedule could be significant. In addition, some towns are skeptical of the need for the extra paperwork, even after the flood of 2008 required replacement of many culverts in the towns and municipalities affected by the flood.

Participating Jurisdictions for Action 7:

Lead agency will be Juneau County Emergency Management in coordination with Juneau County Highway Department. Participating jurisdictions will include: Juneau County, the Cities of Elroy, Mauston & New Lisbon, the Villages of Camp Douglas, Hustler, Lyndon Station, Necedah, Union Center & Wonewoc, and all Towns.

Action 8:

Require storm water catch basins in areas of new development.

Future development in the county may create problems with storm water drainage and water quality. Storm water catch basins have been shown to have significant benefit in flood control. Several municipalities in the County have been installing such basins with good results. However, development review and approval within Juneau County is disjointed among a number of diverse entities. Juneau County Emergency Management should investigate how storm water catch basin requirements for new or expanding developments can be incorporated into the review and approval process. The County Zoning and Land Information Departments should assist with this effort.

In addition, Emergency Management should encourage local municipalities to continue to install storm water catch basins where appropriate to help control storm water flooding problems, see Action 16. The County may be able to provide some assistance in this area by incorporating storm water catch basins into highway projects in areas of new or expanding development.

Participating Jurisdictions for Action 8:

Lead agency will be Juneau County Emergency Management in coordination with County Zoning, Land Information and Highway Departments. Participating jurisdictions will include: Juneau County, the Cities of Elroy, Mauston & New Lisbon, the Villages of Camp Douglas, Hustler, Lyndon Station, Necedah, Union Center & Wonewoc, and all Towns.

Action 9:

Collect and maintain more accurate flood damage data.

Juneau County Emergency Management should continue to collect the various hazard data and damage reports from other departments and municipalities for review and analysis. Hazard areas should be mapped with the assistance of the county's GIS officer.

Participating Jurisdictions for Action 9:

Lead agency will be Juneau County Emergency Management in coordination with the County Land Information Department. Participating jurisdictions will include: Juneau County, the Cities of Elroy, Mauston & New Lisbon, the Villages of Camp Douglas, Hustler, Lyndon Station, Necedah, Union Center & Wonewoc, and all Towns.

Action 10:

Annually review emergency response procedures.

The Juneau County Sheriff's Department is the lead response agency during a flood event. The Department has an adequate plan of response to respond to the event, but not all of the officers have had experience or training in responding to a flood event. In addition, the Sheriff's Department emergency response plan includes and a means of coordinating their efforts with other departments and agencies in dealing with a flood event, but training and exercising of these response plans is irregular. This may lead to a lag in response to a flood event. The Sheriff's Department should review emergency response plans on an annual basis with their road officers and include this review as a part of their annual training.

In addition, Juneau County Emergency Management may want to work with other County departments having a role in flood response as well as local municipalities on training and exercising their response and coordinating with the Sheriff's response plan. Some municipalities may need to establish written response procedures and responsibilities, or update existing.

Participating Jurisdictions for Action 10:

Lead agency will be Juneau County Emergency Management in coordination with the Sheriff's Department. Participating jurisdictions will include: Juneau County, the Cities of Elroy, Mauston & New Lisbon, the Villages of Camp Douglas, Hustler, Lyndon Station, Necedah, Union Center & Wonewoc, and all Towns.

Action 11:

County/City/Village continued compliance in the National Flood Insurance Program (NFIP).*

Communities within Juneau County currently participating in the National Flood Insurance Program (NFIP) should work to ensure continued compliance. Compliance primarily entails adopting and enforcing floodplain management regulations that meet minimum criteria. Juneau County, the Cities of Elroy, Mauston & New Lisbon, and the Villages of Camp Douglas, Hustler, Necedah, Union Center & Wonewoc are in the program. All towns are included under the umbrella of the County through the state mandated county floodplain zoning.

The Village of Lyndon Station is not currently participating in the NFIP. The Village has withdrawn from the program, but will reevaluate this situation in the future. This Plan recommends the Village of Lyndon Station take the necessary steps to come into compliance for participation in the NFIP. By not participating in the program, residents of the Village are not eligible for flood insurance and certain types of disaster aid in the event of a flood event. To enter the program, the Village would have to adopt a compliant floodplain zoning ordinance and the floodplain boundary map from FEMA by resolution and file forms with the WisDNR. Sample documents are available.

Participating Jurisdictions for Action 11:

Lead agency will be Juneau County Emergency Management. Participating jurisdictions will include: Juneau County, the Cities of Elroy, Mauston & New Lisbon, the Villages of Camp Douglas, Hustler, Lyndon Station, Necedah, Union Center and Wonewoc.

Action 12:

Review County and local storm water and erosion management plans.

The Juneau County erosion and storm water management plans should be reviewed annually and updated as necessary to include new development or new storm water management techniques that may be developed. Local municipal ordinances should be reviewed to insure compliance with the county plans.

Participating Jurisdictions for Action 12:

Lead agency will be Juneau County Emergency Management in coordination with the County Land and Water Resources Department. Participating jurisdictions will include: Juneau County, the Cities of Elroy, Mauston & New Lisbon, the Villages of Camp Douglas, Hustler, Lyndon Station, Necedah, Union Center & Wonewoc, and all Towns.

Action 13:

Conduct comprehensive flood study of northern Juneau and southern Wood Counties.

The northern part of Juneau County and southern part of Wood County annually have a flooding issue every spring as a result of rain events and snow melt coming down from northern Wisconsin. The flooding appears to be worsening over time. This affects both the Yellow and Wisconsin Rivers. The situation is complicated by the dam on the Yellow River and two tributaries: Cranberry Creek and Hemlock Creek flowing into the Yellow River. Both areas are part of a large drainage/watershed district and flood plain including a federal wildlife refuge, that are affected by silt, downed trees and other debris in the river. Both Cranberry and Hemlock Creeks are affected by water released by the many cranberry growers in the area. There are a number of other potentially contributing factors: increased agricultural use, timber harvesting, road infrastructure changes, defunct drainage districts. The fall of 2016 flooding has affected residents of 10 to 15 municipalities.

The Juneau County Board of Supervisors and area municipalities are calling for a comprehensive study of the flood plain, which will identify these areas and others that can be addressed to alleviate the increasing flooding problem in northern Juneau and southern Wood Counties. Assistance has been requested from the US Army Corps of Engineers.

Participating Jurisdictions for Action 13:

Lead agencies will be Juneau County Emergency Management & Land and Water Resources Departments in coordination with the US Army Corps of Engineers. Participating jurisdictions will include: Juneau County, Wood County and the affected municipalities and towns.

Action 14:

Conduct lake study of Lemonweir Flowage in Mauston.

A lake study of the Lemonweir Flowage adjacent to the City should be conducted to evaluate its influence on on-going flooding issues within the City to determine the feasibility of dredging to clear the channel for increased flood water carrying capacity.

Participating Jurisdictions for Action 14:

Lead agency will be the City of Mauston. The City of Mauston would be the only directly participating jurisdiction.

Action 15:

Elevate CTH N and improve the bridge near the rail crossing outside Mauston to protect alternate crossing if Highway 58 bridge becomes impassable.

State Highway 58 is the only crossing of the Lemonweir River within the City of Mauston. If this bridge were destroyed or otherwise left unpassable due to flooding or other hazard situation, it would severely hamper emergency response within the City and is a major area of concern for the City. Although circuitous and somewhat lengthy, County Highway N provides an alternate crossing of the Lemonweir River to maintain emergency response. However, County N is also subject to flooding. Elevating the

highway and improving the bridge is recommended to ensure the ability to cross the Lemonweir River as needed in an emergency situation.

A more complex alternative recommendation would be to construct a new, second crossing of the Lemonweir River somewhere along Water Street / Roosevelt Street. This would provide a faster route for emergency response, but the cost and environmental considerations with a new river crossing are daunting.

Participating Jurisdictions for Action 15:

Lead agency will be the City of Mauston and Juneau County Highway Department. Participating jurisdictions would include: the City of Mauston and Juneau County.

Action 16:

Continue installation of detention ponds to alleviate flooding where appropriate.

Some communities around the County such as Elroy and Mauston have been putting in storm water detention ponds to collect storm water runoff and reduce flooding. Good results have been reported by these communities, and additional ponds are being planned.

Local municipalities should plan and install storm water catch basins where appropriate to help control storm water flooding problems, see also Action 8. The County may be able to provide some assistance in this area by incorporating storm water catch basins into highway projects in areas of new or expanding development.

Participating Jurisdictions for Action 16:

Lead agencies will be towns and municipalities with at-risk structures, including but not limited to Elroy, Mauston, Necedah, Union Center and Wonewoc. Participating jurisdictions will include: Juneau County, the Cities of Elroy, Mauston & New Lisbon, the Villages of Camp Douglas, Hustler, Lyndon Station, Necedah, Union Center & Wonewoc, and all Towns with flood-prone areas.

Action 17:

Elevate CTHs FF and G near Wonewoc to alleviate flooding of road and prevent cutting off access to the community.

Severe flooding can cut off access to/from the Village of Wonewoc, as happened in 2008 where areas of the community were isolated for several days; hampering emergency services. Overtopping of these and other local roads is an almost annual occurrence. This is a particular concern as the Wonewoc fire and ambulance serve the surrounding town areas. The main concern on 'FF' is adjacent to the bridge on the west side of the Village, while along 'G' there are a number of low lying areas that can become over-topped.

Participating Jurisdictions for Action 17:

Lead agencies will be the Village of Wonewoc and Juneau County Highway Department. Participating jurisdictions would include: the Village of Wonewoc and Juneau County.

Action 18:

Install floodwall along West Street in the Village of Wonewoc.

Annual flooding conditions and concern over Hillsboro Dam and other storm surge coming down the Baraboo River have led to this recommendation for the installation of a floodwall along West Street to help protect West Street and the main section of the downtown including police, fire, public works and other village departments from flooding.

Participating Jurisdictions for Action 18:

Lead agency will be the Village of Wonewoc. The Village would be the only directly participating jurisdiction.

Action 19:

Install flood walls to protect the waste water treatment plant and electric utility substation in the City of Elroy.

The City has had some success installing flood walls to protect public facilities located in the floodplain from flooding, such as its main electrical utility building. Other critical public facilities have been identified as located within the floodplain area such as the water water treatment plant and a utility substation. Both of these facilities should be protected by construction of flood walls as well.

Participating Jurisdictions for Action 19:

Lead agency will be the City of Elroy. The City would be the only directly participating jurisdiction.

HAZARD: SEVERE STORMS - TORNADO / HIGH WINDS/ LIGHTNING / HAIL**Goals:**

Protect the health, safety, and welfare of county residents and visitors, along with mitigating future loss of property from tornados.

Minimize the threat to human life and property damage caused by thunderstorms and associated hail, high wind and lightning.

Action 20:

Maintain and replace (as necessary) aging sirens and control systems and expand coverage into new areas.

The outdoor warning system in Juneau County is comprised of a number of units at various locations. New control systems have been installed and can be remotely triggered by Juneau County Dispatch. Some municipalities have invested in new siren units, but others are aging and in need of replacement. The older units also require significant maintenance to keep them functioning properly. In addition, growth and development within the County has pushed beyond the existing umbrella of coverage in some areas of the County such as adjacent to Castle Rock and Petenwell Lakes.

Participating Jurisdictions for Action 20:

Lead agencies will be those communities with outdoor warning sirens in place. Participating jurisdictions will include: Juneau County, the Cities of Elroy, Mauston & New Lisbon, the Villages of Camp Douglas, Hustler, Lyndon Station, Necedah, Union Center & Wonewoc, and all Towns with warning sirens in place or in need of coverage.

Action 21:

Promote and expand NOAA weather radio distribution to the public.

Many small businesses and residences both in and out of the coverage area for the emergency warning sirens do not have access to broadcast weather warnings. Even though these people may have access to the Internet or television/radio announcements, these media devices may not be turned on. This puts these people at risk of severe weather.

It is not possible to notify everyone of an approaching storm. However, one innovation that is cost effective and can reach many people is the NOAA weather radio. Juneau County Emergency Management initiated a weather radio distribution program in the spring of 2009, offering a number of radios at cost to the public on a first-come-first-serve basis. The first number of radios sold out in a few hours. A few months later the program was repeated and met with equal success.

