

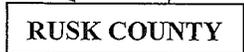


Multi-Hazard Mitigation Plan



September, 2014

Adopting the Rusk County Hazard Mitigation Plan



ROLL CALL Board Members	AYE (Yes)	NAY (No)	Abstain / Excused
1. PETER BOSS			
2. JERRY BILLER			
3. BOB NAWROCKI			
4. TONY HAUSER			
5. ARIAN KNOPS			
6. ROBERT STOUT			
7. RANDY TATUR			
8. LYLE LIEFFRING			
9. MICHAEL FILLION			
10. KEN PEDERSEN			
11. PHIL SCHNEIDER			
12. ROGER GIERKE			
13. MARK SCHMITT			
14. KARL FISHER			
15. TOM HANSON			
16. KATHY MAI			
17. DAVE WILLINGHAM			
18. MICHAEL HRABAN			
19. JIM PLATTETER			
TOTAL			

BOARD ACTION

Vote Required: Majority Vote of a Quorum

Motion to Approve Adopted Defeated

1st Schneider 2nd Stout

No: _____ Yes: _____ Exc: _____

Reviewed by: _____, Corp. Counsel

Reviewed by: _____, Finance Director

FISCAL IMPACT: (Note if there is any fiscal impact or not)

none

Certification:

I, Denise Wetzel, Clerk of Rusk County, hereby certify that the above is a true and correct copy of a resolution that was adopted on the 30th day of June, 2015 by the Rusk County Board of Supervisors.

Denise Wetzel
Denise Wetzel
County Clerk, Rusk County

TO THE RUSK COUNTY BOARD OF SUPERVISORS:

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WHEREAS, hazard mitigation planning is the process of developing a set of actions designed to reduce or eliminate long-term risk to people and property from hazards and their effects; and

WHEREAS, Rusk County has worked through its Local Emergency Planning Committee and in cooperation with the Northwest Regional Planning Commission to develop the Rusk County Hazard Mitigation Plan, to assess the magnitude of hazard risks, and to develop strategies for minimizing or reducing these risks; and

WHEREAS, Rusk County Emergency Management provides emergency management planning, coordination, response, and recovery support on behalf of all communities of Rusk County; and

WHEREAS, the planning meetings for this effort were open to the public, properly noticed in accordance with Wisconsin's Open Meeting's Law, and included a special Public Informational Meeting held on June 30th, 2014 ; and

WHEREAS, the Plan was reviewed and approved by Wisconsin Emergency Management and FEMA as meeting the requirements of the Federal Disaster Mitigation Act of 2000 and applicable Code of Federal Regulations; and,

WHEREAS, adoption of the Plan by the County Board will make all incorporated and unincorporated jurisdictions within Rusk County eligible to apply for federal grant dollars for hazard mitigation projects.

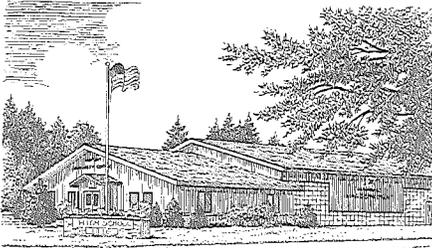
NOW, THEREFORE, BE IT RESOLVED, that the Rusk County Board adopts the Rusk County Hazard Mitigation Plan as the official all hazard mitigation plan for the County with the intent of implementing the plan recommendations as funding and resources allow.

SUBMITTED BY: Rusk County

_____, Chairman

_____, Vice Chairman

25



Village Resolution

Village of Hawkins

509 Main Street
P.O. Box 108
Hawkins, WI 54530
(715) 585-6322
Fax (715) 585-2373



Resolution Adopting the RUSK County Hazard Mitigation Plan

WHEREAS, hazard mitigation planning is the process of developing a set of actions designed to reduce or eliminate long-term risk to people, businesses, infrastructure, and property from hazards and their effects; and,

WHEREAS, RUSK County, working through its Local Emergency Planning Committee, has updated and prepared the RUSK *County Hazard Mitigation Plan*, to assess the magnitude of hazard risks and develop strategies for minimizing or reducing these risks; and,

WHEREAS, the Village of Hawkins participated in the planning process through a meeting with community representatives to identify hazard risks, vulnerabilities, and strategies unique to the community, as well as through the review of draft plan materials; and,

WHEREAS, the Plan was reviewed and approved by Wisconsin Emergency Management and FEMA as meeting the requirements of the Federal Disaster Mitigation Act of 2000 and applicable Code of Federal Regulations; and,

WHEREAS, adoption of the Plan by the Village of Hawkins Board will meet prerequisite requirements which enables the Village to apply for FEMA grant dollars for hazard mitigation projects;

NOW, THEREFORE BE IT RESOLVED, the Village of Hawkins adopts the RUSK *County Hazard Mitigation Plan*, as the official all hazards mitigation plan for the Village of Hawkins with the intent of implementing the plan recommendations as funding and resources allow.

Approved and dated this 1 day of June, 2015.

Kyle Austad, Village President

Janice Krings, Clerk

City/Village Resolution

Resolution Adopting the RUSK County Hazard Mitigation Plan

WHEREAS, hazard mitigation planning is the process of developing a set of actions designed to reduce or eliminate long-term risk to people, businesses, infrastructure, and property from hazards and their effects; and,

WHEREAS, RUSK County, working through its Local Emergency Planning Committee, has updated and prepared the RUSK *County Hazard Mitigation Plan*, to assess the magnitude of hazard risks and develop strategies for minimizing or reducing these risks; and,

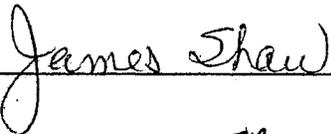
WHEREAS, the **Village** participated in the planning process through a meeting with community representatives to identify hazard risks, vulnerabilities, and strategies unique to the community, as well as through the review of draft plan materials; and,

WHEREAS, the Plan was reviewed and approved by Wisconsin Emergency Management and FEMA as meeting the requirements of the Federal Disaster Mitigation Act of 2000 and applicable Code of Federal Regulations; and,

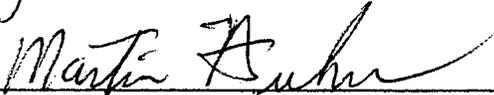
WHEREAS, adoption of the Plan by the **Village of Sheldon Board** will meet prerequisite requirements which enables the **Village** to apply for FEMA grant dollars for hazard mitigation projects;

NOW, THEREFORE BE IT RESOLVED, the **Village of Sheldon** adopts the RUSK *County Hazard Mitigation Plan*, as the official all hazards mitigation plan for the **Village of Sheldon** with the intent of implementing the plan recommendations as funding and resources allow.

Approved and dated this 16th day of June, 2015.



James Shaw, Village President.



Martin Huhn, Village Clerk

Village of Bruce

Resolution #15-02

Resolution Adopting the RUSK County Hazard Mitigation Plan

WHEREAS, hazard mitigation planning is the process of developing a set of actions designed to reduce or eliminate long-term risk to people, businesses, infrastructure, and property from hazards and their effects; and,

WHEREAS, RUSK County, working through its Local Emergency Planning Committee, has updated and prepared the *RUSK County Hazard Mitigation Plan*, to assess the magnitude of hazard risks and develop strategies for minimizing or reducing these risks; and,

WHEREAS, the **Village of Bruce** participated in the planning process through a meeting with community representatives to identify hazard risks, vulnerabilities, and strategies unique to the community, as well as through the review of draft plan materials; and,

WHEREAS, the Plan was reviewed and approved by Wisconsin Emergency Management and FEMA as meeting the requirements of the Federal Disaster Mitigation Act of 2000 and applicable Code of Federal Regulations; and,

WHEREAS, adoption of the Plan by the **Village of Bruce Board** will meet prerequisite requirements which enables the **Village of Bruce** to apply for FEMA grant dollars for hazard mitigation projects;

NOW, THEREFORE BE IT RESOLVED, the **Village of Bruce** adopts the *RUSK County Hazard Mitigation Plan*, as the official all hazards mitigation plan for the **Village of Bruce** with the intent of implementing the plan recommendations as funding and resources allow.

Adopted this 18th day of June, 2015.



Approved: Michael J. Newman, Village President



Attest: Terry Hegeholz, Clerk/Treasurer

Resolution #2015-17

Adopting the RUSK County Hazard Mitigation Plan

WHEREAS, hazard mitigation planning is the process of developing a set of actions designed to reduce or eliminate long-term risk to people, businesses, infrastructure, and property from hazards and their effects; and

WHEREAS, RUSK County, working through its Local Emergency Planning Committee has updated and prepared the *RUSK County Hazard Mitigation Plan*, to assess the magnitude of hazard risks and develop strategies for minimizing or reducing these risks; and,

WHEREAS, the City of Ladysmith participated in the planning process through a meeting with community representatives to identify hazard risks, vulnerabilities, and strategies unique to the community, as well as through the review of draft plan materials; and,

WHEREAS, the Plan was reviewed and approved by Wisconsin Emergency Management and FEMA as meeting the requirements of the Federal Disaster Mitigation Act of 2000 and applicable Code of Federal Regulations; and,

WHEREAS, adoption of the Plan by the City of Ladysmith Common Council will meet prerequisite requirements which enables the City to apply for FEMA grant dollars for hazard mitigation projects;

NOW, THEREFORE BE IT RESOLVED, by the City of Ladysmith that it hereby adopts the *RUSK County Hazard Mitigation Plan*, as the official all hazards mitigation plan for the k with the intent of implementing the plan recommendations as funding and resources allow.

Approved by ~~vote~~ vote at a regular meeting of the Common Council held the ~~13th~~ day of July 2015.

Signed: _____

Marty Reynolds
Mayor

Attest: _____

Alan Christianson
Deputy Clerk

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BACKGROUND

PURPOSE

The intent of a hazard mitigation plan is to inventory and evaluate hazards, provide a comprehensive reference source for planning and mitigation activities, and educate policy makers and emergency service organizations about local risks and vulnerabilities. Rusk County currently has an emergency management plan that addresses emergency action guidelines. These plans address response but do not address prevention. The purpose of a Hazard Mitigation Plan is to assess the possible hazards in Rusk County and to create hazard mitigation goals to protect the health, safety, and welfare of the public.

Mitigation is characterized as a long-term, on-going process. This plan seeks to address both natural and manmade (technological) hazards which may occur in Rusk County. It provides general guidance related to hazards within the county and incorporated communities as well as providing an overview of the mitigation efforts undertaken by the county and local units of government. In addition, the plan identifies potential problematic conditions and outlines corrective actions that the county will undertake to remedy the identified problems. Planning and implementation actions will be identified that are applicable to both pre-incident and post-incident situations.

It is the responsibility of the governments within Rusk County to protect life and property from the effects of hazardous events. Being prepared for disaster throughout the county through planning and mitigation is a continuous process. Appropriate actions must be taken to protect families, businesses, and public facilities by reducing the effects of natural and human-caused disasters. Reducing the effects of natural disasters minimizes detrimental economic impacts and promotes community development and welfare.

SCOPE

The Rusk County Hazard Mitigation Plan addresses both natural and manmade (technological) hazards. The plan intended to address natural hazards such as tornadoes, flooding, wildfires, thunderstorms, windstorms and winter weather events; along with technological hazards such as hazardous material incidents, energy emergencies and terrorism. The Rusk County Hazard Mitigation Plan conforms to the local requirements of the Disaster Mitigation Act of 2000 (DMA 2000), enacted on October 10, 2000. DMA 2000 establishes a pre-disaster hazard mitigation program and new requirements for the national Hazard Mitigation Grant Program (HMGP). Section 322 of the act specifically addresses mitigation planning at the state and local levels and establishes specific criteria for local planning.

PLANNING PROCESS

PREPARATION

The Rusk County Hazard Mitigation Plan was developed through the collective efforts of the Rusk County Hazard Mitigation Planning Committee, state, county and local units of government, and concerned citizens.

Rusk County Hazard Mitigation Planning Committee

Name	Affiliation	Title
Arian Knops	Rusk County	County Board
Cece Tesky	Rusk County	Zoning Administrator
David Kaminski	Rusk County	Sheriff
John Fitzl	Rusk County	GIS Specialist
Kurt Gorsegner	City of Ladysmith	Public Works Director
Mike Zimmer	Rusk County	Parks Supervisor
Phil Schneider	Rusk County/Village of Sheldon	County Board and Village Trustee
Tom Hall	Rusk County Government	Emergency Management Director



Contact Information

Rusk County Emergency Management
311 Miner Avenue East
Ladysmith, WI 54848
(715) 532-2121

PARTNERS

The Rusk County Hazard Mitigation Plan was developed by the Rusk County Hazard Mitigation Steering Committee. Plan development was led by the Rusk County Emergency Management Department, with assistance from the Northwest Regional Planning Commission (NWRPC). The plan development period was from September of 2012 through May of 2014. During this time period, the steering committee regularly met with NWRPC, county and local government staff and local elected officials. A public open house was held on June 30th, 2014 at the Rusk County Courthouse in Ladysmith. The completed draft plan, mapping and an overview of the process were presented to the public. Copies of all materials used during plan development were posted on the project web page at www.nwrpc.com/rhmp for public review throughout the planning process. No oral or written comments on the plan were received via mail, email, online or at the open house. The draft plan was submitted to Wisconsin Emergency Management (WEM), for review and comment in November of 2014, with WEM comments received in December of 2014. The draft plan was submitted to FEMA on March 23rd, 2015 and approved on May 20th, 2015. For information and documentation of the planning process, please refer to Appendix A.

This plan for Rusk County includes several local units of government within the planning area (26 towns, 5 villages, 1 city). Each participating jurisdiction’s resolution adopting the Rusk County Hazard Mitigation Plan is included in the beginning of the plan. All unincorporated towns were invited to participate as stakeholder

members of the steering committee.





Municipal & Regional Stakeholders Involved in the Development of the Hazard Mitigation Plan

Name	Community/Role	How Participated?
Tom Hall	Rusk County, Emergency Management Director	Organized and attended meetings, collected data and information, reviewed draft plan materials, coordinated local government outreach and public participation activities.
Kurt Gorsegner	City of Ladysmith, Public Works Director	Attended meetings, collected city data and information, reviewed draft plan materials and served as a liaison to the Common Council on HMP development
Phil Schneider	Village of Sheldon, Trustee	Attended meetings, collected local data and information, reviewed draft plan materials and served as a liaison to the Village board on HMP development.
Elvin Murray	Village of Weyerhaeuser, President	Participated in phone and email discussions with EMD, collected local data, reviewed draft plan materials and served as a liaison to the Village board on HMP development.
Kyle Austad	Village of Hawkins, President	Participated in phone and email discussions with EMD, collected local data, reviewed draft plan materials and served as a liaison to the Village board
Mike Newman	Village of Bruce, Trustee	Participated in phone and email discussions with EMD, collected local data, reviewed draft plan materials and served as a liaison to the Village board
Cassandra Camren	Village of Glen Flora, Clerk/Treasurer	Participated in phone and email discussions with EMD, collected local data, reviewed draft plan materials and served as a liaison to the Village board
Jason Laumann	Northwest Regional Planning Commission	Facilitated the planning process, collected data and attended regional, county and local HMP development meetings.

Several existing plans and studies were used in the development of this hazard mitigation plan, including:

- Rusk County Outdoor Recreation Plan
- Rusk County Comprehensive Plan
- Rusk County Emergency Operations Plan
- Rusk County Forest Management Plan
- Rusk County Land and Water Resource Management Plan
- State of Wisconsin Hazard Mitigation Plan
- Rusk County Commodity Flow Study
- Dam Failure Inundation River Maps, Excel Energy



Floods in Wisconsin, Magnitude and Frequency, US Geological Survey
Statewide Strategic Plan for Invasive Species, Wisconsin Invasive Species Council

Other references and sources of information used in the development of this plan include,

- U.S. Census Bureau, <http://www.census.gov/>
- USDA Forest Service, <http://www.nrs.fs.fed.us/fia/maps/Invasive-maps/default.asp>
- NOAA, National Weather Service, <http://www.weather.gov/>
- National Climate Data Center, <http://www.ncdc.noaa.gov/stormevents/>
- Wisconsin State Climatology Office, <http://www.aos.wisc.edu/~sco/>
- Tornado Project Online, <http://www.tornadoproject.com/>
- Wisconsin Traffic Operations and Safety Library, <https://transportal.cee.wisc.edu/services/crash-data/>
- Great Lakes Indian Fish and Wildlife Commission, <http://invasives.glifwc.org/>
- Wisconsin Invasive Species Council, <http://invasivespecies.wi.gov/>
- Center for Invasive Species and Ecosystem Health <http://www.eddmaps.org/>

Existing plans and studies were used to provide background information relative to the hazards identified and to provide policy and strategic guidance in the development of the county and local hazard mitigation action plan.

Coordination with Other Jurisdictions

Early in the planning process, state, federal, and local agencies and organizations were invited to participate as stakeholders in the process. Stakeholders could participate in various ways, either by contributing input at planning committee meetings, being aware of planning activities through an email group, providing information to support the effort, or reviewing and commenting on the draft plan. Based on their involvement in other hazard mitigation planning efforts, status in the County, and interest as a neighboring jurisdiction, representatives from the following agencies and communities were invited to participate as stakeholders in the process:

Wisconsin Department of Natural Resources
 National Weather Service
 Northwest Regional Planning Commission
 Rusk County, Wisconsin

Price County, Wisconsin
 Barron County, Wisconsin
 Sawyer County, Wisconsin
 Chippewa County, Wisconsin

Planning Mechanisms and Capabilities

Another important objective of the hazard mitigation plan is to incorporate the document into existing and future planning efforts and initiatives throughout the County. Elements of the plan will be considered during municipal and county development and comprehensive planning efforts. This plan will be incorporated into, considered during, and referenced by future updates and efforts at the County and municipal levels concerning the plans, policies, ordinances, programs, studies, reports, and staff included in the table below.



Rusk County Hazard Mitigation Plan

	Rusk County	Village of Bruce	Village of Glen Flora	Village of Hawkins	Village of Sheldon	Village of Weyerhaeuser	City of Ladysmith
Plans							
Comprehensive/Land Use Plan	Yes	No	No	No	No	No	Yes
Land and Water Management Plan	Yes	No	No	No	No	No	No
Forest Management Plan	Yes	No	No	No	No	No	No
Economic Development Plan	Yes	No	No	No	No	No	No
Emergency Response/Evac Plan	Yes	No	No	No	No	No	No
Capital Improvement Plan	No	No	No	No	No	No	Yes
Comprehensive Emer. Mgmt. Plan	Yes	No	No	No	No	No	No
Policies/Ordinances							
Building Codes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Zoning/Land Use Codes/Restriction	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Subdivision	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Floodplain Ordinances	Yes	No	No	No	No	No	Yes
Programs							
NFIP Participant	Yes	Yes	Yes	Yes	Yes	Yes	Yes
NFIP CRS	No	No	No	No	No	No	No
Studies and Reports							
Flood Insurance Study	No	No	No	No	No	No	No
Floodplain Maps (FIRM)	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Commodity Flow Study	Yes	No	No	No	No	No	No
Dam Failure Inundation Study	Yes	Yes	No	No	No	No	Yes

Yes=Plan, Code/Ordinance, Program or Study/Report was developed

No= Not developed



DEMOGRAPHICS

HISTORY

In 1901, Rusk County, originally known as Gates County, was the 71st county to be established in Wisconsin. Prior to 1901, it was the northern part of Chippewa County. The county’s initial namesake, James Gates, was a business man who promised to donate \$1,000 if the county was named after him. When he didn’t keep his promise, the legislature changed the name to Rusk County in 1905 after Jeremiah Rusk, a former Governor of Wisconsin. Rusk County consists of 24 towns, 8 villages, and the City of Ladysmith which serves as its county seat.

Table 1: Rusk County Municipalities

Municipality	Land Area (mi ²)	Municipality	Land Area (mi ²)
Town of Atlanta	51	Town of Stubbs	36
Town of Big Bend	33	Town of Thornapple	51
Town of Big Falls	35	Town of True	23
Town of Cedar Rapids	35	Town of Washington	34
Town of Dewey	31	Town of Wilkinson	35
Town of Flambeau	35	Town of Willard	36
Town of Grant	33	Town of Wilson	34
Town of Grow	35	Village of Bruce	2
Town of Hawkins	46	Village of Conrath	1
Town of Hubbard	44	Village of Glen Flora	1
Town of Lawrence	48	Village of Hawkins	2
Town of Marshall	36	Village of Ingram	1
Town of Murry	62	Village of Sheldon	1
Town of Richland	23	Village of Tony	2
Town of Rusk	34	Village of Weyerhaeuser	1
Town of South Fork	35	City of Ladysmith	4
Town of Strickland	35		

GEOGRAPHY

Rusk County is located in northwestern Wisconsin, within a predominantly rural forested landscape referred to as the “northwoods.” Traditional economic activities within the region have focused heavily on natural resource utilization. Activities such as farming, logging, trapping and other forest-based resource utilization have played a considerable role in the social, cultural, and economic history of the region. While many of these historic uses continue to be important to local economies, tourism and recreation have become an increasingly important economic force.

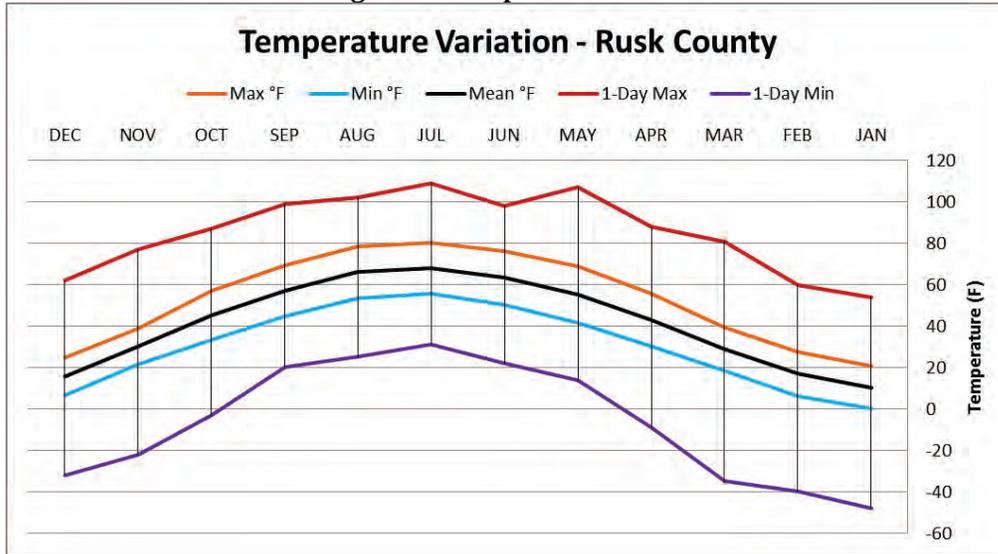
Rusk County encompasses approximately 931 square miles or 595,840 acres. The Chippewa, Jump, Flambeau and Thornapple Rivers flow through the county as well as many smaller streams and lakes. Geologically, Rusk County is part of the Northern Highland region of Wisconsin. The landform is characterized by rolling hills interspaced with streams and lakes, all of which are directly related to the last glaciation period 10,000 to 20,000 years ago. Rusk County is home to the Blue Hills, the remnant core of an ancient mountain range.



CLIMATE

The climate of Rusk County is classified as continental which is characterized by warm, short summers and long, cold, snowy winters. Periods of hot, humid weather are infrequent in contrast to southern Wisconsin.

Figure 1: Temperature Variation



The monthly mean temperature varied from 10°F in January to 68°F in July. Record extremes range from a high of 109°F to a low of -48°F. Dramatizing the continental climatology of the county, temperatures of 100°F or higher can occur during five months and extremes of 0°F or below can occur during the remaining seven months of the year. Snowfall, like temperature, varies in amounts averaging from 0.5 inches in October to 13.4 inches in January, with a mean yearly snowfall of 49.3 inches. Precipitation mean per year is 33.53 inches.

Figure 2: Precipitation

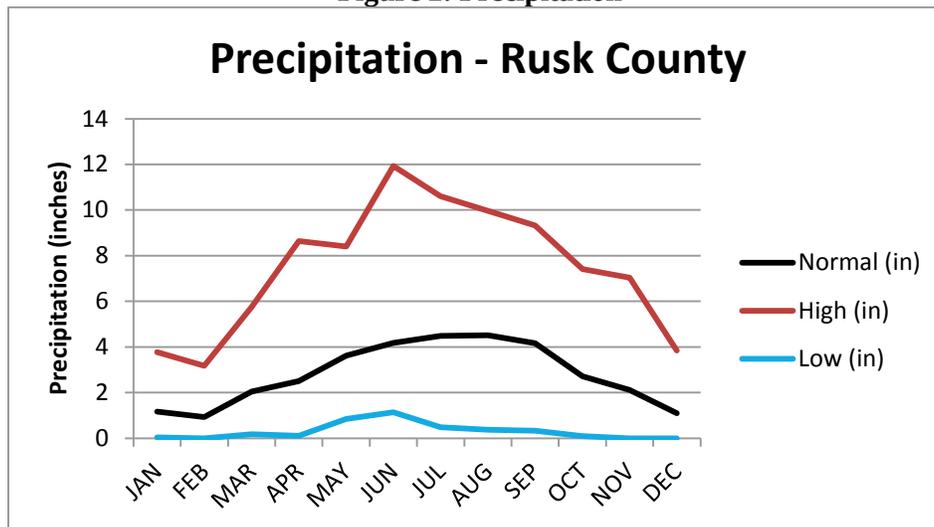
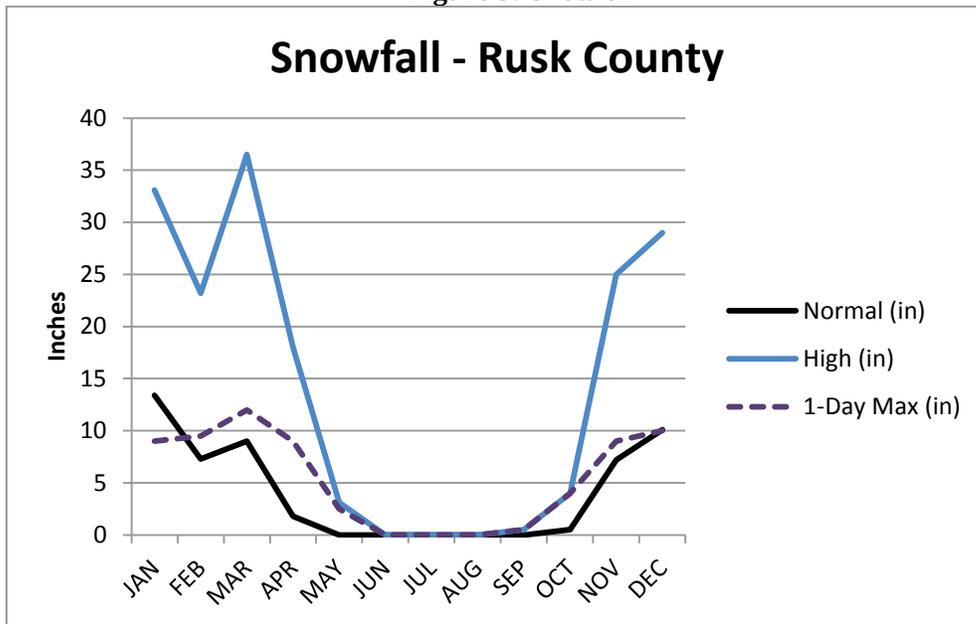


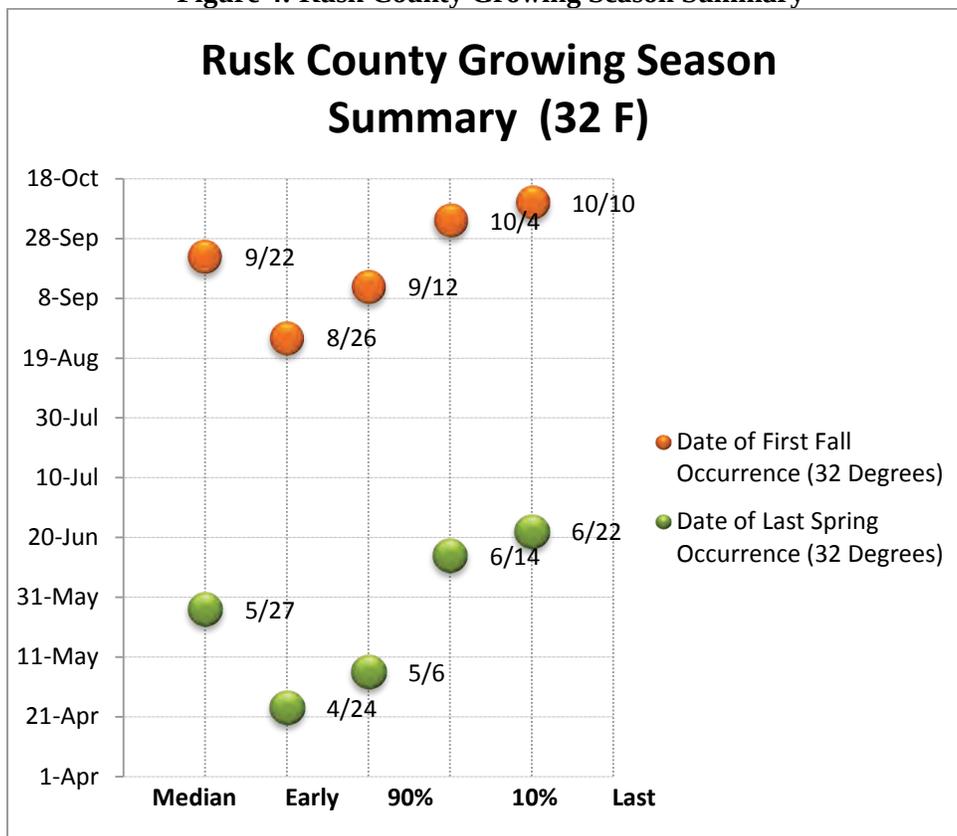


Figure 3: Snowfall



Prevailing winds are from the west and northwest from late fall until early spring and southerly the remaining part of the year. Severe wind conditions are infrequent.

Figure 4: Rusk County Growing Season Summary





Rusk County Weather Extremes

Table 2: Weather Extremes

Weather Extremes	Value	Date
Greatest Temperature	109°F	7/23/1934
Lowest Temperature	-48°F	1/6/1912
Greatest Monthly Snowfall Total	36.5	March 1985
Greatest Annual Snowfall Average	78.6	1949-1950
1 Day Precipitation Maximum	12 in	3/4/1985

Occasionally, Rusk County does experience extreme seasonal weather conditions. As shown in **Table 2** above, dramatic changes in temperature, severe storms, heavy precipitation and severe winter weather events can and do occur.

POPULATION CHARACTERISTICS

Significant population change has occurred in Rusk County over the past 100 years. The county’s population peaked in the 1940’s (**Figure 5**) and then steadily declined throughout the 50’s, 60’s and 70’s before slightly rebounding in 1980. Factors contributing to the county’s declining population include a continued aging population, declining birth rates and little in-migration of new residents.

Figure 5: Rusk County Historical Population

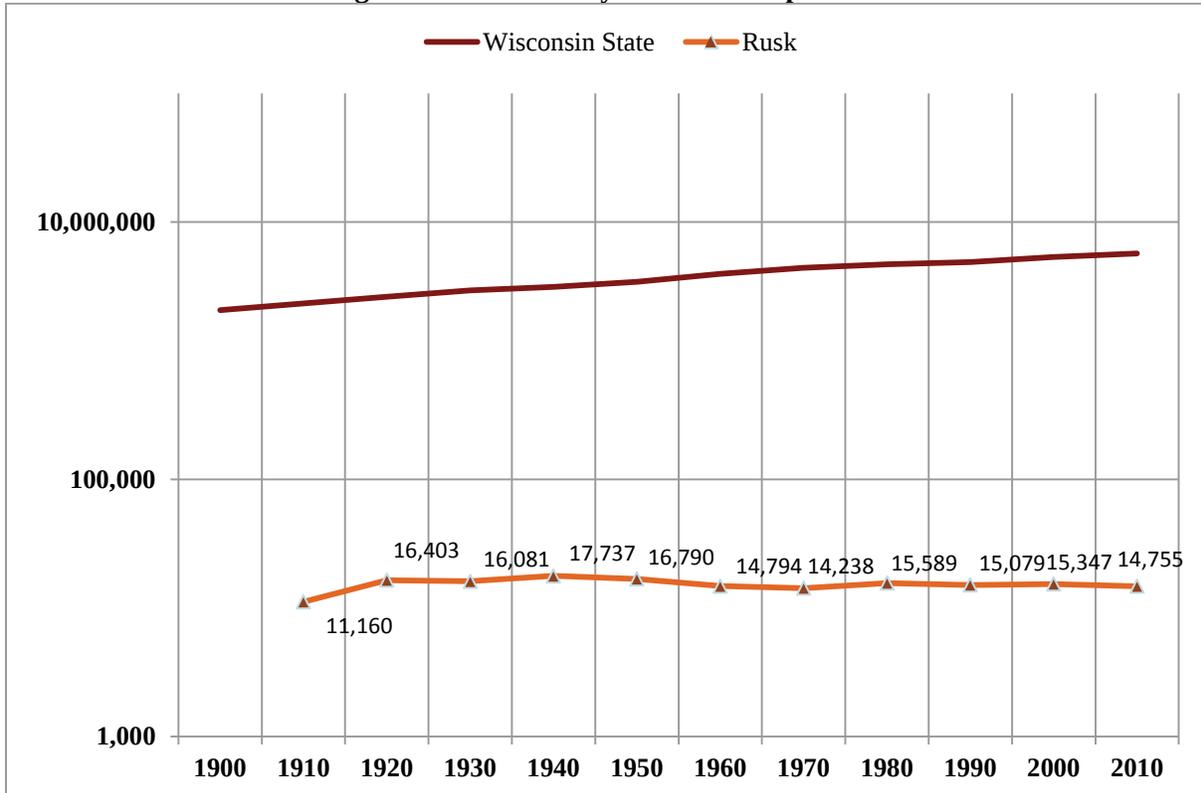




Table 3: 1950-2000 Rusk County Population Statistics

Geography	1970	1980	1990	2000	2010
Town of Atlanta	489	586	585	627	592
Town of Big Bend	324	398	386	402	358
Town of Big Falls	130	122	107	107	140
Town of Cedar Rapids	9	30	30	37	41
Town of Dewey	363	399	487	523	545
Town of Flambeau	931	1,086	1,018	1,067	1,059
Town of Grant	931	998	847	767	813
Town of Grow	548	560	450	473	427
Town of Hawkins	230	184	163	170	153
Town of Hubbard	112	185	216	168	204
Town of Lawrence	167	240	240	240	311
Town of Marshall	679	697	630	683	688
Town of Murry	253	301	291	275	277
Town of Richland	196	217	185	206	232
Town of Rusk	372	422	443	475	525
Town of South Fork	204	146	119	120	120
Town of Strickland	262	281	262	300	280
Town of Stubbs	633	612	573	587	579
Town of Thornapple	543	740	757	811	774
Town of True	360	332	310	291	296
Town of Washington	206	318	301	312	339
Town of Wilkinson	44	63	51	66	40
Town of Willard	380	481	448	539	505
Town of Wilson	75	72	67	84	106
Village of Bruce	799	905	844	787	779
Village of Conrath	114	86	92	98	95
Village of Glen Flora	69	83	108	93	92
Village of Hawkins	385	407	375	317	305
Village of Ingram	109	61	91	76	78
Village of Sheldon	218	292	268	256	237
Village of Tony	144	146	114	105	113
Village of Weyerhaeuser	285	313	283	353	238
City of Ladysmith	3,674	3,826	3,938	3,932	3,414
Rusk County	16,208	17,569	17,069	17,347	16,765

Source: Demographic Services Center, Wisconsin Department of Administration



HOUSING CHARACTERISTICS

The quantity and spatial distribution of housing units is a key concern for emergency managers and response personnel. This information is also critical for assessing risk and estimating the potential losses associated with hazards.

Housing Values

Housing value statistics will be used to assess the potential losses from hazards affecting Rusk County. The census-derived median value of housing units in Rusk County is depicted in **Table 4**.

Table 4: Rusk County Housing Values

Geography	Median Value (Owner-occupied)	Total Assessed Value (Residential)
Town of Atlanta	\$114,300	\$19,023,700
Town of Big Bend	\$162,900	\$41,515,100
Town of Big Falls	\$106,700	\$3,871,900
Town of Cedar Rapids	\$125,000	\$1,406,400
Town of Dewey	\$156,900	\$31,536,400
Town of Flambeau	\$125,000	\$39,552,100
Town of Grant	\$120,400	\$27,887,800
Town of Grow	\$109,800	\$7,615,900
Town of Hawkins	\$93,100	\$3,947,500
Town of Hubbard	\$153,800	\$5,094,000
Town of Lawrence	\$104,200	\$6,425,900
Town of Marshall	\$120,300	\$9,008,500
Town of Murry	\$88,300	\$7,251,200
Town of Richland	\$106,300	\$6,743,500
Town of Rusk	\$172,100	\$52,060,000
Town of South Fork	\$92,900	\$5,241,500
Town of Strickland	\$120,300	\$8,730,400
Town of Stubbs	\$139,200	\$25,392,600
Town of Thornapple	\$115,700	\$31,348,900
Town of True	\$100,000	\$6,633,700
Town of Washington	\$142,900	\$28,848,200
Town of Wilkinson	\$181,300	\$1,916,200
Town of Willard	\$117,300	\$30,237,600
Town of Wilson	\$94,500	\$3,170,200
Village of Bruce	\$80,300	\$18,331,900
Village of Conrath	\$73,200	\$1,972,500
Village of Glen Flora	\$82,500	\$1,662,600
Village of Hawkins	\$70,000	\$6,513,300
Village of Ingram	\$60,000	\$1,010,400
Village of Sheldon	\$73,000	\$5,030,700
Village of Tony	\$75,000	\$2,506,300
Village of Weyerhaeuser	\$66,100	\$7,484,500
City of Ladysmith	\$95,800	\$80,645,700

Source: 2010 American Community Survey, Wisconsin Department of Revenue, Statement of Assessments, 2011



Table 5: 2010 Rusk County Housing Statistics

Geography	Total	Owner	Rental	Seasonal
Town of Atlanta	330	219	25	65
Town of Big Bend	471	161	21	273
Town of Big Falls	128	54	0	73
Town of Cedar Rapids	38	14	3	21
Town of Dewey	427	202	23	193
Town of Flambeau	478	341	61	54
Town of Grant	365	273	38	31
Town of Grow	188	145	16	15
Town of Hawkins	148	63	3	76
Town of Hubbard	172	81	9	77
Town of Lawrence	185	89	30	62
Town of Marshall	235	191	28	6
Town of Murry	204	98	17	79
Town of Richland	193	86	8	92
Town of Rusk	512	196	19	272
Town of South Fork	126	54	5	66
Town of Strickland	158	95	18	34
Town of Stubbs	324	183	53	67
Town of Thornapple	444	276	48	96
Town of True	138	100	10	21
Town of Washington	422	138	15	255
Town of Wilkinson	51	20	1	28
Town of Willard	364	182	31	127
Town of Wilson	56	34	4	15
Village of Bruce	419	247	124	3
Village of Conrath	48	27	15	0
Village of Glen Flora	47	26	15	0
Village of Hawkins	182	133	26	9
Village of Ingram	43	27	5	11
Village of Sheldon	126	84	32	5
Village of Tony	52	38	9	1
Village of Weyerhaeuser	142	85	31	12
City of Ladysmith	1667	808	719	24

Source: 2010 Census

Between 1970 and 2010, the overall number of housing units in Rusk County remained relatively consistent. Housing density in the outlying rural areas ranges from about 1 home per square mile in the Town of Cedar Rapids to 15.3 homes per square mile in the Town of Rusk. Seasonal and recreational housing comprise about one-quarter of the overall housing base. These outlying recreational areas typically experience seasonal, holiday and weekend population fluxes. This variability becomes problematic for emergency managers when considering evacuations and estimating the potential population which may be affected by hazards.

A gradual decline of inhabitants per occupied household is occurring throughout Rusk County and northern Wisconsin. The central trends causing this decline include the out migration of inhabitants over the age of 18 for work or school, overall smaller family sizes, fewer families with children moving into the county, and fewer children being born to county residents. Additionally, many households are composed of retired couples or are single- person households.

**Housing & Household Projections**

Tables 6 depicts housing unit and household projections to the year 2030 for Rusk County municipalities.

Table 6: Household (occupied housing unit) Projections by MCD, 2015-2030

	2015 Projection	2020 Projection	2025 Projection	2030 Projection
Town of Atlanta	278	294	306	316
Town of Big Bend	217	228	235	239
Town of Big Falls	48	50	50	51
Town of Cedar Rapids	12	12	13	13
Town of Dewey	282	304	323	341
Town of Flambeau	485	508	526	538
Town of Grant	305	304	297	288
Town of Grow	169	171	170	169
Town of Hawkins	69	69	70	69
Town of Hubbard	69	68	67	64
Town of Lawrence	121	129	136	142
Town of Marshall	248	261	268	275
Town of Murry	127	129	128	128
Town of Richland	96	103	109	114
Town of Rusk	252	268	279	289
Town of South Fork	55	56	56	57
Town of Strickland	132	139	143	147
Town of Stubbs	270	282	291	296
Town of Thornapple	358	374	382	390
Town of True	101	98	93	88
Town of Washington	169	178	187	193
Town of Wilkinson	29	31	32	33
Town of Willard	293	318	338	357
Town of Wilson	34	36	37	38
Village of Bruce	388	387	378	367
Village of Conrath	49	53	56	59
Village of Glen Flora	50	52	53	54
Village of Hawkins	167	172	175	176
Village of Ingram	34	34	34	34
Village of Sheldon	111	110	107	102
Village of Tony	38	37	35	33
Village of Weyerhaeuser	178	183	186	186
City of Ladysmith	1,581	1,564	1,525	1,469

Source: Wisconsin Department of Administration



EMPLOYMENT & WAGES

Table 7: Rusk County 2011 Employment and Wages

Description	2011 Jobs	2020 Jobs	Change	% Change	2013 Wages, Salaries, & Proprietor Earnings	2013 Establishments
Agriculture, Forestry, Fishing and Hunting	359	394	35	10%	\$24,482	16
Mining, Quarrying, and Oil and Gas Extraction	<10	<10	--	--	--	1
Utilities	23	34	11	48%	\$42,471	2
Construction	217	205	(12)	(6%)	\$23,629	30
Manufacturing	1,341	1,110	(231)	(17%)	\$32,496	27
Wholesale Trade	89	128	39	44%	\$37,710	10
Retail Trade	644	621	(23)	(4%)	\$19,157	44
Transportation and Warehousing	192	272	80	42%	\$37,072	21
Information	83	52	(31)	(37%)	\$43,943	8
Finance and Insurance	118	117	(1)	(1%)	\$38,415	14
Real Estate and Rental and Leasing	19	21	2	11%	\$20,749	3
Professional, Scientific, and Technical Services	78	105	27	35%	\$25,955	8
Management of Companies and Enterprises	94	199	105	112%	\$24,465	2
Administrative and Support and Waste Management and Remediation Services	138	277	139	101%	\$34,289	12
Educational Services (Private)	10	22	12	120%	\$22,094	1
Health Care and Social Assistance	358	370	12	3%	\$19,903	24
Arts, Entertainment, and Recreation	38	32	(6)	(16%)	\$11,546	3
Accommodation and Food Services	292	350	58	20%	\$11,349	30
Other Services (except Public Administration)	306	182	(124)	(41%)	\$21,108	28
Government	1,179	1,062	(117)	(10%)	\$30,404	58
Unclassified Industry	0	0	0	0%	\$0	0
Total	5,578	5,555	(23)	0%	\$27,496	339

Source: QCEW Employees - EMSI 2013.4 Class of Worker



LAND USE PLANNING AND DEVELOPMENT

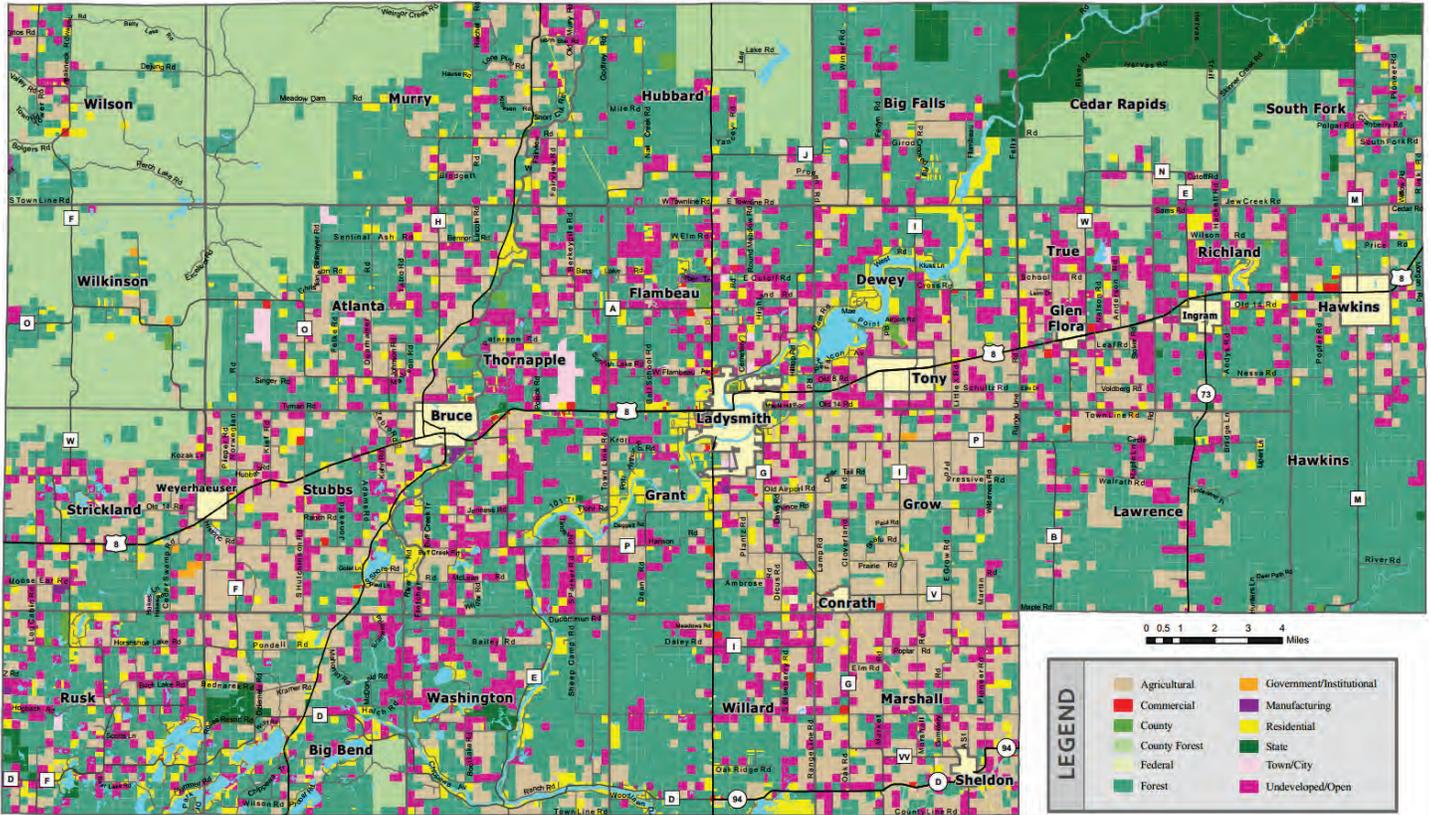


Table 8: Existing Land Use

Land Use Category	Acres	Percent
Residential	14,223	3.7%
Commercial	1,618	0.4%
Manufacturing	583	0.2%
Agricultural	142,231	36.9%
Undeveloped	49,946	12.9%
Agricultural Forest	28,928	7.5%
Forest	146,137	37.9%
Other	2,073	0.5%
Total	385,739	100.0%

Source: Rusk County Comprehensive Plan

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



Existing Land Use

As shown in **Table 8 – Existing Land Use**, Rusk County is predominantly rural. Much of the county outside of the incorporated city and villages has very low density development. The outlying lands are characterized by large tracts of forestland and other natural areas with isolated residential and recreational development.