Juneau County Emergency Management should continue to offer this program at least once per year, possibly in conjunction with Tornado Awareness Week in the spring. Seed money of about \$3000.00 to purchase additional units through a commercial vendor would be returned upon their sale to the public, thereby having no net impact on the County budget.

Participating Jurisdictions for Action 21:

Lead agency will be Juneau County Emergency Management. Participating jurisdictions will include: Juneau County, the Cities of Elroy, Mauston & New Lisbon, the Villages of Camp Douglas, Hustler, Lyndon Station, Necedah, Union Center & Wonewoc, and all Towns.

Action 22:

Promote Tornado and severe storm awareness.

Juneau County Emergency Management promotes tornado awareness every spring through various media such as the County website and Facebook, as well as participation in the state-wide tornado drill each year. Expanded efforts have been made to reach more people. This includes direct mailings, facility surveys and announcements in a variety of publications. Regular Storm Spotter training classes are sponsored in conjunction with the NOAA National Weather Service office. County department employees have had instruction in where to shelter in the event of a severe storm, and several of the county building's security systems have been reconfigured to sound a unique alarm sound for not only leaving the building (as for a fire) but also for sheltering in the basement (as in the approach of a tornado).

Juneau County Emergency Management should continue to promote tornado and severe storm awareness in order to maintain public knowledge of the threat of tornados and other severe weather and the appropriate safety measures.

Participating Jurisdictions for Action 22:

Lead agency will be Juneau County Emergency Management. Participating jurisdictions will include: Juneau County, the Cities of Elroy, Mauston & New Lisbon, the Villages of Camp Douglas, Hustler, Lyndon Station, Necedah, Union Center & Wonewoc, and all Towns.

Action 23:

Encourage the retrofitting of existing structures and construction of new structures to be more wind-resistant.

Building construction techniques may be inadequate to withstand the stresses of severe weather and tornados. The State of Wisconsin has developed uniform building codes that Juneau County and local municipalities have adopted. The likelihood that additional measures specific to high wind or tornado resistance for new construction would be adopted is remote. Juneau County has many structures built before the development of these uniform building codes. Some of these structures could benefit from additional strengthening by means of approved techniques. One simple addition to the building code – the requirement of a designated “safe room” in new construction – could provide adequate protection for the occupants from a variety of hazards.



Straight-line Wind Damage, Armenia 2015

Juneau County should encourage the local real estate industry and construction contractors to (1) promote the retrofitting of some structures to be more wind-resistant and (2) to provide additional wind-resistance features to all new construction. One potential funding source might be to develop a program for assisting low-income homeowners to strengthen their homes with mitigation grant money.

Participating Jurisdictions for Action 23:

Lead agency will be Juneau County Emergency Management. Participating jurisdictions will include: Juneau County, the Cities of Elroy, Mauston & New Lisbon, the Villages of Camp Douglas, Hustler, Lyndon Station, Necedah, Union Center & Woneewoc, and all Towns.

Action 24:

Develop a county-wide tree trimming program for low to moderate income homeowners.

Trees growing too close to power lines or buildings may jeopardize utilities or cause property damage during high winds or tornados. Electrical providers have a tree-trimming maintenance program for keeping their power line rights-of-way clear of trees and limbs that may interfere with power transmission in the event of a severe storm. Some severe storms cause trees normally not a hazard to fall across lines, creating hazardous live-wire conditions, wild fires or loss of service. These interruptions are normally dealt with swiftly. Homeowners with lines on their property are responsible for keeping trees and other objects safely clear of these power lines, an expense often beyond the abilities of some homeowners on limited income. Aging trees adjacent a building are also an expensive problem for some homeowners. Insurance companies will not pay to have hazardous trees removed that threaten a structure, but they are obligated to pay for repair of the structure in the event the tree falls and damages the structure.

A survey of structures vulnerable to falling tree damage from strong winds would give County and municipal emergency managers a measure of the scope of the problem. Juneau County Emergency Management could then write a county-wide mitigation grant proposal focusing on homeowners with trees threatening utilities and their homes and other structures. Assistance grant money could be made available to those in serious need of hazard abatement but are unable to pay the cost of that abatement. Power companies should be asked to retrofit some structures at risk of tree damage with below-ground power feeds. Juneau County Emergency Management should work with Oakdale Electric Cooperative, Alliant Energy and other area power utilities on this project.

Participating Jurisdictions for Action 24:

Lead agency will be Juneau County Emergency Management. Participating jurisdictions will include: Juneau County, the Cities of Elroy, Mauston & New Lisbon, the Villages of Camp Douglas, Hustler, Lyndon Station, Necedah, Union Center & Woneewoc, and all Towns.

Action 25:

Identify mobile home parks in the County that are lacking public storm shelters and encourage construction of these facilities.

Most mobile home parks in the county lack adequate storm shelters for their residents. The New Lisbon tornado of 1985 demonstrated how lack of adequate shelter from

tornados can cause devastation and loss of life. Residents there had no place to take cover. Mobile home parks in the county should be surveyed for availability of adequate storm shelters. Plans for shelters in those parks lacking adequate shelter would be developed and funding sources for construction of these shelters be sought. Funding could be shared by park owners, rent fees from tenants, possible WEM, FEMA or HUD grants. Cost estimates range from \$100,000 to \$150,000 per shelter, depending on size requirements.

Participating Jurisdictions for Action 25:

Lead agency will be Juneau County Emergency Management. Participating jurisdictions will include: Juneau County, the Cities of Elroy, Mauston & New Lisbon, the Villages of Camp Douglas, Hustler, Lyndon Station, Necedah, Union Center & Wonewoc, and all Towns with mobile home parks or concentrations of mobile homes.

Action 26:

Conduct Information & Education campaign on new countywide shelter plan to address lack of information by local agencies. Look for ways to address changing conditions and to address identified issues.

At the local planning meetings for this Plan Update, it became apparent that a number of local officials were not fully aware of Juneau County's new Shelter Plan and the work the County has done to update County-wide sheltering information and establish shelters. An effort should be made to inform local officials about the existence of the plan, what the plan entails and how it relates to their area. These municipal officials should also be included in exercises and training related to the Shelter Plan. Some communities are working on establishing shelters within their jurisdictions with no apparent awareness what the County may have in place.

Shelter issues and concerns identified by local officials include:

- Evacuation and Transport
- Heating / Cooling
- Power Generation Needs (Ex. Inc.: T. Necedah, New Lisbon, Wonewoc & Union Center)
- Manning/Operations/Access
- Homeless
- Animal Evacuation
- Homes Without Basements
- Shelter Deficient Areas
 - Elroy: Campground, Westside, Downtown
 - Mauston: Fairgrounds, Downtown
 - Town Shelter Needs: Wonewoc, Finley, Germantown, Necedah, Marion, Kildare
 - Trailer Parks: Lyndon Station, New Lisbon, Wonewoc
- Possible New Shelter Facilities to Come On-line:
 - Mauston: Plans to Rehab City Hall to Include Shelter Use

- Camp Douglas: Plans to Replace Community Building to Include Shelter Use

Future development / update of the Shelter Plan should include evaluation of these issues.

Participating Jurisdictions for Action 26:

Lead agency will be Juneau County Emergency Management in conjunction with the Health Department. Participating jurisdictions will include: Juneau County, the Cities of Elroy, Mauston & New Lisbon, the Villages of Camp Douglas, Hustler, Lyndon Station, Necedah, Union Center & Wonewoc, and all Towns.

Action 27:

Work to convert overhead to underground powerlines in key / critical locations.

Mitigation planning meetings revealed that there are areas which experience repeated downed power lines and outages in high wind storm conditions. Many of these areas are served by the local, municipal electric utilities in the County such as Elroy and New Lisbon. These small utilities don't have the resources to bury the overhead powerlines to reduce the risk of power outage. The respective utilities should work with their municipalities to identify critical sections of aerial power line which are vulnerable to downing for conversion to underground lines. Burying overhead power lines reduces the risk of power outage. See also Action 32.

The primary programs that might fund such projects include mitigation grants under the Pre-Disaster Mitigation Program (PDM) or the Hazard Mitigation Grant Program (HMGP). The City or Village would likely need to sponsor the application. The Utility might be able to apply directly if WEM were to qualify the utilities participation in this county plan, or if the utility was qualified participant in the State Hazard Mitigation Plan Rural Electric Cooperative Annex. Private utilities like Alliant would not be eligible to apply directly, but the municipality or County could work with one of these utilities to sponsor a project if a critical section of overhead power line was part of their system.

The HMGP funding becomes available when there is a disaster declaration in the state. The PDM program has been slated for budget cuts, and it is uncertain when funding will be maintained. A benefit-cost analysis is required for these applications and is completed by WEM using data provided by the applicant. Documentation of significant previous damages, ie costly power outage and damage to power lines in this case. However, 5% of HMGP funding for each disaster is made available for projects for which it is difficult to perform a benefit-cost analysis.

Participating Jurisdictions for Action 27:

Lead agencies would be Elroy, New Lisbon, or other municipality in conjunction with their local electric utility. Participating jurisdictions may include: Juneau County, the Cities of Elroy, Mauston & New Lisbon, the Villages of Camp Douglas, Hustler, Lyndon

Station, Necedah, Union Center & Wonewoc, and all Towns with electric utilities or frequent power outages.

HAZARD: WINTER STORMS / EXTREME COLD

Goal:

Create safety awareness in citizens and travelers of Juneau County to protect them during and after winter storm events or periods of extreme cold.

Action 28:

Broadcast weather info to the traveling public when inclement weather strikes.

Travelers fail to heed the winter travel advisories broadcast by the National Weather Service, creating an additional burden on emergency response personnel. Motorists have an unreasonable expectation of clean dry roads even in the most inclement weather. Traffic crash numbers routinely spike during the beginning of the winter driving season and during severe winter storms. Currently, the County is using the 211 Helpline and Facebook. Public service announcements as well as informative articles in various print media would aid in reminding residents of the hazards risked in driving in inclement winter weather.

Participating Jurisdictions for Action 28:

Lead agency will be Juneau County Emergency Management in conjunction with the Health Department. Juneau County would be the only directly participating jurisdiction.

Action 29:

Promote winter hazard awareness.

Public awareness of the danger posed from heavy snow, ice or severe cold may be limited. Juneau County Emergency Management and the county's Highway Department promote winter hazard awareness before each season, similar in nature to tornado awareness in the spring. Although no major problems have been noted in the past, some citizens still suffer adversely from such problems as overexertion from snow shoveling or hypothermia due to exposure to the cold. Currently, the County is using its website and Facebook. Juneau County Emergency Management should continue to work with the County Health Department and local municipalities to promote winter weather hazard awareness.

Participating Jurisdictions for Action 29:

Lead agency will be Juneau County Emergency Management in conjunction with the Health Department. Participating jurisdictions will include: Juneau County, the Cities of Elroy, Mauston & New Lisbon, the Villages of Camp Douglas, Hustler, Lyndon Station, Necedah, Union Center & Wonewoc, and all Towns.

Action 30:

Annually review various department winter storm and cold responsibilities.

Formal plans for a coordinated emergency response of public utilities and highway departments of the various municipalities in a winter weather event may be inadequate or not well understood. The County and all municipalities within the County have emergency response plans to deal with winter weather events. The degree to which these plans are implemented is dependent on the severity of the winter season. County departments and municipal agencies tasked with dealing with the various aspects of a winter weather event should annually review their responsibilities prior to the winter weather season. Juneau County Emergency Management could coordinate this effort with the municipal officials tasked with emergency response to a winter storm event, perhaps as a county-wide meeting. Mutual aid agreements could be reviewed and response strategies compared.

Participating Jurisdictions for Action 30:

Lead agency will be Juneau County Emergency Management. Participating jurisdictions will include: Juneau County, the Cities of Elroy, Mauston & New Lisbon, the Villages of Camp Douglas, Hustler, Lyndon Station, Necedah, Union Center & Wonewoc, and all Towns.

Action 31:

Develop a program for sheltering travelers and residents displaced by a winter storm event.

Juneau County does not have a program in place for assisting victims of winter storm events. This was made apparent during the winter storm of November 1985, when a severe snowstorm left 350 motorists stranded in Mauston. Cots and blankets were brought in from Ft. McCoy and emergency housing provided to these people in County facilities. Except for the event cited above, Juneau County has seen no general need for warming centers for the homeless or others stranded due to inclement winter weather. However, another significant winter storm event could occur that could displace travelers and residents unexpectedly. It is understood that the American Red Cross and the Salvation Army are prepared to assist in this capacity.

Juneau County Emergency Management should develop memorandums of understanding with area hotels in the event of another winter weather event displacing travelers or residents. Because winter storm events are regional in nature, assistance from the Red Cross and Salvation Army may be late in coming and short in quantity. Though most displaced people would be able to meet their own costs, a fund should be set up to meet the needs of both resident and traveling poor.

As an extension of the County shelter plan, Juneau County Emergency Management should develop a program for sheltering travelers and residents displaced by a winter storm event. Regional volunteer service organizations active in the County might be

able to play a role in assisting with this recommendation, including creation of a fund through donations.

Participating Jurisdictions for Action 31:

Lead agency will be Juneau County Emergency Management in conjunction with the Health Department. Juneau County would be the only directly participating jurisdiction.

Action 32:

Fund a study on burying select overhead powerlines susceptible to winter storms.

Overhead power lines in some sections of the County are vulnerable to power failure due to extreme cold, high winds or ice accumulation. Traditional overhead delivery of electrical power has been the most economical method of providing this service, particularly in rural areas. New developments have seen underground power lines run for aesthetic reasons and lower long-term maintenance costs. Although Alliant Energy, Oakdale Electric Cooperative and the local municipal utilities are diligent in their right-of-way maintenance, seasonal storms and power outages due to downed trees are an annual event in some areas.

A feasibility study should be conducted on replacing select overhead power lines susceptible to storm damage with underground lines. Estimates to change all the lines in the County exceed \$2,000,000. A more conservative approach to addressing this hazard could substantially reduce this estimate. Because of the broad spectrum of hazards that would be mitigated by this work, this project may qualify for mitigation funding. See also Action 27.

Participating Jurisdictions for Action 32:

Lead agencies would be Elroy, New Lisbon, or other municipality in conjunction with their local electric utility. Participating jurisdictions may include: Juneau County, the Cities of Elroy, Mauston & New Lisbon, the Villages of Camp Douglas, Hustler, Lyndon Station, Necedah, Union Center & Wonewoc, and all Towns with electric utilities or frequent power outages.

HAZARD: DROUGHT / EXTREME HEAT**Goals:**

Minimize crop loss while maintaining water supplies during times of drought.

Create safety awareness in citizens and travelers of Juneau County to protect them during periods of extreme heat.

Action 33:

Increase public awareness of the danger of severe heat.

Public awareness concerning the health dangers of high temperatures needs to be improved. Municipal fire services, law enforcement, public health and emergency management have all contributed to this effort through various public awareness programs.

Many county and municipal agencies have a knowledge base from which they can contribute in this education effort, for example:

- Law enforcement can remind motorists of the dangers to people and pets left in vehicles with inadequate ventilation in high temperatures.
- Fire services can provide guidance in safe ways to cool a structure, using air conditioning units or attic fans.
- The county agricultural extension agent can provide insight to agribusiness concerning keeping livestock cool and hydrated.
- Public health can provide public service announcements regarding healthy choices for people under heat stress.

Currently, the County is using its website and Facebook. Juneau County Emergency Management should continue to work with the County Health Department and local municipalities to promote severe heat hazard awareness.

Participating Jurisdictions for Action 33:

Lead agency will be Juneau County Emergency Management in conjunction with the Health Department. Participating jurisdictions will include: Juneau County, the Cities of Elroy, Mauston & New Lisbon, the Villages of Camp Douglas, Hustler, Lyndon Station, Necedah, Union Center & Wonewoc, and all Towns.

Action 34:

Assess the state of the County's water supply and develop a comprehensive county-wide water use plan.

As the County continues to develop, the strain on water resources and subsequent threat to life and property are unknown in the event of an extended drought. Municipal water supplies and rural wells have historically developed independently of each other. Well water rights are by law controlled by the property holder, whereas flowing water (i.e. navigable streams, rivers and lakes) are under the authority of the state and owned by everyone (or no one). Lakes and navigable waters are protected from commercial or agriculture use unless specifically permitted or in the event of an emergency declaration. Groundwater in central Wisconsin is plentiful, but the effects of continued development and long-term use of deep-water wells during an extended period of drought are undetermined.

A multi-agency approach is necessary to address this challenging problem:

- The Wisconsin Department of Natural Resources should provide an estimate of surface water and groundwater resources and provide an annual assessment of this resource to Juneau County Emergency Management.

- Municipal agencies should compile current water consumption rates and estimate future use rates over the next five years.
- The county agriculture extension service should conduct a similar survey of all farm operations practicing field irrigation.
- Juneau County Zoning should compile a list of private wells in the county and estimate their consumption rates.
- Juneau County land use planners should recognize the limits to growth in respect to water resources and incorporate these limits into their comprehensive plans.

A study of this magnitude would require the involvement of these and other agencies, as well as the cooperation of the municipalities within the County.

Participating Jurisdictions for Action 34:

Lead agency will be Juneau County Emergency Management in conjunction with the Land & Water Resources, County UW-Extension and Health Departments. Participating jurisdictions will include: Juneau County, the Cities of Elroy, Mauston & New Lisbon, the Villages of Camp Douglas, Hustler, Lyndon Station, Necedah, Union Center & Wonewoc, and all Towns.

HAZARD: HAZARDOUS MATERIALS RELEASE

Goal:

Protect people and natural resources from adverse effects of hazardous material incidents.

Action 35:

Conduct regular exercises dealing with the evacuation of people threatened by a HAZMAT release.

Hazardous materials spills can occur with little or no warning. In the event of a hazardous plume, the event can rapidly cover a large area and involve multiple jurisdictions. In 1995, Juneau County conducted a full-scale exercise in the Necedah area involving a chemical spill from a train derailment. This experience demonstrated to emergency response planners the complexities of this type of incident. Recent exercises include: Ethanol Plant Exercise - 2014; Railroad Train Accident Tabletop - 2015; Crude Oil Spill Functional Exercise - 2016. Juneau County Emergency Management should continue conducting exercises dealing with the evacuation of people from areas of potential hazardous materials release. Exercises should include County Sheriff, municipal police, fire & EMS agencies and other emergency responders and local officials. Costs for preparing and conducting an exercise are roughly \$5000, with funding through existing budgets and possible mitigation grants.

Participating Jurisdictions for Action 35:

Lead agency will be Juneau County Emergency Management in conjunction with Sheriff's Department and local police, fire & EMS departments. Participating jurisdictions will include: Juneau County, the Cities of Elroy, Mauston & New Lisbon, the

Villages of Camp Douglas, Hustler, Lyndon Station, Necedah, Union Center & Wonewoc, and all Towns.

Action 36:

Implement recommendations within the Juneau County Hazardous Materials Commodity Flow Study.

The County should coordinate implementation of the recommendations within the 2013 Juneau County LEPC Hazardous Materials Commodity Flow Study regarding precautions and planning to address the presence of "very dangerous materials" moving through Juneau County. The study notes that Juneau County "has an unexpectedly high level of commodity flow. A respectable portion of that is hazardous material." The study characterized the interstate corridor as a "petroleum pipeline on wheels" in addition to the 8,000+ car loads of hazardous materials via rail per year and 1.5 million barrels of crude oil and light hydrocarbons via pipeline per day. As a result, the study recommends, "Precautions still need to be taken and planning should be done to address its (hazardous materials) presence on federal, state and county roads in Juneau County."

Participating Jurisdictions for Action 36:

Lead agency will be Juneau County Emergency Management. Participating jurisdictions will include: Juneau County, the Cities of Elroy, Mauston & New Lisbon, the Villages of Camp Douglas, Hustler, Lyndon Station, Necedah, Union Center & Wonewoc, and all Towns.

Action 37:

Test more homes and business for radon gas expose.

Radon gas continues to be a threat to some homes in Juneau County. The dangers of radon gas, a naturally occurring radioactive gas that has been linked to cases of lung cancer, first became a real concern in the mid 1980's. In 1988, Congress passed the Indoor Radon Abatement Act to help curb exposure to this dangerous substance. Public health departments began distributing radon gas measuring kits to citizens concerned with this potentially deadly threat, especially to those living in older homes with cracks in basement floors and foundations. Of the 76.1 million existing single-family homes in the United States in 2005, only about 2.1 million (less than 3%) had radon-reducing features in place. According to the EPA's Office of Inspector General, this radon abatement program is not achieving desired results because:

- EPA's ability to achieve results with a voluntary program is limited
- Potential loss of a sale represents a disincentive for real estate agents and sellers to conduct radon tests during real estate transactions
- Added expenses represent a disincentive for builders to use radon-resistant new construction.

An EPA map of Wisconsin radon zones indicates that up to 10% of the homes in Juneau County may have radon rates higher than the recommended acceptable levels.

There is currently no legal mandate for public spaces or workplaces to be mitigated for radon gas. Mitigation for radon gas includes shielding newly constructed structures or providing whole-structure air exchange to release the gas to the outside.

The County Health Department currently has radon test kits available for sale to the public. Juneau County Emergency Management and the Health Department should invigorate their information campaign to get more homes and businesses in the county tested for radon gas exposure. Contractors and real estate developers should be encouraged to promote the positive aspects of radon testing and mitigation. Municipalities and towns should also participate in getting the information out to their residents.

Participating Jurisdictions for Action 37:

Lead agency will be Juneau County Emergency Management in conjunction with County Health Department. Participating jurisdictions will include: Juneau County, the Cities of Elroy, Mauston & New Lisbon, the Villages of Camp Douglas, Hustler, Lyndon Station, Necedah, Union Center & Wonewoc, and all Towns.

HAZARD: MASS CASUALTY INCIDENT

Goal:

Protect the health, safety, and welfare of county residents and visitors, along with mitigating future loss of property from mass casualty events.

Action 38:

Continue to offer NIMS training to police, fire, EMS and other County and municipal personnel.

The National Incident Management System, NIMS, is a structure for management of large-scale or multi-jurisdictional incidents. NIMS was developed by the Department of Homeland Security in March 2004, as directed by Presidential Order. It is now required that all jurisdictions at the federal, state and local levels be NIMS compliant. NIMS provides a standardized approach to incident management and response. It establishes a uniform set of processes and procedures that emergency responders at all levels of government must use to conduct response operations. Through NIMS, responders at all levels are to work together more effectively and efficiently to manage domestic incidents no matter what the cause, size or complexity, including catastrophic acts of terrorism and disasters.

NIMS compliance involves the adoption and use of the Incident Command System (ICS). According to FEMA, the ICS is a management system designed to enable effective and efficient domestic incident management by integrating a combination of facilities, equipment, personnel, procedures, and communications operating within a common organizational structure. ICS is normally structured to facilitate activities in major functional areas including: command, operations, planning, logistics, intelligence

& investigations, finance and administration. It is a fundamental form of management, with the purpose of enabling incident managers to identify the key concerns associated with the incident, often under urgent conditions, without sacrificing attention to any component of the command system.

Participating Jurisdictions for Action 38:

Lead agency will be Juneau County Emergency Management to coordinate training. Participating jurisdictions will include: Juneau County, the Cities of Elroy, Mauston & New Lisbon, the Villages of Camp Douglas, Hustler, Lyndon Station, Necedah, Union Center, Wonewoc & all Towns and their respective emergency responders (police, fire, EMS), public works and other county / local officials.

Action 39:

Review response procedures for events involving transportation accidents, pandemic, civil disorder, terrorism, or other potential mass casualty incidents.

Mass casualty incidents can occur with little or no warning. The burden of warning civilian populations at risk during an incident usually falls upon responding law enforcement agencies that also need to deal directly with the threat. Law enforcement agencies in Juneau County have little real experience dealing with widespread civil disorder or a significant terrorist incident. Actual experience has been limited to relatively minor transportation incidents, epidemic (ie H1N1), domestic violence and hostage situations.

Juneau County and its local units of government routinely develop and update plans and procedures for these types of events, and Juneau County Emergency Management periodically coordinates county-wide training and exercises. However, departments that have emergency duties need to understand their roles and responsibilities during mass casualty events and other emergencies, particularly with regard to coordination between various departments and agencies. Departments may be unprepared if they have not regularly reviewed their emergency action plans. Specifically, they may be inadequately prepared to respond to a mass casualty event.