The county has a sizable public land base which includes 106,270 acres of county and state forestlands. Shoreland development on inland waters is significant, with moderately high-density residential/recreational development present in some areas. The county’s urban areas include the City of Ladysmith and the Villages of Bruce, Conrath, Glen Flora, Hawkins, Ingram, Sheldon, Tony and Weyerhaeuser. Most industrial and mixed-use development in Rusk County occurs within these communities.

Development Trends

Rusk County land use trends (20 year) are depicted below in **Table 9**.

Table 9: 1993-2012 Property Assessment Trends, Rusk County (Improvement Value)

	1993	1998	2003	2008	2013
Residential	\$132,357,470	\$173,367,400	\$325,166,830	\$494,025,495	\$ 501,230,000
Commercial	\$24,040,030	\$27,338,900	\$44,357,450	\$72,708,670	\$ 68,451,900
Manufacturing	\$19,065,800	\$11,166,500	\$15,619,700	\$14,952,800	\$ 17,474,200
Agricultural	\$30,780,123	\$0	\$0	\$0	\$0
Forest	\$149,400	\$0	\$0	\$0	\$0

Source: Wisconsin Department of Revenue

Regulatory framework

County Zoning Ordinance

The Rusk County Ordinance (Adopted 1987, Amended March 27, 2012) regulates land use and development practices within zoned unincorporated areas of Rusk County. Zoned unincorporated towns include Atlanta, Flambeau, Grant, Grow, Marshall, Thornapple, Stubbs, Washington, and Wilson.

Shoreland Zoning

Shoreland/Wetland ordinance requirements are mandated by WI Administrative Code NR115. NR115 was recently revised by the Wisconsin Legislature and counties must update their ordinances to meet the new standards by March 1, 2012. Throughout 2011, Rusk County will be working on revising their shoreland ordinance to meet the new state requirements. Ordinance standards will change in some areas, including impervious surfaces and nonconforming structure language. Be aware of this when making your plans for building. Shoreland/Wetland Zoning affects all areas of Rusk County that are within 1000' of any lake, pond or flowage, or within 300' of any river or stream. Shoreland Zoning is administered by Section 17.57 of the Rusk County Code, which limits the development of wetlands and shoreland areas in order to protect water quality. Among other things, Shoreland Zoning also protects fish spawning grounds, wildlife habitat and lake and river ecosystems. Permits are required for construction, land disturbing activities and other land uses.

Local Zoning

The incorporated municipalities within Rusk County have adopted zoning ordinances and are responsible for enforcement and administration within their municipal boundaries.



Floodplain Zoning

Floodplain is the land which has been or may be covered by floodwater during a regional flood - which is a flood that has a 1% chance of occurring in any given year. The Rusk County Floodplain Zoning Ordinance is designed to protect life, health and property. Other purposes of the ordinance include the need to minimize rescue and relief efforts, business interruptions, damage to public facilities and expenditures of public moneys for costly flood control projects. It also discourages the victimization of unwary land and home buyers and prevents increases in regional flood heights that could increase flood damage on other properties. Permits are required for all development in floodplain. Landowners who wish to develop in these areas may be required to complete surveying and/or engineering in order to determine site specific elevations and/or base flood elevations in areas that do not have detailed studies.

In order to participate in the National Flood Insurance Program (NFIP), communities must adopt and submit floodplain management regulations that meet or exceed the minimum floodplain management requirements of the NFIP. The ordinance must also meet state requirements found in Chapter NR 116, Wisconsin Administrative Code. Rusk County's floodplain zoning ordinances and the floodplain ordinances of local participating communities are in compliance with NR 116 and meet the minimum standards for participation in NFIP.

Capability Assessment

The capability assessment identifies current activities used to mitigate hazards. The capability assessment identifies the policies, regulations, procedures, programs, and projects that contribute to the lessening of disaster damages. The assessment also provides an evaluation of these capabilities to determine whether the activities can be improved in order to more effectively reduce the impact of future hazards. The following sections identify existing plans and mitigation capabilities within all of the participating communities.

Legal and Regulatory Capabilities

*Please refer to table on **Page 5**

Administrative and Technical Capabilities

- Planner or engineer with knowledge of land development and land management (Consultant - all jurisdictions)
- Engineer trained in construction practices related to buildings or infrastructure (Consultant - all jurisdictions)
- City and county officials with education or expertise to assess the community's vulnerability to hazards (County)
- Personnel skilled in GIS (County)
- Emergency manager (County)
- County and municipal planning commissions, required to prepared and adopt comprehensive plans (County, City of Ladysmith)
- Regional Planning Commissions, which act as advisors to counties and communities on issues related to growth and development. (All jurisdictions)

Fiscal Capabilities

- Eligible for state and federal grants (All jurisdictions)
- Capital improvement financing (All jurisdictions)
- Authority to levy taxes (All jurisdictions)
- Fees for water, sewer, gas and electric (Ladysmith, Bruce, Weyerhaeuser, Sheldon, Hawkins, Glen Flora)
- Ability to incur debts through general obligation bonds (All jurisdictions)



Institutional Capabilities

As previously mentioned, Rusk County's 33 municipalities include 24 unincorporated towns, 8 villages, and the City of Ladysmith. Each municipality provides various community services according to local needs and limitations. Some local municipalities have formed cooperative working agreements to jointly to provide services, and share emergency response resources (mutual aid) These municipalities vary in staff and size, resource availability, financial standing, services provided, demographics, and levels of vulnerability to the profiled hazards. In addition to the institutional capability of local units of government in Rusk County, the County is capable of engaging in hazard mitigation activities. The county has its own mitigation goals and objectives, emergency management staff, resources, budget, and equipment. As such, it has the capacity to address the hazards profiled in this plan. The county can also partner with local municipalities, the state and federal government, community and citizens groups including lake associations, or other entities to increase capacity for hazard mitigation.

The Rusk County Local Emergency Planning Committee (LEPC) is comprised of emergency response representatives from across the county. The LEPC was actively involved with the creation of the hazard mitigation plan and will oversee implementation of recommended mitigation projects for all jurisdictions. Funding/financing mechanisms for large projects is the greatest element that limits the capability of all jurisdictions. The county has a relatively small tax base in comparison to other Wisconsin counties, and any financing mechanism that increases the public tax burden is not desired by residents, many of whom are elderly and on fixed incomes. As a result, a majority of projects identified in this plan have a minimal cost and can be completed by local staff. Grant funding sources and technical assistance would need to be acquired to help fund the larger projects identified in this plan. Key implementation plans and programs will include the National Flood Insurance Program (NFIP), local and county plans and ordinances and FEMA Hazard Mitigation Assistance Grant Programs.

National Flood Insurance Program (NFIP)

The NFIP is a federal program created by Congress to mitigate future flood losses nationwide through sound, community-enforced building and zoning ordinances and to provide access to affordable, federally-backed flood insurance protection for property owners. The NFIP is designed to provide an insurance alternative to disaster assistance to meet the escalating costs of repairing damage to buildings and their contents caused by floods. Participation in the NFIP is based on an agreement between local communities and the federal government that states that if a community will adopt and enforce a floodplain management ordinance to reduce future flood risks to new construction in Special Flood Hazard Areas (SFHAs), the federal government will make flood insurance available within the community as a financial protection against flood losses. Rusk County, along with the City of Ladysmith and Villages of Bruce, Conrath, Glen Flora, Sheldon, Tony and Weyerhaeuser participate in the National Flood Insurance Program

County and Local Plans and Ordinances

Rusk County and its incorporated communities have a number of plans and ordinances in place to ensure the safety of residents and the effective operation of communities. These include the Rusk County Comprehensive Plan, City of Ladysmith Comprehensive Plan, Rusk County Land and Water Management Plan and ordinances relating to law enforcement, land use, subdivision control, environmental services and planning & zoning. According to Wisconsin Statutes, a Comprehensive Plan shall be made with the general purpose of guiding and accomplishing a coordinated, adjusted, and harmonious development of the community. In accordance with existing and future needs, the Comprehensive Plan will promote public health, safety, and general welfare of the entire community. Wisconsin's Comprehensive Planning Law requires zoning, official mapping, and



subdivision regulations be consistent with a Comprehensive Plan. The table on page 5 provides a comprehensive overview of regulatory instruments in place in Rusk County and municipalities participating in this hazard mitigation plan. The hazard profile and risk assessment included a review of the plans and programs in place **for each identified hazard**, while the mitigation strategy addresses any identified program gaps or deficiencies. Rusk County has fulltime staff to administer land use, building and subdivision control ordinances and a county planning/zoning committee as an administrative body. Administration of city codes, regulations and planning is the responsibility of the City of Ladysmith Planning Commission, and the Common Council. Zoning, subdivision control and land use functions in Bruce, Conrath, Glen Flora, Sheldon, Tony and Weyerhaeuser are performed by the village council in each jurisdiction.

Hazard Mitigation Assistance Grant Programs

Through completion of this Hazard Mitigation Plan, Rusk County, the City of Ladysmith and the Villages of Bruce, Conrath, Glen Flora, Sheldon, Tony and Weyerhaeuser will be eligible for FEMA's Hazard Mitigation Assistance (HMA) grant programs which provide funds for mitigation activities that reduce losses from disasters and protect life and property. The HMA grant programs provide funding opportunities for mitigation activities both before and after a disaster. The Hazard Mitigation Grant Program (HMGP) provides funds for long-term hazard mitigation measures after a Presidential disaster declaration. The Pre Disaster Mitigation Grant Program (PDM) provides funds on an annual basis for hazard mitigation planning and mitigation projects prior to a disaster. The goal of the PDM program is to reduce overall risk to the population and structures, while at the same time, also reducing reliance on Federal funding from actual disaster declarations.



HAZARD PROFILES

Background

Rusk County emergency managers, public agencies and citizens must be prepared to respond to a wide array of natural and technological hazards.

Natural hazards can be defined as those elements of the physical environment which are harmful to man which are caused by forces extraneous to him. Physical events such as tornadoes, lightning, wildfire, hail, ice storms and flooding rains are not, in and of themselves, hazards. It is when these phenomena occur within populated areas, or when the impacts of these events negatively affect the human population, that they become hazardous. Humans can significantly influence the severity and frequency of natural hazards. For example, building in flood prone or subsidence areas substantially increases the chances for loss of life and property. Human alteration of the natural ecosystem can also limit the ability of the natural system to mitigate natural hazards. Human intervention by filling of wetlands, bluff destabilization by removal of vegetation and alteration of natural surface drainage patterns can reduce the natural mitigating capacity of the environment.

Rusk County's relative geographic remoteness and low population density does not make the county immune to the risks from hazardous events. Many events have occurred here in the past and undoubtedly will occur in the future.

Hazard Identification and Prioritization Process

In the fall of 2012, the Rusk County Hazard Mitigation Planning Committee conducted an exercise to identify the hazards which will be addressed in this Hazard Mitigation Plan. As part of this exercise, individuals were asked to rate various aspects of each hazard based on perceptions of probability and severity. A total of 14 natural and 6 technological/man-made hazards were identified. The composite scores assigned to each hazard were used to rank and prioritize hazards. The results of the hazard identification and prioritization process are depicted in **Tables 10-23**.



Table 10: Rusk County Hazard Priority Matrix – Natural Hazards

HAZARD	PROBABILITY	HUMAN IMPACT	PROPERTY IMPACT	BUSINESS IMPACT	DURATION	WARNING TIME	AFFECTED AREA	PREPARED-NESS	RESPONSE CAPABILITY	RISK
	<i>Likelihood this will occur</i>	<i>Possibility of death or injury</i>	<i>Physical losses and damages</i>	<i>Interruption of services</i>	<i>Event, secondary impacts</i>	<i>Time to prepare or evacuate</i>	<i>Size of area affected by hazard</i>	<i>Preplanning</i>	<i>Time, effectiveness, resources</i>	<i>Relative threat</i>
SCORE	0 = N/A 1 = Low 2 = Moderate 3 = High	0 = N/A 1 = Low 2 = Moderate 3 = High	0 = N/A 1 = Low 2 = Moderate 3 = High	0 = N/A 1 = Low 2 = Moderate 3 = High	0 = N/A 1 = Short 2 = Intermediate 3 = Long	0 = N/A 1 = Long 2 = Intermediate 3 = Short	0 = N/A 1 = Localized 2 = Intermediate 3 = Countywide	0 = N/A 1 = High 2 = Moderate 3 = Low or none	0 = N/A 1 = High 2 = Moderate 3 = Low or none	0 - 100%
Tornado	3	2	2	2	1	3	2	2	2	66.7%
Flooding	3	2	3	2	1	2	2	2	2	66.7%
Water Quality	3	2	1	1	1	3	3	0	3	58.3%
High Winds	2	2	3	3	1	3	2	2	2	50.0%
Communicable Disease	2	3	0	3	3	2	3	2	2	50.0%
Invasive Species	2	2	1	1	2	3	3	3	3	50.0%
Lightning	2	2	2	2	1	3	1	2	2	41.7%
Winter Weather Events	2	1	2	1	2	2	3	2	2	41.7%
Drought	2	1	2	1	2	1	3	2	2	38.9%
Dam Failure	1	3	3	3	2	3	2	2	2	27.8%
Wildfire	1	1	3	3	1	2	2	3	2	23.6%
Hail Storms	1	2	2	2	1	3	1	2	2	20.8%
Forest Health	1	1	1	1	2	1	1	2	2	15.3%



Table 11: Rusk County Hazard Priority Matrix – Manmade/Technological Hazards

HAZARD	PROBABILITY	HUMAN IMPACT	PROPERTY IMPACT	BUSINESS IMPACT	DURATION	WARNING TIME	AFFECTED AREA	PREPAREDNESS	RESPONSE CAPABILITY	RISK
	<i>Likelihood this will occur</i>	<i>Possibility of death or injury</i>	<i>Physical losses and damages</i>	<i>Interruption of services</i>	<i>Event, secondary impacts</i>	<i>Time to prepare or evacuate</i>	<i>Size of area affected by hazard</i>	<i>Preplanning</i>	<i>Time, effectiveness, resources</i>	<i>Relative threat</i>
SCORE	0 = N/A 1 = Low 2 = Moderate 3 = High	0 = N/A 1 = Low 2 = Moderate 3 = High	0 = N/A 1 = Low 2 = Moderate 3 = High	0 = N/A 1 = Low 2 = Moderate 3 = High	0 = N/A 1 = Short 2 = Intermediate 3 = Long	0 = N/A 1 = Long 2 = Intermediate 3 = Short	0 = N/A 1 = Localized 2 = Intermediate 3 = Countywide	0 = N/A 1 = High 2 = Moderate 3 = Low or none	0 = N/A 1 = High 2 = Moderate 3 = Low or none	0 - 100%
Energy Emergencies	3	3	2	3	2	2	3	1	3	79.2%
Hazardous Materials Incidents	2	1	1	2	1	2	1	2	2	33.3%
Terrorism	1	3	3	3	2	3	3	3	2	30.6%
Civil Disturbance	1	3	2	3	2	2	3	3	2	27.8%
Train Derailment	1	1	1	1	1	3	1	3	3	19.4%
Industrial Sabotage	1	1	1	1	1	3	1	2	3	18.1%



Table 12: Village of Bruce Hazard Priority Matrix – Natural Hazards

HAZARD	PROBABILITY	HUMAN IMPACT	PROPERTY IMPACT	BUSINESS IMPACT	DURATION	WARNING TIME	AFFECTED AREA	PREPARED-NESS	RESPONSE CAPABILITY	RISK
	<i>Likelihood this will occur</i>	<i>Possibility of death or injury</i>	<i>Physical losses and damages</i>	<i>Interruption of services</i>	<i>Event, secondary impacts</i>	<i>Time to prepare or evacuate</i>	<i>Size of area affected by hazard</i>	<i>Preplanning</i>	<i>Time, effectiveness, resources</i>	<i>Relative threat</i>
SCORE	0 = N/A 1 = Low 2 = Moderate 3 = High	0 = N/A 1 = Low 2 = Moderate 3 = High	0 = N/A 1 = Low 2 = Moderate 3 = High	0 = N/A 1 = Low 2 = Moderate 3 = High	0 = N/A 1 = Short 2 = Intermediate 3 = Long	0 = N/A 1 = Long 2 = Intermediate 3 = Short	0 = N/A 1 = Localized 2 = Intermediate 3 = Countywide	0 = N/A 1 = High 2 = Moderate 3 = Low or none	0 = N/A 1 = High 2 = Moderate 3 = Low or none	0 - 100%
Tornado	1	2	2	2	1	3	2	2	2	22.2%
Flooding	3	2	3	2	1	2	2	2	2	66.7%
Water Quality	2	2	1	1	1	3	3	0	3	38.9%
High Winds	2	2	3	3	1	3	2	2	2	50.0%
Communicable Disease	2	3	0	3	3	2	3	2	2	50.0%
Lightning	2	2	2	2	1	3	1	2	2	41.7%
Winter Weather Events	2	1	2	1	2	2	3	2	2	41.7%
Drought	2	1	2	1	2	1	3	2	2	38.9%
Wildfire	1	1	3	3	1	2	2	3	2	23.6%
Hail Storms	1	2	2	2	1	3	1	2	2	20.8%



Table 13: Village of Bruce Hazard Priority Matrix – Manmade/Technological Hazards

HAZARD	PROBABILITY	HUMAN IMPACT	PROPERTY IMPACT	BUSINESS IMPACT	DURATION	WARNING TIME	AFFECTED AREA	PREPAREDNESS	RESPONSE CAPABILITY	RISK
	<i>Likelihood this will occur</i>	<i>Possibility of death or injury</i>	<i>Physical losses and damages</i>	<i>Interruption of services</i>	<i>Event, secondary impacts</i>	<i>Time to prepare or evacuate</i>	<i>Size of area affected by hazard</i>	<i>Preplanning</i>	<i>Time, effectiveness, resources</i>	<i>Relative threat</i>
SCORE	0 = N/A 1 = Low 2 = Moderate 3 = High	0 = N/A 1 = Low 2 = Moderate 3 = High	0 = N/A 1 = Low 2 = Moderate 3 = High	0 = N/A 1 = Low 2 = Moderate 3 = High	0 = N/A 1 = Short 2 = Intermediate 3 = Long	0 = N/A 1 = Long 2 = Intermediate 3 = Short	0 = N/A 1 = Localized 2 = Intermediate 3 = Countywide	0 = N/A 1 = High 2 = Moderate 3 = Low or none	0 = N/A 1 = High 2 = Moderate 3 = Low or none	0 - 100%
Energy Emergencies	2	3	2	3	2	2	3	1	3	52.8%
Hazardous Materials Incidents	2	1	1	2	1	2	1	2	2	33.3%
Terrorism	1	3	3	3	2	3	3	3	2	30.6%
Civil Disturbance	1	3	2	3	2	2	3	3	2	27.8%
Train Derailment	1	1	1	1	1	3	1	3	3	19.4%
Industrial Sabotage	1	1	1	1	1	3	1	2	3	18.1%



Table 14: Village of Glen Flora Hazard Priority Matrix – Natural Hazards

HAZARD	PROBABILITY	HUMAN IMPACT	PROPERTY IMPACT	BUSINESS IMPACT	DURATION	WARNING TIME	AFFECTED AREA	PREPARED-NESS	RESPONSE CAPABILITY	RISK
	<i>Likelihood this will occur</i>	<i>Possibility of death or injury</i>	<i>Physical losses and damages</i>	<i>Interruption of services</i>	<i>Event, secondary impacts</i>	<i>Time to prepare or evacuate</i>	<i>Size of area affected by hazard</i>	<i>Preplanning</i>	<i>Time, effectiveness, resources</i>	<i>Relative threat</i>
SCORE	0 = N/A 1 = Low 2 = Moderate 3 = High	0 = N/A 1 = Low 2 = Moderate 3 = High	0 = N/A 1 = Low 2 = Moderate 3 = High	0 = N/A 1 = Low 2 = Moderate 3 = High	0 = N/A 1 = Short 2 = Intermediate 3 = Long	0 = N/A 1 = Long 2 = Intermediate 3 = Short	0 = N/A 1 = Localized 2 = Intermediate 3 = Countywide	0 = N/A 1 = High 2 = Moderate 3 = Low or none	0 = N/A 1 = High 2 = Moderate 3 = Low or none	0 - 100%
Wildfire	1.5	1	2	2	1	3	2	3	2	33.3%
Tornado	1	3	3	3	2	2	1	2	2	25.0%
Hail Storms	1	1	1	1	1	3	1	3	2	18.1%
Flooding	1	1	1	1	1	0	3	0	0	9.7%
Drought	1	0	0	0	0	0	0	0	3	4.2%



Table 15: Village of Glen Flora Hazard Priority Matrix – Manmade/Technological Hazards

HAZARD	PROBABILITY	HUMAN IMPACT	PROPERTY IMPACT	BUSINESS IMPACT	DURATION	WARNING TIME	AFFECTED AREA	PREPAREDNESS	RESPONSE CAPABILITY	RISK
	<i>Likelihood this will occur</i>	<i>Possibility of death or injury</i>	<i>Physical losses and damages</i>	<i>Interruption of services</i>	<i>Event, secondary impacts</i>	<i>Time to prepare or evacuate</i>	<i>Size of area affected by hazard</i>	<i>Preplanning</i>	<i>Time, effectiveness, resources</i>	<i>Relative threat</i>
SCORE	0 = N/A 1 = Low 2 = Moderate 3 = High	0 = N/A 1 = Low 2 = Moderate 3 = High	0 = N/A 1 = Low 2 = Moderate 3 = High	0 = N/A 1 = Low 2 = Moderate 3 = High	0 = N/A 1 = Short 2 = Intermediate 3 = Long	0 = N/A 1 = Long 2 = Intermediate 3 = Short	0 = N/A 1 = Localized 2 = Intermediate 3 = Countywide	0 = N/A 1 = High 2 = Moderate 3 = Low or none	0 = N/A 1 = High 2 = Moderate 3 = Low or none	0 - 100%
Energy Emergencies	1	2	1	2	2	3	2	2	3	23.6%
Hazardous Materials Incidents	1	1	1	2	1	0	1	2	1	12.5%



Table 16: Village of Hawkins Hazard Priority Matrix – Natural Hazards

HAZARD	PROBABILITY	HUMAN IMPACT	PROPERTY IMPACT	BUSINESS IMPACT	DURATION	WARNING TIME	AFFECTED AREA	PREPARED-NESS	RESPONSE CAPABILITY	RISK
	<i>Likelihood this will occur</i>	<i>Possibility of death or injury</i>	<i>Physical losses and damages</i>	<i>Interruption of services</i>	<i>Event, secondary impacts</i>	<i>Time to prepare or evacuate</i>	<i>Size of area affected by hazard</i>	<i>Preplanning</i>	<i>Time, effectiveness, resources</i>	<i>Relative threat</i>
SCORE	0 = N/A 1 = Low 2 = Moderate 3 = High	0 = N/A 1 = Low 2 = Moderate 3 = High	0 = N/A 1 = Low 2 = Moderate 3 = High	0 = N/A 1 = Low 2 = Moderate 3 = High	0 = N/A 1 = Short 2 = Intermediate 3 = Long	0 = N/A 1 = Long 2 = Intermediate 3 = Short	0 = N/A 1 = Localized 2 = Intermediate 3 = Countywide	0 = N/A 1 = High 2 = Moderate 3 = Low or none	0 = N/A 1 = High 2 = Moderate 3 = Low or none	0 - 100%
Lightning	3	1	2	2	2	2	1	2	1	54.2%
High Winds	2	2	2	2	1	2	1	2	1	36.1%
Ice Storm	2	1	2	2	2	0	1	2	1	30.6%
Extreme Temperatures	2	1	2	2	2	0	1	2	1	30.6%
Droughts	2	1	1	1	2	0	1	2	0	22.2%



Table 17: Village of Hawkins Hazard Priority Matrix – Manmade/Technological Hazards

HAZARD	PROBABILITY	HUMAN IMPACT	PROPERTY IMPACT	BUSINESS IMPACT	DURATION	WARNING TIME	AFFECTED AREA	PREPAREDNESS	RESPONSE CAPABILITY	RISK
	<i>Likelihood this will occur</i>	<i>Possibility of death or injury</i>	<i>Physical losses and damages</i>	<i>Interruption of services</i>	<i>Event, secondary impacts</i>	<i>Time to prepare or evacuate</i>	<i>Size of area affected by hazard</i>	<i>Preplanning</i>	<i>Time, effectiveness, resources</i>	<i>Relative threat</i>
SCORE	0 = N/A 1 = Low 2 = Moderate 3 = High	0 = N/A 1 = Low 2 = Moderate 3 = High	0 = N/A 1 = Low 2 = Moderate 3 = High	0 = N/A 1 = Low 2 = Moderate 3 = High	0 =N/A 1=Short 2= Intermediate 3=Long	0 =N/A 1=Long 2= Intermediate 3=Short	0 =N/A 1=Localized 2 = Intermediate 3=Countywide	0 = N/A 1 = High 2 = Moderate 3 = Low or none	0 = N/A 1 = High 2 = Moderate 3 = Low or none	0 - 100%
Energy Emergency	2	1	1	2	2	2	1	2	2	36.1%
Train Derailment	1	1	1	1	1	1	1	1	1	11.1%



Table 18: Village of Sheldon Hazard Priority Matrix – Natural Hazards

HAZARD	PROBABILITY	HUMAN IMPACT	PROPERTY IMPACT	BUSINESS IMPACT	DURATION	WARNING TIME	AFFECTED AREA	PREPARED-NESS	RESPONSE CAPABILITY	RISK
	<i>Likelihood this will occur</i>	<i>Possibility of death or injury</i>	<i>Physical losses and damages</i>	<i>Interruption of services</i>	<i>Event, secondary impacts</i>	<i>Time to prepare or evacuate</i>	<i>Size of area affected by hazard</i>	<i>Preplanning</i>	<i>Time, effectiveness, resources</i>	<i>Relative threat</i>
SCORE	0 = N/A 1 = Low 2 = Moderate 3 = High	0 = N/A 1 = Low 2 = Moderate 3 = High	0 = N/A 1 = Low 2 = Moderate 3 = High	0 = N/A 1 = Low 2 = Moderate 3 = High	0 = N/A 1 = Short 2 = Intermediate 3 = Long	0 = N/A 1 = Long 2 = Intermediate 3 = Short	0 = N/A 1 = Localized 2 = Intermediate 3 = Countywide	0 = N/A 1 = High 2 = Moderate 3 = Low or none	0 = N/A 1 = High 2 = Moderate 3 = Low or none	0 - 100%
High Wind	2	2	2	2	3	2	2	2	2	47.2%
Extreme Temperatures	2	2	2	2	2	2	2	2	2	44.4%
Communicable Disease	2	2	0	0	2	2	3	2	2	36.1%
Lightning	3	1	1	2	2	0	2	0	0	33.3%
Flooding	1	2	2	1	2	3	2	3	3	25.0%
Tornado	1	3	3	3	1	2	2	2	2	25.0%
Winter Weather Events	2	1	1	2	0	0	2	2	1	25.0%
Wild Fire	1	0	1	0	1	2	2	2	2	13.9%
Hail Storms	1	1	2	2	1	0	2	0	0	11.1%
Droughts	1	0	0	0	0	0	0	1	1	2.8%
Forest Health	1	0	0	0	2	2	2	0	0	2.0%



Table 19: Village of Sheldon Hazard Priority Matrix – Manmade/Technological Hazards

HAZARD	PROBABILITY	HUMAN IMPACT	PROPERTY IMPACT	BUSINESS IMPACT	DURATION	WARNING TIME	AFFECTED AREA	PREPAREDNESS	RESPONSE CAPABILITY	RISK
	<i>Likelihood this will occur</i>	<i>Possibility of death or injury</i>	<i>Physical losses and damages</i>	<i>Interruption of services</i>	<i>Event, secondary impacts</i>	<i>Time to prepare or evacuate</i>	<i>Size of area affected by hazard</i>	<i>Preplanning</i>	<i>Time, effectiveness, resources</i>	<i>Relative threat</i>
SCORE	0 = N/A 1 = Low 2 = Moderate 3 = High	0 = N/A 1 = Low 2 = Moderate 3 = High	0 = N/A 1 = Low 2 = Moderate 3 = High	0 = N/A 1 = Low 2 = Moderate 3 = High	0 = N/A 1 = Short 2 = Intermediate 3 = Long	0 = N/A 1 = Long 2 = Intermediate 3 = Short	0 = N/A 1 = Localized 2 = Intermediate 3 = Countywide	0 = N/A 1 = High 2 = Moderate 3 = Low or none	0 = N/A 1 = High 2 = Moderate 3 = Low or none	0 - 100%
Hazardous Materials Incidents	3	3	3	3	3	0	3	3	3	87.5%
Arson	2	1	2	2	2	3	2	2	2	44.4%



Table 20: Village of Weyerhaeuser Hazard Priority Matrix – Natural Hazards

HAZARD	PROBABILITY	HUMAN IMPACT	PROPERTY IMPACT	BUSINESS IMPACT	DURATION	WARNING TIME	AFFECTED AREA	PREPARED-NESS	RESPONSE CAPABILITY	RISK
	<i>Likelihood this will occur</i>	<i>Possibility of death or injury</i>	<i>Physical losses and damages</i>	<i>Interruption of services</i>	<i>Event, secondary impacts</i>	<i>Time to prepare or evacuate</i>	<i>Size of area affected by hazard</i>	<i>Preplanning</i>	<i>Time, effectiveness, resources</i>	<i>Relative threat</i>
SCORE	0 = N/A 1 = Low 2 = Moderate 3 = High	0 = N/A 1 = Low 2 = Moderate 3 = High	0 = N/A 1 = Low 2 = Moderate 3 = High	0 = N/A 1 = Low 2 = Moderate 3 = High	0 = N/A 1 = Short 2 = Intermediate 3 = Long	0 = N/A 1 = Long 2 = Intermediate 3 = Short	0 = N/A 1 = Localized 2 = Intermediate 3 = Countywide	0 = N/A 1 = High 2 = Moderate 3 = Low or none	0 = N/A 1 = High 2 = Moderate 3 = Low or none	0 - 100%
Tornado	2	2	2	2	1	3	2	1	1	38.9%
Water Quality	3	2	1	1	1	3	3	0	3	58.3%
High Winds	1	1	1	1	1	1	1	1	1	11.1%
Communicable Disease	1	1	1	1	1	1	1	1	1	11.1%
Lightning	2	2	2	2	1	3	1	2	2	41.7%
Winter Weather Events	1	1	2	1	2	2	3	2	2	20.8%
Drought	2	1	2	1	2	1	3	2	2	38.9%
Hail Storms	1	2	2	2	1	3	1	2	2	20.8%



Table 21: Village of Weyerhaeuser Hazard Priority Matrix – Manmade/Technological Hazards

HAZARD	PROBABILITY	HUMAN IMPACT	PROPERTY IMPACT	BUSINESS IMPACT	DURATION	WARNING TIME	AFFECTED AREA	PREPAREDNESS	RESPONSE CAPABILITY	RISK
	<i>Likelihood this will occur</i>	<i>Possibility of death or injury</i>	<i>Physical losses and damages</i>	<i>Interruption of services</i>	<i>Event, secondary impacts</i>	<i>Time to prepare or evacuate</i>	<i>Size of area affected by hazard</i>	<i>Preplanning</i>	<i>Time, effectiveness, resources</i>	<i>Relative threat</i>
SCORE	0 = N/A 1 = Low 2 = Moderate 3 = High	0 = N/A 1 = Low 2 = Moderate 3 = High	0 = N/A 1 = Low 2 = Moderate 3 = High	0 = N/A 1 = Low 2 = Moderate 3 = High	0 = N/A 1 = Short 2 = Intermediate 3 = Long	0 = N/A 1 = Long 2 = Intermediate 3 = Short	0 = N/A 1 = Localized 2 = Intermediate 3 = Countywide	0 = N/A 1 = High 2 = Moderate 3 = Low or none	0 = N/A 1 = High 2 = Moderate 3 = Low or none	0 - 100%
Energy Emergencies	3	3	2	3	2	2	3	1	3	79.2%
Hazardous Materials Incidents	2	1	1	2	1	2	1	2	2	33.3%
Terrorism	1	3	3	3	2	3	3	3	2	30.6%
Civil Disturbance	1	3	2	3	2	2	3	3	2	27.8%
Train Derailment	2	2	2	2	2	3	2	3	3	52.8%



Table 22: City of Ladysmith Hazard Priority Matrix – Natural Hazards

HAZARD	PROBABILITY	HUMAN IMPACT	PROPERTY IMPACT	BUSINESS IMPACT	DURATION	WARNING TIME	AFFECTED AREA	PREPARED-NESS	RESPONSE CAPABILITY	RISK
	<i>Likelihood this will occur</i>	<i>Possibility of death or injury</i>	<i>Physical losses and damages</i>	<i>Interruption of services</i>	<i>Event, secondary impacts</i>	<i>Time to prepare or evacuate</i>	<i>Size of area affected by hazard</i>	<i>Preplanning</i>	<i>Time, effectiveness, resources</i>	<i>Relative threat</i>
SCORE	0 = N/A 1 = Low 2 = Moderate 3 = High	0 = N/A 1 = Low 2 = Moderate 3 = High	0 = N/A 1 = Low 2 = Moderate 3 = High	0 = N/A 1 = Low 2 = Moderate 3 = High	0 = N/A 1 = Short 2 = Intermediate 3 = Long	0 = N/A 1 = Long 2 = Intermediate 3 = Short	0 = N/A 1 = Localized 2 = Intermediate 3 = Countywide	0 = N/A 1 = High 2 = Moderate 3 = Low or none	0 = N/A 1 = High 2 = Moderate 3 = Low or none	0 - 100%
High Winds	3	2	3	2	1	2	2	2	2	66.7%
Tornado	2	3	3	3	2	3	2	2	2	55.6%
Lightning	2	1	1	2	2	3	1	3	2	41.7%
Hail Storm	2	1	3	1	1	2	2	3	2	41.7%
Flooding	3	2	3	1	2	3	1	2	2	66.7%
Ice Storm	2	1	1	2	2	2	2	3	2	41.7%
Winter Storm	3	1	1	3	2	2	2	2	2	62.5%
Extreme Temperatures	1	2	2	1	1	2	3	3	2	22.2%
Drought	2	2	3	1	2	3	3	3	2	52.8%
Landslide (caving/subsidence)	1	1	3	2	2	3	1	3	2	23.6%
Communicable Disease	1	2	1	1	2	2	2	3	2	20.8%



Table 23: City of Ladysmith Hazard Priority Matrix – Manmade/Technological Hazards

HAZARD	PROBABILITY	HUMAN IMPACT	PROPERTY IMPACT	BUSINESS IMPACT	DURATION	WARNING TIME	AFFECTED AREA	PREPARED-NESS	RESPONSE CAPABILITY	RISK
	<i>Likelihood this will occur</i>	<i>Possibility of death or injury</i>	<i>Physical losses and damages</i>	<i>Interruption of services</i>	<i>Event, secondary impacts</i>	<i>Time to prepare or evacuate</i>	<i>Size of area affected by hazard</i>	<i>Preplanning</i>	<i>Time, effectiveness, resources</i>	<i>Relative threat</i>
SCORE	0 = N/A 1 = Low 2 = Moderate 3 = High	0 = N/A 1 = Low 2 = Moderate 3 = High	0 = N/A 1 = Low 2 = Moderate 3 = High	0 = N/A 1 = Low 2 = Moderate 3 = High	0 = N/A 1 = Short 2 = Intermediate 3 = Long	0 = N/A 1 = Long 2 = Intermediate 3 = Short	0 = N/A 1 = Localized 2 = Intermediate 3 = Countywide	0 = N/A 1 = High 2 = Moderate 3 = Low or none	0 = N/A 1 = High 2 = Moderate 3 = Low or none	0 - 100%
Arson	1	1	2	2	1	0	1	3	1	15.3%
Dam Failure	2	3	3	2	2	2	1	2	2	47.2%
Train Derailment	2	2	2	2	2	0	1	3	2	38.9%
Hazardous Materials Incidents	2	1	2	2	1	0	1	3	2	33.3%
Industrial Sabotage	1	1	3	3	2	0	1	3	2	20.8%
Energy Emergencies	2	1	2	3	1	2	1	3	2	41.7%
Civil Disturbance	1	1	1	1	1	3	1	3	2	18.1%
Terrorism	1	1	1	1	1	3	1	3	2	18.1%



HAZARD BACKGROUND AND RISK ASSESSMENT

Hazard Background

For each of the natural and technological hazards identified as relevant to the planning area, a background profile was developed. This profile includes a brief description of the hazard and a historical account of known occurrences impacting the planning area, or in some cases, the region or state or nation.

Risk and Vulnerability Assessment

The risk and vulnerability assessment is intended to assist emergency managers, decision-makers and the general public in understanding the potential impacts of hazards on the county and local communities. Using historical hazard data and local information resources such as the critical facilities analysis and property value statistics, some basic assumptions can be derived and estimates made relative to risk and potential future losses. In cases where sufficient data was available, modeling tools such as HAZ-US and other geographic information systems (GIS) based applications were used to produce graphical representations of potential future hazards.

What is Risk?

According Merriam-Webster, risk is “the possibility of loss or injury.” This plan examines risk in the context of potential harm that may arise from a future event such as a tornado or a wildfire. In order to perform a basic quantitative risk analysis, a series of evaluative criteria are used to examine various aspects hazards and their potential consequences.

Risk Evaluation Criteria

1. Area affected –The physical area in which the effects of the hazard are experienced
2. Magnitude –A measure of strength of the hazard
3. Duration – How long a hazard lasts
4. Frequency – A measure of how often events of a particular magnitude are expected to occur.
5. Probability – A statistical measure of the likelihood that a hazard event will occur.

What is Vulnerability?

Vulnerability describes how exposed or susceptible to damage or loss an asset is. Assets are defined as any manmade or natural features that have value, including structures, roads, infrastructure, communications resources, parks and natural features such as wetlands and forests. Vulnerability depends on many factors including construction, contents, and functional value. The plan’s vulnerability assessment seeks to describe the extent of injury and damage that may result from a hazard event of a given intensity in a given area.