An annual review of department roles and responsibilities during such events should be conducted. Juneau County Emergency Management could coordinate this effort with the municipal officials tasked with emergency response to a mass casualty event, perhaps as a county-wide meeting. Mutual aid agreements could be reviewed and response strategies compared. Consideration should be given to standardizing notification procedures for the at-risk public during such events.

Participating Jurisdictions for Action 39:

Lead agency will be Juneau County Emergency Management to coordinate and encourage. Participating jurisdictions will include: Juneau County, the Cities of Elroy, Mauston & New Lisbon, the Villages of Camp Douglas, Hustler, Lyndon Station, Necedah, Union Center, Wonewoc & all Towns and their respective emergency responders (police, fire, EMS), public works and local officials.

Action 40:

Harden City of Mauston water towers against unauthorized access and potential contamination.

Currently, City of Mauston water towers have basic security measures in place to prevent unauthorized access and possible tampering with the drinking water supply. The City has identified this as a major vulnerability concern. The City should harden security around its water towers to prevent unauthorized access and ensure the safety of its water supply from terrorism, vandalism or other act of civil disorder.

Participating Jurisdictions for Action 40:

Lead agency will be City of Mauston. The City is would be the only directly participating jurisdiction.

HAZARD: WILD FIRE**Goal:**

Protect the safety and property of residents from forest and wildfires.

Action 41:

Post designated fire evacuation routes in fire prone areas of the County.

Wild fires can occur with little or no warning. In the event of a wind-driven wild fire, evacuation of people in the projected path of the fire can be dangerous. In 1995, Juneau County conducted a full-scale exercise in the Necedah area involving a chemical spill from a train derailment. This experience demonstrated to emergency response planners the complexities of dealing with a mass evacuation under extremely tight time constraints. The rapidly changing dynamics of a situation such as this may benefit from the establishment of designated evacuation routes, especially in areas of the County prone to wild fires. Signage directing people from an area to be evacuated could be temporary, but permanent signage would be more efficient during the actual event.

Signs have already been posted in the Towns of Armenia, Germantown and Necedah. Other areas prone to wild fire, including but not limited to Kingston, Cutler, Clearfield, Marion, Kildare and Lyndon should evaluate evacuation routes and install appropriate directional signage. Juneau County Highway Department and Wisconsin DOT involvement may be necessary where county or state roads make up part of the evacuation routes. Public outreach to familiarize residents with the signs and designated routes would also be beneficial.

Participating Jurisdictions for Action 41:

Lead agencies will be the Towns of Clearfield, Cutler, Kingston, Lyndon and Marion. Participating jurisdictions will include: Juneau County, the Cities of Elroy, Mauston &

New Lisbon, the Villages of Camp Douglas, Hustler, Lyndon Station, Necedah, Union Center, Wonewoc & all Towns in areas prone to wild fire.

Action 42:

Develop evacuation protocols for fast-moving fires.

Contacting every household or business in the path of a wild fire takes time and personnel. Background: Dozens of structures may lie in the path of a wind-driven fire. For emergency responders to check each structure and order an evacuation can be a time consuming and dangerous task.

Juneau County Emergency Management should work with other appropriate departments, local officials and emergency responders in the development and exercise of evacuation protocols to aid in the assistance of people in danger of a fast moving wild fire. One element of these protocols could be the capacity to utilize the 911 telephone system to reverse call people in the projected path of a wild fire.

Participating Jurisdictions for Action 42:

Lead agency will be Juneau County Emergency Management to coordinate the effort. Participating jurisdictions will include: Juneau County, the Cities of Elroy, Mauston & New Lisbon, the Villages of Camp Douglas, Hustler, Lyndon Station, Necedah, Union Center, Wonewoc & all Towns and their respective emergency responders (police, fire, EMS) and local officials.

Action 43:

Promote a county-wide education program aimed at adults in the safe use of fire in debris disposal and teaching outdoor burning regulations.

Many wild fires are man-caused, accidental and preventable. Municipal fire departments in Juneau County make great efforts to educate the public in all aspects of fire safety. With the exception of annual fire inspections of public buildings and businesses in the County, the primary educational emphasis is aimed at children. Since many of the fires started in Juneau County are brush or debris fires ignited by adults, there appears to be a gap in adults understanding the need to use fire safely.

Juneau County Emergency Management could coordinate an education program involving all of the fire services in Juneau County, and that program would be aimed primarily at adults. Indoor fire safety issues such as smoke and carbon monoxide detectors and the safe use of charcoal grills would receive the same emphasis as in the past, but the following topics should also be presented:

- Outdoor burning regulations
- Safe burning of yard waste and debris
- Alternatives to burning
- What to take along in the event you need to evacuate your home (pills, pets and purses)

Some fire prone areas of the County have created Community Wildfire Protection Plans (CWPPs) such as the Northeast Juneau County CWPP prepared by the North Central Wisconsin Regional Planning Commission for the Towns of Armenia, Necedah, Germantown and the Village of Necedah. This recommendation should be incorporated into the public education and information sections of any new developed or updated CWPPs.

Participating Jurisdictions for Action 43:

Lead agency will be Juneau County Emergency Management to coordinate the effort. Participating jurisdictions will include: Juneau County, the Cities of Elroy, Mauston & New Lisbon, the Villages of Camp Douglas, Hustler, Lyndon Station, Necedah, Union Center, Wonewoc & all Towns and their respective local fire agencies.

Action 44:

Educate fire inspectors on current fire prevention techniques and their employment in building construction.

Development in Juneau County is outpacing the ability for municipal fire departments to inspect new structures for fire safety and compliance to regulations. Most municipal departments have a team of firefighters who conduct fire inspections in their jurisdictions. While structures are inspected, the land adjacent the structure is not regulated as to foliage setback or fire resistant landscape design. Developers, contractors and structure owners don't always consider the use of fire retardant roof and siding materials in new construction and renovation of older structures. Local municipal fire departments should develop checklists of recommended setbacks of foliage, fire resistant landscape design and fire retardant building materials for structures in areas at high risk of wild fire. Fire inspectors attend code updates and training provided by Wisconsin Technical Colleges and the Wisconsin Department of Safety and Professional Services.

Participating Jurisdictions for Action 44:

Lead agencies will be municipal fire departments. Participating jurisdictions will include: Juneau County, the Cities of Elroy, Mauston & New Lisbon, the Villages of Camp Douglas, Hustler, Lyndon Station, Necedah, Union Center, Wonewoc and all Towns.



Juneau County Firenado

TABLE 18 SUMMARY OF MITIGATION STRATEGIES JUNEAU COUNTY ALL HAZARDS MITIGATION PLAN UPDATE, 2018					
<i>Mitigation Action</i> (See expanded description in Plan Text)	<i>Responsible Units*</i>	<i>Existing & Potential Resources to Implement</i>	<i>Project** Timeframe</i>	<i>Cost Estimate</i>	<i>Priority Level</i>
HAZARD: FLOODING					
1. Acquire, raze, relocate or flood-proof at-risk structures.***	Towns & Municipalities w/ at risk structures	FEMA Flood Mitigation Assistance, local budgets	2018 to 2022	Costs to be determined	Medium
2. Provide better warning of impending flood events.	Juneau Co. Emergency Management	FEMA, WEM, Office of Justice Assistance grants	2018 to 2022	Staff time	High
3. Educate and inform the public on flood hazards.	Juneau Co. EM & Health	Within existing budgets, WEM grant	Annually: 2018 to 2022	\$500 / yr	Medium
4. Educate the public on flood proofing measures.	Juneau Co. Emergency Management	Within existing budgets, WEM grant	Annually: 2018 to 2022	Staff time	Medium
5. Review department responsibilities during a flood event and hold period training and exercises.	Juneau Co. Emergency Management	Within existing budgets, WEM training grants	Annually: 2018 to 2022	\$5,000 / exercise	High
6. Conduct regular dam and berm inspections.	Juneau Co. Emergency Management	Within existing budgets, special assessment to structure owners	Annually: 2018 to 2022	Staff time	Medium
7. Develop a county-wide culvert maintenance program.	Juneau Co. Emergency Management & Highways	Within existing budgets - Local Road Aids	2019 to 2020	Costs to be determined	High
8. Require stormwater catch basins in areas of new development.	Juneau Co. EM, Land Information, Zoning & Highways	Within existing budgets - assessment to developer	2018 to 2022	Staff time	Medium
9. Collect and maintain more accurate flood damage data.	Juneau Co. EM & Land Information	Within existing budgets	2018 to 2022	Staff time	Low
10. Annually review emergency response procedures.	Juneau Co. EM & Sheriff	Within existing budgets	Annually: 2018 to 2022	Staff time	High
11. County/City/Village continued compliance in the NFIP.***	Juneau Co. EM, Elroy, Mauston, New Lisbon, Camp Douglas, Hustler, Lyndon Station, Necedah, Union Center & Wonevok	Within existing budgets	2018 to 2022	Staff time	Medium
12. Review county & local storm water and erosion management plans.	Juneau Co. EM & Land and Water Resources	Within existing budgets	Annually: 2018 to 2022	Staff time	Medium
13. Conduct Comprehensive Flood Study of northern Juneau and southern Wood counties.	Juneau Co. EM & Land and Water Resources	US Army Corps of Engineers technical assistance	2018	Costs to be determined / Staff time + COE resources	Medium
14. Conduct Lake Study	City of Mauston	US Army Corps of	2019	Costs to be	Medium

of Lemonweir Flowage in Mauston.		Engineers tech. assist., DNR Lake Planning Grant		determined	
15. Elevate CTH N and improve rail bridge to protect alternate crossing if Hwy 58 bridge becomes impassable	City of Mauston	DOT Local Bridge Aids /Local Road Improvement Program (LRIP)	2019 to 2022	Costs to be determined	Medium
16. Continue installation of detention ponds to alleviate flooding where appropriate.	Flood-prone municipalities	Local budgets	2018 to 2022	Costs to be determined	Medium
17. Elevate CTHs FF and G to alleviate flooding and prevent cutting off access to community.	Village of Wonewoc	DOT Local Bridge Aids /Local Road Improvement Program (LRIP)	2019 to 2022	Costs to be determined	Medium
18. Install floodwall along West Street.	Village of Wonewoc	FEMA Flood Mitigation Assistance / other mitigation grants	2018 to 2022	Costs to be determined	Medium
19. Install flood walls to protect wastewater treatment plant and substation.	City of Elroy	FEMA Flood Mitigation Assistance / other mitigation grants	2018 to 2022	Costs to be determined	Medium
<i>Mitigation Strategy / Recommendation</i>	<i>Responsible Departments</i>	<i>Existing & Potential Resources to Implement</i>	<i>Project Timeframe</i>	<i>Cost Estimate</i>	<i>Priority Level</i>
HAZARD: SEVERE STORMS - TORNADO / HIGH WIND / LIGHTNING / HAIL					
20. Maintain and replace (as necessary) aging sirens and control systems and expand coverage into new areas.	Juneau Co. EM, Elroy, Mauston, New Lisbon, Camp Douglas, Hustler, Lyndon Station, Necedah, Union Center & Wonewoc	Within existing budgets, WEM or FEMA grants	2018 to 2022	Costs to be determined	High
21. Promote and expand NOAA weather radio distribution to the public.	Juneau Co. Emergency Management	Mitigation grant (seed money), costs reclaimed through sales	2019 to 2022	\$3000	High
22. Promote tornado and severe storm awareness.	Juneau Co. Emergency Management	Within existing budgets	Annually: 2018 to 2022	Staff time	High
23. Encourage the retrofitting of existing structures and construction of new structures to be more wind-resistant.	Juneau Co. Emergency Management	Within existing budgets	2018 to 2022	Staff time	Medium
24. Develop a county-wide tree trimming program for low to moderate income homeowners.	Juneau Co. EM, Oakdale Electric, Alliant Energy & other electric utilities	Energy company resources, possible HUD grant	2018 to 2019	Costs to be determined	Low
25. Identify mobile home parks in the county lacking public storm shelters and encourage construction of these facilities.	Juneau Co. Emergency Management	FEMA/WEM mitigation grants, possible HUD grant	2018 to 2022	\$150,000 / shelter	High
26. Conduct Information	Juneau Co.	Within existing	2018 to	Staff time	High

& Education campaign on new countywide shelter plan to address lack of information by local agencies. Look for ways to address changing conditions and to address identified issues:	Emergency Management and Health	budgets	2022		
27. Work to convert overhead to underground powerlines in key/critical locations.	Municipal electric utilities, Oakdale Electric & Alliant Energy	FEMA/WEM mitigation grants, utility providers	2018 to 2022	Costs to be determined	Medium
<i>Mitigation Strategy / Recommendation</i>	<i>Responsible Departments</i>	<i>Existing & Potential Resources to Implement</i>	<i>Project Timeframe</i>	<i>Cost Estimate</i>	<i>Priority Level</i>
HAZARD: WINTER STORM / SEVERE COLD					
28. Broadcast weather info to the traveling public when inclement weather strikes.	Juneau Co. Emergency Management & Health	Within existing budgets	As needed 2018 to 2022	Staff time	High
29. Promote winter hazard awareness.	Juneau Co. EM & Health, Elroy, Mauston, New Lisbon, Camp Douglas, Hustler, Lyndon Station, Necedah, Union Center & Woneewoc	Within existing budgets	Annually 2018 to 2022	Staff time	Medium
30. Annually review various department winter storm and cold responsibilities.	Juneau Co. Emergency Management	Within existing budgets	Annually 2018 to 2022	Staff time	Medium
31. Develop a program of sheltering travelers and residents displaced by a winter storm event.	Juneau Co. Emergency Management & Health	Create a fund from donations by local service organizations managed by Juneau Co. EM	2018 to 2021	Costs to be determined	Medium
32. Fund a study of burying select overhead power lines susceptible to winter storms.	Municipal electric utilities, Oakdale Electric & Alliant Energy	WEM or FEMA grant, utility providers	2018 to 2022	\$2,000,000	Medium
<i>Mitigation Strategy / Recommendation</i>	<i>Responsible Departments</i>	<i>Existing & Potential Resources to Implement</i>	<i>Project Timeframe</i>	<i>Cost Estimate</i>	<i>Priority Level</i>
HAZARD: DROUGHT / EXTREME HEAT					
33. Increase public awareness of the danger of severe heat.	Juneau Co. EM & Health, Elroy, Mauston, New Lisbon, Camp Douglas, Hustler, Lyndon Station, Necedah, Union Center & Woneewoc	Within existing budgets	As needed 2018 to 2022	Staff time	Medium
34. Assess the state of the county's water supply and develop a comprehensive county-wide water use plan.	Juneau Co. EM, Land & Water Resources, UW Extension & Health	Grant from WDNR	2018 to 2022	Costs to be determined	Medium

<i>Mitigation Strategy / Recommendation</i>	<i>Responsible Departments</i>	<i>Existing & Potential Resources to Implement</i>	<i>Project Timeframe</i>	<i>Cost Estimate</i>	<i>Priority Level</i>
HAZARD: HAZARDOUS MATERIALS RELEASE					
35. Conduct regular exercises dealing with the evacuation of people threatened by a HAZMAT release.	Juneau Co. EM, Elroy, Mauston, New Lisbon, Camp Douglas, Hustler, Lyndon Station, Necedah, Union Center & Woneewoc	WEM training grants, HMEP and within existing budgets	Annually 2018 to 2022	\$5,000 / exercise	High
36. Implement recommendations within the Juneau County Hazardous Materials Commodity Flow Study.	Juneau Co. Emergency Management	WEM / HMEP grants and within existing budgets	2018 to 2022	Staff time	Medium
37. Test more homes and businesses for radon gas exposure.	Juneau Co. EM & Health	Within existing budgets	2018 to 2022	Staff time; test kits	Medium
<i>Mitigation Strategy / Recommendation</i>	<i>Responsible Departments</i>	<i>Existing & Potential Resources to Implement</i>	<i>Project Timeframe</i>	<i>Cost Estimate</i>	<i>Priority Level</i>
HAZARD: MASS CASUALTY INCIDENT					
38. Continue to offer NIMS training to police, fire, EMS and other county and municipal personnel	Juneau Co. EM, Elroy, Mauston, New Lisbon, Camp Douglas, Hustler, Lyndon Station, Necedah, Union Center & Woneewoc	FEMA, WEM training grants, within existing budgets	2018 to 2022	Staff time	High
39. Review response procedures for events involving transportation accidents, pandemic, civil disorder, terrorism, or other potential mass casualty incidents.	Juneau Co. Emergency Management	Within existing budgets	Annually 2018 to 2022	Staff time	High
40. Harden Mauston water towers against unauthorized access and potential contamination.	City of Mauston	Local budget, mitigation grants	2018 to 2021	Costs to be determined	High
<i>Mitigation Strategy / Recommendation</i>	<i>Responsible Departments</i>	<i>Existing & Potential Resources to Implement</i>	<i>Project Timeframe</i>	<i>Cost Estimate</i>	<i>Priority Level</i>
HAZARD: WILD FIRE					
41. Post designated fire evacuation routes in fire prone areas of the county.	Towns of Clearfield, Cutler, Kingston, Lyndon Marion & other fire prone areas	WEM grants and within existing budgets	2019 to 2020	Costs to be determined	High
42. Develop evacuation protocols for fast-moving fires.	Juneau Co. Emergency Management	Within existing budgets	2019 to 2020	Staff time	High
43. Promote a county-wide education program aimed at adults in the safe use of fire in debris disposal and teaching outdoor burning	Juneau Co. EM, Elroy, Mauston, New Lisbon, Camp Douglas, Hustler, Lyndon Station, Necedah,	Within existing budgets	2018 to 2022	Staff time	Medium

regulations.	Union Center & Wonewoc				
44. Educate fire inspectors on current fire prevention techniques and their employment in building construction.	Municipal fire departments	Within existing budgets	Annually 2018 to 2022	Staff time	Low
*Specific roles of designated lead agencies varies by recommendation, see full report text for detail.					
Recommendations may apply to other jurisdictions/entities not shown in Table, see full report text for details.					
Actual project implementation subject to funding and staff availability. *Indicates NFIP compliance item.					

INTRODUCTION

Part V of the Juneau County All Hazards Mitigation Plan Update describes the plan adoption, implementation, and evaluation and maintenance.

PLAN UPDATE ADOPTION

The adoption of the Juneau County All Hazards Mitigation Plan Update lends itself to serve as a guiding document for all local government officials. It also certifies to program and grant administrators from the FEMA and WEM that the plan's recommendations have been properly considered and approved by the governing authority and the jurisdiction's citizens. Finally, it helps to ensure the continuity of mitigation programs and policies over time because elected officials, staff, and other community decision-makers can refer to the official document when making decisions about the community's future.

Before adoption of the Plan Update by the incorporated areas, the update must be sent to the state and federal level to verify that all DMA2K requirements are met. Once a draft of the updated Plan has been completed, it is submitted to the State Hazard Mitigation Officer (SHMO) at the state level at WEM. Previous drafts of the update have already been reviewed prior to this submittal. The SHMO will determine if the updated Plan meets DMA2K and/or other state program requirements. Upon approval of the draft by WEM, the SHMO is responsible for showing the update to the FEMA Region V Office for review.

Prior to final approval by WEM and FEMA, the update must be formally adopted by Juneau County and its incorporated areas by resolution. Incorporated communities that do not adopt the Plan Update cannot apply for mitigation grant funds unless they opt to prepare, adopt, and submit their own plan. Adoption of the Plan Update gives the jurisdiction a legal basis to enact ordinances, policies, or programs to reduce hazard losses and to implement other mitigation actions.

All general purpose units of government (i.e. cities, villages, towns) within Juneau County were offered one or more avenues to participate in the development of this Plan Update. Adoption of the Plan by a local unit of government certifies their participation. The Juneau County Board has adopted this Update. Resolutions of adoption are contained in APPENDIX B.

PLAN UPDATE IMPLEMENTATION**Administrative Responsibilities**

Once the Plan Update has been approved, stakeholders must be informed. The County Emergency Management Director will distribute links/copies to stakeholders. The County will also make the Plan Update available to the public by linking the report on the Internet.

Along with monitoring the progress of the action projects, the County Emergency Management Director and Emergency Management Committee should also work to secure funding to implement the Plan Update. State and federal agencies, nonprofit organizations, and foundations continually make grants available. Emergency Management should research these grant opportunities to determine eligibility for the County and its local units of government.

When implementing this Plan Update, the County Emergency Management Committee and staff team should consider innovative ways to involve active participation from nonprofit organizations, businesses, and citizens to implement the Update. The relationship between these groups will result in greater exposure of the Plan Update and provide greater probability of implementation of the action projects listed.

The role of department administrators, elected officials, and local administrators are to ensure that adopted actions from Part IV are considered in their budgets. It is understood that projects may not be carried out as they are scheduled in Part IV due to budget constraints. However, since many of these action projects are considered an investment in safeguarding the public's health, safety, and property, they should be carefully considered as a priority.

Promote Success Of Identified Projects

Upon implementing a project covered by this Plan Update, it is important to promote the accomplishment to the stakeholders and to the communities. This will help inform people that the update is being implemented and is effective.

Incorporation Into Other Local Planning Mechanisms

FEMA requires a process by which the mitigation plan is incorporated into other planning mechanisms where appropriate. When undergoing any planning process, County departments, local units of government and/or any professional staff assisting them, typically review and incorporate any related pre-existing plans as a matter of course. However, to help ensure this outcome, Juneau County has established a two-part process to incorporate the All Hazards Mitigation Plan into other County and local planning efforts as follows:

- Notification of County Departments and Local Units of Government - Upon adoption of the All Hazards Mitigation Plan, the County EM Director will distribute a letter that explains how the Plan applies to other planning efforts they might undertake and how to obtain copies of the Mitigation Plan.
- Promotion by EM Director - The EM Department will promote incorporation of the All Hazards Mitigation Plan as the EM Director is made aware of or becomes a participant in any new planning process.

The upcoming County Comprehensive Plan Update has been identified for incorporation of the All Hazards Mitigation Plan, as follows:

Juneau County Comprehensive Plan

The following concepts will be considered when developing the Juneau County Comprehensive Plan Update, based on the nine elements of the Wisconsin comprehensive planning law:

- *Issues and Opportunities Element* – a summary of major hazards local government is vulnerable to, and what is proposed to done to mitigate future losses from the hazards.
- *Housing Element* – an inventory of the properties that are in the floodplain boundaries, the location of mobile homes, recommendation on building codes, shelter opportunities, and a survey of homeowners that may be interested in a voluntary buyout and relocation program.
- *Utilities and Community Facilities Element* – identify critical facilities such as shelter, schools, medical, water infrastructure, etc. and make recommendations on how to mitigate specific risks factors
- *Transportation Element* – identify any transportation routes or facilities that are more at risk during flooding, winter storms, or hazardous material spills.
- *Agricultural, Natural Resources, and Cultural Resources Element* – identify the floodplains and agricultural areas that area at risk to hazardous events. Incorporate recommendations on how to mitigate future losses to agricultural areas.
- *Economic Development Element* – describe the impact past hazards have had on County and municipal business.
- *Intergovernmental Cooperation Element* - identify intergovernmental police, fire, and rescue service sharing agreements that are in effect, or which may merit further investigation, consider cost-sharing and resource pooling on government services and facilities.
- *Land Use Element* - describe how flooding have impacted land uses and what is being done to mitigate negative land use impacts from flooding; map and identify hazard areas such as floodplains, hazardous materials areas, and soils with limitations.
- *Implementation Element* – have action plans from this Plan implemented into comprehensive plans.

PLAN UPDATE EVALUATION AND MAINTENANCE

Planning is an ongoing process. Because of this, this document should grow and adapt in order to keep pace with growth and change of the County and its local jurisdictions. DMA2K requires that local plans be evaluated and updated at least every five years to remain eligible for assistance.

The Plan will be reviewed and evaluated on an annual basis as needed by Emergency Management. The Juneau County Emergency Management Director will evaluate incoming information against the contents of the Plan to determine possible need for revisions; and bring that information to the County Emergency Management Committee to discuss the evaluation and potential revisions to the Plan as needed. The Emergency Management Director is encouraged to consult/coordinate with the NCWRPC in the event of any revision.