Vulnerability Evaluation Criteria

Potential economic impact

Population affected

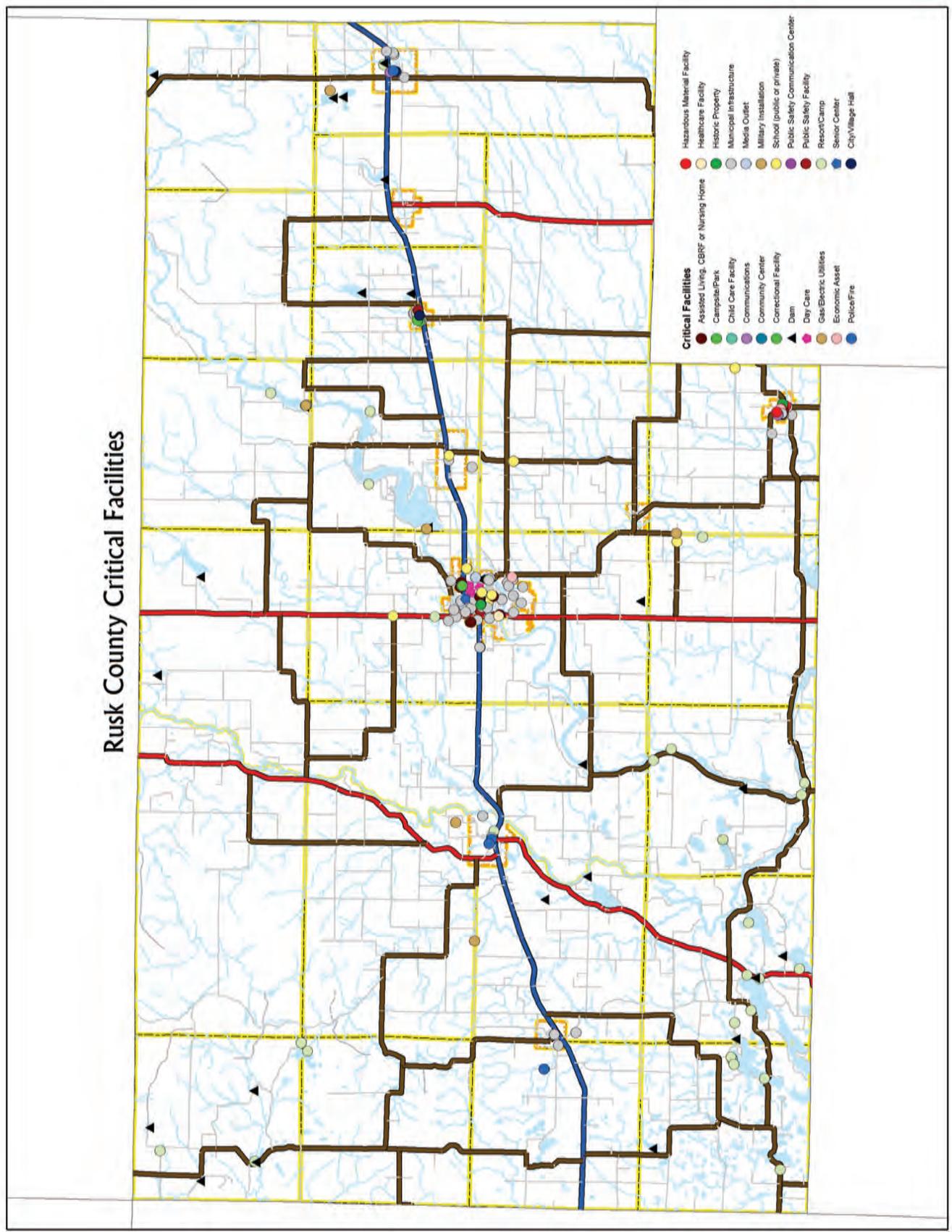
Critical facilities and infrastructure at risk



Critical Facilities

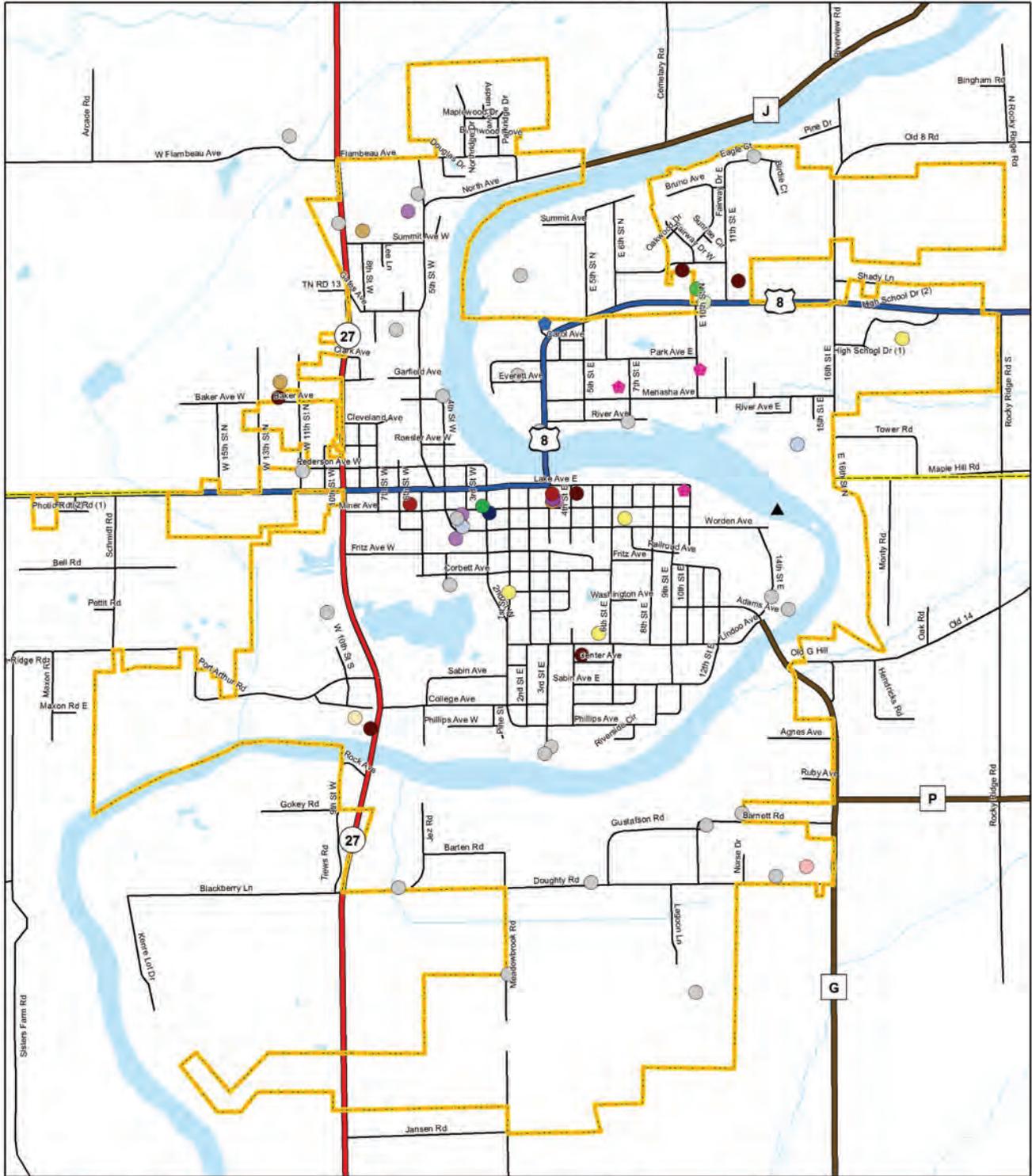
Several types of facilities are critical to the health and welfare of the population following a disaster or during the recovery process. All government facilities are considered “critical” as these facilities are vital to the continued delivery of key government services. Examples of critical facilities include,

- Police stations
- Fire stations
- Emergency operations
- Hospitals
- Schools
- Government buildings
- Shelters
- Nursing homes
- Assisted living centers
- Bridges
- Public works
- Roads





City of Ladysmith Critical Facilities

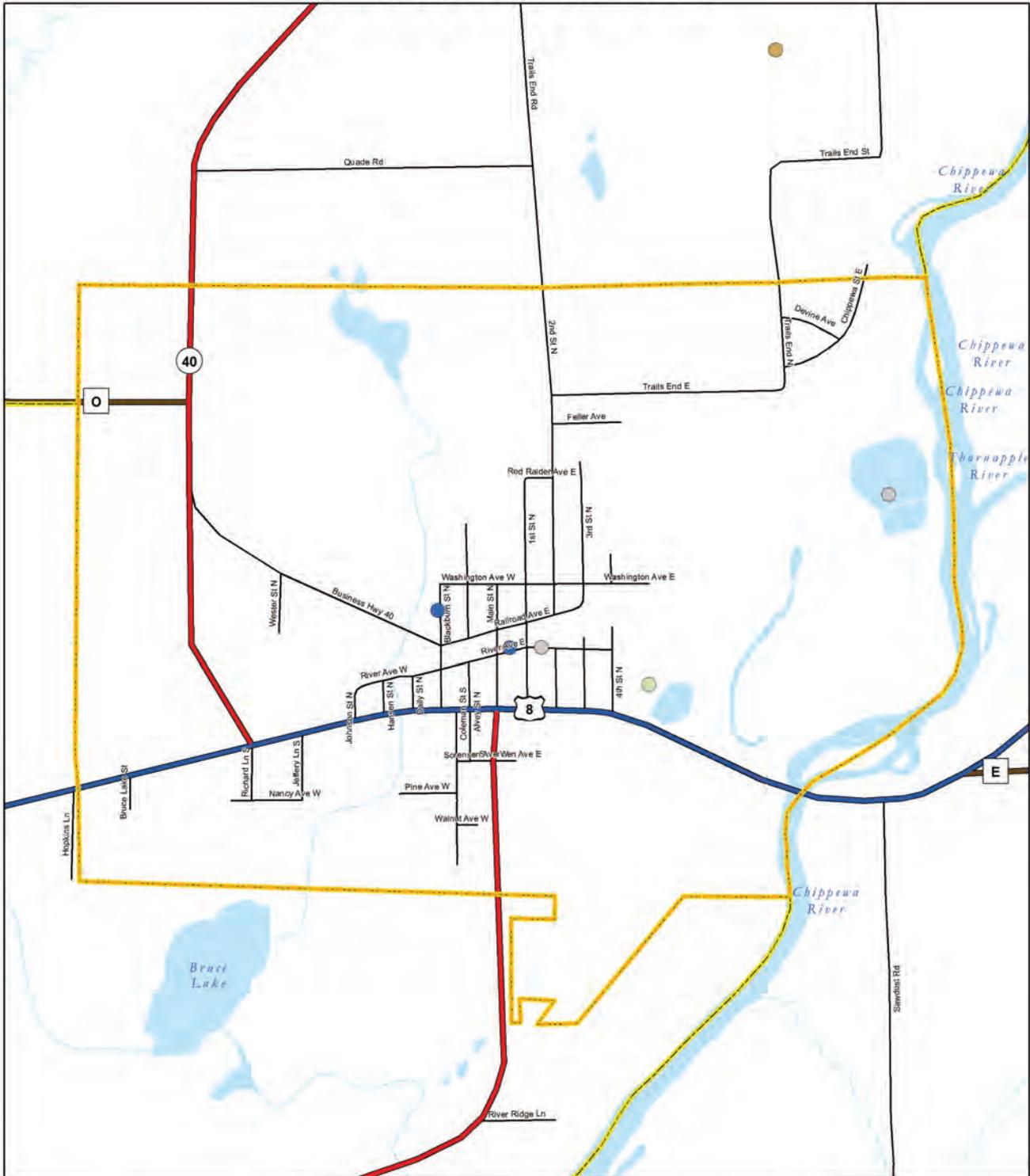


Critical Facilities

- | | | | |
|---|--------------------------|------------------------------|--------------------------------------|
| ● Assisted Living, CBRF or Nursing Home | ▲ Dam | ● Historic Property | ● Public Safety Communication Center |
| ● Campsite/Park | ● Gas/Electric Utilities | ● Municipal Infrastructure | ● Public Safety Facility |
| ● Communications | ● Economic Asset | ● Media Outlet | ● Resort/Camp |
| ● Correctional Facility | ● Healthcare Facility | ● Military Installation | ● Senior Center |
| | | ● School (public or private) | ● City/Village Hall |



Village of Bruce Critical Facilities



Critical Facilities ● Gas/Electric Utilities ● Police/Fire ● Municipal Infrastructure ● Resort/Camp



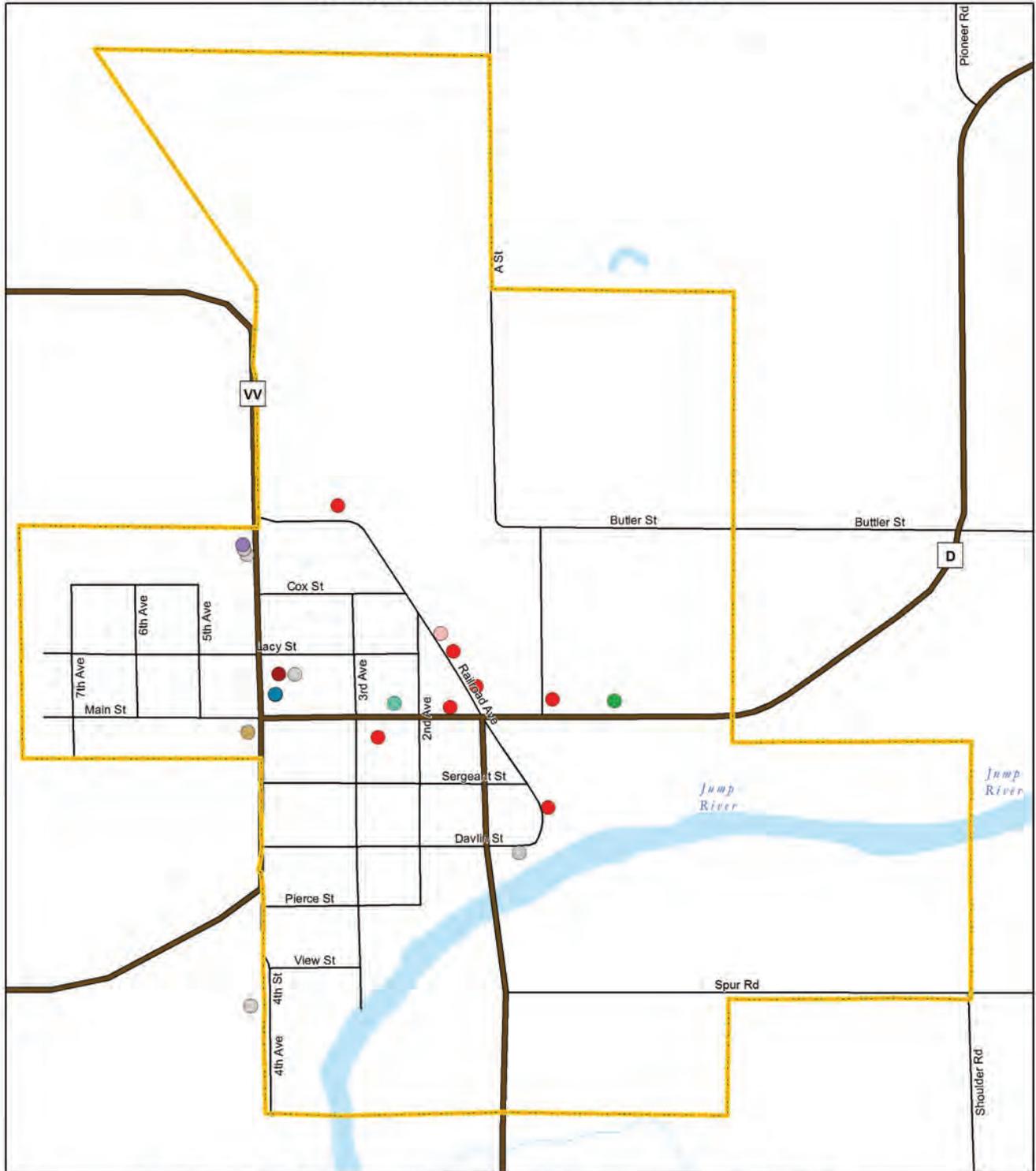
Village of Weyerhaeuser Critical Facilities



● Municipal Infrastructure



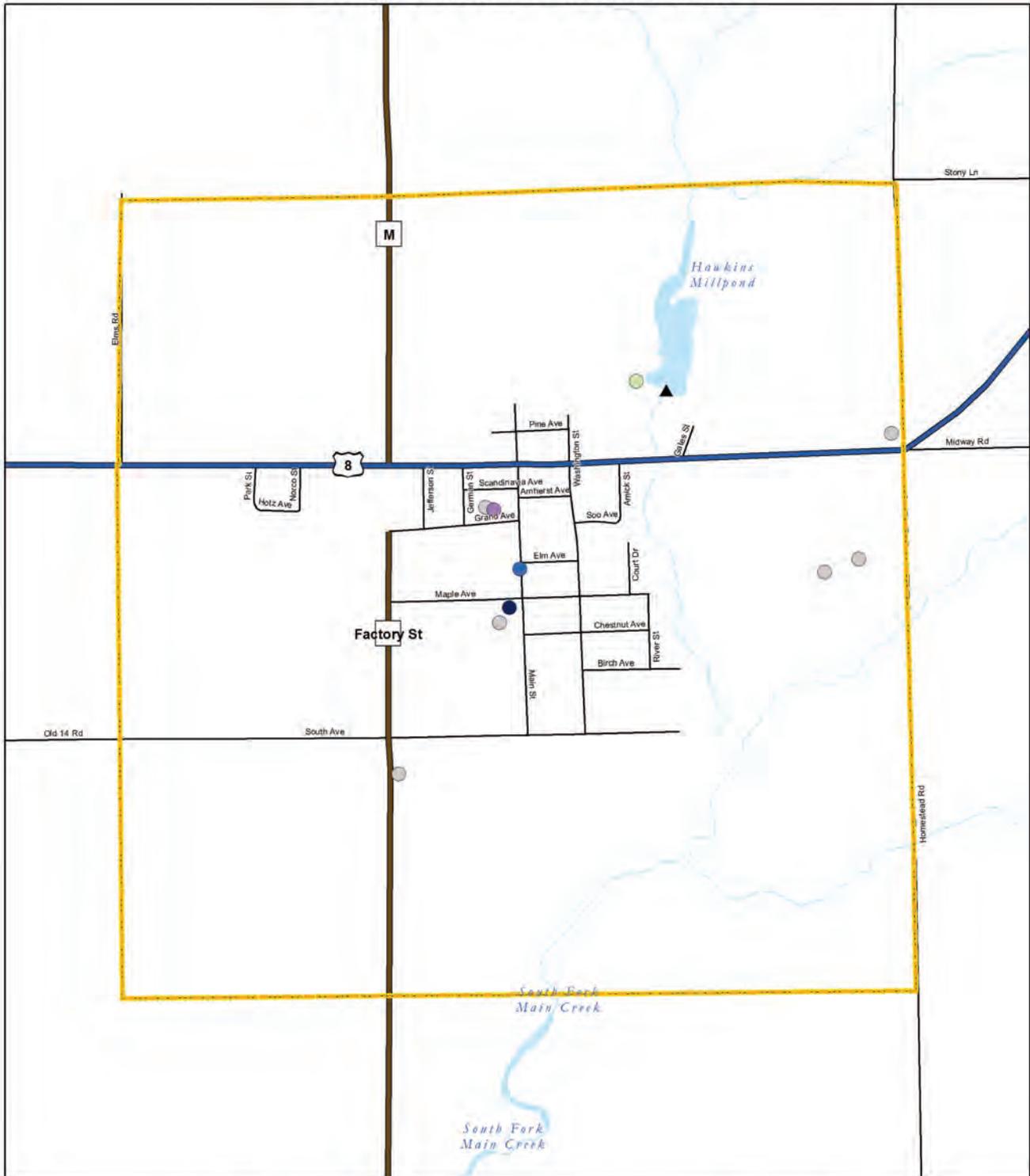
Village of Sheldon Critical Facilities



- Child Care Facility
- Gas/Electric Utilities
- Historic Property
- Communications
- Economic Asset
- Municipal Infrastructure
- Community Center
- Hazardous Material Facility
- Public Safety Facility
- City/Village Hall



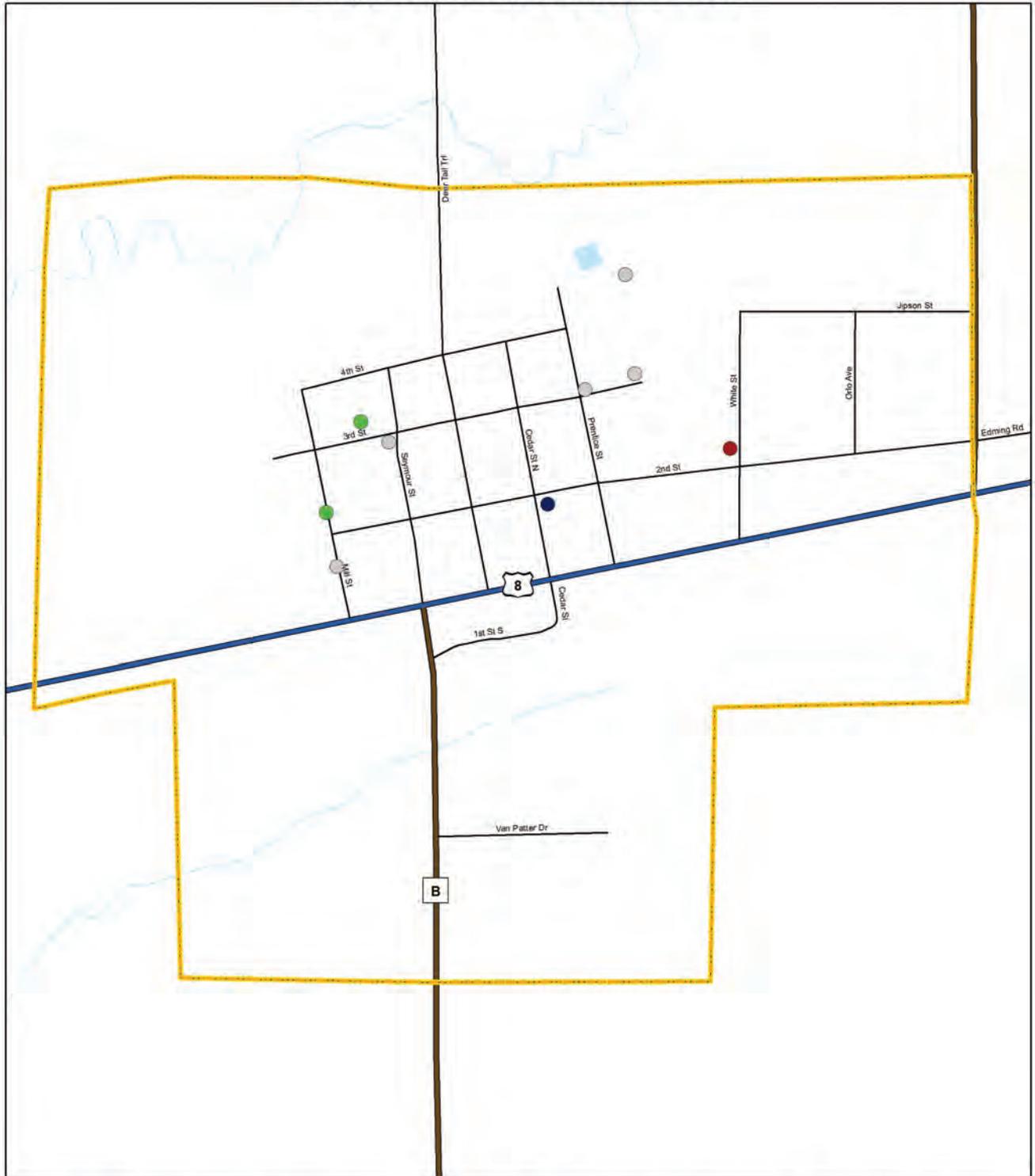
Village of Hawkins Critical Facilities



- Communications
- Police/Fire
- Resort/Camp
- ▲ Dam
- Municipal Infrastructure
- City/Village Hall



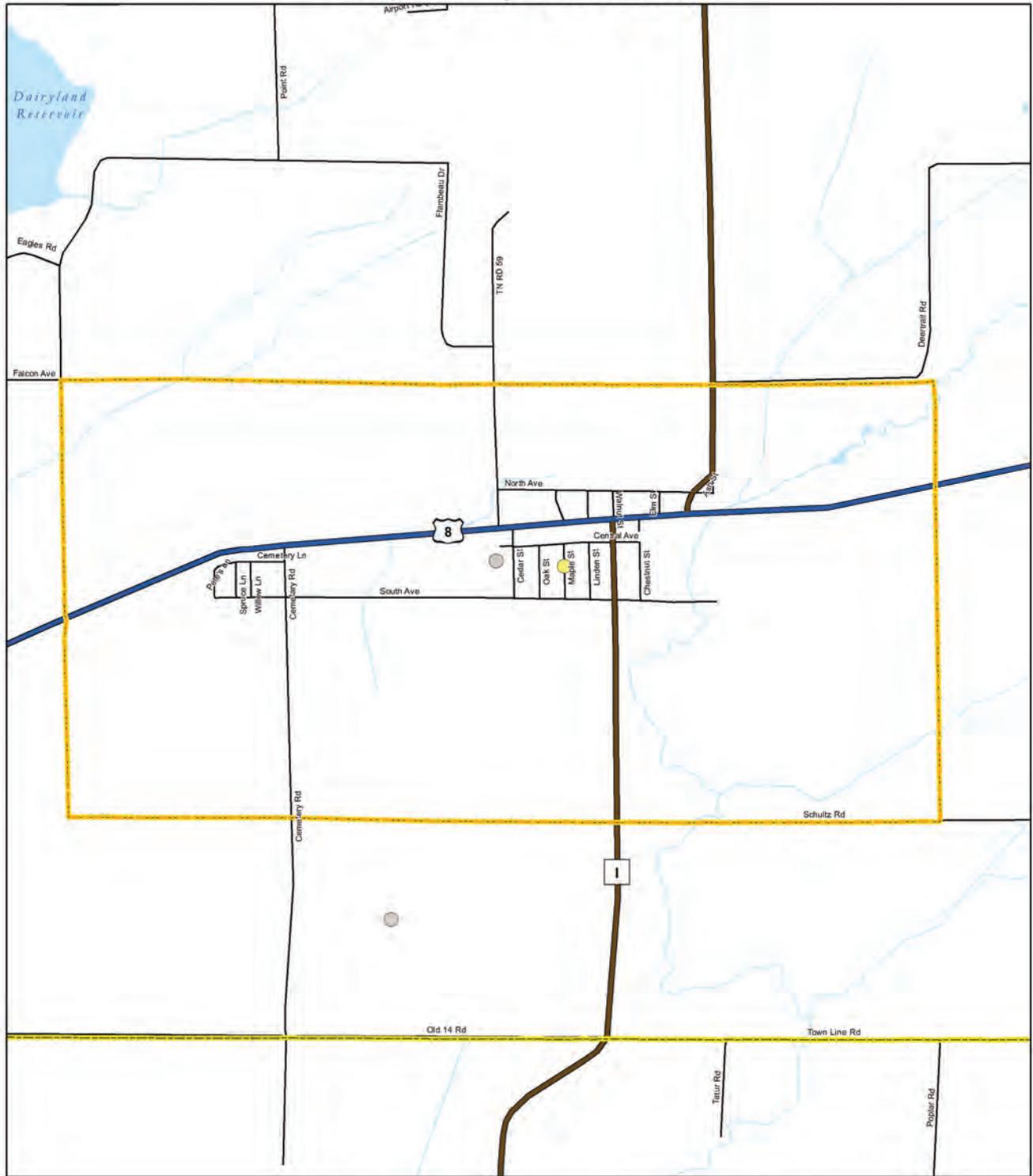
Village of Glen Flora Critical Facilities



- Campsite/Park
- Municipal Infrastructure
- Public Safety Facility
- City/Village Hall



Village of Tony Critical Facilities



- Municipal Infrastructure
- School (public or private)



Taxable Valuation

Tax assessment information was used to develop a detailed inventory of the built environment in Rusk County. Assessment tables, published annually by the Wisconsin Department of Revenue, divide real estate into 7 basic classes. Using this data, the total value of improvements was obtained for residential, commercial and industrial (manufacturing) development for the 2012 tax year.

MCD	Residential	Commercial	Manufacturing	Other	Total - All Columns	Total Personal Property
Towns						
Atlanta	\$19,219,500	\$222,000	\$-	\$3,242,000	\$22,683,500	\$159,600
Big Bend	\$43,336,600	\$1,279,500	\$-	\$1,662,400	\$46,278,500	\$393,920
Big Falls	\$3,935,700	\$161,300	\$-	\$696,500	\$4,793,500	\$428,750
Cedar Rapids	\$1,463,700		\$-	\$232,000	\$1,695,700	\$132,200
Dewey	\$32,366,800	\$240,500	\$-	\$2,937,200	\$35,544,500	\$56,900
Flambeau	\$31,065,000	\$2,631,200	\$150,000	\$2,122,100	\$35,968,300	\$264,300
Grant	\$28,052,600	\$2,600,800	\$79,000	\$2,810,700	\$33,543,100	\$242,800
Grow	\$7,699,200	\$101,600	\$-	\$5,865,200	\$13,666,000	\$47,100
Hawkins	\$4,201,800		\$-	\$1,410,200	\$5,612,000	\$118,340
Hubbard	\$5,228,000	\$80,000	\$-	\$1,468,000	\$6,776,000	\$281,600
Lawrence	\$6,523,700	\$134,200	\$-	\$1,055,300	\$7,713,200	\$100,000
Marshall	\$9,251,400	\$261,500	\$-	\$7,258,700	\$16,771,600	\$220,450
Murry	\$7,461,700	\$99,000	\$-	\$2,077,100	\$9,637,800	\$136,000
Richland	\$5,779,500	\$38,800	\$-	\$768,700	\$6,587,000	\$64,900
Rusk	\$53,538,200	\$4,230,100	\$-	\$3,157,800	\$60,926,100	\$167,100
South Fork	\$5,244,000		\$-	\$954,500	\$6,198,500	\$85,500
Strickland	\$9,097,900	\$855,700	\$283,100	\$2,733,600	\$12,970,300	\$157,000
Stubbs	\$25,512,400	\$2,034,800	\$-	\$4,178,200	\$31,725,400	\$440,000
Thornapple	\$29,648,600	\$410,800	\$-	\$2,097,200	\$32,156,600	\$447,400
True	\$6,853,400	\$166,300	\$-	\$1,913,800	\$8,933,500	\$91,100
Washington	\$28,753,300	\$1,255,500	\$-	\$1,401,700	\$31,410,500	\$405,100
Wilkinson	\$1,886,900	\$171,000	\$-	\$122,000	\$2,179,900	\$45,700
Willard	\$28,784,000	\$974,000	\$-	\$2,192,500	\$31,950,500	\$215,931
Wilson	\$3,303,200	\$30,000	\$-	\$558,300	\$3,891,500	\$74,100
Cities & Villages						
Bruce	\$16,441,700	\$3,383,800	\$1,547,400	\$143,900	\$21,516,800	\$371,500
Conrath	\$1,888,500	\$797,200	\$43,800		\$2,729,500	\$68,503
Glen Flora	\$1,631,200	\$1,054,500	\$1,943,000	\$47,000	\$4,675,700	\$74,300
Hawkins	\$6,657,000	\$1,175,300	\$2,655,700	\$281,200	\$10,769,200	\$194,350
Ingram	\$1,112,200	\$145,300	\$-		\$1,257,500	\$11,800
Sheldon	\$5,364,900	\$2,023,300	\$-		\$7,388,200	\$333,447
Tony	\$2,502,400	\$731,000	\$-	\$161,600	\$3,395,000	\$162,700
Weyerhaeuser	\$7,408,900	\$1,233,700	\$-	\$127,200	\$8,769,800	\$239,600
Ladysmith	\$81,135,100	\$48,826,700	\$12,839,500		\$142,801,300	\$12,376,690
Rusk County	\$522,349,000	\$77,349,400	\$19,541,500	\$53,676,600	\$672,916,500	\$18,608,681



General Population & Exposure

Table 24: Populations “at-risk”

<i>Population Exposed to Hazards</i>	Category	Population Exposed
	Population in Residences (Day)	6,091
	Population in Residences (Night)	14,705
	Population in Commercial Businesses	1,210
	Population in Manufacturing	568
	Population Commuting at 5PM	7,279
	Population in Group Quarters	174
	Population in Schools (WDPI, 2013)	1,998



NATURAL HAZARDS

TORNADOES

Hazard Description

The Tornado is one of the most destructive forces in the nature. A tornado is formed when a rotating column of air extends from the base of a thunderstorm to the ground. The destructive power of a tornado comes from strong winds which generally rotate counterclockwise around the descending air column. Tornadoes are categorized based on strength using the Enhanced Fujita Scale (**Table 25**), which measures the “destructiveness” of a tornado. In the scale, the wind speed is inferred by analyzing the damage caused by the tornado, and not measured directly. Tornado strength is rated from EF0, or “light”, with winds of 65-85 mph to an EF5, or “incredible” tornado, with wind speeds exceeding 200 mph.

Table 25: Enhanced Fujita Scale

Scale	Description	Wind Speed	Type of Damage Done
EF0	Gale tornado	65-85 mph	Light damage. Peels surface off some roofs; some damage to gutters or siding; branches broken off trees; shallow-rooted trees pushed over
EF1	Weak tornado	86-110 mph	Moderate damage. Roofs severely stripped; mobile homes overturned or badly damaged; loss of exterior doors; windows and other glass broken.
EF2	Strong tornado	111-135 mph	Considerable damage. Roofs torn off well-constructed houses; foundations of frame homes shifted; mobile homes completely destroyed; large trees snapped or uprooted; light-object missiles generated; cars lifted off ground.
EF3	Severe tornado	136-165 mph	Severe damage. Entire stories of well-constructed houses destroyed; severe damage to large buildings such as shopping malls; trains overturned; trees debarked; heavy cars lifted off the ground and thrown; structures with weak foundations blown away some distance.
EF4	Devastating tornado	166-200 mph	Devastating damage. Whole frame houses Well-constructed houses and whole frame houses completely leveled; cars thrown and small missiles generated.
EF5	Incredible tornado	>200 mph	Incredible damage. Strong frame houses leveled off foundations and swept away; automobile-sized missiles fly through the air in excess of 100 m (109 yds.); high-rise buildings have significant structural deformation; incredible phenomena will occur.

Source: The Tornado Project

In addition to the intense winds, the destructive nature of a tornado is also a function of its diameter and duration. The average diameter of most tornadoes is about 200 feet, with the largest extending for up to a mile or more. Most tornadoes experience a relatively short lifespan of 5 minutes, and have an average track length of 1 to 4 miles. In rare events, strong tornadoes can last for several hours and cover several hundred miles, as was the case in March 1925 tri-state tornado which lasted for 3 ½ hours and covered nearly 220 miles.



No element of a community is immune to the serious threat posed by tornadoes. While storm prediction technology is improving, events can strike with little or no advance warning. A direct hit on a community can cause immense damage to buildings and infrastructure. Deaths and injuries can result from flying and falling debris.

Hazard History

According to the National Climate Data Center, there were 13 tornado events recorded in Rusk County between 1950 and 2012. On September 2, 2002, a F3 tornado destroyed much of the City of Ladysmith's downtown area. In this area 4 blocks wide and 16 blocks long, 40 buildings were destroyed and 159 damaged. The tornado touched down at approximately 3:20 pm about one and one half miles west southwest of downtown Ladysmith. Injury totals fluctuated at first, but Rusk County Emergency Management stated there were approximately 27 injuries, none more serious than a broken leg. As the tornado reached the east side of Ladysmith, it weakened to F2 status. Once it left Ladysmith, the tornado continued on an eastward path, striking a number of rural farm houses and producing mostly F1 damage until it dissipated. The tornado remained on the ground for about 15 miles and was one quarter of a mile wide at its widest point. Overall damage was estimated at \$25 million, but there were no fatalities.

Other notable events in the modern record include:

7/1/1997 – Tornado rated F1 touched down just south of a northern branch of Holcomb Flowage near the entrance to Deer Tail Creek. The tornado proceeded to cross the flowage and strike a farmstead, ripping the roof off a farmhouse and causing one injury.

Figure 6: Rusk County Tornadoes

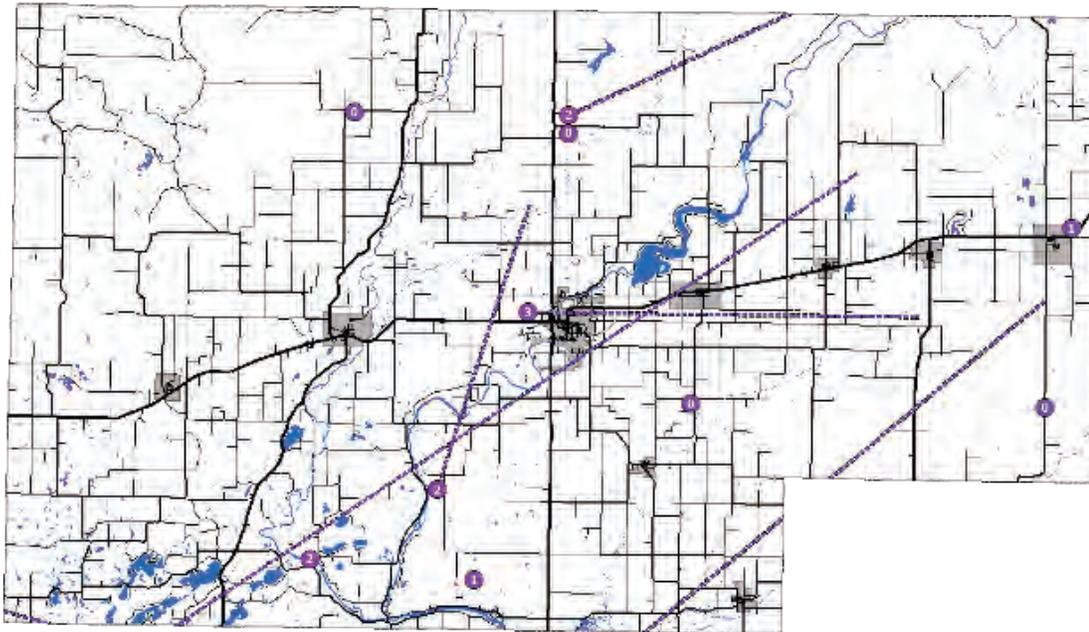




Table 26: 10-County Regional Tornado Data

County	Number of Tornadoes	Property Damage	Crop Damage	Injuries	Deaths
Price	23	\$26,392,500	\$515,000	26	0
Burnett	13	\$12,560,000	\$0	25	3
Rusk	13	\$25,850,000	\$0	34	0
Ashland	9	\$300,280	\$0	0	0
Douglas	9	\$856,000	\$100,000	0	0
Taylor	8	\$4,205,750	\$10,000	1	0
Washburn	8	\$2,780,250	\$0	0	0
Sawyer	7	\$277,500	\$0	0	0
Bayfield	5	\$775,250	\$0	4	0
Iron	4	\$412,530	\$0	3	0
TOTAL	99	\$74,410,060	\$625,000	93	3
Source: National Climate Data Center					

Table 27: 1950-2011 Rusk County Tornadoes

Date	Time	Length (Miles)	Width (Feet)	EF	Fatalities	Injuries	Property Damage	Crop Damage
6/25/1950	7:20 PM	0.5	33		0	0	\$25,000	\$0
6/4/1958	8:10 PM	13.8	200	2	0	0	\$250,000	\$0
5/26/1959	3:45 PM	2.2	33	2	0	0	\$25,000	\$0
7/22/1967	9:56 PM	20.9	33	2	0	0	\$250,000	\$0
8/8/1973	6:15 PM	3.6	100	1	0	0	\$25,000	\$0
8/24/1975	10:30 PM	34.2	400	2	0	6	\$25,000	\$0
7/30/1977	7:45 PM	11.5	1000	2	0	0	\$0	\$0
9/12/1982	3:00 PM	12	200	2	0	0	\$250,000	\$0
7/1/1997	10:44 PM	1	100	1	0	1	\$0	\$0
5/30/1998	1:58 PM	0.1	50	0	0	0	\$0	\$0
5/30/1998	2:00 PM	0.1	50	0	0	0	\$0	\$0
6/5/1999	6:15 PM	0.3	25	0	0	0	\$0	\$0
9/2/2002	3:22 PM	16	440	3	0	27	\$25,000,000	\$0
TOTALS					0	34	\$25,850,000	\$0
Source: National Climate Data Center								

Data Collected and Used

Limited tornado damage information is available, although National Climate Date Center (NCDC) storm event data indicates that the project area can suffer substantial damage resulting from tornadoes. The NCDC indicated that nearly \$26 million in property losses resulted from tornadoes in Rusk County during the period from 1950 to 2011. Storm event probability data was collected using the NOAA Storm Prediction Center database.



VULNERABILITY AND RISK ASSESSMENT

Area Affected

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

Table 28: Magnitude

EF Rating	Number
0	4
1	2
2	6
3	1

The magnitude of a tornado is defined primarily by wind speed. According to the NCDC database, 13 tornadoes have occurred in the county since 1950. These events ranged in magnitude from EF0 (65-85mph) to EF3 (136-165 mph). The most devastating storm was an EF3 event which struck the City of Ladysmith on September 2, 2002. Based on historical data, most tornadoes occurring in Rusk County will be on a magnitude of EF0-EF2 (65mph-110mph).

Duration

Tornadoes are typically brief events, with long recovery times. However, in rare cases these events can last for several hours. The average historical duration of tornadoes occurring within Rusk County is roughly 6 minutes.

Frequency

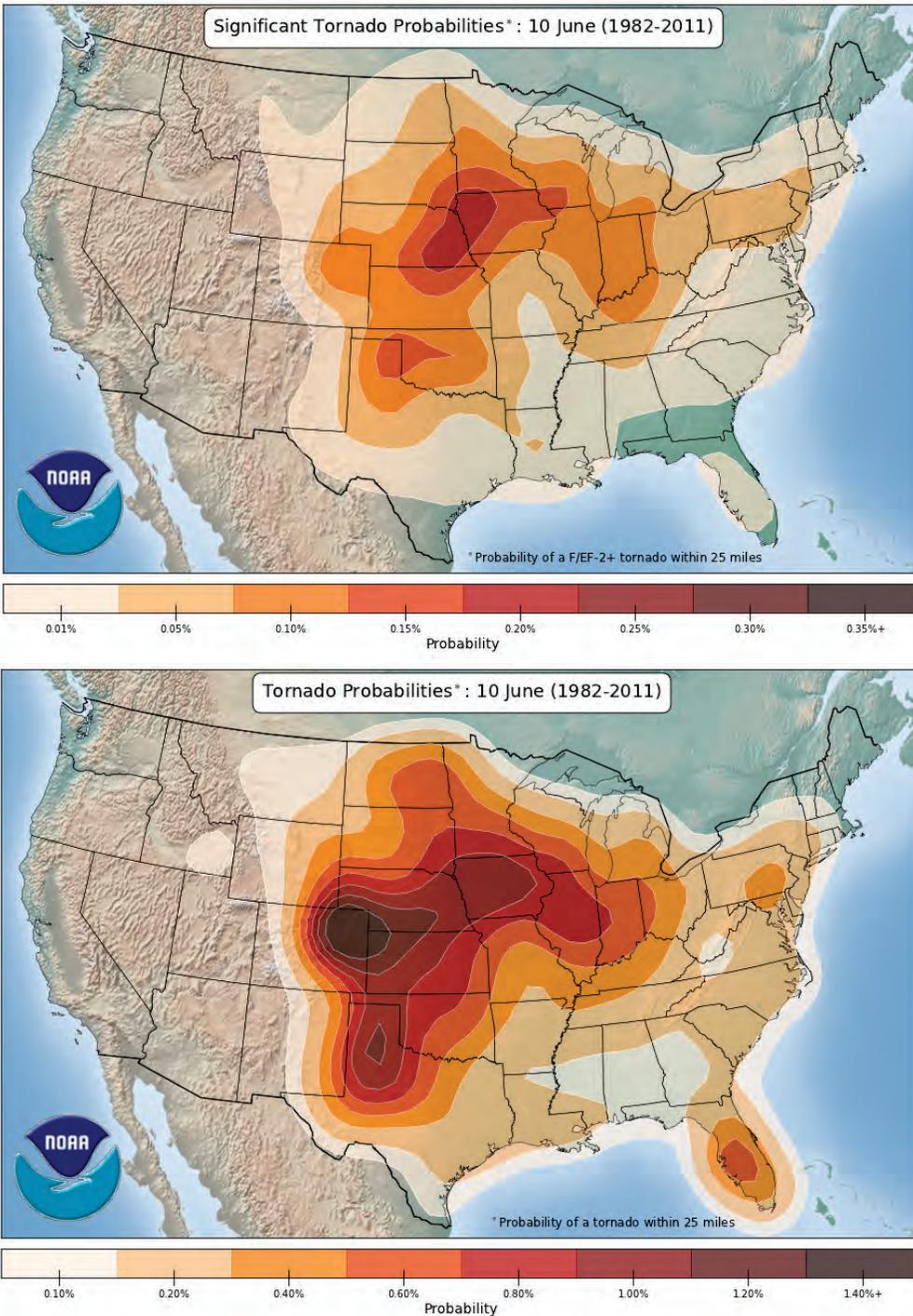
Wisconsin lies along the northern edge of the nation’s tornado belt, which extends northeastward from Oklahoma into Iowa. Winter, spring, and fall tornadoes are more likely to occur in southern Wisconsin than in northern counties. Yet, tornadoes have occurred in Wisconsin during every month except February. Based on historical observations, the recurrence interval for a tornado in Rusk County is about 4.7 years.

Probability

The peak of tornado season in Wisconsin occurs in late spring to early summer. Based on historical observations, the probability of a tornado in Rusk County occurring in any given year is 21.3%. The graphic below (**Figure 7**) indicates estimated tornado probabilities across the United States for the week of June 10th, which is the approximate peak of tornado season in Wisconsin. On this day, the probability of any tornado occurring within Rusk County is within the range of 0.15% to 0.25%. On the same day, the probability of a significant tornado (EF2 or greater) is within the range of 0.025% to 0.075%.



Figure 7: Estimated Tornado Probabilities – Week of June 10th



Potential economic impact
It is difficult to forecast future damage resulting from tornadoes as there are many variables involved. The 13 documented tornado events in the county have resulted in a combined (property + crop) \$25,850,000 in damage, or an average of \$1.98 million per event. If the 2002 Ladysmith tornado is not considered, that estimate drops to roughly \$70,833 per event. Realistically, an event involving a tornado would *most likely* affect a small portion of the county and the damage would not be widespread. If the impacted area were a developed, densely populated area, such as the City of Ladysmith, significant structural damage would likely occur.



FLOODING

Hazard Description

The National Flood Insurance Program (NFIP) defines flooding as a general or temporary condition during which the surface of normally dry land is partially or completely inundated by water.

Riverine Flooding

Riverine flooding can occur at any time of the year but is most likely to occur in spring, summer, and early fall. Spring flooding is the most common situation, where snowfall melt water can combine with rain to produce a gradual build-up of flow and velocity in streams over a period of days. This gradual increase in water volume eventually exceeds the streams capacity and flows over the banks. The period of flooding can last from a day or two to several weeks or longer, until the waters recede back to normal flow levels. These gradual flood events can oftentimes be forecast, and ample evacuation time given to prevent loss of life. Other forms of flooding such as flash floods and ice jam floods can occur very quickly, without advance warning, presenting a much greater danger to human life.

Flash Flooding

Because of their unpredictability and oftentimes violent nature, flash floods can be extraordinarily dangerous and devastating. These events can occur without warning in a matter of minutes to hours following heavy rainfall, dam failure or a sudden release of water from an ice jam.

Urban Flooding

Urban flooding can occur when an urban developed area experiences heavy rain or rapid snowmelt events. Urban areas are especially susceptible to this type of hazard because of the impervious surface presented by development, roads, parking lots, etc. These surfaces do not permit precipitation and snowmelt to infiltrate the soil, causing water to either pool or runoff. Heavy precipitation can also overwhelm municipal drainage systems, resulting in back-ups and flooding.

Ice-Jam Flooding

Ice-jam floods occur on rivers that are totally or partially frozen. A rise in stream stage will break up a totally frozen river and create ice flows that can pile up on channel obstructions such as shallow riffles, log jams, or bridge piers. The jammed ice creates a dam across the channel over which the water and ice mixture continues to flow, allowing for more jamming to occur. Backwater upstream from the ice dam can rise rapidly and overflow the channel banks. Flooding moves downstream when the ice dam fails, and the water stored behind the dam is released. At this time, the flood takes on the characteristics of a flash flood, with the added danger of ice flows that, when driven by the energy of the floodwave, can inflict serious damage on structures.

Impacts of Flooding

The effects of flooding can be devastating. Structures in the path of a flood can be torn from their foundations. Bridges and infrastructure can be quickly washed away with the floodwaters. Flooding can also disrupt power supplies, disable fuel sources, make roads impassable, and greatly hinder emergency response efforts. Although the probability of serious injury and loss of life is often low, personal property damage is usually heavy due to



long periods of inundation. Flooding increases the likelihood of long-term health hazards from water-borne diseases, mold, mildew, insect infestation, and contaminated drinking water. Long-term damage to the environment may also result from flooding of sites containing hazardous materials or waste.

Regulations and Programs

In Wisconsin, all cities, villages and counties are required to adopt local floodplain zoning ordinances that meet or exceed the minimum standards established by the Wisconsin Department of Natural Resources (s. 87.30 Wisconsin Statutes). Rusk County formally adopted a Floodplain Ordinance on February 20, 1990.

State floodplain management regulations are found in Chapters 30.27, 59.971, 61.351, 62.231, 87.30 and 144.26, Wisconsin Statutes and Chapters NR 115, 116, 117 and 118 of the Wisconsin Administrative Code. Federal requirements for floodplain management are set forth in the National Flood Insurance Act as amended, EO 11988 and EO 11990.

Following the 1993 flood event in the midwestern United States, Congress authorized an appropriation of funds to assist communities in rebuilding. The Federal Emergency Management Agency (FEMA) and Wisconsin Emergency Management (WEM) created the Wisconsin Interagency Disaster Recovery Group (WIDRG) to coordinate distribution of these funds. Following a disaster, WIDRG assists local governments in their recovery effort and promotes disaster resistance during reconstruction. In addition, the Wisconsin State Hazard Mitigation Team works to develop and promote a statewide mitigation program. Both groups are led by Wisconsin Emergency Management.

The Hazard Mitigation Grant Program (HMGP), administered by FEMA, provides funding for reducing flood-related disaster losses. FEMA also administers the Flood Mitigation Assistance Program (FMAP), which provides funding for flood mitigation planning and for flood mitigation projects. A newly created program in 2001, the Pre-Disaster Mitigation Program (PDM) provides funding opportunities for local units of government and tribes to produce comprehensive hazard mitigation plans or for hazard mitigation projects. The National Flood Insurance Program (NFIP) is a federal program which enables property owners in participating communities to purchase flood insurance. Flood insurance is required in order to get secured financing to buy, build, or improve structures located within Special Flood Hazard Areas (SFHA's.) The Wisconsin Department of Natural Resources is the state agency that coordinates the NFIP in Wisconsin.

Rusk County NFIP Statistics

Rusk County, along with the City of Ladysmith and Villages of Bruce, Conrath, Glen Flora, Hawkins, Sheldon, Tony and Weyerhaeuser participate in the National Flood Insurance Program. The Village of Ingram has been suspended from the National Flood Insurance Program. As of 2/29/2012 there were 4 policies in-force in Rusk County with insurance in-force of \$1,566,100. The written premium in-force, or premium paid for policies in-force, was \$5,163.



Table 29: Rusk County NFIP Statistics

Community Name	Init FHBM Identified	Init FIRM Identified	Curr Eff Map Date	Losses-Total Payments	In-Force Whole \$	Premium In-Force
City of Ladysmith	9/4/1981	1/2/1987	2/3/2010	\$208,867.81	\$1,566,100.00	\$5,163.00
Village of Bruce	9/4/1981	1/2/1987	2/3/2010			
Village of Conrath	9/4/1981	1/2/1987	2/3/2010			
Village of Glen Flora	9/4/1981	1/2/1987	2/3/2010			
Village of Hawkins	9/4/1981	1/2/1987	3/17/2014			
Village of Sheldon	9/4/1981	1/2/1987	2/3/2010			
Village of Tony	9/4/1981	1/2/1987	2/3/2010			
Village of Weyerhaeuser	9/4/1981	1/2/1987	2/3/2010			
Rusk County	9/4/1981	1/2/1987	2/3/2010	\$81,189.83		

There were two NFIP losses recorded in Rusk County between 1978 and 2012 totaling \$290,058. There are two repetitive loss properties in Rusk County, both single family residential.

Hazard History

Rusk County has nearly 140 miles of rivers, streams and creeks. During the spring months, warm temperatures and rainfall can cause rapid melting of the heavy local snowpack. The resultant flooding largely impacts rural, unpopulated areas of the county but occasionally impacts the populated communities. Travel can be greatly restricted due to the temporary inundation of roadways, washouts and road closures, which often result from these events.

The following storm events were recorded in the National Climate Data Center.

September 14, 1994 – Flash Flood.

September 20, 1994 – Flood.

July 25, 1999 – Flash Flood. At least 6 inches of rain led to flooding of Clear Creek near Hwy 40 and County Road H. Normally 10 feet wide, it swelled to 100 yards wide. County Road H Bridge and nearby approaches washed out. Camper and farm machinery swept away. Basements flooded. Creek also flowed across Hwy 40. One man slightly injured when he drove into washed out bridge approach.

August 14, 2000 – Flash Flood. Road washed out, numerous other roads covered by water. Some basements flooded. NWS Cooperative observers measured 5.1 inches rain 2 SSE Weyerhaeuser, and 4.73 inches in Sheldon.

June 22, 2002 – Flash Flood. Main Creek overflowed its banks and produced water over a road, thereby closing it for a short while.

September 5, 2002 – Flash Flood. Four to seven inches of rain within a few hours resulted in several creeks out of their banks. Water flooded six roads, from Big Bend Township (the Island Lake area) to Grant and Grow



townships (a few miles south and southeast of Ladysmith).

October 4, 2005 – Flood. In Rusk County, several county and township roads were washed out, including County Road I north of Tony, County Road X north of Highway 8, and eastern sections of County Road B. Many county roads were closed due to flooding, and almost every major road north of U.S. 8 was closed. Other closed highways included north sections of Highways 27 and 40. So many roads needed to be barricaded that county officials began to run out of barricades. During the early morning hours of the 5th, a woman in an SUV plunged into a crevice at the Alder Creek Bridge on U.S. 8. She incurred several injuries ranging from bruises to fractured ribs and a bruised heart, and was hospitalized for a week. All school districts in Rusk County closed on the 5th. The main street in Weyerhaeuser flooded.

June 22, 2009 – Flash Flood. Bands of thunderstorms developed across west central Wisconsin the morning of Monday, June 22. These thunderstorms began to train across the same areas in southern Rusk and northeast Chippewa Counties where a large area of two to five inches of rain fell in less than three hours. An automated river gauge near Sheldon, Wisconsin, recorded 4.48 inches of rain that morning, with several observers reporting over 1.50 inches. Some of the higher amounts include: 1.82 at Holcombe, 2.08 at Ladysmith, and 1.55 west of Ladysmith. Local law enforcement officers in the Conrath area reported that the intersection of Highway 27 and Broken Arrow Road was underwater and many fields in the Willard Township area were flooded.

August 2, 2011 – Flash Flood. Two waves of thunderstorms that moved across portions of Rusk County, produced locally two to four inches of rain in less than 2 hours, and caused roads to washout near Hawkins.

Data Collected and Used

Flood analysis for Rusk County was performed using HAZUS-MH MR3 released in July 2007. The bundled aggregated general building stock was updated to Dun & Bradstreet 2006. Building valuations were updated to R.S. Means 2006. Building counts based on census housing unit counts are available for RES1 (single-family dwellings) and RES2 (manufactured housing) instead of calculated building counts.

The site specific inventory (specifically Schools, Hospitals, Emergency Operation Centers, Fire Stations and Police Stations) was updated using the best available statewide information.

HAZUS-MH was used to generate the flood depth grid for a 100-year return period calculated by clipping the USGS 30m DEM to the DFIRM boundary. The figure below depicts the flood boundary from the HAZUS-MH analysis. The majority of damages due to flooding occur along the Chippewa River and the Flambeau River.

VULNERABILITY AND RISK ASSESSMENT

Area Affected

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

Within the rural parts of the county, the most likely areas to be affected by the flood hazard are those areas



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

Magnitude

The term "flash flood" describes localized floods of great volume and short duration. In contrast to riverine flooding, this type of flood usually results from a torrential rain on a relatively small drainage area. Precipitation of this sort usually occurs in the summer. The sudden breakup of an ice jam or the failure of a dam may also result in flash flooding. Flash floods are a potential threat to life and property in areas characterized by steep terrain, high surface runoff rates, and narrow streams and/or subject to severe thunderstorms.

Duration

Flooding events may come as flash floods or as slowly rising waters and may have impacts that last for days, weeks, months, or even years. Riverine flooding may last for weeks or longer dependent on local conditions.

Frequency

Rusk County experiences some minor flood events nearly every year. These events typically stem from melting snowfall, spring rains or summertime severe thunderstorm events. During these minor flood events, stream discharges increase beyond the capacity of the channel to accommodate the entire flow, especially where especially where urban development increases runoff or alters the stream channel. The resultant flooding is oftentimes confined to ditches and low-lying areas and small streams. These minor flood events usually do not cause structural damage, but may result in substantial soil erosion.

On occasion, Rusk County does experience a major flood event. According to local and NCDC records, there have been at least 1 major flood events in the county since 1994, or an average of 1 event every 18 years. These events typically result in structural damage or loss, damage to roads and bridges or agricultural losses.

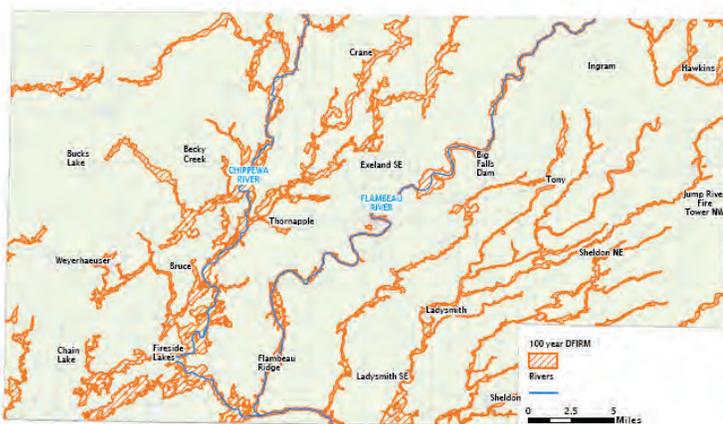
Probability

There is a high (nearly 100%) probability that minor flooding will occur in Rusk County in any given year. Based on the historical frequency, Rusk County can expect to experience a major flood event about once every 18 years. Special Flood Hazard Areas, delineated on the Flood Insurance Rate Maps as Zone A, identify areas that will be flooded on the average of once every 100 years, with a 1% chance of being flooded in any given year.

Potential economic impact:

Flood Insurance Rate Maps (FIRMs) for Rusk County are the most readily available source for identifying areas at risk. FIRMs are intended to be interim maps prior to the completion of a more detailed study and may not include all flood hazard areas in the county. Additional field checking may be required to determine whether or not a given area is in the floodplain before development would be authorized or denied.

Wisconsin Emergency Management (WEM)





completed a generalized impact analysis for Rusk County in 2008 as part of a statewide 100-year flood risk-and-loss estimate. The analysis used HAZUS-MH software to estimate the potential damage that could occur during a 100-year flood event.

An estimated 130 buildings will be damaged totaling \$46 million in building losses and \$82 million in total economic losses. The total estimated number of damaged buildings, total building losses, and estimated total economic losses are shown in the table below.

General Occupancy	Estimated Total Buildings	Total Damaged Buildings	Total Building Exposure X 1000	Total Economic Loss X 1000
Agricultural	1	0	\$23,056	\$3,080
Commercial	27	0	\$123,727	\$8,850
Education	3	0	\$10,883	\$1,097
Government	6	0	\$13,607	\$556
Industrial	4	0	\$71,510	\$9,025
Religious/Non-Profit	1	0	\$18,966	\$3,753
Residential	7,069	130	\$811,792	\$55,544
Total	7,111	130	\$1,073,541	\$81,905

Population Affected

The flood hazard poses the greatest direct risk to that portion of the population nearest to the inundated areas. The population impacts associated with riverine flooding are likely to be low to moderate because some advanced warning is usually possible. Population impacts could easily be greater with flash flooding events, which oftentimes occur without advanced warning. Indirectly, flooding may impact a much larger portion of the county population due to road/bridge closures or other damages which limit accessibility to services, school, work, etc. According to the HAZUS-MH model, 400 households are expected to be displaced from their homes due to the flood and the associated potential evacuation.

Critical Facilities and Infrastructure at Risk

Class	Building Count	At Least Moderate Damage	At Least Substantial Damage	Loss of Use
Care Facilities	3	0	0	0
EOC	0	0	0	0
Fire Stations	5	0	0	0
Police Stations	5	0	0	0
Schools	14	0	0	0
Total	27	0	0	0



WATER QUALITY

Hazard Description

The quality of water resources is directly linked to community health and wellbeing. With a tourism-enhanced economy and a relative abundance of lakes and rivers, Rusk County also depends on high quality water resources for economic health and vitality.

Water quality refers to the chemical, physical and biological properties of water; both surface and groundwater. Surface water resources such as ponds, lakes and rivers are hydrologically connected to groundwater resources and the two systems interact and exchange both water and solutes, including pollutants.

The primary threats to water quality in Rusk County include pollution (point and nonpoint) and invasive species. Nationally, nonpoint source pollution (NPS) is the leading cause of water quality problems. NPS, unlike point-source pollution from industrial and wastewater treatment plants, comes from many diffuse sources. NPS pollution occurs when water runs overland or through the ground, collecting pollutants and depositing them in surface water or groundwater. The effects of nonpoint source pollutants on specific waters vary and may not always be fully assessed. Runoff from agricultural lands and urban areas are the primary source of the leading pollutants threatening water quality: siltation, bacteria, the nutrients phosphorus and nitrogen, and metals.

The Wisconsin Department of Natural Resources is the state agency responsible for assessing aquatic health, evaluating environmental problems, and determining the success of management actions designed to protect aquatic resources. Many local lake associations and citizen volunteers participate in Wisconsin's Citizen Lake Monitoring Network by collecting water quality data. The Rusk County Land and Water Conservation Department is the county agency responsible for administering local programs for protecting natural resources.

Invasive species are non-native organisms that evolved in one location and are introduced through a variety of means into another location. In Wisconsin, aquatic invasive species such as the zebra mussel, rusty crayfish and Eurasian water milfoil have gained a foothold in many lakes, rivers and streams, including the Great Lakes. Ecologically, aquatic invasive species' impacts include food-web disruptions, native species reduction or loss (and dependent species), water quality degradation, and the introduction of pathogens. Aquatic and terrestrial invasive species are addressed within the hazard mitigation plan on pages 57-60.

Hazard History

Every two years, the Wisconsin Department of Natural Resources publishes a list of waters considered impaired under Clean Water Act Section 303(d). Impaired waters do not meet water quality standards and may not support fishing, swimming, recreating or public health and welfare. Currently, there are 11 water bodies in Rusk County on Wisconsin's list of impaired waterways. In total there are 266 lakes in Rusk County, 90 named and 176 unnamed. The majority of named lakes are classified as "seepage" lakes, which are landlocked water bodies with no inlet or outlet. The principal source of water in seepage lakes is precipitation or runoff, supplemented by groundwater from the immediate drainage area. These lakes are the vulnerable to premature eutrophication and contamination caused by development in the shoreland zone.

Water quality can vary from lake to lake and it can also change seasonally, with climate and with soil and substrate conditions on the landscape. Overall, water quality in Rusk County is generally good, with only a small percentage of surface waters experiencing major impairments. It should be noted that not all water bodies

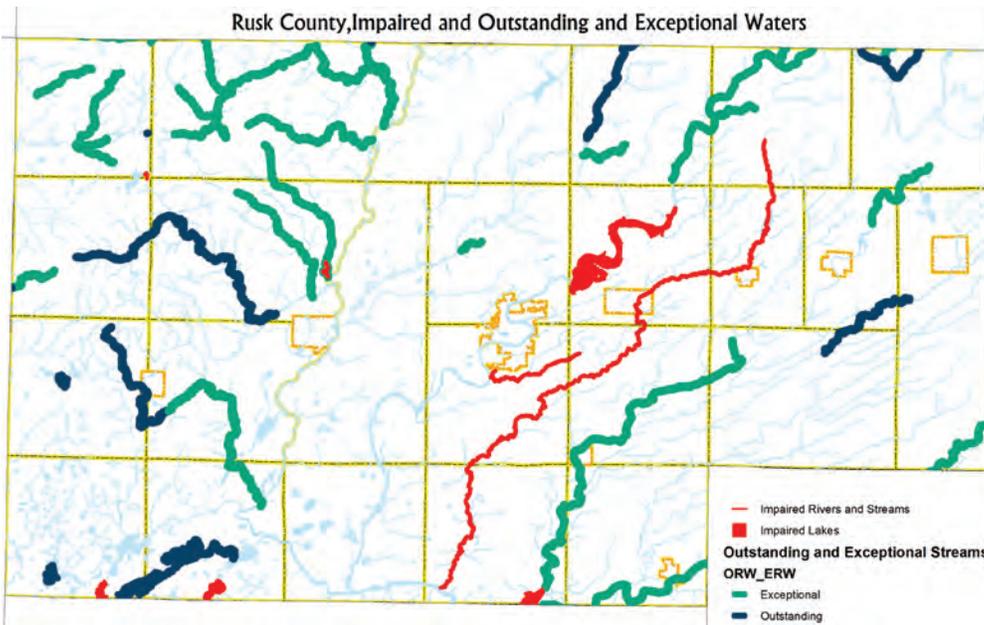


are monitored and comprehensive, long-term chemical, physical and biological data is not available for many lakes and rivers.

Table 30: 303d Impaired Waters, Rusk County

Official Name	Start Mile	End Mile	Water Type	County	Pollutant	Impairment	Status	Priority
Amacoy Lake			Lake	Rusk	Unknown Pollutant	Excess Algal Growth	Proposed for List	Low
Becky Creek	0.00	1.24	River	Rusk	E. coli	Recreational Restrictions - Pathogens	Pollutant Removed	Not Applicable
Becky Creek	0.00	1.24	River	Rusk	Sediment/Total Suspended Solids	Degraded Habitat	TMDL Approved	Not Applicable
Chippewa River	110.14	144.18	River	Chippewa, Rusk	PCBs	Contaminated Fish Tissue	Water Delisted	Delisted 2008
Chippewa River	112.37	132.21	River	Rusk, Sawyer	PCBs	Contaminated Fish Tissue	Water Delisted	Delisted 2008
Dairyland Reservoir (Flambeau)			Impoundment	Rusk	Mercury	Contaminated Fish Tissue	303d Listed	Medium
Deer Tail Creek	0.00	40.00	River	Rusk	Total Phosphorus	Impairment Unknown	303d Listed	Low
Holcombe Flowage			Impoundment	Chippewa, Rusk	Total Phosphorus	Eutrophication , Elevated pH	303d Listed	Low
Holcombe Flowage			Impoundment	Chippewa, Rusk	Sediment/Total Suspended Solids	Degraded Habitat	303d Listed	Low
Holcombe Flowage			Impoundment	Chippewa, Rusk	Mercury	Contaminated Fish Tissue	Pollutant Removed	Not Applicable
Meadow Brook	0.00	5.00	River	Rusk	Total Phosphorus	Impairment Unknown	303d Listed	Low
Perch Lake			Lake	Rusk	Mercury	Contaminated Fish Tissue	303d Listed	Medium
Pine Lake			Lake	Chippewa, Rusk	Mercury	Contaminated Fish Tissue	303d Listed	Low
Potato Lake			Lake	Rusk	Total Phosphorus	Eutrophication , Excess Algal Growth	Proposed for List	Low
Sand Lake			Lake	Chippewa, Rusk	Mercury	Contaminated Fish Tissue	303d Listed	Medium

Source: National Climate Data Center



Data Collected and Used

Water Quality data examined and mapping products were obtained through the Wisconsin Department of Natural Resources.

VULNERABILITY AND RISK ASSESSMENT

Area Affected

Varies considerably. Surface water quality impacts may impact entire river systems, portions of river systems, impoundments and reservoirs or individual lakes. Groundwater quality impacts may affect a small localized area or a much larger region depending upon the nature of the contamination event. It should also be noted that contamination events can spread through an entire hydrologic system impacting both ground and surface water resources.

Magnitude

Varies significantly due to the nature of the water quality issue. Water quality impacts range from impaired beneficial uses to direct hazards to human health, depending upon many factors including the nature of the water quality issue, concentration, toxicity of contaminants, ecosystem health and ability to mitigate.

Duration

Water quality concerns are an ongoing hazard in Rusk County. The duration of a specific event can range from a period of a few days to several decades. Case in point, chlorinated hydrocarbons such as PCBs were banned in 1979 but continue to pose problems for the Great Lakes.

Frequency

Water quality concerns are an ongoing hazard in Rusk County.

**Probability**

The probability of at least some degree of nonpoint source pollution occurring within Rusk County is 100 percent. NPS pollution is widespread because it can occur any time activities disturb the land or water. Agriculture, forestry, grazing, septic systems, recreational boating, urban runoff, construction, physical changes to stream channels, and habitat degradation are potential sources of NPS pollution. One of the problems in determining probability of both point and nonpoint pollution issues is detection. Not all water waterbodies are monitored and those that are, are not necessarily monitored on a continuous basis. Many problems are not detected until well after contaminants enter the environment.

Potential economic impact

Environmental contaminants may impair beneficial uses of surface and groundwater. The degree to which these uses are impaired determines the economic impacts of the event(s). Abatement activities and mitigation costs to clean up contaminated sites and water bodies also factor into the economic equation. Healthy, clean surface waters in are critical to tourism and outdoor recreation in the county. Nonpoint source pollution affects the beauty and health of lands and waters. If the physical and environmental well-being of these areas is diminished, people will naturally find it less appealing to visit the area. Seasonal/recreational housing development in water-rich communities is also increasing at a rapid rate, and the value of waterfront property often relies on environmental and aquatic conditions. Excess nonpoint source pollution impacts the overall quality of life, and subsequently can drive property values down.

Population Affected

Water quality issues affect the entire population of Rusk County.

Critical Facilities and Infrastructure at Risk

Generally, critical facilities are considered to have the same vulnerability and risk as other facilities within the county.



HIGH WINDS

Hazard Description

Severe thunderstorms are capable of producing hurricane force winds. Rapidly descending rain-cooled air beneath a thunderstorm is referred to as a downburst. Wind speeds associated with downbursts can reach velocities of 100 to 150 miles per hour, comparable to a category 4 hurricane. Downbursts typically fan out in the direction of wind flow, diverging from where they first impact the ground. Damage from downbursts is typically most intense near the initial point of impact, becoming progressively less intense further outward.

Another type of thunderstorm wind is referred to as a derecho. Winds in a derecho event are created by the merging of many thunderstorm cells into a bow-shaped cluster or solid line. The width of such a storm can range from 20 to 65 miles and the length can reach 100 miles or more. The extreme velocity winds produced by a derecho can exceed 150 miles per hour and cause extensive damage. A recent example of the impact of derecho winds was observed following the storm event of July 4, 1999, which occurred in Minnesota's Boundary Waters Canoe Area Wilderness (BWCAW). This event was one of the largest blowdowns in North American history, similar in size and severity of a category 3 or 4 hurricane, making landfall in a forested region. The storm impacted approximately 477,000 acres. A similar derecho event occurred in northern Wisconsin on July 4th, 1977, when storm winds of 73 to 157 miles per hour caused widespread damage across 7 counties in northwestern and north-central Wisconsin. The storm, which originated over west-central Minnesota and ended in northern Ohio, crossed 3 states in 14 hours, killing 1 and injuring 37.

Hazard History

Thunderstorm wind events have historically occurred quite regularly in Rusk County (**Table 31**). The NCDC Storm Events Database includes 73 wind events occurring between 1968 and 2011. The majority of recorded events occurred from 1995 to 2011, suggesting incomplete data for years prior to 1995. Of those events recorded, wind damage to trees and power outages were the most common storm impacts. No storms resulted in loss of life and no injuries were reported during the period.



Table 31: Thunderstorm Wind Events 1995-2011

Date	Location	Fat/ Inj	Property Damage	Crop Damage	Description
7/14/1995	Tony	0/0	0	0	Trees blown down between Ladysmith and Glen Flora in the vicinity of the town of Tony. Westbound lane of Highway 8 blocked by fallen trees.
5/18/1996	Bruce	0/0	0	0	Large trees and power lines down.
5/19/1996	Bruce	0/0	0	0	Large trees and power lines down.
8/7/1996	Hawkins	0/0	0	0	Large pine trees blown onto roofs. Power lines down. Shed roof damage.
5/15/1998	Ladysmith	0/0	0	0	Roof ripped off apartment building and restaurant. Flying debris from apartment building damaged nearby motel. 3,000 pound pontoon boat on Lake Flambeau blown a distance of 125 feet and destroyed. Many trees blown over. Numerous garages and sheds destroyed.
6/25/1998	Conrath	0/0	0	0	Large trees blown down.
6/5/1999	Island Lake	0/0	0	0	Trees and power lines blown down.
6/6/1999	Weyerhaeuser	0/0	0	0	Trees down.
6/6/1999	Bruce	0/0	0	0	Trees down.
7/8/1999	Island Lake	0/0	0	0	Trees and power lines downed.
7/23/1999	Weyerhaeuser	0/0	0	0	Powerlines down, numerous trees down.
7/25/1999	Ladysmith	0/0	0	0	Estimated winds, large trees toppled.
7/25/1999	Hawkins	0/0	0	0	Estimated winds, several trees down.
7/30/1999	Ladysmith	0/0	0	0	A five mile wide swath of damaging winds tracked for 20 miles through central and eastern Rusk County, downing hundreds of trees, some eighteen inches in diameter. Some trees on houses and garages. Roof partially blown off house in Ladysmith. Shed down 2 N Tony. Two unanchored mobile homes smashed 1 NE Ingram. Part of a tree in Hawkins blown 100 yards. Barn down, hangar and two aircraft destroyed 1 S Hawkins. Some shingles and soffits torn off in Hawkins.
7/8/2000	Bruce	0/0	0	0	Trees down.
7/8/2000	Bruce	0/0	0	0	Large trees down.
8/8/2000	Ladysmith	0/0	0	0	Scattered trees down throughout city.
8/14/2000	Bruce	0/0	0	0	Several trees toppled across road.
8/14/2000	Ingram	0/0	0	0	Several trees blown over onto road.
8/14/2000	Weyerhaeuser	0/0	0	0	Tree down across road.
6/11/2001	Weyerhaeuser	0/0	0	0	Trees and power lines came down. Barn down with roof blown 100 feet away 3 W Weyerhaeuser, near Bass Lake. Garage down and many windows blown out.
6/11/2001	Ladysmith	0/0	0	0	Measured at the DNR Forestry Station. Scattered damage to houses and outbuildings. Numerous trees and power lines down. Memorial Park in Ladysmith lost about 100 trees. One home lost part of its roof. Damage figure is the total from all storms in Rusk County from 1770 to 1815.
6/11/2001	Sheldon	0/0	0	0	Barn and sheds down. Scattered trees down.
6/11/2001	Hawkins	0/0	0	0	Few trees down.
6/16/2001	Ladysmith	0/0	0	0	Awning torn off a house.



Rusk County Hazard Mitigation Plan

Date	Location	Fat/Inj	Property Damage	Crop Damage	Description
6/18/2001	Tony	0/0	\$230,000	0	Trees down.
6/25/2002	Ladysmith	0/0	0	0	Tree down.
7/27/2002	Bruce	0/0	0	0	Power lines down.
8/11/2002	Bruce	0/0	0	0	Several trees down.
8/11/2002	Hawkins	0/0	0	0	Scattered trees toppled.
4/18/2004	Weyerhaeuser	0/0	0	0	Trees were downed onto Highway 8.
4/18/2004		0/0	0	0	A vigorous low pressure system over South Dakota moved into western Minnesota late on the 18th. This system brought windy conditions to west central Wisconsin during the afternoon. Several jurisdictions reported downed trees and power lines. A handful of structures were also damaged, including hangars at New Richmond Regional Airport. In Eau Claire County, a 73-year-old man struck a tree with his car after it was blown onto the highway by high winds. Wind gusts as strong as 68 MPH were recorded less than an hour before a line of severe thunderstorms moved through the region.
5/9/2004	Bruce	0/0	0	0	A large tree blocked a road.
7/30/2004	Ladysmith	0/0	0	0	A large tree was downed across 5th Avenue W.
6/5/2005	Island Lake	0/0	0	0	Trees were downed across a road.
6/5/2005	Bruce	0/0	0	0	A tree was downed in Big Bend Township.
6/27/2005	Weyerhaeuser	0/0	0	0	Scattered trees were downed near a campground by County Road O.
6/27/2005	Weyerhaeuser	0/0	0	0	Scattered trees were downed in Rusk.
6/27/2005	Hawkins	0/0	0	0	Trees were downed.
6/29/2005	Weyerhaeuser	0/0	0	0	A tree was downed.
7/30/2006	Ladysmith	0/0	0	0	Large tree limb fell onto County road J.
5/23/2007	Weyerhaeuser	0/0	0	0	Numerous small trees down. Frontal boundary induced severe weather episode.
7/26/2007	Weyerhaeuser	0/0	\$1,000,000	0	Trees down. Warm frontal boundary induced severe thunderstorms.
7/29/2008	Ingram	0/0	0	0	Tree and several branches downed at the intersection of Town Line road and Highway 73. A warm frontal boundary draped across West Central Wisconsin was the focus for isolated severe thunderstorms on this date.
8/3/2008	Bruce	0/0	0	0	Many trees toppled, power pole downed, and some trees blocking Highway 8. A warm frontal boundary emanating from a surface low pressure system in South Central South Dakota, and draped across West Central Wisconsin, was the catalyst for scattered severe thunderstorms on this date.
5/25/2010	Hawkins Ingram Murray	0/0	0	0	An old frontal boundary moved across eastern Minnesota, and into west-central Wisconsin before stalling during the afternoon of Tuesday, May 25th. Scattered thunderstorms developed during the afternoon along this boundary where wind shear values were around 30 knots, and instability parameters were approaching 3000 J/kg. This caused some of the thunderstorms to produced isolated wind damage near Hawkins, Ingram and north of Bruce,



Date	Location	Fat/ Inj	Property Damage	Crop Damage	Description
					Wisconsin. Severe wind gusts caused trees to be blown down near Hawkins, Wisconsin. Severe winds also caused trees to be blown down near Ingram, and rural areas north of Ladysmith.
7/20/2010	Weyerhaeuser	0/0	0	0	One severe thunderstorm tracked across portions of west-central Wisconsin the afternoon of Tuesday July 20th. The storm caused extensive damage near the cities of Cumberland and Rice Lake, where a turkey barn roof was blown off and numerous reports of golf ball size hail were received. A large tree and numerous branches were blown down near Highway 40.
7/27/2010	Ladysmith	0/0	10,000	0	A complex of thunderstorms developed across west-central Minnesota during the afternoon of July 27th and quickly moved eastward into east-central Minnesota and west-central Wisconsin during the evening hours, and caused three tornadoes in west central Wisconsin. There also were several areas of straight-line wind damage. Several trees were blown down between Ladysmith and Glen Flora, Wisconsin. Some trees fell on power lines.
7/19/2011	Ladysmith Tony	0/0	0	0	Thunderstorms that developed across northern Minnesota during the afternoon of Tuesday, July 19th, moved southeast into west central Wisconsin by the early evening and produced numerous damaging wind reports and flash flooding. A few large trees and power lines were blown down near Ladysmith, Wisconsin. A few trees and power lines were blown down near Tony.

Source: National Climate Data Center

Data Collected and Used

National weather databases were collected and analyzed. Data on historic property damage and loss, and injuries and deaths, was collected for Rusk County from the National Oceanic and Atmospheric Administration’s (NOAA) National Climatic Data Center website, and the Spatial Hazard Events and Losses Database (SHELDUS). This data was used to support an evaluation of exposure and potential impacts associated with this hazard. Storm event probability data was collected using the NOAA Storm Prediction Center database.

VULNERABILITY AND RISK ASSESSMENT

Area Affected

The potential for high winds is shared equally among all areas of the county. High wind events can be localized, affecting small geographic areas, even individual neighborhoods. These events can also be very widespread, impacting an entire county or region, as was the case in the 1977 northern Wisconsin derecho event.

Magnitude

Using NCDC historical data, the average intensity of severe thunderstorm winds in Rusk County is about 54 mph. At this speed, winds could be expected to uproot trees and cause considerable structural damage.



Duration

The average thunderstorm typically lasts less than 30 minutes at a given location

Frequency

Based on recent storm records (2005-2011), Rusk County can expect an average of 3 high wind storm events in any given year.

Probability

The severe thunderstorm season in Wisconsin generally ranges from April through August, with the peak generally falling in late June to early July. Based on historical observations, the probability of a wind event in Rusk County occurring somewhere within Rusk County during any given year is very high. The graphic below (**Figure 8**) indicates estimated wind probabilities across the United States for the week of June 24th, which is the approximate peak of severe thunderstorm season in the region. On this day, the probability of any event where winds exceed 50 knots (57.5 mph) is within the range of 0.50% to 1.50%. On the same day, the probability of a significant wind event (62 knots or 71.2 mph) is within the range of 0.10% to 0.25%.

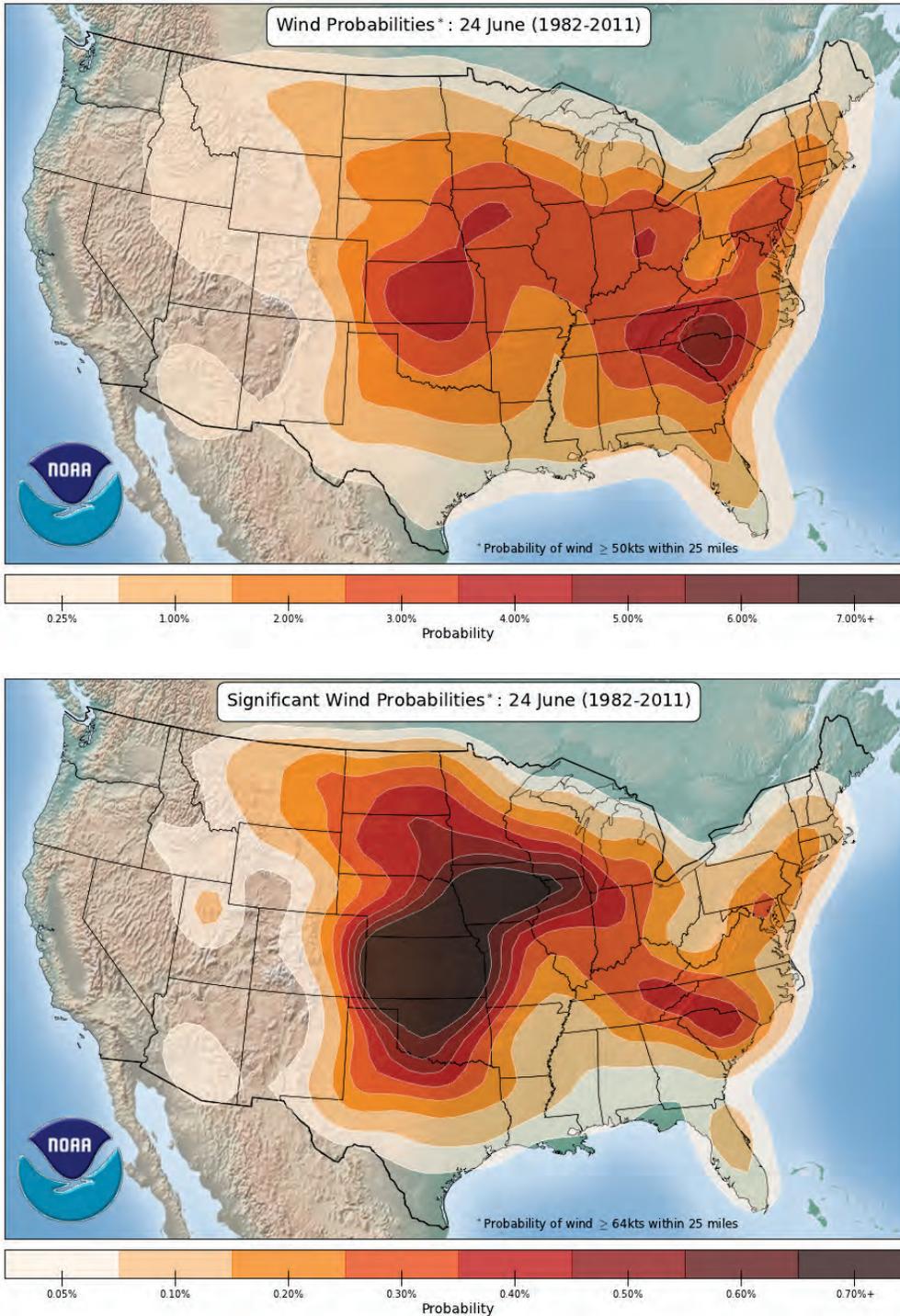
Potential economic impact

A severe wind event has the potential to cause significant economic impacts in Rusk County. High winds are capable of producing widespread damage to homes, businesses, personal property and infrastructure. These storms may also down trees and destroy agricultural crops. Revenue losses to businesses may result from prolonged power outages caused by down electric lines. Fallen debris may also necessitate temporary road closures resulting in citizens being stranded at home or work. Between 1980 and 2011, the average property damage due to a wind event was \$23,585, but ranged from \$0 to \$1,000,000 per event.

Based on historical events, the most **likely** impact from high winds will be downed trees. Because of the low population density of the rural area, it can be inferred that a severe wind event in these areas would not cause widespread property damage. If such an event were to occur in population center, the structural and property damage would likely be significant by comparison. If the event were exceptionally severe, such as the derecho event of 1977, timber losses and economic impact to the forest products industry could be also be significant.



Figure 8: Estimated Wind Probabilities – week of June 24th



Population Affected

Localized high wind events would affect a small portion of the county’s population whereas a large scale derecho-type event could impact the entire population of Rusk County.

Critical Facilities and Infrastructure at Risk

Generally, critical facilities are considered to have the same vulnerability to high wind as other development. Infrastructure such as power and utility lines are more vulnerable to high winds and falling trees. County power systems are subject to failure during a severe thunderstorm event. Communications towers may also be damaged or destroyed by high winds, blowing debris or falling trees.



COMMUNICABLE DISEASE

Hazard Description

Communicable diseases include epidemics, pandemics and human disease outbreaks. The Rusk County Health Department monitors for and investigates communicable disease outbreaks affecting the county’s population.

Hazard History

One of the infectious agents which has impacted Rusk County in recent history is Pertussis, or whooping cough. Pertussis is a serious bacterial infection that begins with symptoms of a mild respiratory illness progressing to a severe persistent cough that can last up to three months.

Confirmed Pertussis Cases

County of Residence	2010		2011		2012	
	Cases	Rate	Cases	Rate	Cases	Rate
Rusk	3	20.3	1	6.8	27	183

Wisconsin Department of Health Services, 2013

Suspected, Probable and Confirmed Pertussis Cases Requiring Follow-Up by Health Department

2005	2006	2007	2008	2009	2010	2011	2012	2013
6	2	60	2	0	3	19	42	2

Rusk County Public Health Department, 2013

Data Collected and Used

Statistical data for the hazard profile and risk assessment was collected from the Wisconsin Department of Health Services and the Rusk County Public Health Department.

VULNERABILITY AND RISK ASSESSMENT

Area Affected

The location of disease outbreaks is dictated by the proximity that residents have to infected people or to infected vectors. Residents in rural areas of the county may be at a slightly higher risk to vector-borne diseases, but ultimately, all county residents will be at some risk to these diseases.

Magnitude

FluAid¹ provides estimate ranges based on different attack rates and different pandemic scenarios. An attack rate is the risk of becoming inflicted with a condition during an epidemic period. For example, an attack rate of 25% means that 1 out of every 4 persons would have influenza. The 1968-Type estimates were generated using the default FluAid rates of health outcomes (deaths, hospitalizations, and outpatient visits) that reflect the rates of influenza-related morbidity and mortality measured during the 1960s and 1970s (a 1968-Type influenza pandemic strain). To produce estimates of the potential impact of the next influenza pandemic assuming a 1918-type strain scenario, the FluAid rates of health outcomes were altered using a scaling factor to account for the

¹ FluAid is a test version of software created by programmers at the Centers for Disease Control and Prevention (CDC). It is designed to assist state and local level planners in preparing for the next influenza pandemic by providing estimates of potential impact specific to their locality. FluAid provides only a range of estimates of impact in terms of deaths, hospitalizations, and outpatients visits due to pandemic influenza.



pattern of deaths and hospitalizations experienced in 1918.

Data was entered into FluAid assuming an 8-week pandemic period and a one week stay necessary for those who are hospitalized due to influenza. Both of the scenarios assume a model the same attack rates, so the number of people who become ill on both scenarios is comparable. However, in the 1918 “severe” scenario, infection is much more likely to lead to hospitalization or death. Note that the estimates count only the “worst” health outcome for each sick person, so if a patient seeks outpatient care and is later hospitalized, the case is not counted as an outpatient visit but is instead regarded as a hospitalization. As a result, this approach may underestimate potential encounters with the health care delivery system.

The term “hospitalization” as used in FluAid refers to those who are admitted to the hospital due to influenza-related illness but who survive. It is reasonable to assume that some percentage of those whose ultimate influenza-related health outcome will be death, will die in the hospital.

Describing the range of health outcomes for both pandemic scenarios using a 25% attack rate, for Rusk County it is estimated that there will be:

- 9-160 deaths
- 21-516 hospitalizations
- 1,620-2,546 outpatient visits
- 1,416-2,224 ill people, who did not seek any medical care

* It should be noted that these figures are based on a year 2000 estimate of countywide population of 15,347

Duration

Based on statistics from the U.S. Department of Health and Human Services, it is likely that a pandemic wave could last for 3 to 4 months, with community outbreaks lasting from 6 to 8 weeks.

Frequency

The frequency of pandemics and local outbreaks that tax areas with minimal resources are unpredictable. A total of 3 events have occurred in the past 90 years, resulting in a rough average of 1 event every 30 years.

Probability

The risk of pandemic flu is serious. The H5N1 strain has become well established in large parts of Asia, increasing the risk for more human cases. The strain has also spread to poultry and wild birds in new areas, expanding the opportunities for human transmission. While the specific probability that pandemic flu will occur in Rusk County cannot be predicted, it can be assumed that the expansion of the H5N1 virus has increased the probability and risk.

Potential economic impact

A pandemic flu event would likely have severe economic repercussions, with significant costs associated with hospitalization and care for those afflicted. Broader economic impacts associated with lost productivity and wages could also be expected. In general, most economic functions would be challenged by the high rate of absenteeism associated with a pandemic.



Population Affected

The total population of the community is approximately 14,316 (2012 estimate) people. FluAid estimates that 16 percent (2,291) of the county's population is potentially at risk.

Those who are at high risk for adverse health outcomes due to influenza include:

- Persons aged 65 or older
- Residents of nursing homes or other chronic-care facilities that house persons with chronic medical conditions
- Adults and children who have chronic disorders of the pulmonary or cardiovascular systems, including those with asthma
- Adults and children who require regular medical follow-up or hospitalization because of chronic metabolic diseases (including diabetes mellitus), renal dysfunction, hemoglobinopathies, or immunosuppression (including immunosuppression cause by medications)
- Children and teenagers (aged 6 months to 18 years) who are receiving long-term aspirin therapy and therefore might be at risk for Reye Syndrome after influenza
- Women who will be in the second or third trimester of pregnancy during the influenza season.