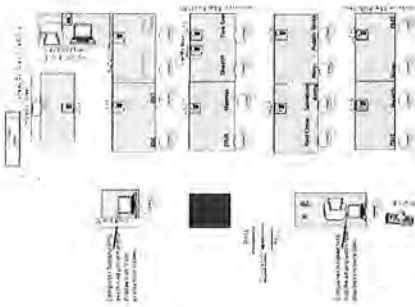
The Plan must also be evaluated and revised following disaster events to determine if the recommended actions are appropriate given the impact of the event. The risk assessment (Part III) should also be reviewed to see if any changes are necessary based on the pattern of disaster damages.

Full updates are required every five years. As a result, every fifth year, the review will be expanded to an overall plan update to meet FEMA requirements. All stakeholders and the public will again be involved in the update process. The County will conduct a survey and open comment meeting. This also provides an opportunity to inform on the progress of any projects.

The County Emergency Management Committee and County Board must approve all changes and updates to the Plan.

Appendix A – Meeting Notices

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LEPC MEETING

**September 21, 2016, 10:30 AM
Juneau County EOC
200 Oak Street
Mauston, WI 53948**



Meeting Agenda

A. Call to Order

B. Roll Call

C. Minutes of: June 15, 2016

D. Public Concerns.

E. Old Business

1. WISCOM Radio Grant #10577

- 2. WISCOM Engineering Grant #10605** – Received final draft from Elert & Associates, and forwarded to EF Johnson. EF Johnson responded asking for an opportunity to redact the report to prevent the disclosure of proprietary and confidential information.

3. FFY 2015 Pre Disaster Mitigation Plan Grant

F. New Business

1. Hazmat Team Report

- a.) Discussion on appointment and compensation of the Hazmat Team Administrator.

2. JCPPP Report – Theis & Bass

3. ARC Report – Ryan Avery

4. Hospital EM Report – Mary Crowley

5. DNR Report – Melissa Gilaume-Cappaert, Chad Nichols

- 6. Pre-Disaster Mitigation Plan** – Darryl Landeau, (AICP) of Northwest Wisconsin Regional Planning Commission (NWRPC) With presentation of the plan. Approve LEPC as the Taskforce/Planning Committee to review and approve the plan.

7. Updates – Off-Site Facility Plans for Frontier and K-Mart in Mauston are being completed.

8. 2016 Hazmat & Computer Equipment Grants for Juneau and Adams Counties –
Juneau County: Amount spent: \$7,431.80 + shipping/Awarded Amount: \$7,677.07
Adams County Amount spent: \$7,652.22 + shipping/ Awarded Amount: \$7,918.68

9. Hazmat Operations Class – Being held through Western Technical College.

10. Mobile-Link Monitoring – Monitors generators at all radio tower sites.

G. **Other Business**

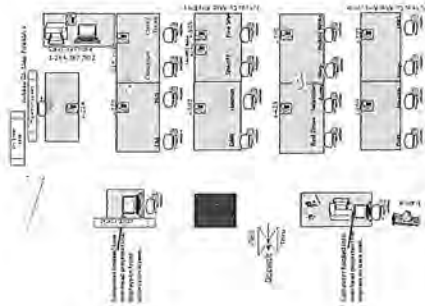
1. Any other business to come properly before the LEPC Committee for discussion.

Juneau County All Hazards Mitigation Plan Update

Steering Committee Meeting SIGN-IN

December 21, 2016 - 10:00 AM

	Name	Department/Organization	Email
1	Alan K. Peterson	Co. Bd. Chairman	
2	SCOTT WILHORN	Co Board Supervisor	
3	CRAIG H. STUCHLIK	SHERIFF'S OFFICE	
4	Michelle Tischer	American Red cross	
5	Dawn Miller	Allied Cooperative	
6	Dennis Wright	Juneau County Housing	
7	Matt Davies	Volk Field	
8	Judy Bass	Juneau Co Health Dept	
9	DAVID BUTLER	JUNEANEM@JUNEAU.	
10	Lynn Wilgus	lwilgus@juneau.net	
11	Gervase Thompson	Juneau EMT	
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LEPC MEETING

March 15, 2017, 10:30 AM
Juneau County EOC
200 Oak Street
Mauston, WI 53948



Meeting Agenda

A. Call to Order

B. Roll Call

C. Minutes of: December 21, 2016

D. Public Concerns.

E. Old Business

- 1. WISCOM Radio System Update** – Meeting with EF Johnson on system upgrades and improvements to the system.
- 2. 2016 Exercise Grant for Juneau County Update** – Homeland Security Grant includes a tabletop, functional and full-scale exercise involving the loss of electrical power due to an ice storm. Public Health, Human Services and ARC will test the “Juneau County Mass Care Sheltering Plan”.
- 3. FFY 2015 Pre-Disaster Mitigation Plan Grant Update**– Darryl Landeau of NCRPC will discuss the survey summary and hazard evaluation results.
- 4. Mobile-Link Monitoring Update** – Gervase to report.
- 5. Cybersecurity Training Exercise** – Gervase, Lynn Willard, Mike Hunkins, Dennis Weiss and Dave attended a Tabletop/Functional Cybersecurity/Long term power outage exercise in Wisconsin Dells on February 16th, 2017.

F. New Business

1. Hazmat Team Report

- a.) Diesel Fuel spill at the BP Station in Camp Douglas. Spill caused by two semi tractors colliding in parking lot. Camp Douglas Fire Chief James Newlun advised that a containment pool was under the leaking fuel tank and the company would be making arrangements for cleanup. DNR was contacted by Chief Newlun.
- b.) Pressure testing was completed on all hazmat suits and several over the five year recommended in-service date were removed from service and marked “FOR TRAINING ONLY”

2. **JCPPP Report** – Theis & Bass
3. **ARC Report** – Michelle Tischer
4. **Hospital EM Report** – Mary Crowley
5. **DNR Report** – Melissa Gilaume-Cappaert, Chad Nichols
6. **Updates** – Currently working on a County-wide Cybersecurity Plan.

G. **Other Business**

1. Any other business to come properly before the LEPC Committee for discussion.

NORTH CENTRAL WISCONSIN REGIONAL PLANNING COMMISSION

210 McClellan Street, Suite 210, Wausau, Wisconsin 54403
Telephone: (715) 849-5510 Fax: (715) 849-5110
Web Page: www.ncwrpc.org Email: staff@ncwrpc.org



SERVING ADAMS, FOREST, JUNEAU, LANGLADE, LINCOLN, MARATHON, ONEIDA, PORTAGE, VILAS AND WOOD COUNTIES

MEMORANDUM

TO: Village Officials within Juneau County
FROM: Darryl L. Landeau, AICP: Senior Planner
DATE: May 5, 2017
RE: Juneau Co. All-Hazards Mitigation Plan Update Meeting Notice

Juneau County has received a grant through the Federal Emergency Management Agency (FEMA) to complete an update of its All-Hazards Mitigation Plan to protect the health and safety of residents from the impacts of natural hazards and to minimize and prevent damages caused by these events. The North Central Wisconsin Regional Planning Commission (NCWRPC) is assisting Juneau County with this plan.

As with the county outdoor recreation plan, all hazard plans are done at the county level but include all local units within the county in the spirit of intergovernmental cooperation and to avoid duplication of the same work by each municipality. Federal regulations require incorporated municipalities, such as villages, to have an approved all hazards mitigation plan to remain eligible for certain disaster funds that would be available after a disaster declaration. Additionally, FEMA may require a municipality to develop and adopt an all hazard plan following a disaster in that community. Participation in the county all hazard plan satisfies the planning requirement, so that the Village does not have to go through the time and expense of creating a plan from scratch.

As part of the process for this update, a meeting has been set to provide an opportunity for the villages within Juneau County to be involved and included in the plan development to satisfy FEMA's participation requirements. This meeting is scheduled for the following date and place:

When: Wednesday, May 31, 2017 at 1:00 p.m.
Where: Mauston Public Works Building
1240 North Road, City of Mauston

Please send representatives to participate on behalf of the Village. Typically, these meetings for incorporated municipalities would include some or all of the following officials: village administrator, village president, police chief, fire chief, and public works director. In addition to satisfying FEMA requirements, the meeting will be a way to gather ideas on how to safeguard residents and visitors of the Village and protect property in the event of a natural disaster.

Please call or email me if you have any questions regarding this meeting. My number is 715-849-5510 ext. 308, and my email is dlandeau@ncwrpc.org. Or, contact Gervase Thompson, the County's Emergency Management Director at 608-847-9393 or emjuneau@co.juneau.wi.us.

Thank you.

N:\DARRYL\JUNEAU_DLL\COUNTY_DLL\JC_AHMP_UX\JC_MEETINGS\16\JC VILLAGE MEETING 2017.DOC

NORTH CENTRAL WISCONSIN REGIONAL PLANNING COMMISSION

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Telephone: (715) 849-5510 Fax: (715) 849-5110
Web Page: www.ncwrpc.org Email: staff@ncwrpc.org



SERVING ADAMS, FOREST, JUNEAU, LANGLADE, LINCOLN, MARATHON, ONEIDA, PORTAGE, VILAS AND WOOD COUNTIES

MEMORANDUM

TO: Government agencies, County department staff, and other private or non-profit organizations within Juneau County
FROM: Darryl L. Landeau, AICP: Senior Planner
DATE: May 5, 2017
RE: Juneau Co. All-Hazards Mitigation Plan Update Agency Meeting Notice

Juneau County has received a grant through the Federal Emergency Management Agency (FEMA) to complete an update of its All-Hazards Mitigation Plan to protect the health and safety of residents from the impacts of natural hazards and to minimize and prevent damages caused by these events. The North Central Wisconsin Regional Planning Commission (NCWRPC) is assisting Juneau County with this plan.

As a requirement of the planning process, an opportunity must be provided to local and regional agencies involved in hazard mitigation activities, and agencies that have the authority to regulate development, as well as business, academia and private and non profit interests to be involved. To meet this requirement, an interest group meeting is scheduled for the following date and place:

When: Wednesday, May 31, 2017 at 3:00 p.m.
Where: Mauston Public Works Building
1240 North Road, City of Mauston

In addition to meeting FEMA requirements, the interest group meeting will be a way to gather ideas on how to safeguard the residents and visitors of Juneau County and protect property in the event of natural disasters. Since you live and/or do business in or around Juneau County, your input in this process is very valuable. Draft plan material can be reviewed on the web at <http://www.ncwrpc.org/juneau/ahmp.html>.

Please call or email me if you have any questions regarding this meeting. My number is 715-849-5510 ext. 308, and my email is dlandeau@ncwrpc.org. Or, contact Gervase Thompson, the County's Emergency Management Director at 608-847-9393 or emjuneau@co.juneau.wi.us. I highly encourage at least one staff person from your department or agency with responsibilities relating to or potentially impacted by natural hazards / disaster to attend.

Thank you.

N:\DARRYL\JUNEAU_DLL\COUNTY_DLL\JC_AHMP_UX\JC_MEETINGS\16\JC_INTERESTGRP2017.DOC

NORTH CENTRAL WISCONSIN REGIONAL PLANNING COMMISSION

210 McClellan Street, Suite 210, Wausau, Wisconsin 54403
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SERVING ADAMS, FOREST, JUNEAU, LANGLADE, LINCOLN, MARATHON, ONEIDA, PORTAGE, VILAS AND WOOD COUNTIES

MEMORANDUM

TO: Town Clerks, Juneau County
FROM: Darryl L. Landeau, AICP: Senior Planner *D.L.L.*
DATE: May 5, 2017
RE: Juneau Co. All-Hazards Mitigation Plan Update Meeting Notice

Juneau County Emergency Management and the NCWRPC will be hosting an open house / public informational meeting on strategies to mitigate the effects of future natural disasters in Juneau County. This meeting will take place in an open house format beginning at 6:00 pm on Wednesday, May 31 in the Mauston Public Works Building, 1240 North Road, Mauston.

This meeting will provide local officials with an update on the county's mitigation planning project and an opportunity to provide input on new recommendations. The draft will incorporate information from the survey sent to each town last fall. If possible, please share this meeting date with your chairperson and other supervisors in case they are interested in attending this session. Draft plan material can be reviewed at www.ncwrpc.org/juneau/hazard/index.html.