Critical Facilities and Infrastructure at Risk

While a pandemic outbreak will not directly impact critical facilities and infrastructure like other hazards, it could severely impact local health care services.



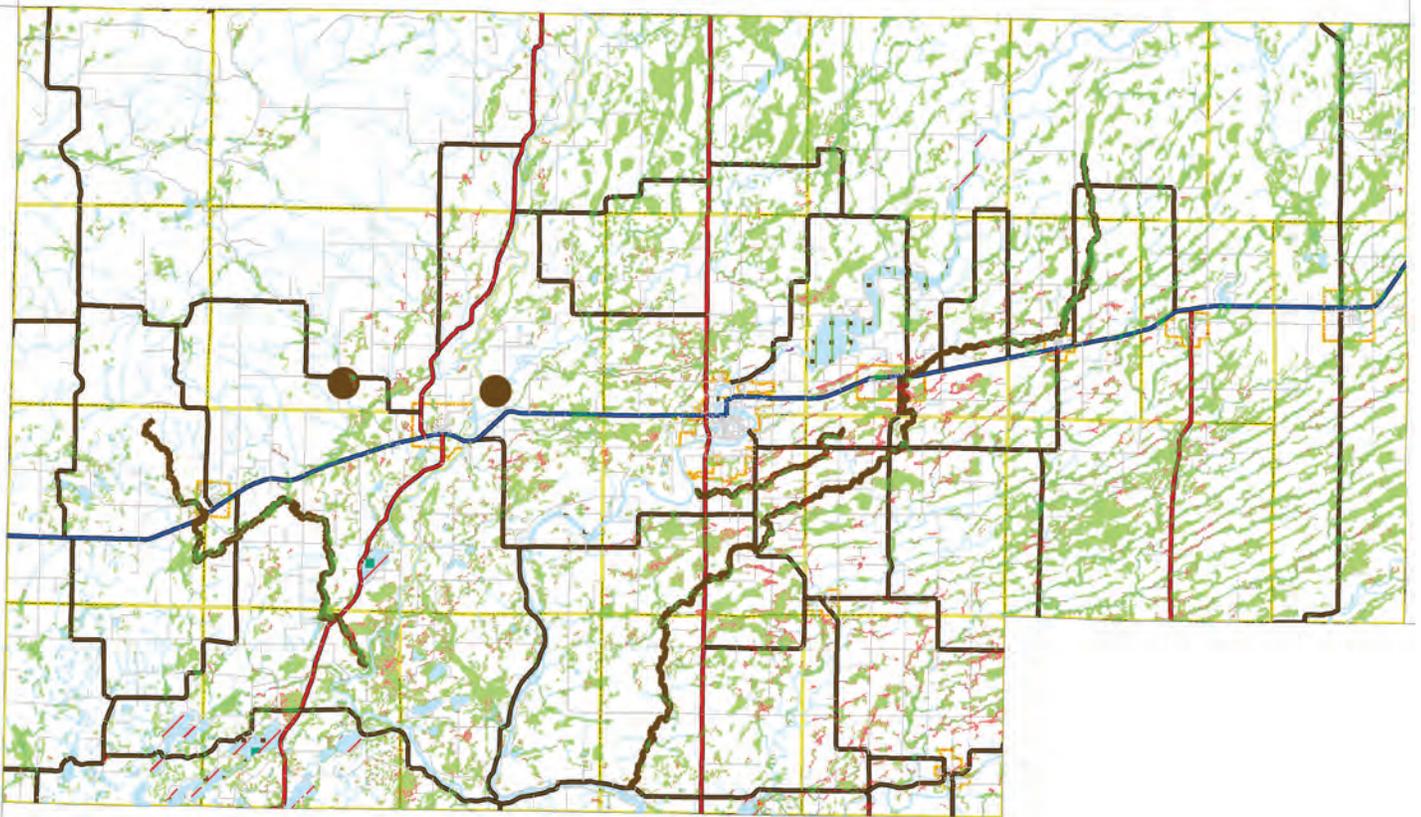
INVASIVE SPECIES

Hazard Description

An invasive species is a non-native species whose introduction does or is likely to cause economic or environmental harm or harm to human, animal, or plant health. The term “invasive” denotes the uncontrolled or unintended spread of an organism outside its native range. Once introduced, invasive species may alter ecological relationships among native species and can affect ecosystem function, economic value of ecosystems, and human health. In Wisconsin there are a number of aquatic and terrestrial invasive species threats, many of which are also a threat to Rusk County.

Hazard History

Aquatic Invasive Species Distribution





Aquatic Invasive Species Occurrences in Rusk County

Waterbody Name	Invasive Species
Amacoey Lake	Chinese Mystery Snail, Curly-Leaf Pondweed
Bass Lake	Chinese Mystery Snail
Big Falls Flowage	Curly-Leaf Pondweed, Eurasian Water-Milfoil
Chain Lake	Curly-Leaf Pondweed, Rusty Crayfish
Chippewa River	Rusty Crayfish
Clear Lake	Chinese Mystery Snail, Curly-Leaf Pondweed, Rusty Crayfish
Dairyland Reservoir (Flambeau)	Eurasian Water-Milfoil, Rusty Crayfish
Deer Tail Creek	Rusty Crayfish
Devils Creek	Rusty Crayfish
Dickey Lake	Eurasian Water-Milfoil
Fireside Lakes	Chinese Mystery Snail, Curly-Leaf Pondweed
Holcombe Flowage	Banded Mystery Snail, Chinese Mystery Snail, Curly-Leaf Pondweed, Rusty Crayfish
Island Lake	Chinese Mystery Snail, Curly-Leaf Pondweed, Rusty Crayfish
Ladysmith Flowage	Purple Loosestrife, Rusty Crayfish
Lea Flowage (Lea Lake)	Eurasian Water-Milfoil
McCann Lake	Curly-Leaf Pondweed, Rusty Crayfish
Meadow Brook	Rusty Crayfish
Murphy Flowage	Curly-Leaf Pondweed
Potato Lake	Curly-Leaf Pondweed
Pulaski Lake	Banded Mystery Snail, Chinese Mystery Snail, Freshwater Jellyfish
Sand Lake	Curly-Leaf Pondweed
Soft Maple Creek	Rusty Crayfish
Sucker Creek	Rusty Crayfish
Thornapple Flowage	Rusty Crayfish
Thornapple River	Rusty Crayfish

Source: Wisconsin Department of Natural Resources

Invasive Plant Species Occurrences in Rusk County

common yarrow	splitlip hempnettle	longleaf speedwell
sneezewort yarrow	common hempnettle	tall buttercup
redtop	American mannagrass	wild radish
common ragweed	low cudweed	red sorrel
annual ragweed	tawny daylily	laurel willow
biennial wormwood	orange hawkweed	yellow foxtail
yellow rocket	common St. Johnswort	garden catchfly
hoary alyssum	prickly lettuce	white campion
Indian mustard	everlasting peavine	bladder campion
birdsrape mustard	oxeye daisy	wild mustard
smooth brome	yellow toadflax	hedge mustard
hedge bindweed	bush honeysuckles (exotic)	perennial sowthistle
shepherd's-purse	purple loosestrife	field sowthistle
bittersweets	musk mallow	red sandspurry
spotted knapweed	pineapple-weed	common comfrey
common mouse-ear chickweed	black medic	common tansy
big chickweed	yellow sweet-clover	field pennycress



lambquarters	true forget-me-not	western salsify
oakleaf goosefoot	giant chickweed	hop clover
Canada thistle	Eurasian water-milfoil	large hop clover
field thistle	wild-proso millet	alsike clover
bull thistle	reed canarygrass	red clover
Asiatic dayflower	timothy	white clover
smooth crabgrass	European common reed	common mullein
quackgrass	broadleaf plantain	thymeleaf speedwell
wallflower mustard	black bindweed	thymeleaf speedwell
cypress spurge	marshpepper smartweed	European cranberrybush
wild buckwheat	curly-leaved pondweed	hairy vetch
meadow fescue	sulfur cinquefoil	pansy
Source: University of Georgia - Center for Invasive Species and Ecosystem Health.		

Additional information about invasive species occurrences (insects) and impacts in Rusk County can be found under the Forest Health hazard on starting on page 81.

Data Collected and Used

Invasive species data for Rusk County was collected through the Wisconsin Department of Natural Resources and Center for Invasive Species and Ecosystem Health at the University of Georgia (<http://www.eddmaps.org/>) A comprehensive database of aquatic and terrestrial invasive species is not available and monitoring activities are ongoing.

VULNERABILITY AND RISK ASSESSMENT

Area Affected

Varied. Invasive species infestations can range from individual properties to landscape level events which impact large forest stands or major lake and/or river systems. Tracking the affected area is difficult and time-consuming and requires constant monitoring and vigilance. Depending on the nature of the organism and environmental conditions, invasive species can spread rapidly across a landscape.

Magnitude

Varied. Some invasive species have a much more profound ecological impact than others. It is difficult to determine the overall magnitude of invasive species infestation due to the fact that many long-term outcomes are unknown. In the short-term there is the potential for increased mortality or displacement of native species, degraded resource function and quality, loss of aesthetic and recreational values. Economic impacts range from minor to severe, especially for industries that rely on natural resources, such as forestry and tourism.

Duration

Invasive species are an ongoing threat to ecological systems, local economies and biological diversity. The short-term impacts of invasive species introduction can be difficult to predict within a given ecosystem and may not accurately reflect the long-term consequences. Short-term impacts may involve increased stresses on native species while long-term impacts could result in physical displacement of native flora and fauna, alteration of hydrologic properties and soil chemistry or even complete ecosystem collapse.



Frequency

It is difficult to track invasive species introductions across the landscape. While monitoring efforts are ongoing, most introductions are not detected until after the invader has become established within a given area.

Probability

At least 93 terrestrial and aquatic invasive species have already been identified in Rusk County. The future probability of occurrence is unknown, but the total number of invasive species occurring within the county is likely to increase. Increasing globalization, travel and use patterns and changing climate create favorable conditions for the introduction and spread of invasive species.

Potential economic impact:

In the United States, the annual cost of invasive species (including plants and aquatic organisms) is estimated at more than \$138 billion. In Wisconsin, invasive insects alone cost municipalities, property owners, nursery operators, and forest products industries tens of millions of dollars each year. It is estimated that Eurasian watermilfoil has reduced values of Wisconsin lakefront property by 13 percent (USFWS, 2012). For a county that relies heavily in tourism, forestry and agriculture, the economic impacts of invasive species could be significant. There are also additional economic impacts due to mitigation and control.

Population Affected

Invasive species impact all of Rusk County's 14,755 residents. While a direct human health impact is not likely, the cultural and economic costs to Rusk County are of great concern. The forestry, tourism and agriculture sectors are at the greatest risk.

Critical Facilities and Infrastructure at Risk

Community facilities and infrastructure would likely not be at risk due to invasive species.



Data Collected and Used

Historical lightning occurrence data is currently unavailable for Rusk County and only 1 event was reported to the National Weather Service between 1982 and 2011.

VULNERABILITY AND RISK ASSESSMENT

Area Affected

The lightning hazard affects all areas of the county equally. Lightning associated with a severe thunderstorm may be quite localized. Lightning itself affects a very small area, although secondary impacts such as wildfire can be extensive.

Magnitude

Lightning has tremendous potential to cause bodily harm and property damage.

Duration

Average duration of a lightning storm is about 30 minutes.

Frequency

Lightning occurs with all thunderstorms, not just severe storms. On average, the county experiences about 3 severe thunderstorms per year, and numerous non-severe thunderstorms. Lightning can also travel into the county from storms occurring outside of the county.

Probability

The chance of a lightning event occurring in Rusk County during any given year is nearly 100%.

Potential economic impact:

Lightning can cause damage to structures and infrastructure, including power and communication resources. Structural fires related to lightning are not uncommon. Electrical appliances and equipment is vulnerable to power surges. Lightning can also cause considerable problems for forestry and agriculture. Agricultural production can be disrupted due to damage to machinery and loss of livestock. Lightning is also capable of causing damage to trees, and is the primary natural cause of wildfires in Wisconsin. It is estimated that in northern Wisconsin there are between two and five lightning-caused fires per million acres of forested lands every year (WEM, 2002). Of the 979 wildfires reported in Rusk County between 1982 and 2009, 20 (2.04%) were classified as lightning-caused fires. Secondary impacts include revenue loss from lost production in business and industry, and costs associated with repair and replacement of infrastructure. Modern lightning-caused wildfires in Rusk County have not resulted in significant economic losses associated with structure loss or damage. The historical average fire suppression cost per lightning-induced wildfire was \$5,700 per fire and there is roughly one lightning-induced wildfire event per year in Rusk County.

Population Affected

Lightning does not discriminate based on socio-economic status. The risk posed by lightning is shared equally among all of Rusk County's 14,755 residents. The risk that an individual would be directly struck by lightning is actually quite small.



Critical Facilities and Infrastructure at Risk

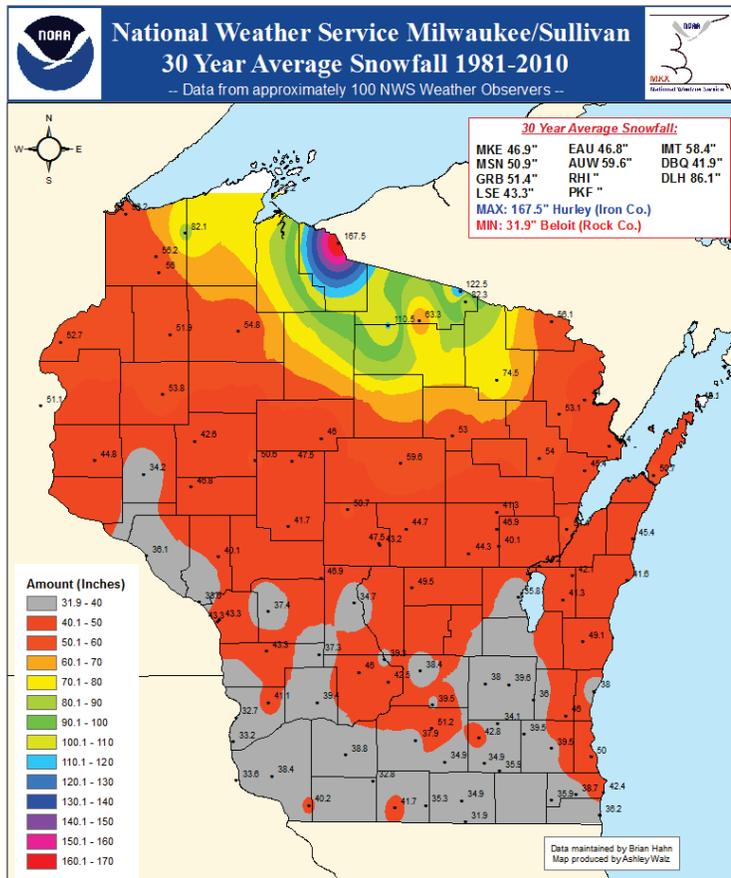
Lightning has the potential to cause damage and disruption to critical facilities, government services and infrastructure. Critical facilities are equally as vulnerable to damage as other structures. Communications infrastructure such as towers and antennas are especially vulnerable, as these objects are generally the tallest features on the landscape. Lightning is one of the major causes of power interruption and equipment damage in the electricity transmission and distribution system. Loss of electric power can result in serious government service disruptions.



WINTER STORMS

Hazard Description

Winter weather hazards are common to northern Wisconsin. Winter storms include a variety of weather phenomena including heavy snowstorms, blizzards, and sleet. The winter storm season generally runs from November to March in Wisconsin, although storm events can and occasionally do occur much earlier or later in the year. The majority of Wisconsin snowfalls are between one and three inches per occurrence. However, heavy snowfalls, which produce at least ten inches, may occur four or five times per season. In addition to heavy snows, winter storm events are often accompanied by strong winds and bitterly cold temperatures. Wind chill, or the combined cooling power of the wind and temperature on exposed flesh, can also produce hazardous conditions.



The effects of winter storms can range from minor nuisance to major disruption. Extreme events can result in near incapacitation. Minor storms may create travel difficulties and delays, but do not generally disrupt government services. In contrast, severe winter storms, accompanied by strong winds, blinding wind-driven snow, severe drifting, and dangerous wind chill can create major service disruptions and are potentially hazardous to human life. Severe storms can result in road closures, disruptions in electric and utility service and greatly limit emergency response. Additionally, the cost of snow removal, storm damage repair and loss to businesses can have short-term negative impacts on the local economy.

Source: NOAA, National Weather Service



Figure 10: Wisconsin Blizzards

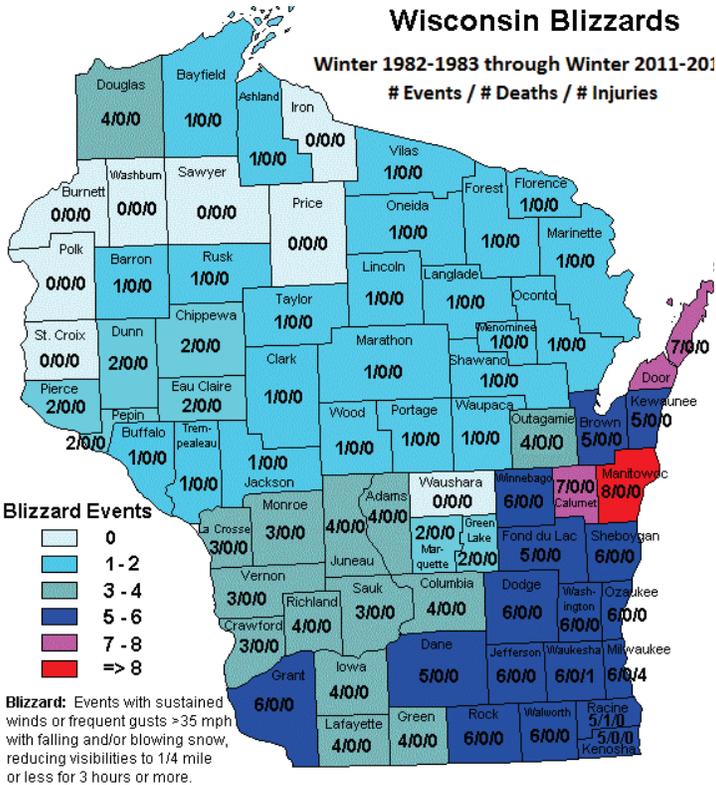
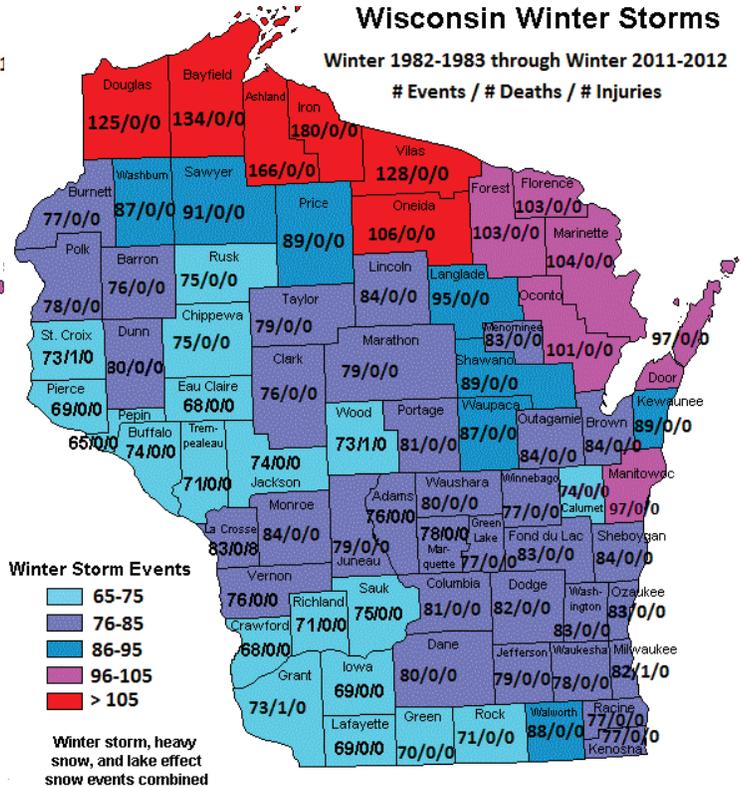


Figure 11: Wisconsin Winter Storms



Source: NOAA, National Weather Service

As indicated by the above graphics, Blizzard events are relatively rare in Rusk County, while winter storm events are very common.

Hazard History

Winter storm events are common to Rusk County. Major snowfall events occur annually, with occasional severe winter storms. According to NCDC storm data, there were 42 major winter storm events affecting Rusk County between 1993 and 2011, or an average of about 2 major storm events per year.

Data Collected and Used

Data on past winter storm events in Rusk County was collected from the National Oceanic and Atmospheric Administration’s (NOAA) National Climatic Data Center website, and the National Weather Service. This data was used to support an evaluation of exposure and potential impacts associated with this hazard.

VULNERABILITY AND RISK ASSESSMENT

Area Affected

A typical winter storm event is likely to affect the entire county, although there may be localized differences in snowfall totals, depending upon the track of a particular storm.



Magnitude

The magnitude of a severe winter storm is usually expressed as a measure of snowfall total, although other indices such as duration, temperature, wind chill and ice accumulation may also be used. The average snowfall per major storm events between 1993 and 2011 was about 9 inches. Several of the historically significant snowfall events were accompanied by other hazardous winter weather such as high winds, cold temperatures and ice.

Duration

Winter storms can range from a moderate snow over a few hours to a blizzard with heavy, wind-driven snow that lasts for several days. Severe winter storms are often followed by extended periods of cold weather.

Frequency

Using the historical NOAA, National Weather Service data as a baseline, Rusk County averages about 2 significant winter storm events every winter season.

Probability

The annual probability of a winter storm in Rusk County is near 100 percent. On average, the county experiences 2 winter storm events per year. It is likely that at least 1 of those events will produce snowfalls of 12 inches or greater. There is roughly a 50% chance of a storm event of 24 inches or greater in any given year.

Potential economic impact

The economic impact of winter storms is very difficult to quantify. Winter storms have the potential negatively impact to business and individuals. Conversely, snowfall attracts winter recreation enthusiasts, which brings revenue to the county. Heavy snows can cripple transportation infrastructure, causing travel delays and even road closures. As a result, businesses may experience revenue losses. Weather related traffic accidents also result in economic losses. The costs of snow removal can also be a significant burden, especially for county and local government. Snow removal costs and traffic accident cost data is not readily available. Economic impact to business as a result of lost revenue is also difficult to determine.

Population affected

Winter storms affect the entire population of Rusk County. Drivers are also at-risk during winter storm events. Between 2002 and 2012 there were 351 motor vehicle accidents in Rusk County where the road condition was reported as snow or ice covered (WisTransPortal, 2013). These accidents resulted in 111 injuries and 2 deaths.

Critical Facilities and Infrastructure at Risk

Winter storms pose the greatest threat to transportation infrastructure in Rusk County. The county has several hundreds of miles of roadway, which includes U.S. Highway 8 and three State Trunk Highways. Heavy snows pose serious challenges for essential services, such as police and fire. In extreme cases, roads may be impassable, even to emergency vehicles.



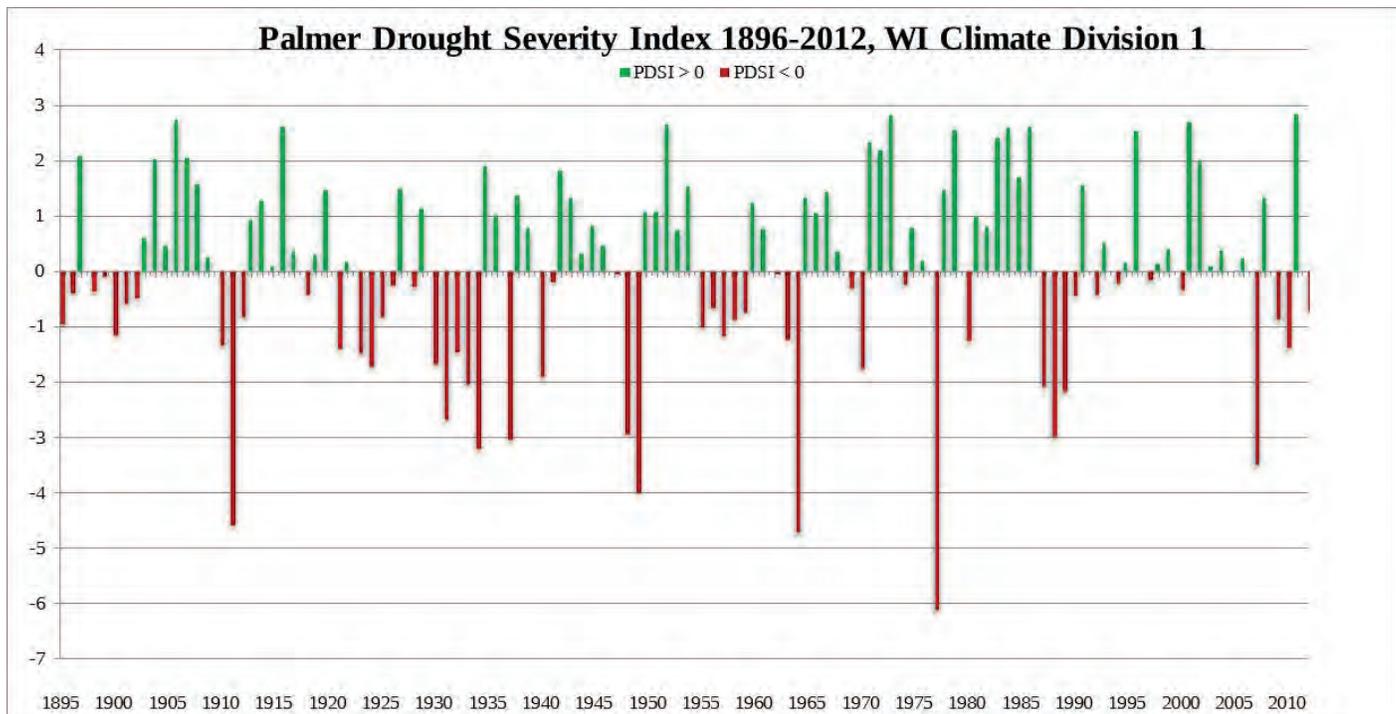
DROUGHT

Hazard Description

Drought is a normal periodic feature of climate, although many erroneously consider it a rare and random event. It occurs in virtually all climatic zones, but its characteristics vary significantly from one region to another. Drought is a temporary anomaly; it differs from aridity (desert conditions), which is restricted to low rainfall regions and is a permanent feature of climate. Droughts may be accompanied by extreme heat (in excess of 10°F above normal). Droughts in Wisconsin can be classified into two types, agricultural and hydrologic droughts. 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.

Hazard History

In 1976, drought conditions in Rusk County and much of Wisconsin were severe enough to warrant a presidential disaster declaration. Rusk County is located within Climate Division 1 in Wisconsin, an area that encompasses much of northwestern Wisconsin. According to the National Climate Data Center (NCDC), there were 5 periods of moderate drought (-2.0 - -2.99) and 4 periods of severe drought (-3.0 - -3.99) in Division 1 between 1895 and 2012. Extended moderate to severe droughts were recorded during the periods 1910-1911, 1930-1934, 1947-1949, 1962-1964, 1976-1977, 1987-1990 and 2008-2011.



Data Collected and Used

Data on past drought events in Rusk County was collected from the National Oceanic and Atmospheric Administration’s (NOAA) National Climatic Data Center. This data was used to support an evaluation of exposure and potential impacts associated with this hazard.



VULNERABILITY AND RISK ASSESSMENT

Area Affected

A typical drought event is likely to affect the entire county.

Magnitude

Varied. There is a significantly greater chance for a mild drought compared to extreme drought conditions. Between 1895 and 2012, the mean PDSI was 0.05, or near normal. For all years where the PDSI was negative, the average was -1.77, or mild drought conditions.

Duration

Between 1895 and 2012, there were 237 months where the PDSI was -2 (moderate drought) or lower. The duration of these events ranged from 2 to 25 months, with a mean of 7.9 months.

Frequency

Between 1895 and 2012, the longest drought-free period (continuous PDSI greater than 0) was 61 months. The average return interval is about 39.5 months for a drought of a magnitude -2 or lower (in 2 or more consecutive months). The return interval for severe droughts (-4 and lower for 2 or more consecutive months) is about 10.4 years.

Probability

The probability of drought occurring in Rusk County was estimated by using historical data. Climate Division 1 (northwestern Wisconsin) drought data was obtained from NOAA for the period 1895-2012. The percentage of months during the 118-year period with drought-range PDSI values is reflected in the table below.

PDSI	-0.5 to -1	-1 to -2	-2 to -3	-3 to -4	< -4
Months PDSI was within given range	138	178	137	60	51
Probability PDSI will be within given range during any month	9.7%	12.5%	9.6%	4.2%	3.6%

Potential Impacts	PDSI
Going into drought: short-term dryness slowing planting, growth of crops in pastures; fire risk above average. Coming out of drought: some lingering water deficits; pastures or crops not fully recovered	-1.0 to -1.9
Some damage to crops, pastures; high fire risk; streams, reservoirs, wells low, some water shortages developing or imminent, voluntary water restrictions	-2.0 to -2.9
Crop or pasture losses likely, very high fire risk, water shortages common, water restrictions imposed	-3.0 to -3.9
Major crop/pasture losses; extreme fire danger; widespread water shortages or restrictions	-4.0 to -4.9
Exceptional and widespread crop/pasture losses; exceptional fire risk, shortages of water in reservoirs, streams and wells creating water emergencies	-5.0 or less



Potential economic impact:

According to the USDA Census of Agriculture for Rusk County, the 2007 the market value of agricultural crops sold was \$6,308,000. Using the spring-fall drought of 2012 that impacted much of the central U.S. as a baseline, crop yields could be reduced by as much as half during a significant drought.

Population Affected

Drought conditions would impact the entire population of Rusk County.

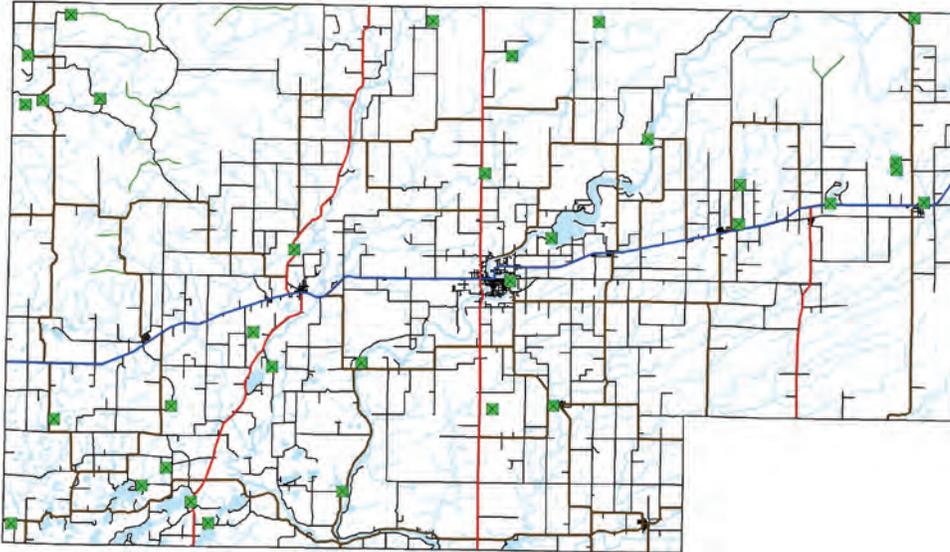
Critical Facilities and Infrastructure at Risk

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



DAM FAILURE

Hazard Description



Dams and levees are artificial barriers constructed across waterways for purposes of water control, storage or diversion. Floods resulting from dam/levee failure are usually associated with heavy precipitation, runoff from snowmelt, or flood conditions. The area immediately below the dam is at greatest risk, as flood discharges decrease as the flood wave moves downstream. Dam or levee failure could result from poor design or construction, operational mistakes and oversights, or the magnitude of

floodwaters could simply exceed the design capacity of the structure. Dam or levee failures pose threats to life and property in downstream areas. These structures can fail with little or no advance warning

Dam safety in Wisconsin is regulated under Chapter 31 of the Wisconsin State Statutes. These regulations provide the Department of Natural Resources with the authority to regulate operation, maintenance, construction, change of ownership and flow control of dams in the state which are not under federal jurisdiction. Dams under federal jurisdiction are those that are used to generate hydroelectric power. These structures are regulated by the Federal Energy Regulatory Agency (FERC).

Rusk County is dissected by two major regional river systems (Chippewa and Flambeau) and numerous tributary streams. While there are no dams on the Chippewa River within Rusk County, there are 4 large dams on the Flambeau River and an additional 33 dams located on tributary streams and drainage areas across the county. In the case of these large regional river systems, dam failures occurring well upstream of Rusk County could potentially impact citizens and communities within the county. Federal Energy Regulatory Commission (FERC) licensing requires identification of inundation areas in the event of a dam failure.

Hazard History

In October of 2011, the National Weather Service issued a flash flood warning for residents downstream of the Excel Energy Big Falls Hydro Dam near Ladysmith after a sink hole developed in an earthen embankment. The dam did not fail; however, this event clearly illustrates the potential for dam failure within Rusk County.

There are no known historical dam/levee failure events in Rusk County.



Table 32: Rusk County Dams

Official Name	Size	Hazard Rating	Type (Primary)	Stream	Owner
Washington Creek Wildlife Area	Large	L	Recreation	Washington Creek	DNR
Mikula, Henry L.	Small		Pond	Trib Deer Tail Creek	
Goose Lake	Small	L	Recreation	Outlet Goose Lake	PRIV
Blumer	Small		Recreation	Trib. Nail Creek	PRIV
Ten Mile Dam*			Other	Tenmile Creek	
Ladysmith	Large	L	Hydroelectric	Flambeau River	UTIL
Murphy (Old Dam)*			Other	Hemlock River	
Potato Lake Dam*			Fish Pond	Potato Creek	
Flambeau	Large	H	Hydroelectric	Flambeau River	UTIL
Hoyt Dam*			Other	Thornapple River	
Amacoy	Large	L	Flood Control	Trib. Chippewa	TOWN
Deertail Creek	Small			Deertail Cr	CO
Shamrock Lake (Lower)	Small	L	Irrigation	Outlet Shamrock Lake	CRAN
Thornapple	Large	L	Hydroelectric	Flambeau	UTIL
Upper Hemlock Dam*			Other	Hemlock Creek	
Campbell	Large	L	Pond	Trib. Main Creek	PRIV
Conrath Dam*			Other	Main Creek	
Kaiser And Fisher Flowage	Large	S	Recreation	Middle Fork Main Creek	PRIV
Shaw Dam*			Other	Thornapple River	
Gargulak, John	Small		Pond	Trib.-Pigeon Creek	
Middle Hemlock Dam*			Other	Hemlock Creek	
Sobieski	Small	L	Recreation	Skinner Creek	DNR
Arpin Sawmill Dam*			Other	Devils Creek	
Island Lake	Large	L	Recreation	Swift Creek	CO
Murphy	Large	L	Recreation	Hemlock Cr	CO
Blue Hills*	Large	L	Other	Trib. Big Weirgor	CO
Shamrock Lake	Large	L	Irrigation	Shamrock Creek	CRAN
Potato Lake	Small	L	Recreation	Potato Creek	CO
Tainter	Large	L	Recreation	Hemlock Creek	CO
Christman	Small	L	Fish Pond	Tributary To Amacoy Lake	PRIV
Big Falls	Large	H	Hydroelectric	Flambeau	UTIL
Pigeon Creek Flowage	Large	L	Recreation	Trib. Pigeon Creek	CO
Little Thornapple River	Large	L	Recreation	Little Thornapple	CO
Deertail Creek (old one)*			Recreation	Deertail Creek	
Hawkins	Small	S	Recreation	South Fork Main Creek	CO
Two Bear Lake	Small	L	Recreation	Outlet Two Bear Lake	PRIV
Sieja	Large	L	Pond	No Waterway	

* abandoned



Data Collected and Used

The primary source for dam information was the Wisconsin Department of Natural Resources, Dam Safety Program. Dam failure information (Chippewa Reservoir Dam and Big Falls Dam) was generated by Xcel Energy and was extracted from the Safety and Education section of their website (www.xcelenergy.com/).

VULNERABILITY AND RISK ASSESSMENT

Area Affected

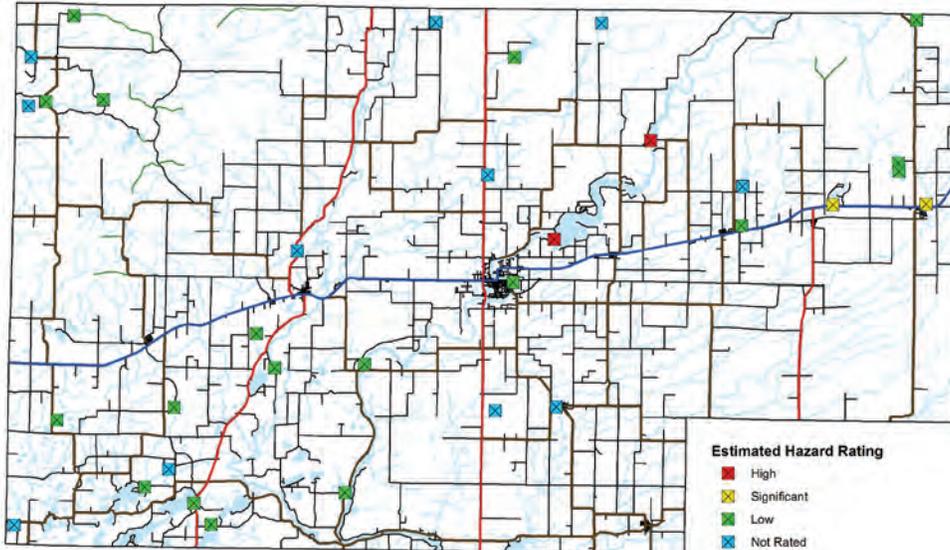
Downstream communities are most vulnerable to dam failure events.

Official Name	Distance (mi.)	Downstream Community
Kaiser And Fisher Flowage	1	Ingram
Christman	1.3	Village Of Bruce
Flambeau	3	Ladysmith
Deertail Creek	6	Tony
Potato Lake	6	Weyerhaeuser
Two Bear Lake	7	Weyerhauser
Big Falls	12	Ladysmith
Blumer	16	Bruce
Monson Flowage	23	Holcombe

Magnitude

The Wisconsin Dam Safety Program database contains an estimate of hazard to life and property downstream of dams, based on existing land use.

- H (High) would loss of life likely should dam fail
- S (Significant) significant property damage is likely
- L (Low) neither loss of life or property will occur

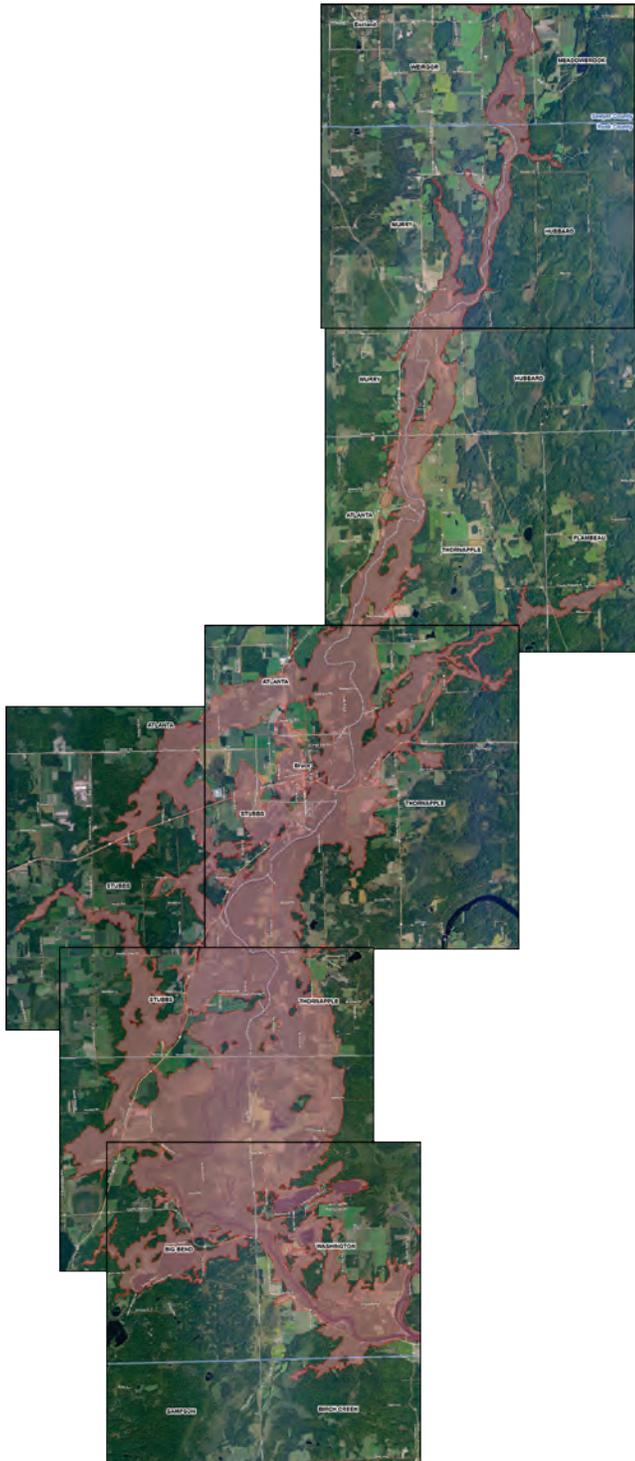


In Rusk County there are two dams which have an estimated hazard rating of *high*, Dairyland Dam and the Big Falls Hydro Dam. Both dams are located on the Flambeau River upstream of the City of Ladysmith. Failure of either would likely result in significant downstream inundation within populated areas. The Kaiser and Fisher Flowage Dam above Ingram and the Hawkins Dam are both estimated as *significant* hazards to downstream communities in the event of failure.



Graphic A

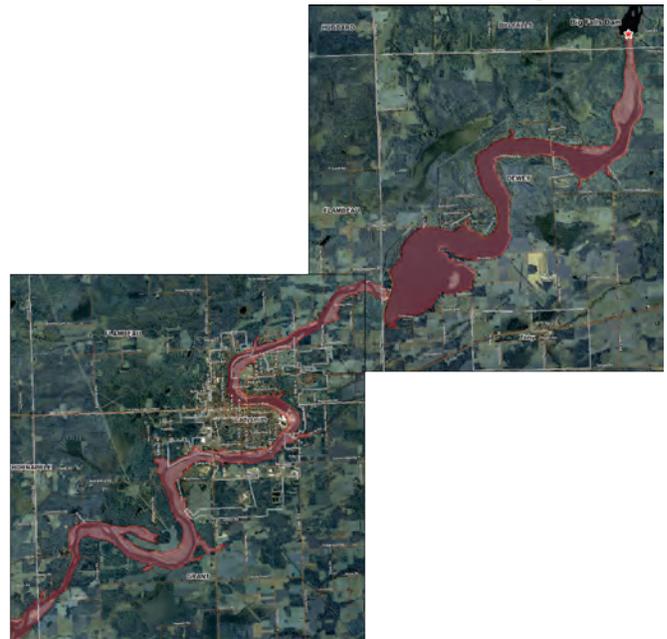
Chippewa River
Failure of Chippewa Reservoir Dam



The graphics, produced by Xcel Energy, depict key potential inundation areas within Rusk County in the event of dam failure events impacting the Chippewa and Flambeau River systems. Graphic A shows the potential inundation area in the event of a failure of the Chippewa Reservoir Dam (Sawyer County) while Graphic B depicts the potential inundation area in the event of failure of Big Falls Dam. If the Chippewa Reservoir Dam were to fail, downstream inundation would include much of the Village of Bruce and lands adjoining the river corridor. If the Big Falls dam were to fail, the core area of Ladysmith would likely be spared; however, riparian properties would likely be significantly impacted downstream of the dam.

Graphic B

Flambeau River
Failure of Big Falls Dam





Duration

Generally brief.

Frequency

Minor dam failures do occur periodically, however significant dam failures occur much less frequently. No reliable historical record of dam/levee failure exists for Rusk County.

Probability

The probability of dam/levee failure is unknown.

Potential economic impact:

If a dam in Rusk County were to fail, a flash flood would move quickly downstream, threatening life and property below the dam. The hydraulic energy released in a mass of water would be devastating to structures, roads, bridges and other infrastructure.

The potential economic impact of a dam failure is directly related to the level of downstream development. For example, a catastrophic failure of the Big Falls hydroelectric dam northeast of Ladysmith would result in a tremendous volume of water rushing downstream into the city. Because the affected area has a relatively high development density, losses would likely be significantly greater than if such a failure were to occur in a less densely developed area. There was insufficient information to generate a dollar estimate of potential losses resulting from dam and levee failure and dam failure analyses have not been completed for the majority of dams in Rusk County. Potential losses will be estimated as more information and technology becomes available.

Population Affected

Unknown

Critical Facilities and Infrastructure at Risk

Unknown



WILDFIRE

Hazard Description



A wildfire is a fire that burns uncontrollably in a natural setting. Wildfires are a part of the natural disturbance regime of forest ecosystems in Wisconsin. Some ecosystems, such as the jack pine communities of the Great Lakes states, depend on fire to promote forest regeneration. Wildfire is also one of the most destructive forces of nature that poses significant challenges for resource managers, firefighters and those residing in the wildland-urban interface.

Debris burning is the number one cause of wildfire in Wisconsin. In 2012, the outdoor burning of brush and debris caused more than 1/4th of all wildland fires in the state. Outdoor burning is regulated by the state, which authorizes these activities through the issuance of burning permits. Illegal burning and failure to follow the requirements of a burning permit is the cause of numerous wildfires in Wisconsin. Other human-related causes of wildfire include equipment use, deliberately set fires (incendiary), campfires, railroads, and smoking. Lightning is the primary natural cause of wildfire in the state.

Wildfires can occur at any time during the year. In Wisconsin, most wildfires occur during the spring months, with a peak during the month of May. Once snow disappears, warm sunny days with windy conditions dry out forest fuels, making them easy to ignite. The peak of the fire season usually lasts until green-up when photosynthesis resumes in forest vegetation.

Rusk County is located entirely within the intensive fire protection area of Wisconsin. The Wisconsin Department of Natural Resources has primary wildfire suppression responsibility in the intensive areas of the state.

Hazard History

Wisconsin averages 5,000 wildfires annually, consuming an average of 27,000 acres of land. While most wildfires in Wisconsin are generally small in area, large fires can and do occur. In fact, the largest and most devastating wildfire in U.S. history occurred in Wisconsin. In October of 1871, wildfire struck the Town of Peshtigo in northeastern Wisconsin killing 1,300-1,500 people.

Between 1982 and 2009 there were 979 wildfire occurrences reported in Rusk County (WDNR, 2013), or an average of 36.3 per year.

Data Collected and Used

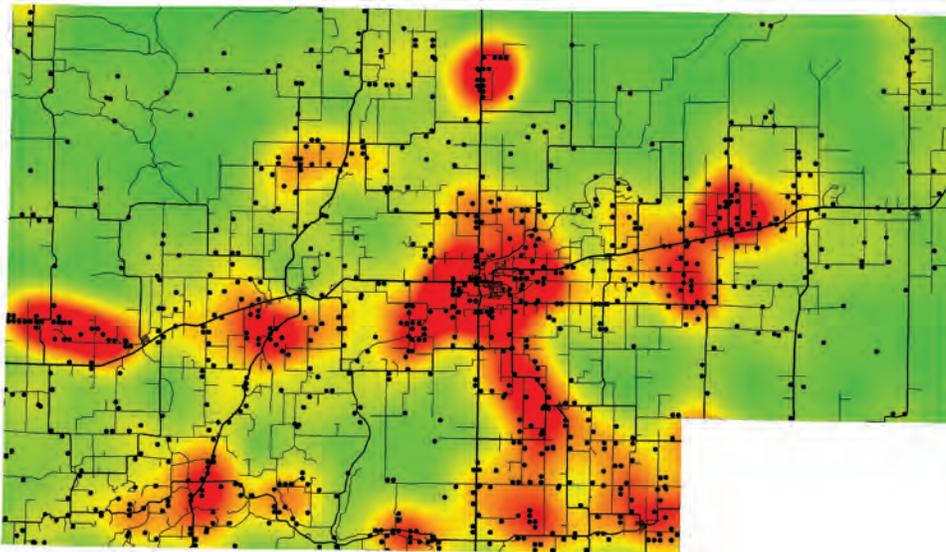
Wildfire occurrence information (1982-2009) was extracted from the Wisconsin Department of Natural Resources GIS dataset. Fire risk information was extracted the WDNR "communities at risk" GIS analysis and dataset.



Vulnerability and Risk Assessment

Area Affected

Wildfires in Rusk County generally affect areas of less than 3 acres. The largest wildfire reported in the years 1982-2009 was a 230-acre incident in the Town of True on April 24th 1989. The county faces its greatest wildfire risk in areas where the developed landscape meets the wildland environment. As depicted in the density plot graphic to the left, the highest number of wildfire events occur in close proximity to developed areas at the interface between human activities and wildland fuels, or the wildland-urban interface (WUI).

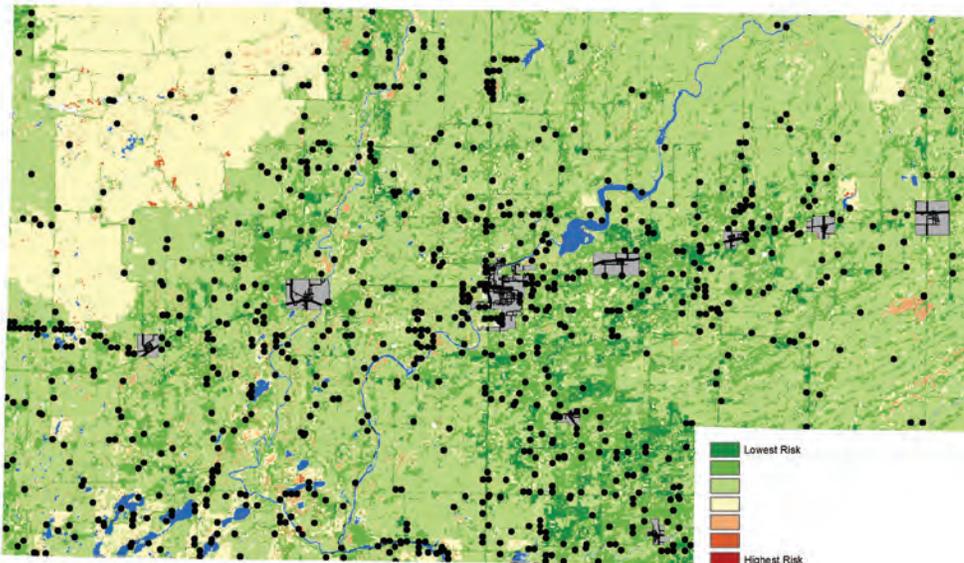


Magnitude

The physical setting, weather and condition of forest fuels will dictate the magnitude of a wildfire. In forests with accumulated fuels, fire can burn very intensely and spread rapidly, possibly spreading into the tops of the trees. Surface fires can migrate into the tops of the trees via ladder fuels resulting in a condition referred to as “crowning.” Crown fires are very difficult to control and threaten communities, infrastructure and resources. Most wildfires in Rusk County are low-intensity, small-scale events, averaging 2.68 acres in size.

Duration

In the absence of suppressive action by man, and given favorable weather and topographic conditions, a wildfire will burn until its fuel source is exhausted. In the pre-suppression era, fire duration was generally much longer than it is today.



Frequency

Rusk County can expect to experience about 36 wildfire events annually. These events are most likely to occur during the spring months, with the peak of the fire season in May.



Probability

Between 1982 and 2009 there were 979 wildfire occurrences reported in Rusk County (WDNR, 2013), or an average of 36.3 per year. The likelihood of a wildfire occurring somewhere in the county in any given year is very high, nearly 100%.

Potential economic impact

No historical record of structural damage or loss attributable to wildfire exists for Rusk County. Without this information, it is impossible to accurately estimate potential future losses. The magnitude of a wildfire event will greatly influence its economic impact. For purposes of this analysis, it is assumed that all development in wildland areas is subject to some level of risk, consequently the total value at-risk is likely to exceed \$1 billion, countywide. It should be noted that the vast majority of wildfires in Rusk County are small and have a very minor economic impact. The greatest concern relative to property damage is within the wildland-urban or WUI. WUI is where homes and other human development meets or intermingles with wildland vegetation. Within the interface areas of Rusk County there are an estimated 3,079 single family and seasonal homes. Considering a median home value of \$110,200, the total estimated value within the WUI is \$339,305,800.

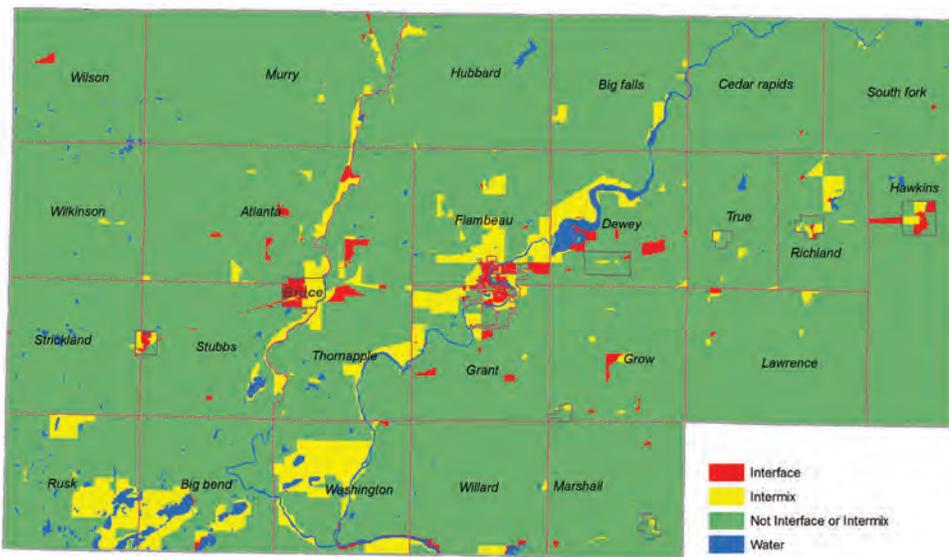
The forest products industry is a significant component of the county economy. Forest and wood products is the single largest industry group in Rusk County, providing jobs for 1,032 county residents (EMSI, 2013). A catastrophic wildfire would likely result in some economic losses in the forest products sector.

Population affected

The population at greatest risk from wildland fire residents living within the wildland-urban interface. The total estimated population within the wildland-urban interface is 8,830.

Critical facilities and infrastructure at risk

Critical facilities and infrastructure share a risk equal to that of other forms of development.





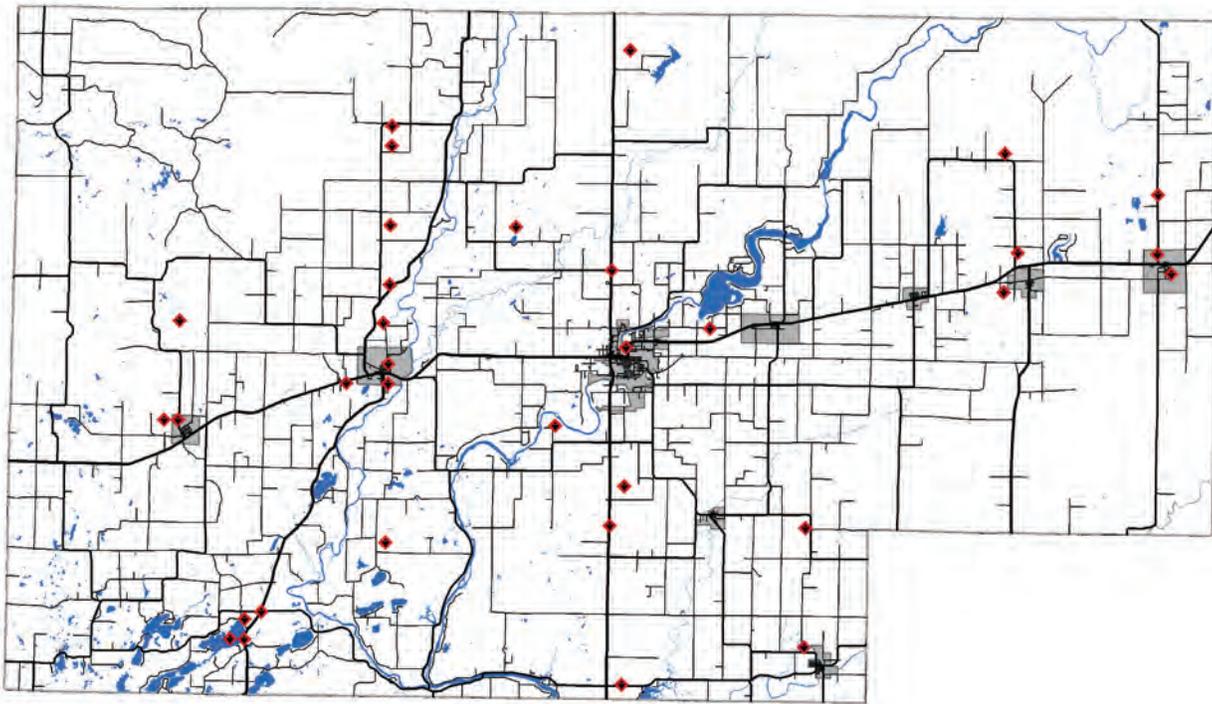
HAIL

Hazard Description

A hailstorm is a weather condition where atmospheric water particles form into rounded or irregular masses of ice that fall to earth. Hail events usually occur in association with strong and severe thunderstorms, and can cause widespread damage. Nearly 1/5th of all severe weather events in Wisconsin are hail events in which the hailstones are ¾” in diameter and greater. Significant hailstorms, or those with hailstones 1.5” in diameter and greater, are rare in Wisconsin, but do occasionally occur.

The primary impacts of hailstorms are property and crop damage, but injuries and even death can occur. In the northwoods, hail can be particularly devastating to trees by bringing down branches, stripping leaves and damaging buds. Any given location in the state is subjected to about three days with hail per year, with most events occurring between April and August.

Hazard History



Between 1964 and 2011, there were 61 hail events recorded for Rusk County in the National Climate Data Center Database. This record is likely incomplete as a disproportionate number of occurrences is recorded for 1990-2011 (56 occurrences) compared to 1964-1987 (5 occurrences).

Data Collected and Used

Historical hail occurrence data was obtained through the National Climate Data Center (NCDC) online database and other digital historical records. Hail occurrence probabilities were obtained through the NOAA Storm Prediction Center, Severe Storms Laboratory.



VULNERABILITY AND RISK ASSESSMENT

Area Affected

Hail susceptibility is equal across all areas of the county. Hail is generally associated with severe thunderstorms, which average about 6-10 miles in diameter.

Magnitude

Magnitude is dependent upon storm duration and the size of hailstones. Recorded hailstorms between 1964 and 2011 produced stones up to 3 inches in diameter but averaged about 1.1 inches. The National Weather Service minimum size hail criterion for severe thunderstorms is 1 inch in diameter.

Duration

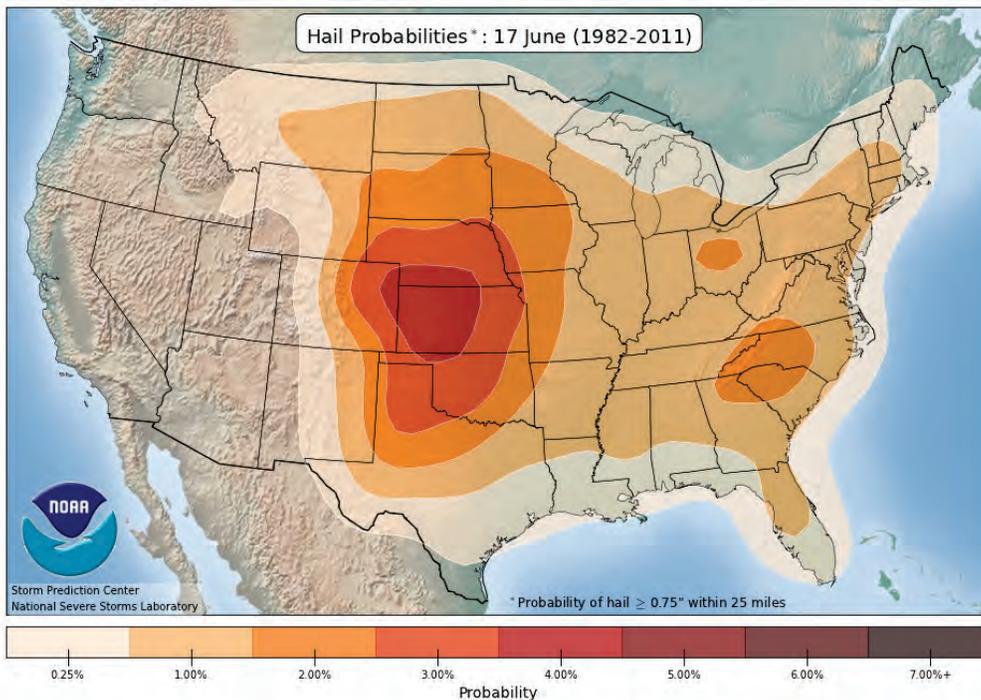
Hailstorms can range from short-lived to extended, depending upon the size of thunderstorm clouds present in the area. On average, most hail producing areas of a thunderstorm are one-half mile wide and five miles long, with the event lasting a few minutes.

Frequency

On average, Rusk County experiences about 4 significant hail event occurrences per year.

Probability

Hail probability peaks in mid to late June in Wisconsin. From June 17 -24th, there is roughly a 1-2 percent chance of ¾ inch diameter hail in Rusk County. The daily probability of significant hail (2" diameter and greater) is roughly between 0.05 and 0.10 percent during the peak hail period.



Potential economic impact:

In general, all crops, forests, buildings and vehicles in Rusk County are vulnerable, to some extent, to hail damage. Damage resulting from a hailstorm depends greatly on the location of the storm and the time of day the storm occurs (garaged vehicles vs. exposed). As these variables are nearly impossible to predict, and in the absence of historical data, future economic losses due to hail are difficult to assess. There were no historical hail events indicated that associated losses in Rusk County. Based on a lack of recorded property damage, it can be assumed that most hail events occurring in Rusk County are minor, resulting in less than \$200,000 in property



damage. A severe hail event poses much more of a risk to the populated communities than to the outlying rural areas. If a storm were to occur in the City of Ladysmith, damages would likely be significantly higher than if the same event were to occur in a low-density rural area.

Population Affected

The risk posed by hail is shared equally among all of Rusk County’s 14,755 residents. No deaths or injuries were reported for Rusk County between 1964 and 2011.

Critical Facilities and Infrastructure at Risk

Critical facilities, essential community infrastructure and government service delivery would likely not be compromised due to a significant hail event.



FOREST HEALTH

Hazard Description

Forests are critical economic resources to Rusk County, not only for the production of forest products, but recreation and tourism as well. The health of forestlands greatly affects their economic potential and viability.

How important are forests to Rusk County?

In 2011, there were 113 (EMSI, 2013) people employed in the forest, conservation and logging industry in Rusk County. Secondary forestry-related industries such as wood products manufacturing and paper manufacturing are key sectors of the local economy, employing 814 (EMSI, 2013) people in 2011.

Rusk County Forest Statistics

- Total Forested Acreage in 2012 **(391,537)**
- Total Acreage in County Forest Program in 2012 **(89,006)**
- Total Volume of growing stock in 2012 **(429.9 million cubic feet)**
- Number of Primary Forest Products Companies **(6)**
- Number of Secondary Forest Products Companies **(1)**

Threats to forest health include a wide range of both natural and human-introduced threats including disease, insects, weather damage and exotic species.

Insect Threats

Forest tent caterpillar
 Gypsy moth*
 Emerald ash borer*
 Spruce budworm
 Linden looper*
 Basswood thrips*

Potentially Affected Species

Sugar Maple, Aspen
 Oak, Aspen
 Ash
 Spruce, Balsam fir
 Red & White Oak, Maple, Elm
 American Basswood

Disease Threats

Oak wilt

Black, Bur, Pin, Red & White Oak

Weather Threats

Hail
 Wind
 Drought

All species
 All species
 All species

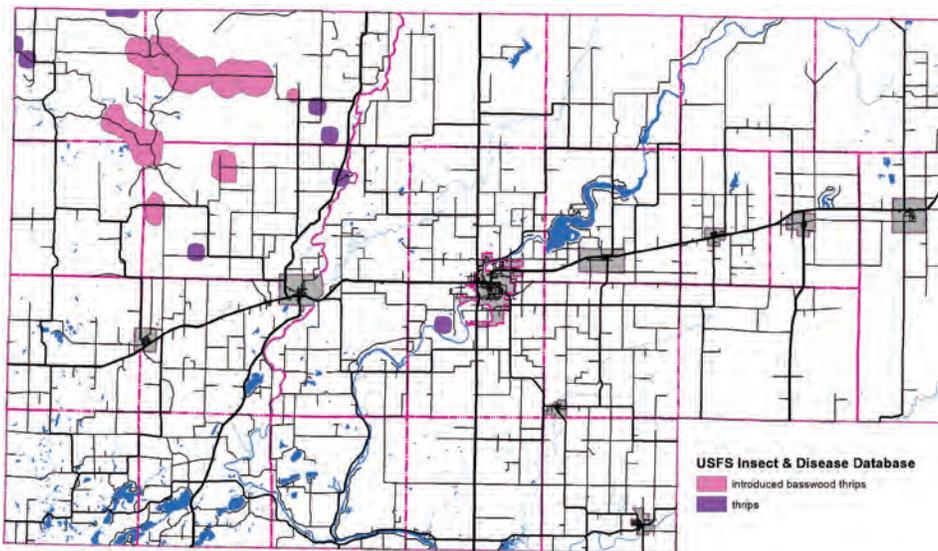
*-Exotic species



Hazard History

Comprehensive historical hazard data related to forest health in Rusk County has not been collected by federal, state or county resource management agencies.

Historical Events



The map to the left shows insect and disease outbreaks within the county between 2008 and 2012 (2013 USFS, Insect and Disease Detection Survey). This data is not complete, as only portions of the county were surveyed in specific years for some of the documented hazards. This information is incomplete, as many areas of the county have not been surveyed.

VULNERABILITY AND RISK ASSESSMENT

Area Affected

The area adversely affected by insects, diseases and other disturbances is highly variable. Forest diseases may, over a period of time, impact the species across the entire county, as in the case of Dutch elm disease. Forest tent caterpillar infestations can be widespread, covering large areas of the county. The impacts of weather and fire-related forest disturbances are also highly variable, depending on the nature of the event(s).

Magnitude

Disturbance events vary greatly in magnitude. Factors which influence the magnitude of forest disturbances include the nature of the disturbance, timing of the disturbance and environmental factors.

Duration & Frequency

The duration of forest disturbance is difficult to assess. Regional Forest tent caterpillar infestations occur in cyclic 10-15 year intervals, with outbreaks lasting of 2 to 5 years. Gypsy moth outbreaks occur (in infected areas) in regular intervals every 10 to 12 years, with the first outbreak lasting from 3 to 15 years. Detailed information on the biology and ecology of the Emerald ash borer is still limited. Spruce budworm infestations occur in intervals of 30-40 years, with outbreaks lasting from 5 to 15 years. Basswood thrips has been active in the Great Lakes region since the early 1980's when it was first identified as a pest. The initial thrips outbreak in the region lasted through the 1980's. Linden looper outbreaks are very localized and last 3 to 4 years, with a cyclic frequency of 10-20 years. Weather and related forest disturbances occur nearly annually in Rusk County.



Probability

The probability of a forest health-related disturbance occurring within any given year is very high. Invasive species are well established in areas of Rusk County. While difficult to quantify monetarily, invasive species are likely having a negative impact on resource productivity and ecosystem health in Rusk County.

Potential economic impact

In 2010, the value of timber sales on county and state forestlands in Rusk County was \$1.1 million. Forest-related industries contribute millions of dollars to the economy of Rusk County. In addition to direct payroll, each dollar in salary paid in forestry, logging and the manufacturing of wood products and paper manufacturing creates additional payroll expenses throughout the economy.

Population affected

Forest health issues will not directly impact individuals. Forest health concerns have the potential to impact forest overall productivity resulting in economic losses, employment impacts, and/or impacts on forest recreation and tourism. In addition, the increased fuel load resulting from a disease or pest outbreak may increase the risk of wildfire.

Critical facilities and infrastructure at risk

None



ICE STORMS

Hazard Description

An ice storm occurs when rain, falling out of the warm and moist upper layers of the atmosphere, comes into contact with a cold and dry layer near the ground. The rain freezes on contact with the ground and accumulates on exposed surfaces. A half-inch of rain freezing on trees and utility wires can cause extensive damage, especially if accompanied by high winds. In contrast, a sleet storm involves frozen raindrops of pellets, which do not cling to surfaces. An accumulation of these pellets can make driving hazardous.

Hazard History

The NCDC storm events database lists 2 ice storm events affecting Rusk County between 1996 and 2012. Of the events which were recorded, no damage or personal injuries were reported. The greatest impact of these events appears to have been travel, as the icy conditions caused traffic delays and forced school closures.

Description	Date	Time	Deaths	Injuries	Property Damage	Crop Damage
Ice Storm	1/17/1996	9:00 PM	0	0	0	0
Ice Storm	1/4/1998	5:00 PM	0	0	0	0
TOTALS					\$ 0	\$ 0

Source: National Climate Data Center

VULNERABILITY AND RISK ASSESSMENT

Area Affected

Severe winter storms tend to be regional in nature; thus, all of Rusk County is likely to be affected by an ice storm event.

Magnitude

Ice storms are one of the most devastating and debilitating of all winter weather phenomena. The magnitude of ice storms is a function of total ice accumulation, the size and location of the affected area and duration of the storm. Historical events typically produced ¼ to ½ of an inch of ice.

Duration

The historical average duration of ice storm events in Rusk County is about 9 hours.

Frequency

Between 1996 and 1998, Rusk County experienced 2 ice storm events, or roughly 1 event every 2 years.

Probability

The annual probability of an ice storm event is about 50%, or a 1 in 2 chance of occurrence anywhere in Rusk County.

Potential economic impact

There is insufficient data available to assess economic impacts of ice storms on a countywide or local jurisdictional basis.



Ice storms can have major economic impacts, depending upon the location, ice accumulation and storm duration. Some of the potential economic impacts from ice storms include:

Forestry & Agriculture Impacts

- Loss of timber production
- Loss of livestock due to exposure
- Costs associated with damage to machinery and facilities

Residential & Commercial Impacts

- Lack of water for municipal use due to frozen or burst lines
- Damage to homes, businesses and vehicles from falling tree limbs
- Revenue loss from lost production or business closure

Health Costs

- Costs associated with injuries from traffic accidents
- Costs associated with pedestrian injuries (slipping on icy surfaces)

Government Service Impacts

- Costs to remove ice roads and bridges
- Costs to repair damaged infrastructure
- Power disruption

Population affected

Ice storms affect the entire population of Rusk County, equally.

Critical Facilities and Infrastructure at Risk

Risks to critical facilities are similar to those posed to other development. Ice storms can cause significant impacts to infrastructure, particularly power and other utility lines, which may collapse as a result of ice build-up or falling trees. Even minor ice storms can cause power disruption. Severe events may result in significant damage to lines causing extended black-out periods. Roadways would also be negatively impacted due to ice build-up. Minor events may result in hazardous driving conditions and traffic accidents, while severe events may make travel impossible.



EXTREME TEMPERATURES

Hazard Description

Rusk County’s mid-latitude setting results in a high variability in annual temperature and is characterized by relatively short, warm summers and long, cold winters. Within Rusk County both high and low temperatures outside of the normal range of variability can and do occur. These temperature extremes can last for extended periods, and can pose as health risks to the general population. Perhaps most notable are periods of excessive cold experienced during the winter months.

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

During the summer months, strong high pressure ridges may allow excessive heat to build over the region. These warm periods, referred to as heat waves, typically occur during the months of June through August. When extreme heat is combined with high humidity, dangerous conditions can result. Like extreme cold, excessive heat also poses a risk to human health, particularly to the young, elderly, and those with health problems. The most common risks from excessive heat include: heatstroke/sunstroke, heat cramps, and heat exhaustion. The problems associated with excessive heat can be exacerbated by power outages resulting from the high electric consumption for air conditioning.

Hazard History

There were 18 extreme temperature-related events listed for Rusk County in the NCDC Storm Events Database. Of those events, 8 were cold-related, and 10 were related to excessive warmth. Rusk County extreme temperature events are depicted in **Table 33**.

Table 33: Rusk County Extreme Temperatures

Description	Begin Date	Duration	Deaths	Injuries	Property Damage	Crop Damage	Magnitude
Heat Wave	6/14/1994	9 Days	0	0	0	0	90-100°F
Extreme Heat	6/17/1995	10 Days	9*	0	0	0	98-104°F
Extreme Heat	7/13/1995	2 Days	57*	0	0	0	100-109°F, DP 70s-80s
Record Warmth	10/12/1995	1 Day	0	0	0	0	Unseasonable warmth, 80+°F
Excessive Heat	7/23/1999	2 Days	0	0	0	0	90-100°F
Excessive Heat	7/29/1999	1 Day	0	0	0	0	90-100°F
Excessive Heat	7/31/2001	1 Day	0	0	0	0	90+°F
Excessive Heat	8/1/2001	1 Day	0	0	0	0	Dewpoints 70-80s
Excessive Heat	8/4/2001	4 Days	0	0	0	0	90-95°F
Heat	7/31/2006	1 Day	0	0	0	0	100°F
Excessive	6/14/1994	2 Days	0	0	0	0	108-116°F



Heat							
Cold	1/13/1994	7 Days	0	0	0	0	-50°F, WC -80°F
Cold	2/10/1995	1 Day	0	0	0	0	-25°F, WC -50 to -70°F
Extreme Cold	1/31/1996	1 Day	0	0	0	0	-35°F
Extreme Cold	2/1/1996	3 Days	0	0	0	0	-35°F
Extreme Windchill	1/15/1997	1 Day	0	0	0	0	WC -40 to -60°F
Cold/Wind Chill	2/10/2008	1 Day	0	0	0	0	-15°F, WC -35 to -40°F
Cold/Wind Chill	2/19/2008	1 Day	0	0	0	0	-15°F, WC -25 to -40°F
Cold/Wind Chill	1/15/2009	1 Day	0	0	0	0	WC -35 to -42°F
TOTALS					\$ 0	\$ 0	
Source: National Climate Data Center * Total across multi-county northern region WC= Wind chill							

VULNERABILITY AND RISK ASSESSMENT

Area Affected

Extreme temperatures are likely to affect large areas. In all likelihood, an extreme temperature event would affect all of Rusk County simultaneously.

Magnitude

Extreme temperatures can take the form of extreme heat or extreme cold, with extreme heat being a more common occurrence in Rusk County. Temperatures that climb to 10-15 degrees or more above the average high temperature for the region and last for extended periods of time are considered high temperature extreme events. The National Weather Service issues **Excessive Heat Outlooks** when the potential exists for an excessive heat event in the next 3-7 days. An Outlook provides information to those who need considerable lead time to prepare for the event, such as public utility staff, emergency managers and public health officials. An **Excessive Heat Watch** is issued when conditions are favorable for an excessive heat event in the next 24 to 72 hours. A Watch is used when the risk of a heat wave has increased but its occurrence and timing is still uncertain. A Watch provides enough lead time so that those who need to prepare can do so, such as cities officials who have excessive heat event mitigation plans. **Excessive Heat Warning/Advisories** are issued when an excessive heat event is expected in the next 36 hours. These products are issued when an excessive heat event is occurring, is imminent, or has a very high probability of occurring. The warning is used for conditions posing a threat to life. An advisory is for less serious conditions that cause significant discomfort or inconvenience and, if caution is not taken, could lead to a threat to life.

NWS ran an experimental **Extreme Cold Warning** in 2011, which was replaced in the winter of 2011-12 with the previously used **Wind Chill Watch/Warning** product. The National Weather Service (NWS) issues a **Wind Chill Watch** when conditions are favorable for wind chill temperatures to meet or exceed local wind chill watch criteria (wind chill of -25°F or below) in the next 24 to 72 hours. A **Wind Chill Warning** is issued when wind chill temperatures are expected to meet or exceed local wind chill warning criteria (wind chill of -35°F or below) in the next 12 to 36 hours. Typical extreme cold events in Rusk County include temperatures below -15 and wind chills of -35 or below.



Duration

Extreme hot or cold periods can last from a day to, in extreme cases, a week or longer. The average duration of extreme heat events in Rusk County is 3 days, while the average duration of extreme cold events is about 2 days.

Frequency

Historical data suggests that, in general, Rusk County will experience an extreme heat event once every 1.2 years and an extreme cold event about once in every 1.9 years.

Probability

The annual probability of an extreme heat event in Rusk County is about 83 percent, while the probability of an extreme cold event in any given year is about 53 percent.

Potential economic impact

There is insufficient data available to assess economic impacts of extreme temperatures on a countywide or local jurisdictional basis. Extreme temperatures have the potential negatively impact to business and individuals. Business closure due to extreme temperature events is unlikely. The most notable cost associated with extreme temperature events would be the increased costs of heating or cooling. While no specific data is available to estimate potential heating or cooling costs, it is assumed that, based on increases in heating or cooling degree days, energy use costs could easily double during these extreme temperature events.

Population affected

There is insufficient data available to assess population impacts of extreme temperatures on a countywide or local jurisdictional basis. Extreme temperature events will likely affect the entire population of Rusk County. The most susceptible portion of the population would include young children, the elderly and those who work outdoors.

Critical Facilities and Infrastructure at Risk

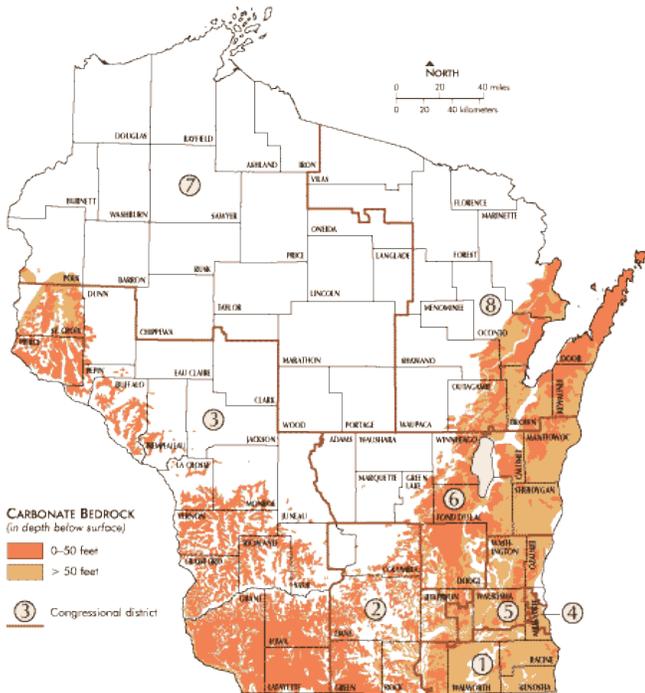
While critical facilities are unlikely to be affected to a great degree, public infrastructure could be damaged due to the severe weather conditions. Extreme heat or cold events could tax local utilities, especially the electric service industry. As demand increases, energy usage could exceed available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



CAVING/SUBSIDENCE

Hazard Description

Natural subsidence is predominantly associated with karst terrain, or terrain with distinctive characteristics of relief and drainage resulting from the dissolution of soluble rocks such as limestone and dolomite. As subsurface rock dissolves in groundwater, sinkholes can form as the consolidated surface materials collapse into the unstable voids. In Rusk County, natural subsidence is unlikely as the county is underlain by igneous and metamorphic rock types such as granite, quartzite and slate.



Landslides are geologic hazards which have the potential to cause significant damage and loss of life. These hazards are characterized by the sudden downhill movement of soil, mud and rock caused when stresses placed on the slope exceed the slope’s strength. Landslides can be triggered once slope material becomes saturated from precipitation or rapid snowmelt. Landslides can also be caused by erosion, and the undercutting of cliffs and banks by waves or rivers. Human activities can also trigger landslides and influence their severity. Activities such as grading for construction and roads, mining, alteration of natural drainage patterns and vegetation removal can greatly contribute to landslide potential.

Hazard History

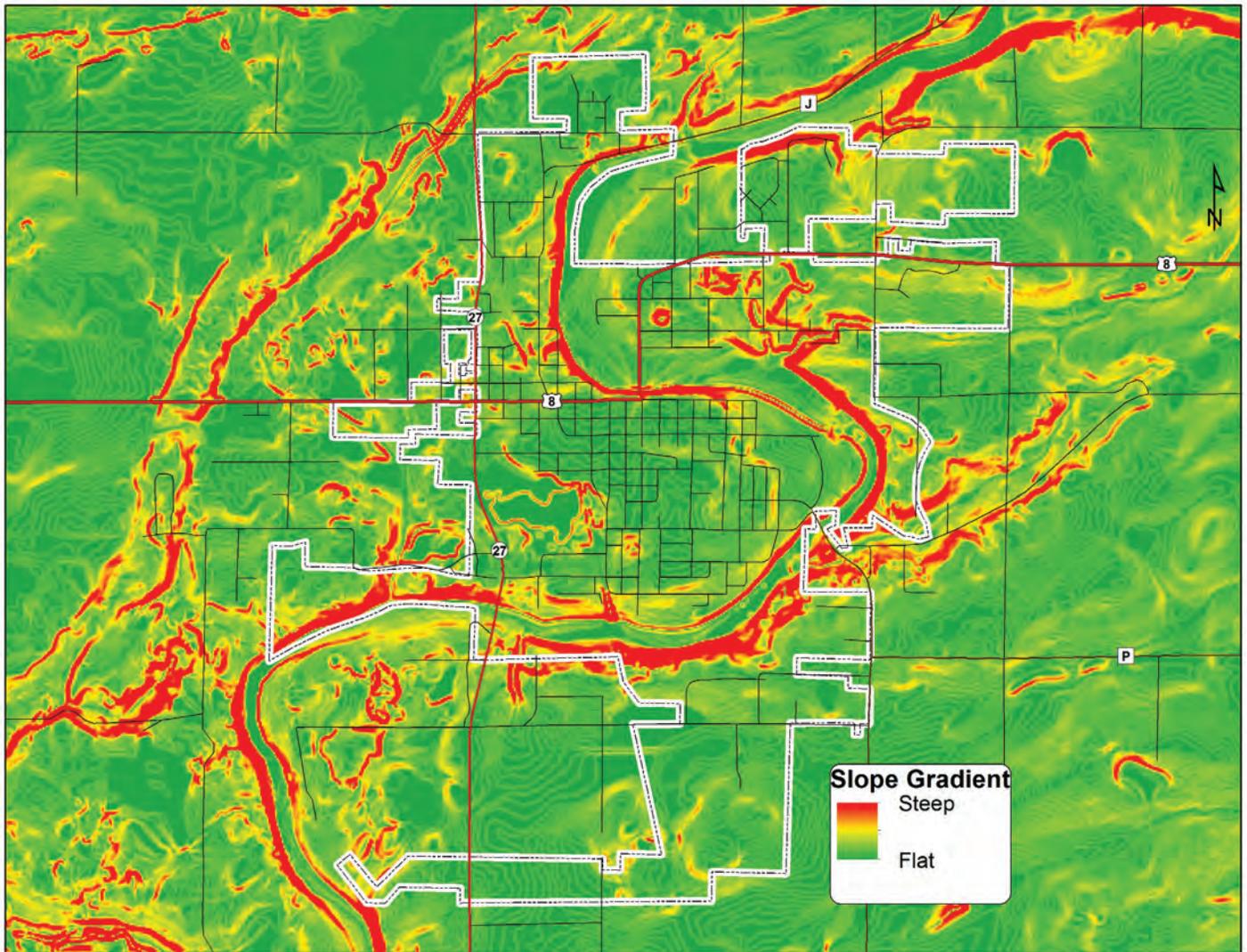
There is no historical record of significant caving/subsidence events in Rusk County.

VULNERABILITY AND RISK ASSESSMENT

Area Affected

Unknown. *There is insufficient data available to accurately predict the areas affected by caving/subsidence incidents on a countywide or local jurisdictional basis.*

One of the variables contributing to localized vulnerability to caving/subsidence is slope angle. This is shown for the City of Ladysmith in the graphic below. In general terms, the highest risk areas based on the slope angle variable are those lands adjacent to the Flambeau River.



Magnitude

Unknown. *There is insufficient data available to assess the magnitude of caving/subsidence incidents on a countywide or local jurisdictional basis.*

Duration

Land subsidence or ground settling as result of underground mining can occur over a period of several years.

Frequency

Unknown

Probability

There is insufficient data to determine the probability of a caving/subsidence event occurring in Rusk County. As additional data becomes available, the county will attempt to further assess this hazard and integrate findings into future hazard mitigation plan updates. According to the USGS's Landslide Overview Map of the Conterminous United States, the probability of landslide occurrence within the county is very low.



Potential economic impact

Unknown. *There is insufficient data available to assess the potential economic impacts of caving/subsidence incidents on a countywide or local jurisdictional basis*

Population affected

Unknown. *There is insufficient data available to assess the population impacts of caving/subsidence incidents on a countywide or local jurisdictional basis*

Critical facilities and infrastructure at risk

Unknown. *There is insufficient data available to assess the critical facilities or infrastructure at risk from caving/subsidence incidents on a countywide or local jurisdictional basis*



MANMADE/TECHNOLOGICAL HAZARDS

ENERGY EMERGENCIES

Hazard Description

Energy emergencies include short-term shortages of electricity, heating oil or gasoline. Shortages in petroleum-derived fuels may result from economic or political issues, oil embargos, terrorism, or breakdowns in the processing/supply/distribution system. Electrical energy shortages may result from natural causes, such as severe storms and solar anomalies. The electrical energy supply may also be disrupted during periods of peak usage.

Energy disruption may have both economic and human health consequences. Extended disruptions would certainly impact local government and businesses that rely on energy to conduct business and commerce. Some residents would be unable to heat or cool their homes, resulting in a potentially dangerous situation for those who are home-bound, children and the elderly.

The increasing cost of energy is also a concern. If energy prices were to increase beyond the consumer's ability to pay for it, the situation is essentially the same as a supply disruption. In light of the current global energy situation, political instability and current market trends, the cost factor is certainly of the utmost concern.

Hazard History

Electricity

Short-term electrical disruptions occur infrequently in Rusk County as a result of natural weather events. Most power outages are short-term, lasting less than 24 hours, and the effects are generally localized. Occasional major weather events such as floods and ice storms can result in power disruption which lasts from days to a week or more.

Oil and Gasoline

The supply of petroleum-derived fuels and heating oil has historically been relatively stable, save the Arab oil embargo of 1973-74 and Iranian oil embargo of 1979. During these periods, gasoline was in short supply nationwide, resulting in rationing and long lines at filling stations.

In the summer of 2012, Wisconsin Governor Scott Walker declared an energy emergency for 7 counties in northeastern Wisconsin following the shutdown of a major fuel pipeline between Green Bay and Chicago. While this event didn't directly impact Rusk County, it does demonstrate that rural populations are susceptible to this hazard.

Natural Gas

While there have been no documented natural gas energy emergencies in Rusk County, there is cause for concern as 71.3 percent of Rusk County households use natural gas, LP or fuel oil as their primary heating source. This critical dependence leaves the county vulnerable to shortages and price spikes.

VULNERABILITY AND RISK ASSESSMENT

Area Affected

A national oil crisis, similar to those experienced during the 1970's would affect all of Rusk County. A major



fuel crisis may develop in the future as a result of geopolitical issues, war, terrorism, or a decline in global oil supplies. Current instability in the oil market, international tension and concerns related the future availability of oil play into the complex global energy equation. Minor weather-related disruptions in electrical energy supply are fairly common, and tend to affect localized areas. Isolated power outages resulting from high winds, falling trees, ice storms, flooding or lightning occur within the county nearly year. The affected area may include an entire Town, or more, or may only affect a few customers.

Magnitude

Magnitude depends on the location, nature and length of the emergency.

Duration

An oil crisis may impact the county for an extended period of time. Oil supply problems resulting from geopolitical issues, war or terrorism may last for years. A crisis resulting from the declining availability of oil could reasonably be expected to last until alternative viable energy sources are exploited. Energy emergencies resulting from electrical supply disruption are generally short term, lasting from a few hours to a few days. The 2012 energy emergency declaration in northeastern Wisconsin was in place for 10 days.

Frequency

The county can expect to experience some degree of electrical supply disruption nearly every year. Current trends in the oil/gas market related to supply/demand and geopolitical tension could result in an oil crisis in the foreseeable future. Oil refinery maintenance or shutdowns due to accidents, weather, etc. could have notable impacts on market fuel Rusks. The refinery shutdowns in the Midwest during the late spring of 2013 caused immediate gasoline price spikes across the north-central US, including Rusk County. It is possible that these regional price spikes will become increasingly more frequent without significant investment in the nation's refining capacity and distribution networks.