The strategies will become part of the County's All Hazards Mitigation Plan update currently being developed. Counties are required to make such plans as a result of the federal Disaster Mitigation Act of 2000 (DMA2K). This Act put a national priority on hazard mitigation by requiring mitigation plans in order to be eligible for disaster mitigation grant programs from FEMA. Juneau County is developing a multi-jurisdictional plan to establish eligibility for both the county and each municipality in the same way the county-wide outdoor recreation plan works with DNR grants. This in no way obligates or commits any local jurisdiction.

The meetings will provide information about the natural hazards that can affect Juneau County, and draft plan materials will be available for review. Public Comment will also be solicited, so we request that you post this notice at your primary posting location to help us encourage public attendance. We have already published legal notice in the newspaper, so that is not something we are asking any of you to do.

If you have any questions, please feel free to contact me at 715-849-5510 extension 308 or email to dlandeau@ncwrpc.org.

Thank you.

Capital Newspapers Proof of Publication Affidavit

Ad #: 3556997 Price: \$17.46 Ad ID: Juneau County All Hazards

*Retain this portion for your records.
Please do not remit payment until you receive your advertising invoice.*

Mail to:

North Central Wisconsin Regional Planning Commission
Bernie Lewis
210 McClellan Street
Ste 210
Wausau, WI 54403

RECEIVED

MAY 22 2017

NORTH CENTRAL WISCONSIN
REGIONAL PLANNING COMMISSION

STATE OF WISCONSIN

Juneau County

ss.

**JUNEAU COUNTY
ALL HAZARDS
MITIGATION PLAN
PUBLIC INFORMATIONAL
MEETING**

Notice is hereby given by the Juneau County Emergency Management Department that there will be a public informational meeting at the Mauston Public Works Building, 1240 North Road, Mauston, WI on Wednesday, May 31, 2017 at 6 p.m. to discuss the County's Draft All Hazards Mitigation Plan Update.

The meeting will be an open house format and will provide information about natural hazards that can affect the County and the strategies being developed to mitigate against future losses and reduce public expenditure for response and recovery. Draft plan material can be reviewed on the web at <http://www.ncwrpc.org/juneau/hazard/index.html>.

All interested parties are encouraged to attend. Please contact the Juneau County Emergency Management Director, Gervase Thompson at 608-847-9393 for more information.

PUB. JCST: May 17, 2017
#3556997 WNAXLP

Julie Kopfhamer

being duly sworn, doth depose and say that
he (she) is an authorized representative of
Capital Newspapers, publishers of

Juneau County Star Times

and that an advertisement of which the annexed is a true
copy, taken from said paper, was published therein on
May 17th, 2017

(Signed)

(Title)

Subscribed and sworn to before me on **MAY 17 2017**

Julie Lubbock
Notary Public, Wisconsin

My Commission expires

MAR 21 2021

Juneau County All Hazards Mitigation Plan Update

City of Elroy Planning Meeting SIGN-IN

May 23, 2017 - 10:00 AM

	Name	Department	Email
1	MARK STEWARD	ADMINISTRATION	msteward@elroywi.com
2	MARK SAEMISCH	Wastewater OIC	m.saemisch@elroywi.com marksaemisch@lk
3	SHAWN THOMPSON	Police Dept.	thompsonr209@gmail.com
4	Tony Green	Police Chief	police.dept@elroywi.com
5	SHAWN KUESTER	LINE ELECTRIC	skuester@elroywi.com
6	Peter Wollschlager	Water/Wastewater	PWollschlager@gmail.com
7	Dave Lind	Water OIC	DLind@elroywi.com
8	Jonathan Brock	Electric Utility	jbrock@elroywi.com
9	Raye Walz	Elroy Area Fire & Amb.	glendalc.wiscorsing@gmail.com
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Capital Newspapers Proof of Publication Affidavit

Ad #: 3557958 Price: \$21.03 Ad ID: All Hazards

Retain this portion for your records.

Please do not remit payment until you receive your advertising invoice.

Mail to:

North Central Wisconsin Regional Planning Commission
Bernie Lewis
210 McClellan Street
Ste 210
Wausau, WI 54403

RECEIVED

MAY 30 2017

NORTH CENTRAL WISCONSIN
REGIONAL PLANNING COMMISSION

STATE OF WISCONSIN

Juneau County

ss.

Julie Kopfhamer

being duly sworn, doth depose and say that
he (she) is an authorized representative of
Capital Newspapers, publishers of

Juneau County Star Times

it an advertisement of which the annexed is a true
taken from said paper, was published therein on
May 24th, 2017

**JUNEAU COUNTY
ALL HAZARDS
MITIGATION PLAN
PUBLIC INFORMATIONAL MEETING**

Notice is hereby given by the Juneau County Emergency Management Department that there will be a public informational meeting at the Mauston Public Works Building, 1240 North Road, Mauston, WI on Wednesday, May 31, 2017 at 6 p.m. to discuss the County's Draft All Hazards Mitigation Plan Update.

The meeting will be an open house format and will provide information about natural hazards that can affect the County and the strategies being developed to mitigate against future losses and reduce public expenditure for response and recovery. Draft plan material can be reviewed on the web at <http://www.ncwrpc.org/juneau/hazard/index.html>.

All interested parties are encouraged to attend. Please contact the Juneau County Emergency Management Director, Gervase Thompson at 608-847-9393 for more information.

PUB. JCST: May 24, 2017
#3557958 WNAXLP

(Signed)

(Title)

Julie Kopfhamer

Subscribed and sworn to before me on

MAY 24 2017

Katherine J Portzen

Notary Public, Wisconsin

My Commission expires

DEC 13 2019

KATHERINE J PORTZEN
Notary Public
State of Wisconsin

Juneau County All Hazards Mitigation Plan Update

City of Mauston Planning Meeting SIGN-IN

May 31, 2017 - 10:30 AM

	Name	Department	Email
1	Chief Michael Zircus	Maustons Police	chief@mauston.com
2	Nathan Thiel	city Admin	nthiel@mauston.com
3	Jim McBale	Mauston Fire	firechief@mauston.com
4	Rob Nelson	Public Works	rnelson@mauston.com
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Juneau County All Hazards Mitigation Plan Update

Village Planning Meeting SIGN-IN

May 31, 2017 - 1:00 PM

	Name	Village	Department
1	RANDALL FIELD	WONEWOC	WONEWOC FIRE
2	SCOTT JENNINGS	WONEWOC	VILLAGE
3	Chad Rick	Union Center	Union Center Police Dept.
4	Dennis Laubscher	Union Center	Public Works
5	Robin Laubscher	Union Center	Clerk / Treas
6	Julie Ott	Wonevoc	Police Dept.
7	Gervase Thompson	Juneau EM	Juneau County
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Juneau County All Hazards Mitigation Plan Update

Agency & Interest Group Meeting SIGN-IN

May 31, 2017 - 3:00 PM

	Name	Agency / Organization	Email
1	Alyson Horkan	Juneau Co. Health Depart.	ahorkan@juneau.wi.us
2	Mark Schoen	Alliant ENERGY	markschoen@alliantenergy.com
3	Mary Crowley	Mid Bluff Medical Ctr	mcrowley@midbluff.com
4	Larry D. Dziwinski	Juneau County Planning	K9L2D1@Gmail.com
5	Matt Stanek	Heritage Manor	hmanor@mwt.net
6	Douglas Bellile	Sand Ridge	Douglas.Bellile@WTGWI.com
7	Diane Donnelly	Juneau Co. Zoning	dldonnelly@co.juneau.wi.us
8	GERVASE THOMPSON	Juneau EM	em.juneau@co.juneau.wi.us
9	Matt Davies	Volk Field	matthew.S.Davies4.mil@mail.mil
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Juneau County All Hazards Mitigation Plan Update

Public Informational Meeting SIGN-IN

May 31, 2017 - 6:00 PM

	Name	Area of Residence	Email
1	Carin Leach	Lemonweir	twntlemn@merr.com
2	Susan Koserider	Town of Necedah	necedah@mediacumbb.net
3	Ellen J. Carter	Town of Fulk/ Kingston	quackgobble@hotmail.com
4	Larry Taft	Town of Necedah	tg+414468@yahoo.com
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Juneau County All Hazards Mitigation Plan Update

City of New Lisbon Planning Meeting SIGN-IN

June 2, 2017 - 10:30 AM

	Name	Department	Email
1	LYNN WIZLARD	FIRE DEPT	NL FIRE @ MWT.NET
2	Lisa Vinz	City Clerk	nlclerk@mwt.net
3	Brent Granger	N.L. Police Dept	nlpd@mwt.net
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Juneau County All Hazards Mitigation Plan Update

Steering Committee Meeting SIGN-IN

June 7, 2017 - 10:30 AM

	Name	Department/Organization	Email
1	DAVE BUTLER	JUNEAU EM	
2	Gerrase Thompson	Juneau EM	
3	Lynn WILLARD	NL FIRE - CT. 13 J	
4	Cory Peterson	Tongue City Sheriff	
5	Dawn McCluskey	Allied Cooperative	
6	Alyson Horkan	Juneau Co. Health Depart.	
7	Barb Theis	" "	
8	Matt Davies	Volk Field	
9	Mary Crowley	MBMC	
10	Michelle Tischer	American Red Cross	
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JUN 15 2017

Community: Village of Hustler List those who participated in
form completion: Dean Duescher, Robert Nelson, Rick Cook
Ross Farbo, Margie Lowe & John Cook.

NORTH CENTRAL WISCONSIN
REGIONAL PLANNING COMMISSION

BRIEFLY, WHAT NATURAL HAZARDS/DISASTERS ARE OF MOST CONCERN TO THE VILLAGE AND WHY?

- ① During the spring & summer damage from high wind is a concern.
- ② During the winter providing a warm place for residents displaced by a major snow or ice storm. if the village hall was destroyed.
- ③ Clean drinking water if our Village well was not operational or contaminated.

WHAT AREAS/FACILITIES ARE VULNERABLE TO HAZARDS/DISASTERS IN THE VILLAGE?

Our water system because we only have one well.

WHAT KIND OF THINGS WOULD THE VILLAGE LIKE TO SEE DONE TO REDUCE THE POTENTIAL IMPACT OF A DISASTER EVENT IN THE VILLAGE (Looking for new project ideas - think big as if money was no object, we won't hold you to it.) REFER TO ATTACHED TABLE FROM PREVIOUS PLAN FOR IDEAS.

We would like to put in a second well.
Then we would have a back up source of water if the system failed or was contaminated.

Any questions call
Dean Duescher
(608) 548-7778

Subject: FW: Village of Necedah All Hazards Plan Input
From: Roger Herried <Roger.Herried@necedah.us>
Date: 6/23/2017 5:17 PM
To: "dlandeau@ncwrpc.org" <dlandeau@ncwrpc.org>

From: Roger Herried
Sent: Friday, June 23, 2017 4:23 PM
To: 'dlandea1u@ncwrpc.org' <dlandea1u@ncwrpc.org>
Subject: Village of Necedah All Hazards Plan Input

Darryl:

Below is our response:

COMMUNITY – Village of Necedah

People the participated in the plan - Village Board Members (June Gill, Mary Alice Lasswell, June Gill, Scott Carter, James Seebruck, Maribeth Stivers, Charlie Krupa) and Village Staff (Roger Herried -Administrator/Clerk)

Discussed at June 12 Village Board Meeting

Briefly, What natural hazards/disasters are of most concern to the Village and why?

Forest fires were selected as the number one concern by the Village of Necedah Board member. The Village had a wildland fire in the last few years. The fire was started by a train traveling through the community. The Necedah Village Board knows that we have to railroads that pass through the Village and both have the potential to cause sparks that would ignite fires.

Tornado was the second most popular answer. The Village has experienced severe storms with high winds. We also were aware of tornados that missed the village.

Train Derailment is also a possible disaster. The Village has two railroads that pass through. We also have 5 railroad crossings. Two of the crossings are on Major Highways.

Flood Event – The Yellow River is located in the Village. It has a dam and a bridge that crosses the river. During spring flooding events, there is large ice dams on the yellow river that can damage the bridge or dam.

What areas/facilities are vulnerable to hazards/disasters in the Village?

Village/Town Hall – Serves as our emergency operation center. It is located two blocks from a major railroad crossing (HWY 21). It is located one block from the HWY21/HWY80 intersection. The building has limited backup power supplied by a generator. The generator is powered by natural gas. The fire department operates of the Village/Town Hall Building.

Necedah Area School - Serves as an emergency shelter.

Water System Facilities (Water Treatment Facility, water storage elevated tank, water ground reservoir, Necedah

Well #3 and Well #4 – Provides water to the village.

Wastewater treatment Plant – Treats raw sewage.

Public Safety Building – The ambulance service and the Police operate out of this building. The building has a generator. The generator is powered by diesel fuel.

Oak Grove Assisted Care Facility - The building has 40 rooms. To evacuate the building would be difficult during a fire or disaster.

Siegler-Community Memorial Library - There is a large meeting room at the library. It also has wireless internet.

Communication Towers on the Bluff - Us Cellular, Verizon, and the State of WI has communication towers on the bluff. If those towers were damaged it would cause a communication problems.

What kind of things would the village like to see done to reduce the potential impact of a disaster event in the Village?

Create fire breaks along the borders of the village (The golf course helped create a fire break when it was operating).

Maintain railroad corridors free from vegetation.

Maintain/mow areas that could create a fire danger.

The table of previous plan ideas is still valid.

Thanks,

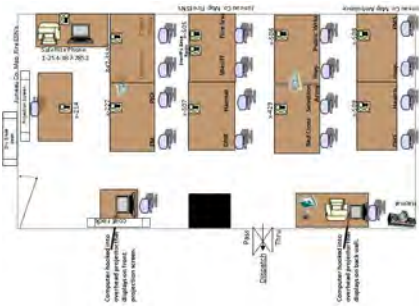
Roger Herried
Administrator/Clerk

Juneau County All Hazards Mitigation Plan Update

Steering Committee Meeting SIGN-IN

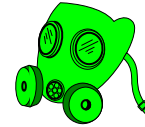
September 20, 2017 - 10:30 AM

	Name	Department/Organization	Email
1	Lynn Willard	FIRE & CTY BO	LWILLARD@MUSKIE.NET
2	Gerrard Thompson	JUNEAU EM	em@juneau.co.juneau.ak.us
3	DAVE BUTLER	" "	juneauem@co.juneau.ak.us
4	Glenn Peterson	Co. Bd. Chairman	melissagillauwe@cappaertwi.gov
5	Melissa Gillauwe Cappaert	WDNR	
6	Dawn McCluskey	Allied Cooperative	dmccluskey@allied.coop
7	CRAIG H. STUCKLIK	JUSO	
8	Bob Theis	Health	btheis@co.juneau.ak.us
9	Alyson Horkan	Health	ahorkan@co.juneau.ak.us
10	Bob Dellman	Highway	rdellman@co.juneau.ak.us
11	Matthew Davies	Volk Field	matthew.J.Davies@mil.com
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LEPC MEETING

December 20, 2017, 10:30 AM
Juneau County EOC
200 Oak Street
Mauston, WI 53948



Meeting Agenda

A. Call to Order

B. Roll Call

C. Minutes of: September 20, 2017 LEPC Meeting

D. Public Concerns.

E. Old Business

- 1. WISCOM Radio System Update** – The “Scope of Work Agreement” is being completed between Juneau County, Elert & Associates and EF Johnson on system requirements, upgrades and improvements that will be made to the radio system. The agreement is being finalized and work should start in April 2018.
- 2. 2016 Exercise Grant for Juneau County Update** – The functional exercise involving the “Long term loss of electrical power” due to an ice storm was held on October 24, 2017 at the Justice Center from 0830 – 1130. The AAR was held at 1200 in the County Board Room. A full scale exercise is scheduled for summer 2018.
- 3. FFY 2015 Pre-Disaster Mitigation Plan Grant Update**– Darryl Landeau of NCRPC has completed the All-Hazard Mitigation Plan and is asking for the LEPC approval as the “Oversite Committee” for the plan. The plan has been approved by the State of Wisconsin and FEMA. Upon LEPC approval and Emergency Management Committee approval today at 11:30am, the plan will go before the Juneau County Board for adoption by resolution.

F. New Business

1. Hazmat Team Report

- a.) AAR for July 29, 2017 Anhydrous Ammonia leak at the Camp Douglas Farmer’s Cooperative Hwy. 12-16 location was held at the REACT Center on December 6, 2017 at 6:00pm
- b.) Hazmat Team future Existence.

2. JCPPP Report – Theis & Horkan

3. ARC Report – Michelle Tischer

4. Hospital EM Report – Mary Crowley

- a.) Report on possibility of full scale exercise combined with “Patriot North” exercise in 2018 at Volk Field.

5. DNR Report – Melissa Gilaume-Cappaert, Chad Nichols

6. Updates – Off-Site Facility Plans – Letters for “Request of Information” were sent out November 6th, 2017 to Merrick’s, Allied Cooperative/Agronomy and K-Mart. Allied Cooperative/Agronomy has returned their updated information and their Off-Site Plan has been updated.

Basic Plan, Table of Contents, Acronyms, Legal Basis, ESF #1 Transportation, ESF #2 “Communications” and Annex B “Warning and Communication” were updated.

7. Flooding Issues in Clearfield Township – A meeting was held with Wood County Emergency Management Office on December 4, 2017 in Adams County.
Maps and other resource materials needed for the study are being gathered for the affected areas in both Wood County and Juneau County. The Army Corp of Engineers advised the funds for the study have been allocated by the federal government under “Continuing Resolution” of the federal budget. However the funds are held up until January 2018.

8. Estimates for concrete floor in Emergency Management Storage Building.

Received two bids, work to be completed in the spring of 2018.

G. **Other Business**

- 1. Any other business to come properly before the LEPC Committee for discussion.



**Amended AGENDA FOR THE
JUNEAU COUNTY BOARD OF SUPERVISORS MEETING
January 23, 2018
COUNTY BOARD ROOM 200**

- 9:30 a.m. Call to Order
 Roll Call
 Opening Prayer/Pledge of Allegiance
- 9:35 a.m. Approve minutes of December 19, 2017 Meeting of the Juneau County Board of Supervisors
- 9:40 a.m. Ordinance 18-01 * Amending Section 7.17 of the Juneau County Code of Ordinances Entitled “Utility Vehicle and All-Terrain Vehicle Routes and Operations” to add new routes
- 9:45 a.m. Ordinance 18-02 * Adoption of Updated Juneau County All Hazards Mitigation Plan
- 9:50 a.m. Resolution 18-01 * Creating a Skype and Web Conference Software Provision in the Juneau County Internet and Computer Policy
- 9:55 a.m. Resolution 18-02 * Approving the 2018 Juneau County Forest Work Plan
- 10:00 a.m. Resolution 18-03 * Substitute Resolution for Approval of Amendments to Section 8.4 and 8.4a of the Juneau County Personnel Policy, Regarding Holiday Compensation
- 10:05 a.m. Resolution 18-04 * Authorizing Expenditure of Funds for Baraboo River Corridor Plan
- 10:10 a.m. Resolution 18-05 * Authorizing Bridge Loan Financing for the New Building Project
- 10:15 a.m. Resolution 18-06 * Approval of the Memorandum of Understanding between Juneau County and the Regional Board of the ADRC of Eagle Country
- 10:20 a.m. Resolution Honoring County Employees

Motion to fill:

Receptionist, DHS, grade 4, Department Transfer

Help Desk Associate, Information Technology, Resignation

Reports:

Public Works

Veterans Service

*These times are estimates only Access to the handicapped will be provided. If special accommodations are needed, please notify the sponsoring committee by calling 847-9300 phone number. Attention: This notice must be posted on the bulletin board in the Courthouse prior to the meeting in order to conform to 19.83 and 19.84 Wis. Stats.

Appendix B – Resolutions of Plan Adoption

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Juneau County Board of Supervisors

Courthouse, 220 East State Street
Mauston, Wisconsin 53948



ORDINANCE No. 18 – 02

DATE: January 23, 2018

INTRODUCED BY: Emergency Management Committee

SYNOPSIS: Adoption of Updated Juneau County All Hazards Mitigation Plan

WHEREAS, Juneau County has developed an All Hazards Mitigation Plan consistent with local plan criteria contained in 44 CFR Part 201, as authorized by the Disaster Mitigation Act of 2000 and current Wisconsin Emergency Management guidelines, and the Plan identifies both likely hazards faced by municipalities in the County and how vulnerable those municipalities are to each hazard; and

WHEREAS, Juneau County and participating municipalities must adopt the plan in order to have a Federal Emergency Management Agency (FEMA)-approved hazard mitigation plan so as to be eligible for funding through the Hazard Mitigation Grant Program, the Flood Mitigation Assistance Program, and the Repetitive Flood Claims Program; and

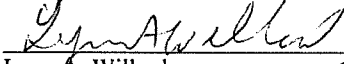
WHEREAS, the current All Hazards Mitigation Plan (available for inspection upon request from the Emergency Planning Director) is a proper update of the original All Hazards Mitigation Plan first adopted by the County on January 20, 2004, and has undergone maintenance and revision as originally designed into the Plan through the efforts of Juneau County's business and public outreach, county departmental involvement, emergency management research, coordinated analysis with state and local agencies, and lessons learned from exercises and actual events occurring in the County;

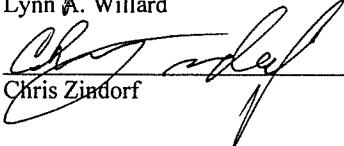
NOW, THEREFORE, BE IT ORDAINED that the Juneau County Board of Supervisors shall and hereby does approve and support implementation of the current updated Juneau County All Hazards Mitigation Plan.

INTRODUCED AND RECOMMENDED FOR ADOPTION ON JANUARY 23, 2018.

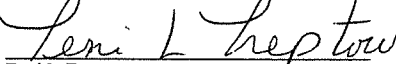
EMERGENCY MANAGEMENT COMMITTEE:


Alan K. Peterson, Chairperson


Lynn A. Willard


Chris Zindorf

Adopted by the County Board of Supervisors of
Juneau County on January 23, 2018.


Terri L. Treptow, Juneau County Clerk

RESOLUTION # _____

ADOPTING THE JUNEAU COUNTY ALL HAZARDS MITIGATION PLAN UPDATE

WHEREAS, the City of _____ recognizes the threat that natural hazards pose to people and property; and

WHEREAS, under taking hazard mitigation actions before disasters occur will reduce the potential for harm to people and property and save tax payer dollars; and

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

WHEREAS, the City of _____ adopted the last All Hazards Mitigation Plan on _____; and

WHEREAS, City of _____ participated jointly in the planning process with Juneau County and the other local units of government within the County to prepare an update to the existing multi-jurisdictional All Hazards Mitigation Plan;

NOW, THEREFORE, BE IT RESOLVED, that the City Council of the City of _____, hereby adopts the Juneau County All Hazards Mitigation Plan Update as an official plan; and

BE IT FURTHER RESOLVED, that the Juneau County Emergency Management Department will submit, on behalf of the City, the adopted All Hazards Mitigation Plan Update to Wisconsin Emergency Management and Federal Emergency Management Agency officials for final review and approval.

PASSED:_____.

Certifying Official

RESOLUTION # _____

ADOPTING THE JUNEAU COUNTY ALL HAZARDS MITIGATION PLAN UPDATE

WHEREAS, the Village of _____ recognizes the threat that natural hazards pose to people and property; and

WHEREAS, under taking hazard mitigation actions before disasters occur will reduce the potential for harm to people and property and save tax payer dollars; and

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

WHEREAS, the Village of _____ adopted the last All Hazards Mitigation Plan on _____; and

WHEREAS, the Village of _____ participated jointly in the planning process with Juneau County and the other local units of government within the County to prepare an update to the existing multi-jurisdictional All Hazards Mitigation Plan;

NOW, THEREFORE, BE IT RESOLVED, that the Village Board of the Village of _____, hereby adopts the Juneau County All Hazards Mitigation Plan Update as an official plan; and

BE IT FURTHER RESOLVED, that the Juneau County Emergency Management Department will submit, on behalf of the Village, the adopted All Hazards Mitigation Plan Update to Wisconsin Emergency Management and Federal Emergency Management Agency officials for final review and approval.

PASSED:_____.

Certifying Official