Probability

The probability of a short-term energy supply disruption is high. Current global oil and gas supplies are dwindling and becoming increasingly expensive. In this regard, it can be assumed that in the absence of viable alternative energy supplies that an oil and gas crisis is probable in the future.

Potential economic impact

An extended energy emergency could have severe economic consequences. High gasoline costs could make automobile travel difficult. Costs for basic necessities such as food and clothing would also escalate as a result of the higher production and transportation costs. As a result of the high energy costs, the public would likely turn to local natural resources.

Population affected

An oil crisis may affect the entire population of Rusk County, whereas an electrical supply disruption may only impact a few customers.

Critical facilities and infrastructure at risk

High energy costs or lack of a reliable energy supply would likely impact the ability of local government to provide basic services to citizens.



HAZARDOUS MATERIALS INCIDENTS

Hazard Description

According to the Federal Code of Regulations (49 CFR 171.8), a hazardous material is, "a substance or material, which has been determined by the Secretary of Transportation to be capable of posing an unreasonable risk to health, safety, and property when transported in commerce." These materials include various forms of flammable, combustible, poisonous and radioactive substances. Hazardous materials represent a public health and safety threat if they are unintentionally released due to transportation or chemical facility accident.

Hazardous materials incidents typically occur as either fixed facility incidents or transportation incidents. The principal difference being that it is reasonably possible to identify and prepare for a fixed facility incident, because laws require those facilities to notify state and local authorities about what is being used or produced at the facility. Transportation incidents are more difficult to prepare for because the transport of hazardous materials, while regulated, is not actively monitored. This make is very difficult to determine what material(s) could be involved until the accident actually occurs.

Hazard History

According to the Wisconsin Department of Natural Resources Bureau for Remediation and Redevelopment Tracking System (BRRTS) database, there have been 176 hazardous materials incidents within the county since 1979. Rusk County hazardous materials incidents are depicted in **Table 34**.

Table 34: Rusk County Hazardous Materials Incidents

Date	Material	Cause	Amount
1980-12-29	Soil Contamination	Spill from truck	
1981-07-05	Soil Contamination	Train derailment	
1981-11-16	Petroleum - Unknown Type	Faulty valve	1 gal
1981-12-25	Soil Contamination	Hit & run accident	
1982-01-26	Soil Contamination	Vandalism	
1982-06-22	Soil Contamination	Unknown	
1982-06-22	Soil Contamination	Broken gas hose	
1982-07-28	Soil Contamination	Airplane crash	
1983-05-14	Soil Contamination	Rupture on plant sewer	
1983-10-04	Soil Contamination	Pipe leak	
1983-11-02	Soil Contamination	Brake failure - delivery truck	
1984-01-04	Groundwater Contamination	Leak in bulk storage tank	
1984-03-22	Soil Contamination	Vehicle struck power pole	
1984-04-18	Contained/Recovered	Auto shut off malfunction	
1984-04-18	Soil Contamination	Unknown	
1984-05-20	Polychlorinated Biphenyl	Broken transformer	1 gal
1984-06-29	Soil Contamination	Truck jack-knifed	



Rusk County Hazard Mitigation Plan

1984-07-18	Soil Contamination	Emergency aircraft landing	
1984-08-22		Vehicle tank overflow	
1984-08-25	Soil Contamination	Traffic accident	
1984-08-31	Soil Contamination	Improper tank cleaning	
1984-10-22	Surface Water Contamination	Vehicle accident	
1985-07-09	Groundwater Contamination	Leaking underground tank	
1985-09-26	Soil Contamination	From hatch manhole on tank	
1986-02-18	Soil Contamination	Traffic accident	
1986-04-29	Soil Contamination	Spillage of waste oil around tank	
1986-05-12	Soil Contamination	Transformer failure	
1986-07-16	Soil Contamination	Failure to remove fuel from tank	
1986-07-29	Surface Water Contamination	Washing out used fuel oil tank	
1986-10-10	Petroleum - Unknown Type	Tipped over fuel tank	75 gal
1987-01-21	Soil Contamination	Overflow from filling vehicle	
1987-08-05	Contained/Recovered	Semi-tanker overturned	
1987-11-19	Contained/Recovered	Split tank on semi-tractor	
1988-01-07	Contained/Recovered	Lost tire, and hit plumbing	
1988-07-01	Food product	Tank rolled off flatbed truck	275 gal
1988-07-23	Wastewater	Tank truck dumping liquid	
1988-10-18	Gasoline - Unleaded and Leaded	Property abandoned	
1988-12-20	petroleum - unknown type	Removal of underground tank	50 gal
1989-01-11	Diesel fuel	Broken fuel tank line on semi	50 gal
1989-04-19	Gasoline - Unleaded and Leaded	Leak under pump island	
1989-05-02	Petroleum - Unknown Type	Vandalism	
1989-07-05	Fertilizer	Ruptured fiberglass tank in transit	200 gal
1989-09-28	Gasoline - Unleaded and Leaded	Broken brass tank drain valve	50 gal
1989-10-31	Gasoline - Unleaded and Leaded	Leaking underground storage tank	
1990-06-13	Polychlorinated Biphenyl	Tank rupture, maybe from lightening	5 gal
1990-06-20	Petroleum - Unknown Type	Unknown	
1990-12-23	Sewage	Broken force main pipe	200 gal
1991-03-07	petroleum - unknown type	Dumping on ground	5 gal
1991-03-26	petroleum - unknown type	Electrical breaker blew-up	1 gal
1991-08-18	Diesel fuel	Traffic accident	70 gal
1991-12-02	Diesel fuel	Train derailment	200 gal
1991-12-04	Gasoline - Unleaded and Leaded	Truck sunk thru ice on Mccann Lake	10 gal
1992-01-20	petroleum - unknown type	Transformer leak	5 gal



Rusk County Hazard Mitigation Plan

1992-09-16	Gasoline - Unleaded and Leaded	Traffic accident	15 gal
1993-02-01	Diesel fuel	Dispenser valve stuck open	10 gal
1993-08-18	Gasoline - Unleaded and Leaded	Removal of tank	25 gal
1993-11-18	Containment	Unknown	
1994-03-14	Soil Contamination		
1994-05-17	Gasoline - Unleaded and Leaded	Leaking vehicle fuel tank	20 gal
1994-08-03	Gasoline - Unleaded and Leaded	Traffic accident	18 gal
1994-09-16	Engine Waste Oil	Flooding	40 gal
1994-12-02	petroleum - unknown type	Broken line	15 gal
1994-12-14	Antifreeze	Dozer flipped over	9 lb
1994-12-14	Petroleum - Unknown Type and Antifreeze	Dozer turned over	1 gal/22lb
1995-02-20	Gasoline - Unleaded and Leaded	Fire	250 gal
1995-05-02	petroleum - unknown type	Valve stuck	10 gal
1995-05-09	Diesel fuel	Fuel truck accident	150 gal
1995-08-01	Gasoline - Unleaded and Leaded	Personal watercraft fire	3 gal
1995-08-29	Diesel fuel	Crane overturned	25 gal
1995-10-25	petroleum - unknown type	Leaking pipe	
1995-12-11	petroleum - unknown type	Overfill of heating oil tank into basement.	31 gal
1996-01-22	Mineral Oil	Leaking hose on truck	8 gal
1996-09-06	Mineral Oil	Unknown	8 gal
1996-12-08	Petroleum - Unknown	Collapse of support	100 gal
1996-12-17	Hydraulic oil	Leaking truck hose	30 gal
1997-02-26	Jet fuel	Ice fell & broke feed pipe	20 gal
1997-03-07	Mineral Oil	Broken hose on fork lift	40 gal
1997-05-16	Hydraulic oil	Blown hydraulic hose on limestone delivery truck	15 gal
1997-05-22	Salt	Overfill	99 gal
1997-05-23	Hydraulic oil	The hydraulic pump on truck 549230 cracked which caused release of 10wt hydraulic oil	40 gal
1997-05-31	diesel fuel	Vandalism to RR tracks - debris on tracks punctured tanks	2000 gal
1997-07-18	Petroleum - Unknown Type	Unknown	28 gal
1997-07-24	Hydraulic oil	Lift cylinder to bowl of scraper failed which caused release of 10 gal hydraulic oil	10 gal
1997-08-13	Mineral Oil	Drive line on haul truck broke	5 gal
1997-08-27	Fertilizer	Storage tank tipped over	400 gal
1997-09-29	Transmission fluid	Scavange pump seals failed causing transmission fluid to be released through breather. Equipment failure on water wagon	5 gal
1997-11-06	diesel fuel	Traffic accident	30 gal



Rusk County Hazard Mitigation Plan

1997-11-28	Gasoline - Unleaded and Leaded	Valve broke on trailer	100 gal
1998-03-30	Mineral Oil	Hydraulic line broke	50 gal
1998-04-01	Unknown substance	Probably from containers due to sudden breaking of truck	
1998-04-17	Diesel fuel	Fuel tank fueling pump malfunctioned	20 gal
1998-07-07	Petroleum - Unknown Type	Leaking gear box	2 gal
1998-07-08	Leachate from landfill runoff	Hardware malfunction in leachate pumping system which caused a tank overflow.	400 gal
1998-07-28	Mineral Oil	Hose on sheet piling hammer broke	10 gal
1998-07-28	Mineral Oil	Hydraulic hose broke	15 gal
1998-08-03	Mineral Oil	Burst hydraulic hose	12 gal
1999-04-18	Mineral Oil	Improperly pumped out into storm sewer	0.5 gal
1999-04-30	petroleum - unknown type	Containers with oils in left on property. One was leaking.	20 gal
1999-05-02	Manure	Unknown	100 gal
1999-06-17	Jet fuel	Intentional dumping of kerosene	2 gal
1999-07-29	Engine Waste Oil	Sump pump failure caused water to backup into oil tank causing overflow of oily water onto concrete & drain into flambeau river.	225 gal
2000-03-21	diesel fuel	Vehicle accident	100 gal
2000-04-23	Engine Waste Oil	Vehicle fire	
2001-07-17	Mineral Oil	Storm blew transformer down	19 gal
2001-10-03	Mineral Oil	Hydraulic line rupture	1 qt
2001-12-03	diesel fuel	Truck/train accident	200 gal
2001-12-14	Dairy products	Truck/train collision	
2002-01-31	diesel fuel	Motor vehicle accident	35 gal
2002-03-09	diesel fuel	Punctured fuel tank on rail engine	1700 gal
2002-05-10	Mineral Oil	Ruptured hose on truck	10 gal
2002-07-31	Mineral Oil	Hydraulic line break	2 gal
2002-09-02	Mineral Oil	Tornado	
2002-09-02	Unknown Substance	Tornado	
2002-09-02	Non-Chlorinated Solvents	Tornado	
2002-09-02	Petroleum - Unknown Type	Tornado	
2002-09-02	Non-Chlorinated Solvents	Tornado	
2002-09-02	Petroleum - Unknown Type	Tornado	
2002-09-02	Unknown substance	Tornado	
2002-09-02	Mineral Oil	Ruptured hose on down truck	50 gal
2002-09-03	Non-Chlorinated Solvents	Tornado	50 gal
2002-09-06	Engine Waste Oil	traffic accident	35 gal
2002-10-02	Diesel fuel and Asphalt	Unit that heats tar from blacktop leaked-to be replaced spring 2003	
2002-10-13	Diesel fuel	Vandalism-someone opened spigot to fuel tank during the night	30 gal
2003-03-20	Gasoline - Unleaded and	Rp drove off with gas nozzle still in tank	20 gal



Rusk County Hazard Mitigation Plan

	Leaded		
2003-03-24	Fertilizer	Motor vehicle accident	20 gal
2003-07-05	Gasoline - Unleaded and Leaded	Truck swerved to avoid deer and struck bridge and rolled into creek bad	
2003-08-09	Engine Waste Oil	Alcohol related vehicle accident, driver flipped vehicle into river	25 gal
2003-09-09	Petroleum - Unknown Type	Unknown	300 gal
2004-02-08	diesel fuel	Parked truck with fuel leak	35 gal
2004-04-27	Mineral Oil	Broken utility pole, transformer busted	50 gal
2004-05-01	Mineral Oil	Hydraulic leak in dozer	
2004-09-10	Mineral Oil	Utility contractor left their truck on the track during the night, it rained and a sink hole opened next to the truck and it tipped over.	10 gal
2004-10-30	Mineral Oil	The truck lost its hose. The oil spilled over a 400 ft area.	30 gal
2004-11-05	Leachate from landfill runoff	Unsecure cap on landfill recirculation system fill pipe	55000 gal
2005-03-17	Diesel fuel	Fuel tank spill; overflow from nozzle	30 gal
2005-04-28	Gasoline - Unleaded and Leaded	Vehicle accident. Auto in creek	
2005-05-06	diesel fuel	Overfill of tank	80
2005-06-25	Gasoline - Unleaded and Leaded	Intoxicated operation of a motor vehicle (bac of .265 g/100ml)	
2005-07-22	Gasoline - Unleaded and Leaded	Vehicle fell off the railroad trestle	1 gal
2005-09-01	Petroleum - Unknown Type	Tractor ran off road & crashed into creek	
2005-09-13	Engine Waste Oil	Overloaded logging truck tipped over after going around corner	5 gal
2005-10-05	Gasoline - Unleaded and Leaded	Following a period of heavy rain - vehicle exited the bridge, hit embankment & came to rest in Alder Creek	
2005-11-11	Engine Waste Oil	Caller stated due to operator error there was release of materials from steel tote container	50 gal
2006-02-07	Mineral Oil	Broken hydraulic line	40 gal
2006-04-06	Mineral Oil	Broken hydraulic line	40 gal
2006-06-02	Mineral Oil	Hydraulic line on a truck broke causing spill of 25 gal of hydraulic oil on to the roadway and gravel shoulder. They are currently cleaning up spill with floor dry and digging up gravel.	25 gal
2006-11-07	Non-chlorinated solvents	Process point connection failure. Liquid leaked onto concrete floor, solvent likely ran onto floor and down drilled 1/2" holes into gravel subfloor. River is 15-20 ft from building	1000 gal
2007-02-02	crude oil	An underground pipeline was hit while boring the road for a construction project causing 100 barrels of oil to leak into ditch.	100 barrels
2007-03-04	Engine Waste Oil	Snowmobile head on collision	
2007-03-05	diesel fuel	Gas nozzle came out of the truck's gas tank while refueling	27 gal
2007-03-29	Mineral Oil	Old pole transformer failed	10
2007-05-25	Diesel fuel	Motor vehicle crash that demolished one vehicle and punctured the saddle tanks on the semi-truck.	30 gal
2007-08-29	diesel fuel	Contractor left a cap off of the truck and allowed fuel to leak	8 gal
2007-10-24	Diesel fuel	Tractor caught on fire, electrical suspected. Unknown as to why the gasoline was leaking from the tractor to begin with. Tractor was fully	90 gal

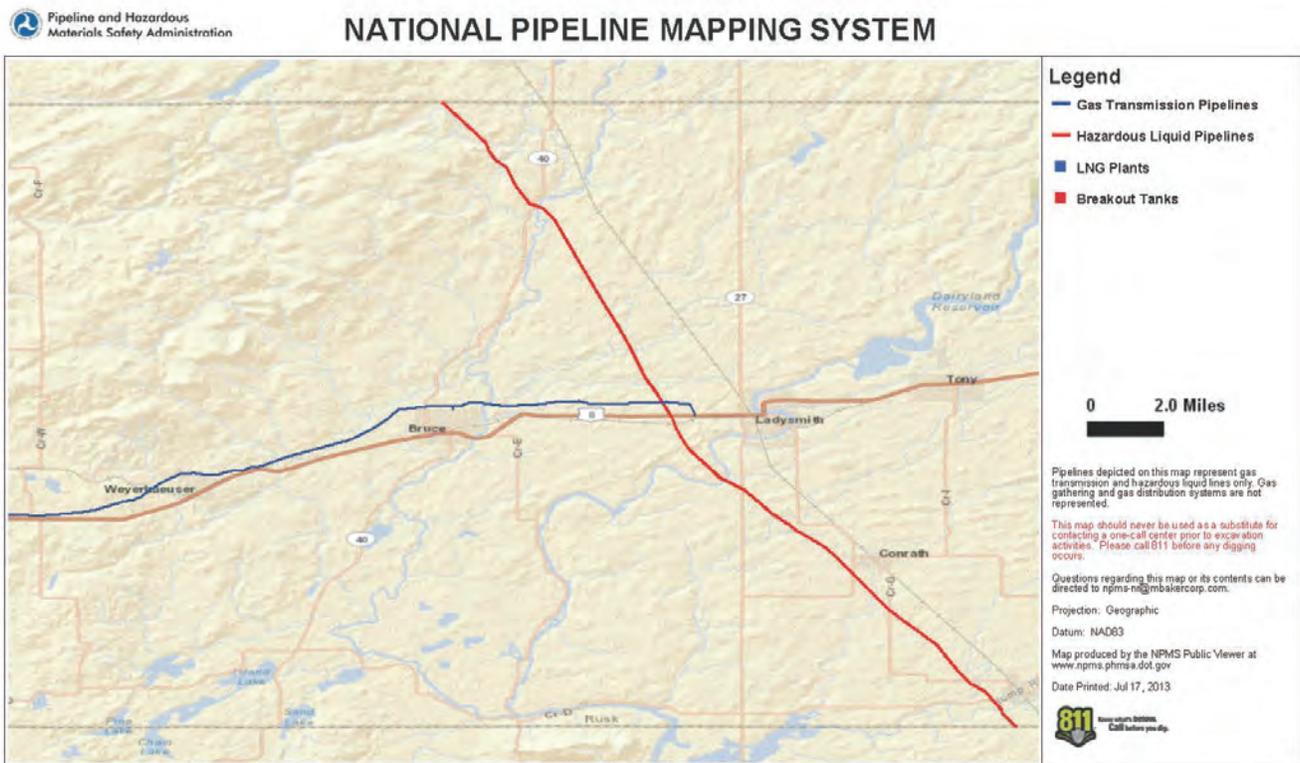


Rusk County Hazard Mitigation Plan

		engulfed at arrival and inspection was not practical.	
2008-03-13	Gasoline - Unleaded and Leaded	Responsible party was driving a car that was in severe disrepair. The car's gas tank fell off while the car was being operated on the roadway. Gasoline spilled from the tank and entered the storm sewer.	5 gal
2008-04-09	Petroleum - Unknown Type	Unknown	20 gal
2008-07-15	Mineral Oil	Faulty valve--equipment failure	2 gal
2008-09-28	Engine Waste Oil	Vehicle ran off the bridge and crashed into the creek causing various vehicle fluids to be released into skunk creek	15 gal
2009-04-13	Engine Waste Oil	Unknown	
2009-07-07	Other substance not listed	Vehicle hit the pole and the transformer fell onto the parking lot.	90 gal
2010-02-13	Manure	Unknown	
2010-03-25	Hydraulic oil	A hydraulic pump broke	10 gal
2010-04-03	diesel fuel	Wind storm caused the above ground 300 gallon diesel container to fall off the stand and broke the valve.	300 gal
2010-05-07	Hydraulic oil	Blown hydraulic line on a truck	8 gal
2011-05-23	Hydraulic oil	Leak from hydraulic reservoir	15 gal
2011-05-27	Mineral Oil	Vehicle accident.	16 gal
2011-07-08	Pesticides, Herbicides and Insecticides	The carriage under the tank broke causing the tank to rupture	350 gal
2011-09-23	Hydraulic oil	Unknown	5 gal
2011-11-08	Manure	Irrigation hose broke spilling manure. Water resources were not affected.	150 gal
2012-04-18	Hydraulic oil	Unknown	60 gal
2012-05-15	Fuel oil	Fuel oil tank outside residence has been leaking for several days possibly.	180
2012-06-27	Asphalt	Unknown	1 gal
2012-07-13	Mineral Oil	Unknown	50 gal
2013-01-04	Storm Sewer Contamination	Mechanical problem with cooling tower. Water sprayed from tower.	500 gal
2013-01-04	Storm Sewer Contamination	Mechanical problem with cooling tower. Water sprayed from tower.	500 gal
2013-06-03	Manure	Unknown	4400 gal



Pipelines



VULNERABILITY AND RISK ASSESSMENT

Area Affected

While the majority of events are relatively small, hazardous materials incidents have the potential to affect a large area, or even an entire community. An incident resulting in the release of toxic agents into the air or water has the potential to impact large areas of the county. Several past incidents have occurred on or near public roadways and within the county’s populated communities. The Wisconsin Department of Natural Resources regulates the transport of hazardous materials within the state. WDNR requires transporters of hazardous materials to obtain a license to haul the materials and the company must meet strict documentation requirements. DNR does not, however, track the specific date/time of the transport, or the route of transit.

Magnitude

Most historic events have been minor spills rather than large-scale chemical releases. A Regional Response Team may be activated for an incident involving a hazardous materials spill, leak, explosion, injury or the potential of immediate threat to life, the environment, or property. The Regional or "Level A" Teams respond to the most serious of spills and releases requiring the highest level of skin and respiratory protective gear. This includes all chemical, biological, or radiological emergencies. The regional response team serving Rusk County is based in Superior.

Duration

Hazardous materials incidents can occur anytime and without warning. Most incidents are handled well before becoming a disaster. Clean-up time is variable, depending on the nature of the incident. Serious incidents may



require long-term environmental remediation.

Frequency

There were 176 documented hazardous materials incidents in Rusk County between 1979 and 2013, or an average of about 5 incidents per year.

Probability

Based on historical records, there is a high likelihood that at least one minor hazardous materials incident will occur during any given year.

Potential economic impact

The potential economic impact associated with a fixed facility or transportation-related incident is unknown. Historical data from the Pipeline and Hazardous Materials Safety Administration (PHMSA) indicates that the average property damage cost associated with pipeline incidents in Wisconsin between 2002 and 2013 was \$648,687.

Population affected

The population affected by a future transportation-related incident will be dependent on several factors including, location of incident, nature of chemicals released and environmental factors. Based on historical evidence, it is assumed that there is a high probability of incident containment before significant population impact. PHMSA historical data suggests that there is approximately a 12.5% chance of injury and a 4.1% chance of a fatality associated with pipeline incidents in Wisconsin.

Critical facilities and infrastructure at risk

Because a large number of past incidents have occurred on or near public roadways, all critical facilities are at risk.



TERRORISM

Hazard Description

The U.S. government defines terrorism as: “any activity that (A) involves a violent act or an act dangerous to human life that is a violation of the criminal laws of the United States or any State, or that would be a criminal violation if committed within the jurisdiction of the United States or of any State; and (B) appears to be intended (i) to intimidate or coerce a civilian population; (ii) to influence the policy of a government by intimidation or coercion; or (iii) to affect the conduct of a government by assassination or kidnapping.” (United States Code Congressional and Administrative News, 98th Congress, Second Session, 1984, Oct. 19, volume 2; par. 3077, 98 STAT. 2707. Section 802 of the USA PATRIOT Act expanded this definition to include domestic acts of terrorism.

High-risk targets for acts of terrorism include military, education and civilian government facilities, international airports, medical and research facilities, transportation systems, large cities, and high-profile landmarks. Terrorists also might target large public gatherings, water and food supplies, utilities and corporate centers. Terrorists are capable of spreading fear by sending explosives or biological and chemical agents through the mail.

While terrorist targets are more likely to lie within urban, populated areas, rural areas are not invulnerable to terrorist activity. In fact, unlike a busy urban setting, rural areas like Rusk County provide a relative degree of isolation and protection from law enforcement. The remoteness and low population density of rural communities may allow individuals or groups to more inconspicuously organize, train and prepare.

Categories of Terrorism

Contamination

Contamination refers to the intentional release of release of chemical, biological or radiological agents, as well as nuclear hazards. **Chemical** agents are poisonous vapors, aerosols, liquids and solids that have toxic effects on people, animals or plants. They can be released by bombs or sprayed from aircraft, boats and vehicles. They can be used as a liquid to create a hazard to people and the environment. Chemical agents may pose viable threats for hours to weeks depending on the agent used and the conditions which exist at the exposed area. **Biological** agents are organisms or toxins that can kill or incapacitate people, livestock and crops. A biological attack is the deliberate release of biological substances such as toxins, bacteria or fungi with the intention of causing harm. Biological hazards may pose a danger for a period of hours to years, depending on the type of agent used and the conditions in which it exists. **Radiological** agents are radioactive elements which pose significant hazards to human and animal health which may remain hazardous in the environment for many years depending on the material used. The initial effects of a radiological attack are likely to be localized to the site of the attack; however, depending on atmospheric conditions, the subsequent behavior of radiological contaminants may become more dynamic and widespread. **Nuclear** devices detonated on the earth’s surface or at high altitude, pose serious risks to human life and the environment. The light, heat and shockwave produced following detonation of a nuclear device is capable of complete devastation within the blast zone. The release of nuclear radiation into the environment could result in long-term human and ecological health impacts. Depending on atmospheric conditions, nuclear fallout can be transported and deposited well away from the immediate blast area, impacting locations far-removed from the detonation site.



Cyber-Terrorism

According to the U.S. Federal Bureau of Investigation, cyber-terrorism is any "premeditated, politically motivated attack against information, computer systems, computer programs, and data which results in violence against non-combatant targets by sub-national groups or clandestine agents." Cyber-terrorism is a relatively new concept of the digital information age which poses a serious potential threat to security. Attacks on digital information systems can result in widespread disruption, damage and possible loss of life. Computer systems vital to utilities, transportation, energies, financial systems or other government services are generally the highest-risk targets. The effects of a cyber-attack may be localized or widespread and may reach far beyond the initial point of attack.

Energy Release (Bombing and Incendiary)

Energy release refers to the use of explosive or incendiary device. The detonation of a bomb or incendiary device results in near instantaneous damage or devastation within the blast area. The extent of damage caused by an explosion is determined by the type and quantity of explosive used and the manner in which it is used. It should be noted that explosive incidents can result in cascading effects, such as the incremental failure of a structure or system. Incendiary devices inflict their devastating effects by combining the effects of powerful explosives and highly flammable materials. These "firebombs" are designed to detonate and to set nearby materials on fire.

Weapons of Mass Destruction

Weapons of Mass Destruction (WMD) are defined in US law (18 USC §2332a) as :“(A) any destructive device as defined in section 921 of this title (i.e. explosive device); (B) any weapon that is designed or intended to cause death or serious bodily injury through the release, dissemination, or impact of toxic or poisonous chemicals, or their precursors; (C) any weapon involving a biological agent, toxin, or vector (as those terms are defined in section 178 of this title)(D) any weapon that is designed to release radiation or radioactivity at a level dangerous to human life.” WMDs could include any of the aforementioned agents: chemical, biological, radiological, nuclear, explosive or incendiary. WMDs are designed with the intent to inflict the maximum damage, death/injuries and disruption.

Mass Shootings

There is some debate as to whether or not mass shootings, such as school shootings, should be classified as terrorism incidents. For purposes of hazard mitigation planning, shooting events are profiled as a subheading under terrorism.

The FBI defines mass shootings as “Four or more murders occurring during the same incident, with no distinctive time period between the murders. These events typically involve a single location, where the killer murdered a number of victims in an ongoing incident.”

There have been several high profile mass shooting events in the U.S. over the past few years, including an incident in August 2012 at a Sikh temple in Oak Creek, WI which left 6 people dead and 4 injured. In the wake of several mass shooting incidents at various public education institutions across the county, there is growing concern about school safety and a call to institute policies and procedures to prevent these types of incidents in the future.

Industrial Sabotage

Industrial sabotage involves the intentional disruption of the business activity of an enterprise. The motives



behind these activities may vary from internal and external conflicts to corporate competition or political/social issues. Most acts of industrial sabotage are non-violent, and result in disruption of business and economic activities.

Hazard History

There have been no documented domestic or international terrorism events in Rusk County.

VULNERABILITY AND RISK ASSESSMENT

Area Affected

Because the terrorism objectives are so widely varied, so are the potential targets of terrorist action. In theory, virtually any public facility, utilities, infrastructure or gathering place could be a target for terrorist activity. In addition, certain types of businesses and governmental institutions may be more prone to terrorist activities due to the specific nature of their business or size. In particular, business such as banks, financial institutions, health care facilities or businesses engaging in controversial activities are at the greatest risk. Local, state and federal government facilities, public schools and colleges/universities are also potential terrorist targets.

Magnitude

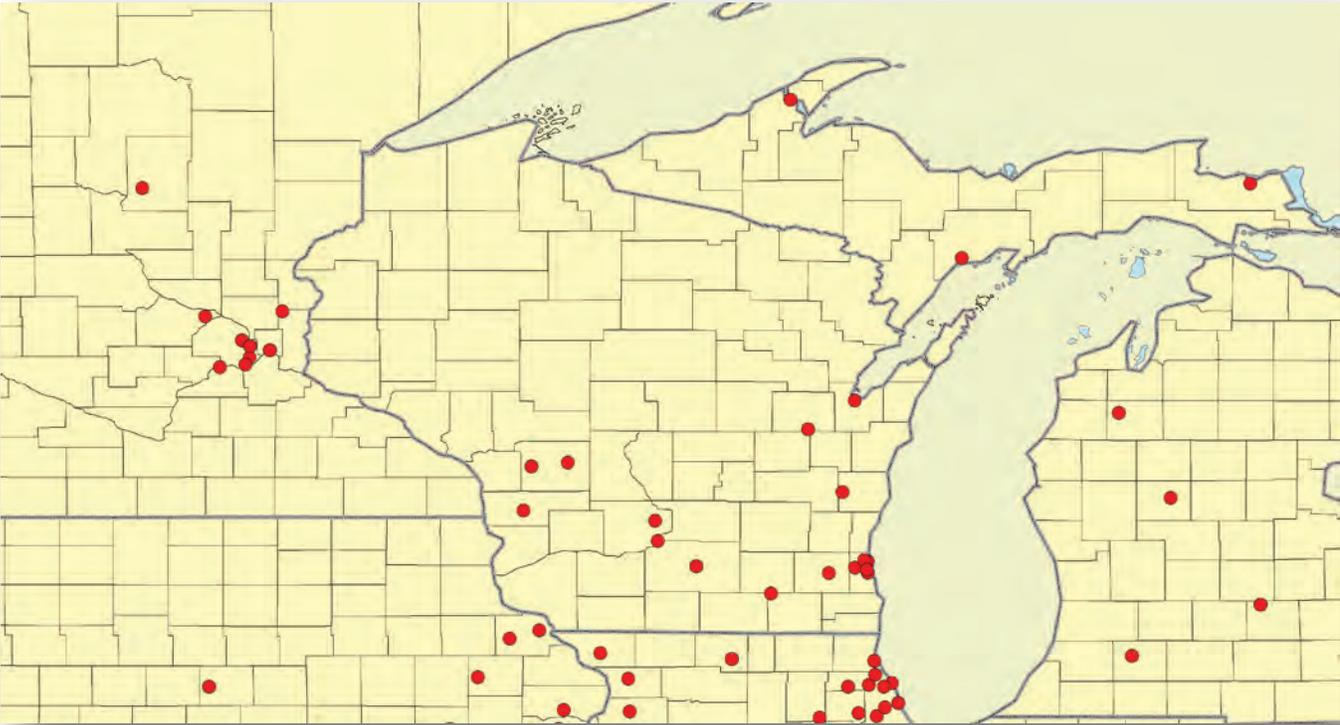
Minor to catastrophic

Duration

Depending on the nature of the event, terrorism actions may be very short or instantaneous, as in the case of a bombing, or may last much longer. The recovery time for major events is often very long (weeks to months), with permanent psychological impacts.

Frequency

Unknown. There have been no documented terrorism incidents in Rusk County. As illustrated in the graphic below, past terrorism incidents have occurred in southern Wisconsin, the Twin Cities metropolitan area and the Upper Peninsula of Michigan. Statewide, there were 35 documented incidents between 1970 and 2011 (GTD, 2013), or an average of less than one event per year.



Probability

Because there have been no historical activities in the county, the probability is unknown; however, it is assumed to be very low.

Potential economic impact

The total structural and content value at risk (commercial, educational, religious, government facilities) is estimated to be \$1,068,768,000 (HAZUS, 2013). It is highly unlikely that a terrorism event would impact all at-risk facilities, but rather a single facility. An attack on the oil and gas pipeline infrastructure could have severe economic repercussions, both locally and nationally. The average property damage impact of past terrorism incidents in Wisconsin was about \$500,000 per incident (GTD, 2013).

Population affected

The population impacted will be dependent on numerous factors, including the nature of the event, location and time of day. The likelihood that any individual will be affected by this hazard in Rusk County is very low. Of the 35 historical incidents in Wisconsin, one death occurred and five injuries were reported (GTD, 2013).

Critical facilities and infrastructure at risk

All facilities are at some degree of risk, largely because of the accessibility, proximity to automobile accessibility, and lack of a secure or hardened design



CIVIL DISTURBANCE

Hazard Description

Civil disturbance hazards include incidents which threaten public safety or disrupt community affairs. Examples of civil disturbance include riots, civil unrest, labor disputes and strikes and public demonstrations. These incidents may arise due to economic conditions, unpopular political actions, tensions between groups with opposing social or political viewpoints, food/water/fuel supply shortages or racial issues. Because these incidents usually involve large groups of people, they are more likely to occur in populated, urban areas.

Hazard History

Perhaps of the most notable examples of civil disturbance followed the 1983 Voight decision which reaffirmed Native American treaty rights to hunt, fish and gather on lands ceded to the United States by the Lake Superior Chippewa Tribes in 1837 and 1842. The court decision, and subsequent spearfishing activity brought about violent clashes at public boat landings between the fishermen and protestors. The violent scenes at northern Wisconsin boat landings received both national and international attention.



VULNERABILITY AND RISK ASSESSMENT

Area Affected

These events usually impact a small area, less than a city block. A large scale uprising or demonstration has the potential to affect a much larger area.

Magnitude

There is a range that can be associated with the severity of the hazard depending on the nature of the disturbance. A localized civil disturbance that involved a small segment of the population such as a small-scale demonstration or labor strike would have a low severity; whereas a riot, looting or large-scale uprising that threatens public safety would have a high level of severity.

Duration

Civil disturbance events can be expected to last from a period of a few hours to days, depending on the nature of the event.

Frequency

Civil disturbance events are exceedingly rare in Rusk County. The county may experience a low-severity disturbance once every 10 or 20 years.

Probability

While there has been no history of civil disturbance rising to the level of major emergency or disaster in Rusk County, the potential for such an incident does exist. Future events are likely to be low severity labor or demonstration events.

Potential economic impact

Given the unpredictable nature of civil disturbances, an estimate of potential losses associated with a disturbance is very difficult.

Population affected

Low severity events are likely to affect only a small segment of the population.

Critical facilities and infrastructure at risk

All critical facilities have some degree of risk as potential targets of civil disturbance. In particular, government facilities or offices would likely have the highest risk.



TRAIN DERAILMENTS (RAIL INCIDENTS)

Hazard Description

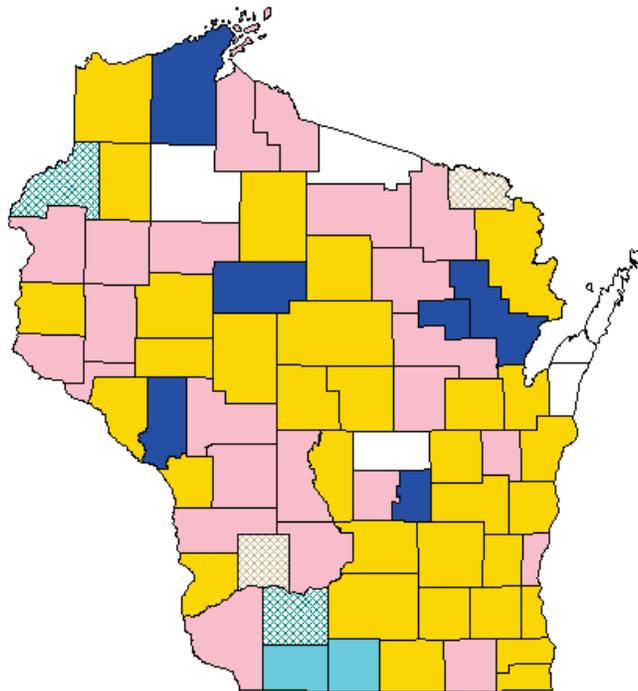
While uncommon, rail incidents can be devastating to communities. Responses to rail incidents are generally long-term in nature and require a considerable commitment of time and resources. Clean-up and remediation (in cases of hazardous materials spills) takes considerable time and financial resources. Public safety is also of great concern as many of the major rail lines pass directly through populated communities.

A train derailment occurs when a train comes off of the rails of its tracks. Derailments are often the result of one or more causes such as broken or misaligned rails, excessive speeds, collisions, operator error or mechanical failure of the track or train. Besides the potential loss of life from a derailed train it can also pose serious health or environmental problems. If a train derails that contains a hazardous substance, a mass evacuation needs to take place to ensure the safety of those nearby while the cleanup process takes place.

Hazard History

TRAIN ACCIDENTS FOR WISCONSIN, January 1975 TO May 2013

RAILROAD: ALL TYPE OF TRACK: All



Nbr	1	2-3	4-5	6-10	11-25	> 25
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Excludes Highway Rail Incidents



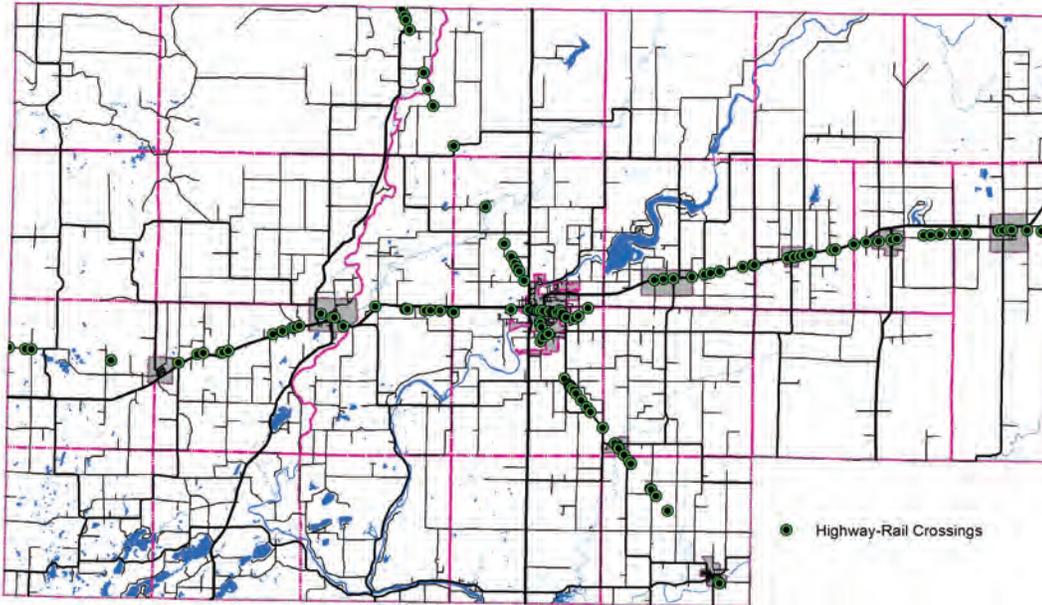
Rusk County Rail Incidents

RR	M	D	Y	NUM	DMG	HZD	STATION	MILE	Comment
Soo	06	20	1975	0	0	0	Ladysmith	128.80	
Soo	04	03	1976	0	0	0	Flambeau	358.51	
Soo	03	28	1977	0	0	0	Conrath	344.75	
Soo	03	01	1978	0	0	0	Murry	364.05	
Soo	05	08	1978	1	0	0	Ladysmith	355.85	
Soo	11	11	1978	0	0	0	Ladysmith	129.56	
Soo	11	11	1978	0	0	0	Ladysmith	129.56	
Soo	07	13	1980	0	0	0	Sheldon	340	
Soo	09	23	1981	0	0	0	Weyerhaeuser	113.0	
Soo	07	05	1981	0	0	0	Conrath	348.44	
Soo	10	23	1983	0	0	0	Ladysmith	352.0	Train no. 402 derailed. Three cars due to bent switch point protector.
Wc	05	11	1988	0	0	0	Weyerhaeuser	107.75	Wisconsin Central Ltd engine & 5 cars traveling 28 mph struck a loaded dump truck which pulled out of private crossing in front of engine.
Wc	01	18	2001	0	0	0	Ladysmith	359.1	Train xostes-16 consisted of 2 locomotives and 100 loaded ore cars as it operated under ctc at 38 mph on main line track into Ladysmith. At milepost 359.1 car CNW 112598 had its lead axle cross over.
Wc	12	14	2001	0	0	0	Conrath	347.56	Train T118-11 was operating under CTC through Conrath when the driver of truck failed to stop at stop sign and proceeded across tracks in front of train. Train struck truck carrying hazardous material
Source: Federal Railroad Administration – Office of Safety Analysis									

VULNERABILITY AND RISK ASSESSMENT

Area Affected

Most rail incidents are confined to a relatively small geographic area. According to the Federal Railroad Administration, approximately 60% of all rail incidents are caused between rail and highway users at crossing sites. Twenty percent of rail incidents are to rail trespassers. In addition to collisions and trespasser incidents, between 6% and 10% of all rail transportation involve the movement of hazardous substances. Rail incidents involving hazardous materials could impact a much larger area and may require evacuation of citizens to areas outside of the incident zone. Highway-rail incidents at crossings are of concern due to the relative frequency that these types of incidents occur. Within Rusk County, there are 163 public highway-rail crossings, with the highest concentration occurring within the City of Ladysmith and villages along U.S. Highway 8.



Magnitude

There is a range that can be associated with the severity of the hazard depending on the type of crash and whether or not hazardous chemicals are released into the environment following an incident.

Duration

The incident itself is very short. Possible longer-term effects of the incident such as evacuations, clean-up or environmental remediation can last from days to weeks or longer.

Frequency

Based on the historical occurrences between 1976 and 2013, Rusk County can expect to experience about one rail incident every 2.7 years.

Probability

While the probability of rail incidents is unknown, the Federal Rail Administration has predicted the probability of incidents at highway crossings throughout the county. According to FRA data, the 9th Street West crossing in the City of Ladysmith has an accident prediction value of 0.093, or 9.3 percent in any given year. The accident prediction value is the probability that a collision between a train and a highway vehicle will occur at the crossing in a year. The Marshall Road crossing in the Village of Sheldon has an accident prediction value of 3.65 percent and the U.S. Highway 8 crossing in Ladysmith has a value of 2.95 percent. All remaining crossings within Rusk County have a prediction value of less than 2 percent.

Potential economic impact

The combined economic impact of historical rail incidents in Rusk County was \$810,006 (FRA, 2013), or an average of about \$58,000 per incident.

Population affected

There have been no recorded fatalities due to rail incidents in Rusk County. Statewide, the 1976-2013 fatality rate was one fatality per 450 incidents. There was a single injury reported due to a past rail incident in Rusk County. The statewide injury rate was one injury per 20 incidents. Because rail lines within the county pass



directly through the most populated communities, there is the possibility of death or injury as the result of a significant rail incident. If an incident were to occur within one of the populated communities there would likely be an impact to residents in the vicinity of the incident, and possibly to the community as a whole, if hazardous materials are involved.

Critical facilities and infrastructure at risk

Unknown



HAZARD MITIGATION STRATEGY

Identifying and analyzing the natural and technological hazards impacting Rusk County has resulted in the formulation of actions that are intended to protect life and property. Utilizing planning committee and public input, a comprehensive list of mitigation goals and actions has been developed to assist the county in efforts reduce the effects of natural hazards. The mitigation strategies have been placed in priority order as identified in the Rusk County Hazard Priority Matrix in **Tables 10-23**.

Hazard Mitigation Plan Goal Statements

The final list of mitigation goals developed by the Steering Committee are listed below in no particular order of importance.

1. Increase public awareness and understanding of the potential impacts of natural and manmade hazards in Rusk County
2. Identify measures to reduce Rusk County's overall vulnerability to natural and manmade hazards
3. Identify mitigation recommendations aimed at minimizing the impacts of natural and manmade hazards in Rusk County
4. Explore all internal and external avenues to fund mitigation activities.

Mitigation Action Prioritization

The planning committee reviewed the county and participating community hazard mitigation capabilities and risk assessment as a basis for developing potential mitigation actions. In addition, particular emphasis was placed on actions that reduced the effects of hazards on both new and existing buildings and infrastructure.

The planning steering committee developed a methodology for prioritizing the action items that meets the requirements of 44 CFR. The actions were prioritized according to the following criteria:

- High Priority—Activity addresses multiple goals, benefits exceed cost, funding is secured under existing programs, or is grant eligible.
- Medium Priority—Activity addresses at least one plan goal, benefits exceed costs, requires special funding authorization under existing programs, grant eligibility is questionable.
- Low Priority—Project will mitigate the risk of a hazard, benefits exceed costs, funding has not been secured, project is likely not grant eligible.

These priority definitions are dynamic and can change from one category over time. For example, a project might be assigned a medium priority because of the uncertainty of a funding source, but be changed to high once a funding source has been identified. The prioritization schedule for this plan will be reviewed and updated in accordance with the plan maintenance strategy.



NATURAL HAZARDS		TECHNOLOGICAL HAZARDS	
Hazard	Priority Rank	Hazard	Priority Rank
Tornado	1	Energy Emergencies	1
Flooding	2	Hazmat Incidents	2
Water Quality	3	Terrorism	3
High Winds	4	Civil Disturbance	4
Communicable Disease	5	Train Derailment	5
Invasive Species	6	Industrial Sabotage	6
Lightning	7		
Winter Weather Events	8		
Drought	9		
Dam Failure	10		
Wildfire	11		
Hail Storms	12		
Forest Health	13		



Action	Hazards	Action Applies to	Priority	Timeframe Short Years 1-2	Timeframe Long Years 3-5	Potential Funding Sources	Lead and Partners in Implementation
1. Maintain and update the Rusk County Hazard Mitigation Plan every 5 years [Updating the plan also requires updating the risk assessment every five years]	Multiple Hazards	County Village of Sheldon	High		<input type="checkbox"/>	General Revenue, apply for PDM or HMGP	Rusk County Emergency Management
2. Incorporate Hazard Mitigation Planning into existing and future county planning activities: Comprehensive Plan Land & Water Resource Management Plan County Forest Management Plan Pandemic Flu Plan	Multiple Hazards	County	High	<input type="checkbox"/>	<input type="checkbox"/>	Existing programming (general revenue)	Rusk County Emergency Management Land Conservation Forestry Department Public Health
3. Develop storm shelters for licensed campgrounds and mobile home parks	Multiple Hazards	County Village of Hawkins	High	<input type="checkbox"/>		Hazard Mitigation Grant Program	Rusk County Emergency Management Campgrounds, mobile home parks
4. Develop a storm shelter at Memorial Park	Multiple Hazards	City of Ladysmith	High		<input type="checkbox"/>	Hazard Mitigation Grant Program	Ladysmith Public Works Rusk County Emergency Management
5. Acquire address point data layer	Multiple Hazards	County Village of Sheldon	Medium		<input type="checkbox"/>	Wisconsin Land Information Grant Program	Rusk County Land Information/Surveyor



Action	Hazards	Action Applies to	Priority	Timeframe Short Years 1-2	Timeframe Long Years 3-5	Potential Funding Sources	Lead and Partners in Implementation
6. Warning system improvements to replace current outdated system. (CodeRED system)	Multiple Hazards	County City of Ladysmith Village of Sheldon, Village of Weyerhaeuser Village of Hawkins	High		<input type="checkbox"/>	Hazard Mitigation Grant Program, USDA Community Facilities Loans and Grants	Rusk County Emergency Management
7. Develop a two-tone warning system	Multiple Hazards	County City of Ladysmith Village of Sheldon Village of Hawkins	Medium		<input type="checkbox"/>	Hazard Mitigation Grant Program, USDA Community Facilities Loans and Grants	Rusk County Emergency Management
8. Continue severe weather public education campaign (Severe weather awareness week, etc.)	Multiple Hazards	County, Village of Weyerhaeuser, Village of Sheldon	High	<input type="checkbox"/>	<input type="checkbox"/>	Existing programming (general revenue)	Rusk County Emergency Management
9. Acquire NOAA weather radios for all critical and vulnerable facilities, including schools, day care facilities, group homes and businesses.	Multiple Hazards	County City of Ladysmith Village of Sheldon Village of Hawkins	High	<input type="checkbox"/>		NOAA Weather Radio Grant (2014 Farm Bill)	Rusk County Emergency Management Public works (Ladysmith & Sheldon)



Rusk County Hazard Mitigation Plan

Action	Hazards	Action Applies to	Priority	Timeframe Short Years 1-2	Timeframe Long Years 3-5	Potential Funding Sources	Lead and Partners in Implementation
10. Acquire countywide aerial imagery and LiDAR topographic data	Multiple Hazards	County	Low		<input type="checkbox"/>	General revenue, consortium, Community Development Block Grant Emergency Assistance Program (CDBG-EAP)	Rusk County Land Information/Surveyor
11. Acquire ArcGIS software to support multi hazard modelling, analytical operations, asset management and emergency response. 4 seats (County) 1 seat (City of Ladysmith)	Multiple Hazards	County City of Ladysmith Village of Hawkins	Low	<input type="checkbox"/>		Wisconsin Land Information Grant Program	Rusk County Land Information/Surveyor Ladysmith Public Works
12. Compile a list of available generators and public shelter areas available throughout the county.	Multiple Hazards	County Village of Weyerhaeuser Village of Hawkins Village of Sheldon	Medium	<input type="checkbox"/>		Existing programming (general revenue)	Rusk County Emergency Management
13. Explore options for Site Notification Database for special needs population.	Multiple Hazards	County Village of Weyerhaeuser	Medium	<input type="checkbox"/>		Existing programming (general revenue)	Rusk County Emergency Management
14. Conduct a feasibility study and cost -benefit analysis for installing a reverse 9-1-1 communications system in the county.	Multiple Hazards	County	Medium	<input type="checkbox"/>		Existing programming (general revenue)	Rusk County Emergency Management



Action	Hazards	Action Applies to	Priority	Timeframe Short Years 1-2	Timeframe Long Years 3-5	Potential Funding Sources	Lead and Partners in Implementation
15.Continue to actively participate in countywide interoperability communications planning efforts.	Multiple Hazards	County Village of Weyerhaeuser Village of Hawkins Village of Sheldon	High	<input type="checkbox"/>	<input type="checkbox"/>	Existing programming (general revenue)	Rusk County Emergency Management
16.Develop and post recommended visitor actions in case of severe weather at all county campgrounds.	Multiple Hazards	County Village of Weyerhaeuser Village of Hawkins	High	<input type="checkbox"/>		Existing programming (general revenue)	Rusk County Emergency Management
17.Explore the development of countywide public road access ordinance to ensure that driveways which access county roads are appropriately sized to allow for emergency vehicle access. (NFPA standards)	Multiple Hazards	County	Medium		<input type="checkbox"/>	Existing programming (general revenue)	Rusk County Emergency Management, Local Fire Departments
18.Provide a copy of all subdivision plats to the local responding fire departments for review and comment as part of the plat review process.	Multiple Hazards	County City of Ladysmith (Subdivision Ordinance) Village of Hawkins	Medium		<input type="checkbox"/>	Existing programming (general revenue)	Rusk County Zoning, Ladysmith Public Works



Rusk County Hazard Mitigation Plan

Action	Hazards	Action Applies to	Priority	Timeframe Short Years 1-2	Timeframe Long Years 3-5	Potential Funding Sources	Lead and Partners in Implementation
19. Develop a continuity of operations plan for government operations, including plans for back-up (off site) critical data and official records.	Multiple Hazards	County Village of Weyerhaeuser	High	<input type="checkbox"/>		Existing programming (general revenue), HMGP	Rusk County Emergency Management
20. Develop flood warning systems for campgrounds along major rivers	Flooding	County	Medium	<input type="checkbox"/>		Hazard Mitigation Grant Program	Rusk County Emergency Management Businesses Forestry Department (County-owned)
21. Continue to participate in the National Flood Insurance Program (NFIP)	Flooding	County City of Ladysmith Village of Sheldon Village of Hawkins	High	<input type="checkbox"/>	<input type="checkbox"/>	Existing programming (general revenue)	Local Governing Bodies
22. Develop a map of potential overland flooding areas and/or 100 and 500 year flood zones. Use Taylor County flood resiliency project (once completed) as a process model for Rusk County analysis.	Flooding	County Village of Sheldon	Medium		<input type="checkbox"/>	Wisconsin Land Information Grant Program (data), existing programming (analysis)	Rusk County Emergency Management



Action	Hazards	Action Applies to	Priority	Timeframe Short Years 1-2	Timeframe Long Years 3-5	Potential Funding Sources	Lead and Partners in Implementation
23. Coordinate local meetings to raise awareness of the Community Rating System (CRS) which can significantly lower flood insurance rates. Engage communities and determine interest in CRS participation.	Flooding	County	Medium	<input type="checkbox"/>		Existing programming (general revenue)	Rusk County Emergency Management FEMA, Wisconsin Emergency Management, Communities, Homeowners and Lake Associations
24. Raise public awareness of the fact that typical homeowners insurance does not cover flood damage and that there are many structures in the county which are potentially vulnerable to flooding, including many structures located outside the 100-year floodplain.	Flooding	County	Medium	<input type="checkbox"/>		Existing programming (general revenue)	Rusk County Emergency Management
25. Replace failing septic systems and wellhead protection	Water Quality	County	Medium	<input type="checkbox"/>	<input type="checkbox"/>	Community Development Block Grant Program, WDNR planning grants (wellhead protection)	Rusk County Emergency Management Land conservation
26. Maintain and restore natural riparian buffers	Water Quality	County	Medium	<input type="checkbox"/>	<input type="checkbox"/>	Consider tax credit for implementing restoration. Lake and River protection grants (WDNR)	Rusk County Land Conservation



Rusk County Hazard Mitigation Plan

Action	Hazards	Action Applies to	Priority	Timeframe Short Years 1-2	Timeframe Long Years 3-5	Potential Funding Sources	Lead and Partners in Implementation
27. Treating the ill and providing contacts with appropriate treatment or prophylaxis	Communicable Disease	County Village of Weyerhaeuser Village of Hawkins	High	<input type="checkbox"/>	<input type="checkbox"/>	Existing programming (general revenue)	Rusk County Public Health
28. Administration of vaccine (if available) to the general public, beginning with high risk populations.	Communicable Disease	County Village of Weyerhaeuser Village of Hawkins	High	<input type="checkbox"/>	<input type="checkbox"/>	Existing programming (general revenue)	Rusk County Public Health
29. Implement Pandemic Response Plan early and in a coordinated effort with a layered approach - individuals, community and international measures	Communicable Disease	County Village of Weyerhaeuser Village of Hawkins	High	<input type="checkbox"/>	<input type="checkbox"/>	Existing programming (general revenue)	Rusk County Public Health
30. Voluntary household quarantine	Communicable Disease	County Village of Weyerhaeuser Village of Hawkins	High	<input type="checkbox"/>	<input type="checkbox"/>	Existing programming (general revenue)	Rusk County Public Health
31. Voluntary home isolation when ill	Communicable Disease	County Village of Weyerhaeuser	High	<input type="checkbox"/>	<input type="checkbox"/>	Existing programming (general revenue)	Rusk County Public Health



Action	Hazards	Action Applies to	Priority	Timeframe Short Years 1-2	Timeframe Long Years 3-5	Potential Funding Sources	Lead and Partners in Implementation
32. Keep kids and teens at home	Communicable Disease	County Village of Weyerhaeuser Village of Hawkins	High	<input type="checkbox"/>	<input type="checkbox"/>	Existing programming (general revenue)	Rusk County Public Health
33. School closure	Communicable Disease	County Village of Weyerhaeuser	High	<input type="checkbox"/>	<input type="checkbox"/>	Existing programming (general revenue)	Rusk County Public Health
34. Work with the State of Wisconsin to formulate a public awareness plan. Already being extensively addressed through the use of the website flu.wisconsin.gov	Communicable Disease	County Village of Weyerhaeuser Village of Hawkins	High	<input type="checkbox"/>	<input type="checkbox"/>	Existing programming (general revenue)	Rusk County Public Health Wisconsin Department of Health Services
35. Invasive species identification. Map the extent of affected areas throughout the county.	Invasive Species	County Village of Sheldon	Low	<input type="checkbox"/>		Wisconsin Land Information Grant Program (data development)	Rusk County Land Information/Surveyor Land Conservation, WDNR, Forestry Department, Volunteers
36. Actively participate in the Clean Boats, Clean Waters program to prevent the spread of aquatic invasive species.	Invasive Species	County Village of Hawkins	High	<input type="checkbox"/>	<input type="checkbox"/>	Clean Boats Clean Waters (CBCW) Aquatic Invasive Species Control Grant Program	Wisconsin Department of Natural Resources Lake Associations



Rusk County Hazard Mitigation Plan

Action	Hazards	Action Applies to	Priority	Timeframe Short Years 1-2	Timeframe Long Years 3-5	Potential Funding Sources	Lead and Partners in Implementation
37. Work with the WDNR to implement a countywide public education initiative on invasive species and mitigation options to raise local awareness.	Invasive Species	County Village of Hawkins Village of Sheldon	High	<input type="checkbox"/>	<input type="checkbox"/>	WDNR Aquatic Invasive Species (AIS) Control Grants	Rusk County Emergency Management Wisconsin Department of Natural Resources
38. Continue to maintain and implement the Rusk County 15-year Comprehensive Forest Land Use Plan and the Rusk County Land and Water Resource Management Plan.	Invasive Species Wildfire Water Quality	County Village of Hawkins	High	<input type="checkbox"/>	<input type="checkbox"/>	Existing programming (general revenue)	Rusk County Forestry, Rusk County Land Conservation
39. Complete hydraulic study/ dam failure analysis for all dams which do not have a study at present. Use the study information to develop emergency operating and response plans.	Dam Failure	County Village of Hawkins	Medium	<input type="checkbox"/>	<input type="checkbox"/>	Hazard Mitigation Grant Program, WDNR sources	Rusk County Emergency Management Wisconsin Department of Natural Resources, Forestry Department
40. Continue with dam maintenance and rehabilitation projects and the removal of dams which no longer meet functional objectives. Remove abandoned dams where practical and possible.	Dam Failure	County	Low	<input type="checkbox"/>	<input type="checkbox"/>	Existing programming (general revenue)	Rusk County Emergency Management Wisconsin Department of Natural Resources, Forestry Department
41. Pursue grant funding for the installation of dry hydrants in rural parts of the county, especially within the highest fire-prone areas.	Wildfire	County Village of Hawkins	Low	<input type="checkbox"/>	<input type="checkbox"/>	Forest Fire Protection (FFP) Grant Program WDNR	Local Fire Departments



Action	Hazards	Action Applies to	Priority	Timeframe Short Years 1-2	Timeframe Long Years 3-5	Potential Funding Sources	Lead and Partners in Implementation
42. Periodically conduct a multi-agency wildfire training exercise, such as a “mock fire” training exercise	Wildfire	County Village of Weyerhaeuser Village of Hawkins Village of Sheldon	High	<input type="checkbox"/>	<input type="checkbox"/>	Existing programming (general revenue)	Rusk County Emergency Management Wisconsin Department of Natural Resources, Local Fire Departments
43. Continue to annually obtain hazardous chemical railroad manifests for review by the Rusk County LEPC.	Hazardous Materials	County Village of Hawkins Village of Sheldon	High	<input type="checkbox"/>	<input type="checkbox"/>	Existing programming (general revenue)	Rusk County Emergency Management
44. Study the feasibility and costs of converting the existing at-grade Canadian National rail crossing at CTH ‘D’ to an above grade crossing.	Hazardous Materials	Village of Sheldon	High	<input type="checkbox"/>		Existing programming (general revenue), Approach railroad for funding	Village of Sheldon, in conjunction with Canadian National Railway and Wisconsin Department of Transportation
45. Retrofit or reconfigure the existing back-up power generator system in the village building to provide cooling, allowing the facility to serve as a community cooling shelter.	Extreme Temperatures	Village of Sheldon	Medium	<input type="checkbox"/>		Hazard Mitigation Grant Program	Village of Sheldon



PLAN MAINTENANCE

This chapter outlines the process Rusk County will use to assure that the goals, objectives, and action items described in this document will remain relevant. The first section, “Monitoring, Evaluating, and Updating the Plan,” describes the system established to monitor the plan, as well as how, when and by whom the plan will be evaluated. The next section describes how continued public involvement will be assured as the plan is monitored and updated. Post-adoption, the plan administrator will be the Rusk County Local Emergency Planning Committee (LEPC), an existing committee with broad membership across many sectors of government, emergency government, law enforcement, fire and rescue, community health services and business. The Rusk County Emergency Management Director will monitor plan implementation activities, both countywide and locally, and ensure that any related topics, goals or projects in this hazard mitigation plan are presented to those involved in county or local planning activities, especially those involved in preparing county, city, village or town comprehensive plans.

MONITORING, EVALUATING, AND UPDATING THE PLAN

To ensure that the Rusk County Hazard Mitigation Plan continues to meet the needs of the county, the document should be periodically reviewed and updated. To accomplish this it has been determined that the Rusk County Emergency Management Director should review the contents of the plan for its applicability annually and report to the LEPC on the progress made pertaining to goals, projects and actions contained in the document. Changing community values and beliefs, coupled with evolving technology necessitate that the document be considered a “living” document. The plan’s “Hazard Mitigation Strategy” should not only be re-evaluated within this “values” context, but also include an examination of plan successes and failures.

The LEPC should meet annually to formally address plan maintenance and revision issues. A more complete plan revision should occur at least once every five years. It is important that representatives from each of the county’s jurisdictions are involved in the plan update and monitoring process. Additionally, representatives from business, the insurance industry, homeowners’ association, public environmental organizations and social service providers should be included in the plan revision process.

In the process of evaluating the plan, the Hazard Mitigation Committee should answer the following questions:

- A. Do the goals and objectives continue to address expected conditions in Rusk County?
- B. Is the risk assessment still appropriate or has the nature or magnitude of the hazard and/or vulnerability changed over time?
- C. Are current resources appropriate for implementing this plan?
- D. Have lead agencies participated as originally proposed?
- E. Have outcomes met our expectations?
- F. What problems have occurred in the implementation process?
- G. What were the plan’s successes and failures?



H. Have member of the public been adequately involved in the process? Are their comments being heard?

The Rusk County Hazard Mitigation Planning Committee should be responsible for the following tasks relative to the plan revision process (ANNUAL BASIS)

- 1) Review the plans goal and objective statements to ensure consistency with changing values, beliefs and technology.
- 2) Monitoring and evaluating the mitigation strategies in this plan to assure that the document reflects current hazard analyses, development trends, code changes and risk analyses and perceptions.
- 3) Documenting the successful (and unsuccessful) completion of plan implementation strategies and monitoring/adjusting established timelines.
- 4) Developing new hazard mitigation strategies, and future mitigation actions to be undertaken in the community.
- 5) Continue to involve local units of government and the public in the planning process.

The Rusk County Hazard Mitigation Planning Committee should be responsible for the following tasks relative to the plan revision process (FIVE YEAR)

- 1) Update the plan's demographics
- 2) Update the "Hazard Identification" and "Risk Assessment" sections of the plan with relevant information. (i.e. documenting storms occurring within the timeframe)
- 3) Update plan statistics and valuations
- 4) Incorporate additional information that becomes available during the time period. For example, a completed shoreline recession rate study should result in new data which should be incorporated into the county's plan. Also, the release of relevant GIS data such as Q3 floodplain data will necessitate that the flood analysis portion of the document be revised to reflect more accurate data.
- 5) The County and participating jurisdictions will coordinate with other planning activities such as comprehensive planning, land use plans, and others to ensure that mitigation strategies are considered and addressed as appropriate. In addition, those planning activities will be coordinated with the five-year update of the hazard mitigation plan.
- 6) Revise the plan's "Hazard Mitigation Strategy" to reflect new data. Develop additional hazard mitigation measures based on new information.

CONTINUED PUBLIC INVOLVEMENT

To facilitate continued public involvement in the planning process, The Hazard Mitigation Planning Committee



should assure that the following steps are taken:

- A. The public should be directly involved in the update and review of the plan. All meetings should be open to the public and publicized to encourage attendance. Time for public comment should be granted throughout the process.
- B. Copies of the plan should be made available at all of the public libraries and at appropriate agencies throughout Rusk County.
- C. The plan will be available on the county's website, and will contain an email address and phone number the public can use for submitting comments and concerns about the plan.
- D. A public meeting will be held annually to provide the public with a forum for expressing concerns, opinions, and ideas.



APPENDIX



**Northwest Regional
Planning Commission**
an economic development district

Serving communities within and counties of
ASHLAND ● BAYFIELD ● BURNETT
DOUGLAS ● IRON ● PRICE ● RUSK
● RUSK ● WASHBURN
And the Tribal Nations of
BAD RIVER ● LAC COURTE OREILLES
LAC DU FLAMBEAU ● RED CLIFF ● ST. CROIX

August 15, 2012

Regional Hazard Mitigation Plan Participating Local Governments and Community Stakeholders,

You are cordially invited to attend a kickoff meeting regarding the development of a Hazard Mitigation Plan which includes Rusk County and its local jurisdictions. You are receiving this invitation because your community indicated a commitment to participate in order to receive local credit and to remain eligible for future FEMA funding. This meeting will be held at **6:00 PM on Monday September 10th, 2012 in the Board Room of the Rusk County Government Center.**

**Rusk County Government Center
311 Miner Avenue East
Ladysmith, WI 54848**

The Regional Hazard Mitigation Plan is being developed in compliance with the Disaster Mitigation Act of 2000. The Act requires communities and local public jurisdictions to have an approved, adopted hazard mitigation plan on file with the Federal Emergency Management Agency (FEMA) to be eligible to apply for and receive Hazard Mitigation Grant Program and other Federal mitigation program assistance. The plan developed for Rusk County and participating local jurisdictions will meet the minimum planning requirements for all FEMA mitigation programs.

Topics to be discussed at the kickoff meeting will include greater detail on the plan development process; community participation and responsibilities in order to receive credit; elements of the hazard mitigation plan and their implications; and a timeline for completion, approval, and adoption of the plan update.

We look forward to the participation of your community in the plan update process and encourage your questions, comments, and input at all stages of this process.

Sincerely,

Jason K. Laumann
Senior Planner
Northwest Regional Planning Commission

Four-County Regional Hazard Mitigation Plan

Monday September 10th, 2012

6:00 PM

Board Room

Rusk County Government Center

311 Miner Avenue East

Ladysmith, WI 54848

Agenda

1. Introductions
2. Overview of the hazard mitigation plan and planning requirements (Hazard Mitigation PowerPoint)
 - a. Participation requirements
 - b. Meetings
 - c. Committee appointment (County)
 - d. Exercises
3. Hazard history overview (Climate and Hazard History PowerPoint)
4. Hazard Identification Exercise (Hazard Identification PowerPoint)
5. Set next meeting date
6. Adjourn

RUSK COUNTY HAZARD MITIGATION PLANNING MEETING I AGENDA

***Monday, January 14th 2013
4:00 PM***

***Rusk County Government Center, Board Room
311 Miner Avenue East
Ladysmith, WI 54848***

1. Call meeting to order
2. Synopsis of the planning process
 - a) Hazard mitigation planning PowerPoint
3. Overview of natural and technological hazards.
 - a) Climate and hazard history PowerPoint
 - b) Hazard identification PowerPoint
 - c) Hazard priority matrix assignment
4. Other items
5. Public comment
6. Set next meeting date and adjourn

Local participating communities: Please bring copies of your local natural and manmade hazard ratings and critical /vulnerable facilities worksheets (worksheet #1, which was sent to you on September 11th, 2012)

Individuals wishing to direct written comments may do so to the attention of Jason Laumann, Northwest Regional Planning Commission, 1400 S. River Street, Spooner WI 54801 or by email to jlaumann@nwrpc.com

Regional Hazard Mitigation Plan – Rusk County 1-14-13

Name	Affiliation	Email Address
JASON LAUMANN	NWRPC	
JOHN FITZL	RUSK COUNTY GIS	JOHN@RUSKCOUNTYWI.US
MIKE ZIMMER	Rusk Co LWCD	MIKE@RUSKCOUNTYWI.US
PHIL SCHNEIDER	CB + village of Sheldon	Phil.Schneider1@yahoo.com
ARIAN KNOPS	CB of Town of ATLANTA	SERENITY2@BRYKTEL.NET AKNOPS@RUSKCOUNTYWI.US
Tom Hall	Rusk Co Em	thall@RuskCountyWI.US
Cele Tesky	Rusk County Zoning	ctesky@ruskcountywi.us
KURT GOETSEGNER	CITY OF LADYSMITH	KURT@CENTURYTEL.NET



**Northwest Regional
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Serving communities within and counties of
ASHLAND ● BAYFIELD ● BURNETT
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● RUSK ● WASHBURN
And the Tribal Nations of
BAD RIVER ● LAC COURTE OREILLES
LAC DU FLAMBEAU ● RED CLIFF ● ST. CROIX

March 26, 2013

Rusk County Hazard Mitigation Plan Participating Local Governments and Community Stakeholders:

The second meeting of the Rusk County Hazard Mitigation Planning Committee will be held at 3:00 PM on Monday, April 8th 2013 in the Board Room of the Rusk County Government Center. Local participating units of government are welcomed encouraged to attend.

**Rusk County Government Center
311 Miner Avenue East
Ladysmith, WI 54848**

Topics to be discussed include local hazard priorities, natural hazard occurrences and discussion of critical and vulnerable facilities.

We look forward to the participation of your community in the plan development process and encourage your questions, comments, and input at all stages.

Sincerely,

Jason K. Laumann
Senior Planner
Northwest Regional Planning Commission

Rusk County Hazard Mitigation Plan Meeting 2 Agenda

Monday, April 8th 2013

3:00 PM

Board Room

Rusk County Government Center

311 Miner Avenue East

Ladysmith, WI 54848

Agenda

1. Introductions
2. Review of historical hazard occurrences
3. Hazard Identification Exercise - Results
4. Critical and Vulnerable Facilities - Results
5. Adjourn

Rusk County Hazard Mitigation Plan - April 8, 2013

Name	Affiliation
John K. Deen	NWRPC
MARC EGGE	RUSK CO.
Tom Isaac	Em Rusk Co
Martin Huber	Village of Sheldon
Mike Zinner	Rusk co.
Cele Tesky	Zoning Administrator
John Pitt	CIFS SPECIALIST

Rusk County Hazard Mitigation Plan Meeting 3 Agenda

Monday, July 8th, 2013

2:00 PM

Board Room

Rusk County Government Center

311 Miner Avenue East

Ladysmith, WI 54848

Agenda

1. Introductions
2. Local participation
3. Critical and vulnerable facilities mapping
4. Hazard mitigation plan goals
5. Mitigation strategy action items
6. Adjourn

Rusk County Hazard Mitigation Plan Meeting 3 Agenda

Monday, July 8th, 2013
2:00 PM
Board Room
Rusk County Government Center
311 Miner Avenue East
Ladysmith, WI 54848

Agenda

1. Introductions
2. Local participation
3. Critical and vulnerable facilities mapping
4. Hazard mitigation plan goals
5. Mitigation strategy action items
6. Adjourn

Jason Klaman

NWRPC

Thomas Hall

RC EM

David Kaminski

Rusk County Sheriff

John Fitzl

GIS SPECIALIST

Arian Kovacs

County Board/Town of ATLANTIS

Hurt GORSEGUER

CITY OF LADYSMITH

Celina Cooper - Rush Co Public Health

John Huff - LAND INFO

Mike Zimmer - Land Conservation

IL UPATIS & COITSEGWFA CITY OF CADYSMITH

Tom Hall | Em - Rusk

PROOF OF PUBLICATION

AFFIDAVIT OF PUBLICATION

State of Wisconsin }
Rusk County } ss.

Leslie A. Harmon being duly sworn, on oath says that he (she) is an authorized representative of THE LADYSMITH NEWS, a weekly newspaper of general circulation published at Ladysmith, in said county: that a notice of which the annexed is a printed copy taken from said newspaper, was published therein on

June 12, 2014

Signed

Leslie A. Harmon
General Manager Title

Subscribed and sworn to before me this 12th day of

June 2014

Sally A. Carlson
Notary Public, Rusk County, Wisconsin

My commission expires 8-1-2017

Fees:

35 Lines
Fol.

1 inches wks. \$ 24.17

Plus 50% for tab.

Affidavit Fee..... \$ 1.00

TOTAL..... \$ 25.17



PUBLIC OPEN HOUSE RUSK COUNTY HAZARD MITIGATION PLAN

Rusk County is currently developing a countywide All-Hazards Mitigation Plan. The purpose of this All-Hazard Mitigation Plan is to (1) assist the county in identifying and reducing its risk from natural and human-caused hazards; (2) identify actions that can be taken to prevent damage to property and loss of life; (3) and prioritize funding for mitigation efforts. This project is being funded by a grant allocated by the Wisconsin Emergency Management Agency and funded by the Federal Emergency Management Agency.

The Rusk County Emergency Management Department is holding a public open house on June 30, 2014, from 3-5 pm at the Rusk County Board Meeting room located on the west side of the County building at 311 Miner Ave E., to discuss the development of the Hazard Mitigation Plan, describe the work completed to date, and highlight some of the hazards that could present the greatest risks to county. Members of the planning committee will be available to answer questions and listen to community and stakeholder comments. Display boards will be available to help explain the planning process and summarize the results of the hazard risk assessment undertaken as a key component of the Hazard Mitigation planning effort. Questions or comments regarding this public open house should be directed to Tom Hall at 715-532-2121 or thall@ruskcountywi.us

Rusk County Hazard Mitigation Plan Public Open House

June 30, 2014

Name	Community
Jasper Lowman	NWRPC
Thomas Ayl	Rusk Co. EM

HUGE MULTI-FAMILY SALE—Thursday and Friday, June 12 and 13, 4 - 8 p.m.; and Saturday, June 14, 8 a.m.-? Baby girl, kids, teen, adult clothes; Hollister, American Eagle, Hurley; household; linens; glassware; air conditioners; garden items; dresser; pet cage; DVDs. More added daily. 406 Sexton St., Chetek.

GARAGE SALE—Friday and Saturday, June 13 and 14, 8 a.m.-3 p.m. Stained glass grinder and accessories and much more. 1005 Fifth St., Chetek.

YARD SALE—Friday, June 13, 10 a.m.-5 p.m.; and Saturday, June 14, 7 a.m.-1 p.m. Sporting goods, shop tools, chainsaws, riding lawn mower and wagon, cow tank and heater, ATV trailer, freezers, boat, ATVs, restaurant equipment and much more. 704 CTH D, 4.5 miles east of Chetek.

GARAGE SALE—Saturday, June 14, 7:30 a.m.-2:30 p.m. Oak entertainment center; two ent. speakers; multi meters; golf buddy; golf course GPS; wood swivel TV stand; Kodak 35mm camera; Swiffer wet jet; misc. toys; clothes; dishes; glassware; costume jewelry; and coins. 105 Pine Street, Chetek.

GARAGE SALE—Thursday, June 12, 4-7 p.m.; and Friday, June 13, 8 a.m.-1 p.m. Girls' clothes up to 4T; carseats; toys; household; adult clothes; antique

**PUBLIC OPEN HOUSE
RUSK COUNTY HAZARD MITIGATION PLAN**

Rusk County is currently developing a countywide All-Hazards Mitigation Plan. The purpose of this All-Hazard Mitigation Plan is to (1) assist the county in identifying and reducing its risk from natural and human-caused hazards; (2) identify actions that can be taken to prevent damage to property and loss of life, (3) and prioritize funding for mitigation efforts.

This project is being funded by a grant allocated by the Wisconsin Emergency Management Agency and funded by the Federal Emergency Management Agency.

The Rusk County Emergency Management Department is holding a public open house on June 30, 2014, from 3-5 pm at the Rusk County Board Meeting room located on the west side of the County building at 311 Miner Ave E., to discuss the development of the Hazard Mitigation Plan, describe the work completed to date, and highlight some of the hazards that could present the greatest risks to county. Members of the planning committee will be available to answer questions and listen to community and stakeholder comments. Display boards will be available to help explain the planning process and summarize the results of the hazard risk assessment undertaken as a key component of the Hazard Mitigation planning effort. Questions or comments regarding this public open house should be directed to Tom Hall at 715-532-2121 or thall@ruskcountywi.us

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**NOTICE TO LADYSMITH
WATER CUSTOMERS**

Please take note that the City of Ladysmith will be flushing hydrants throughout the City during the weeks of June 9 - 13, 16 - 20 from 7:00PM to 11:30PM.

The flushing of water mains removes existing sediment and deposits of manganese (black specs which cause black or discolored water). In the process of flushing, some black sediment may become evident in your water. If so, please flush your house during a short period - one faucet for 5 to 10 minutes. If black or discolored water persists for more than a day, please contact City Hall at 532-2600.

DO NOT BECOME ALARMED over the safety of the water. Manganese in the water is only an aesthetic and/or odor problem and is not a health hazard.

Please, if at all possible, do not use water for clothes washing if the water is discolored or discolored water is extreme, since manganese in concentrated amounts will discolor cloth.

Flushing will be done during low water use hours and hopefully will not create a serious problem.

Water Department - City of Ladysmith

**NOTICE OF THE BOARD OF REVIEW
FOR THE
TOWN OF GRANT**

NOTICE IS HEREBY GIVEN that the Board of Review for the Town of Grant will hold its meeting on June 16, 2014 from 6:00 p.m. to 8:00 p.m., at the Grant Hall, W8494 Cty Hwy P, Ladysmith, Wisconsin.

Please be advised of the following requirements to appear before the Board of Review and procedural requirements if appearing before the Board:

No person shall be allowed to appear before the Board of Review to the Board by telephone or to contest the amount of any assessment or personal property if the person has refused a reasonable written request by certified mail of the Assessor to view such property.

After the first meeting of the Board of Review and before the Board adjournment, no person who is scheduled to appear before the Board may contact, or provide information to, a member of the Board about the objection except at a session of the Board.

No person may appear before the Board of Review, testify to the value of the property by telephone or contest the amount of any assessment unless, at least 48 hours before the first meeting of the Board or at least 48 hours before the objection is heard if the objection is allowed because the person has been granted the 48-hour notice of an intent to file a written objection by appearing before the Board during the first two hours of the meeting and showing good cause for failure to meet the 48-hour notice requirement and files a written objection with the Board. The person provides to the Clerk of the Board of Review notice as to when the person will ask for removal of any Board members and, if so, which members shall be removed and the person's reasonable estimate of the length of time the hearing will take.

When appearing before the Board, the person shall specify, in writing, the person's estimate of the value of the land and of the improvements thereon, the subject of the person's objection and specify the information that the person wishes to arrive at that estimate.

No person may appear before the Board of Review, testify to the value of the property by telephone or object to a valuation; if that valuation was made by the Assessor or the Objector using the income method; unless the person supplies to the Assessor all of the information about income and expenses, as specified in the manual under Section 73.03(2a), that the Assessor requests. The municipality or county shall provide by ordinance for the confidentiality of information about income and expenses that is provided to the Assessor under this paragraph. The Assessor shall provide exemptions for persons using the information in the discharge of their duties imposed by law or of the duties of their office or by order of a court. Information that is provided under this paragraph, unless a court determines otherwise, is not subject to the right of inspection and copying under Section 19.35(1).

The Board shall hear upon oath, by telephone, all ill or disabled persons who are unable to present to the Board a letter from a physician, surgeon or osteopath testifying to their illness or disability. No other persons may testify by telephone.

Respectfully,
TOWN CLERK
Kurt Gorske

**CITY OF LADYSMITH SUMMER
BRUSH, LEAF, AND YARD
WASTE DROP OFF DATES**

Brush, leaves, and yard waste from within the City of Ladysmith will be accepted on the following dates at the site of the Rusk County animal shelter, 1103 E. 3rd St. S., from 10:00 a.m. until 12:00 p.m. and from 1:30 p.m. until 3:30 p.m. An attendant will be on site.

1. Saturday, June 28th
2. Saturday, July 26th
3. Saturday, August 30th

For more information please call City Hall at (715) 532-2600 or go to our website www.cityofladysmithwi.com.

8N9SN105

The Bruce Housing Authority (BHA) 503 S Coleman St., Bruce, WI and the Ladysmith Housing Authority (LHA) 705 E. 4th St. S., Ladysmith, WI will receive written comment on their proposed Flat Rent Significant Amendments to their Annual Agency Plans (see below) until July 31, 2014 at their respective offices. The proposed new Flat Rent Amounts will also be posted at the offices. Public hearings to review comments received will take place at their regular August Board of Commissioners Meetings.

Flat Rent Significant Amendment

The BHA (LHA) hereby amends its flat rent policies to comply with the statutory changes contained within, Public Law 113 - 76, the Fiscal Year 2014 Appropriation Act.

The BHA (LHA) will set the flat rental amount for each public housing unit that complies with the requirement that all flat rents be set at no less than 80 percent of the applicable Fair Market Rent (FMR) adjusted, if necessary, to account for reasonable utilities costs. The new flat rental amount will apply to all new program admissions effective October 1, 2014. For current program participants that pay the flat rental amount, the new flat rental amount will be offered, as well as the income-based rental amount, at the next annual rental option.

The BHA (LHA) will place a cap on any increase in a family's rental payment that exceeds 35 percent, and is a result of changes to the flat rental amount as follows:

- 1) Multiply the existing flat rental payment by 1.35 and compare that to the updated flat rental amount;
- 2) The PHA will present two rent options to the family as follows:
 - a) the lower of the product of the calculation and the updated flat rental amount; and
 - b) the income-based rent.

Dated: June 4, 2014

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APPENDIX B - Updated HAZUS Level 1 Flood Analysis (September 2014)

Hazus-MH: Flood Event Report

Region Name: Rusk

Flood Scenario: Rusk

Print Date: Wednesday, September 17, 2014

Disclaimer:

Totals only reflect data for those census tracts/blocks included in the user's study region.

The estimates of social and economic impacts contained in this report were produced using Hazus loss estimation methodology software which is based on current scientific and engineering knowledge. There are uncertainties inherent in any loss estimation technique. Therefore, there may be significant differences between the modeled results contained in this report and the actual social

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General Description of the Region

Hazus is a regional multi-hazard loss estimation model that was developed by the Federal Emergency Management Agency (FEMA) and the National Institute of Building Sciences (NIBS). The primary purpose of Hazus is to provide a methodology and software application to develop multi-hazard losses at a regional scale. These loss estimates would be used primarily by local, state and regional officials to plan and stimulate efforts to reduce risks from multi-hazards and to prepare for emergency response and recovery.

The flood loss estimates provided in this report were based on a region that included 1 county(ies) from the following state(s):

- Wisconsin

Note:

Appendix A contains a complete listing of the counties contained in the region.

The geographical size of the region is 913 square miles and contains 1,670 census blocks. The region contains over 6 thousand households and has a total population of 15,347 people (2000 Census Bureau data). The distribution of population by State and County for the study region is provided in Appendix B.

There are an estimated 7,111 buildings in the region with a total building replacement value (excluding contents) of 1,069 million dollars (2006 dollars). Approximately 99.41% of the buildings (and 75.51% of the building value) are associated with residential housing.

General Building Stock

Hazus estimates that there are 7,111 buildings in the region which have an aggregate total replacement value of 1,069 million (2006 dollars). Table 1 and Table 2 present the relative distribution of the value with respect to the general occupancies by Study Region and Scenario respectively. Appendix B provides a general distribution of the building value by State and County.

Table 1
Building Exposure by Occupancy Type for the Study Region

Occupancy	Exposure (\$1000)	Percent of Total
Residential	807,019	75.5%
Commercial	123,727	11.6%
Industrial	71,510	6.7%
Agricultural	23,056	2.2%
Religion	18,966	1.8%
Government	13,607	1.3%
Education	10,883	1.0%
Total	1,068,768	100.00%

Table 2
Building Exposure by Occupancy Type for the Scenario

Occupancy	Exposure (\$1000)	Percent of Total
Residential	412,116	77.6%
Commercial	40,866	7.7%
Industrial	54,954	10.3%
Agricultural	13,065	2.5%
Religion	7,514	1.4%
Government	1,143	0.2%
Education	1,425	0.3%
Total	531,083	100.00%

Essential Facility Inventory

For essential facilities, there are 1 hospitals in the region with a total bed capacity of 134 beds. There are 17 schools, 4 fire stations, 3 police stations and no emergency operation centers.

Flood Scenario Parameters

Hazus used the following set of information to define the flood parameters for the flood loss estimate provided in this report.

Study Region Name:	Rusk
Scenario Name:	Rusk
Return Period Analyzed:	100
Analysis Options Analyzed:	No What-Ifs

General Building Stock Damage

Hazus estimates that about 77 buildings will be at least moderately damaged. This is over 56% of the total number of buildings in the scenario. There are an estimated 39 buildings that will be completely destroyed. The definition of the 'damage states' is provided in Volume 1: Chapter 5.3 of the Hazus Flood Technical Manual. Table 3 below summarizes the expected damage by general occupancy for the buildings in the region. Table 4 summarizes the expected damage by general building type.

Table 3: Expected Building Damage by Occupancy

Occupancy	1-10		11-20		21-30		31-40		41-50		Substantially	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Agriculture	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Commercial	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Education	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Government	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Industrial	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Religion	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Residential	0	0.00	0	0.00	3	3.90	9	11.69	26	33.77	39	50.65
Total	0		0		3		9		26		39	

Table 4: Expected Building Damage by Building Type

Building Type	1-10		11-20		21-30		31-40		41-50		Substantially	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Concrete	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
ManufHousing	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	11	100.00
Masonry	0	0.00	0	0.00	0	0.00	0	0.00	1	50.00	1	50.00
Steel	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Wood	0	0.00	0	0.00	3	4.69	9	14.06	25	39.06	27	42.19

Essential Facility Damage

Before the flood analyzed in this scenario, the region had 134 hospital beds available for use. On the day of the scenario flood event, the model estimates that 134 hospital beds are available in the region.

Table 5: Expected Damage to Essential Facilities

Classification	Total	# Facilities		
		At Least Moderate	At Least Substantial	Loss of Use
Fire Stations	4	0	0	0
Hospitals	1	0	0	0
Police Stations	3	0	0	0
Schools	17	0	0	0

If this report displays all zeros or is blank, two possibilities can explain this.

- (1) None of your facilities were flooded. This can be checked by mapping the inventory data on the depth grid.
- (2) The analysis was not run. This can be tested by checking the run box on the Analysis Menu and seeing if a message box asks you to replace the existing results.

Induced Flood Damage

Debris Generation

Hazus estimates the amount of debris that will be generated by the flood. The model breaks debris into three general categories: 1) Finishes (dry wall, insulation, etc.), 2) Structural (wood, brick, etc.) and 3) Foundations (concrete slab, concrete block, rebar, etc.). This distinction is made because of the different types of material handling equipment required to handle the debris.

The model estimates that a total of 5,541 tons of debris will be generated. Of the total amount, Finishes comprises 39% of the total, Structure comprises 35% of the total. If the debris tonnage is converted into an estimated number of truckloads, it will require 222 truckloads (@25 tons/truck) to remove the debris generated by the flood.

Social Impact

Shelter Requirements

Hazus estimates the number of households that are expected to be displaced from their homes due to the flood and the associated potential evacuation. Hazus also estimates those displaced people that will require accommodations in temporary public shelters. The model estimates 335 households will be displaced due to the flood. Displacement includes households evacuated from within or very near to the inundated area. Of these, 241 people (out of a total population of 15,347) will seek temporary shelter in public shelters.

Economic Loss

The total economic loss estimated for the flood is 40.05 million dollars, which represents 7.54 % of the total replacement value of the scenario buildings.

Building-Related Losses

The building losses are broken into two categories: direct building losses and business interruption losses. The direct building losses are the estimated costs to repair or replace the damage caused to the building and its contents. The business interruption losses are the losses associated with inability to operate a business because of the damage sustained during the flood. Business interruption losses also include the temporary living expenses for those people displaced from their homes because of the flood.

The total building-related losses were 40.00 million dollars. 0% of the estimated losses were related to the business interruption of the region. The residential occupancies made up 62.95% of the total loss. Table 6 below provides a summary of the losses associated with the building damage.

Table 6: Building-Related Economic Loss Estimates

(Millions of dollars)

Category	Area	Residential	Commercial	Industrial	Others	Total
<u>Building Loss</u>						
	Building	15.85	1.66	1.44	0.47	19.42
	Content	9.35	4.55	3.78	2.22	19.89
	Inventory	0.00	0.06	0.55	0.09	0.69
	Subtotal	25.20	6.27	5.76	2.78	40.00
<u>Business Interruption</u>						
	Income	0.00	0.01	0.00	0.00	0.01
	Relocation	0.01	0.00	0.00	0.00	0.01
	Rental Income	0.00	0.00	0.00	0.00	0.00
	Wage	0.00	0.01	0.00	0.01	0.02
	Subtotal	0.01	0.02	0.00	0.01	0.04
ALL	Total	25.21	6.29	5.76	2.78	40.05

Appendix A: County Listing for the Region

Wisconsin

- Rusk

Appendix B: Regional Population and Building Value Data

	Building Value (thousands of dollars)			Total
	Population	Residential	Non-Residential	
Wisconsin				
Rusk	15,347	807,019	261,749	1,068,768
Total	15,347	807,019	261,749	1,068,768
Total Study Region	15,347	807,019	261,749	1,068,768