

---

# ONEIDA COUNTY ALL HAZARDS MITIGATION PLAN UPDATE

	INTERNET DOWNLOAD VERSION	

**Oneida County Emergency Management**

## ONEIDA COUNTY ALL HAZARDS MITIGATION PLAN UPDATE

prepared for:

Oneida County Emergency Management

by:

North Central Wisconsin Regional Planning Commission

adopted by Oneida County Board on:

September 21, 2010

---

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

NORTH CENTRAL WISCONSIN REGIONAL PLANNING COMMISSION  
210 McCLELLAN STREET, SUITE 210  
WAUSAU, WI 54403



Telephone: 715-849-5510

FAX: 715-849-5110

email: [staff@ncwrpc.org](mailto:staff@ncwrpc.org)

[www.ncwrpc.org](http://www.ncwrpc.org)

**TABLE OF CONTENTS**

Part I – Update Planning Process

- Introduction ..... 1-1
- Disaster Mitigation Act of 2000 ..... 1-1
- Five Parts of All Hazards Mitigation Plan Update ..... 1-2
- Development of All Hazards Mitigation Plan Update ..... 1-2
- Key Elements of Update to Original 2005 Plan..... 1-2
- All Hazards Mitigation Plan Update Taskforce ..... 1-3
- Local Government Involvement ..... 1-3
- Neighboring Community Involvement ..... 1-4
- Local and Regional Agency Involvement..... 1-4
- Public Review Process and Update Adoption ..... 1-5
- Incorporated Plans, Studies, Reports and Technical Data ..... 1-5
- Contact Information..... 1-6

Part II – Planning Area

- Introduction ..... 2-1
- General Geography ..... 2-1
  - Location ..... 2-1
  - Civil Divisions ..... 2-1
  - Topography ..... 2-3
  - Climate ..... 2-4
- Demographic and Economic Profile..... 2-4
  - Population and Households ..... 2-4
  - Seasonal Population..... 2-6
  - Employment..... 2-7
- Land Use/Land Cover and Development Patterns..... 2-8
  - Forestry and Agriculture..... 2-8
  - Residential Development ..... 2-9
  - Commercial, Industrial & Institutional Development ..... 2-9
  - Surface Water ..... 2-11
  - Floodplains..... 2-11
  - Wetlands ..... 2-12
  - Other Land Cover/Uses ..... 2-15
  - Future Growth and Development in Oneida County..... 2-15
- Public Facilities and Services..... 2-17
  - Transportation..... 2-17
  - Utilities ..... 2-17
  - Emergency Services and Facilities..... 2-21
  - Critical Community Facilities..... 2-22
- Inventory & Value of Structures & Property in Oneida County ..... 2-27

Part III – Risk Assessment

- Introduction ..... 3-1
- Hazard Identification ..... 3-1
- Hazard Analysis ..... 3-2
  - Tornados..... 3-4
  - Severe Thunderstorms/High Wind/Lightning/Hail ..... 3-9
  - Flooding/Dam Failure..... 3-11
  - Hazardous Materials Incidents..... 3-20
  - Forest Fires/Wildfires ..... 3-24
  - Winter Storms/Extreme Cold ..... 3-27
  - Drought/Extreme Heat..... 3-30

Part IV – Mitigation Strategies

- Introduction ..... 4-1
- Progress Report 2005-2009 ..... 4-1
- Local Hazard Mitigation Goals ..... 4-4
- Prioritization of Strategies ..... 4-5
- Mitigation Action Plan..... 4-6
  - All Hazards..... 4-6
  - Tornados..... 4-9
  - Severe Thunderstorms/High Wind/Lightning/Hail ..... 4-12
  - Flooding/Dam Failure..... 4-12
  - Hazardous Materials Incidents..... 4-16
  - Forest Fires/Wildfires ..... 4-16
  - Winter Storms/Extreme Cold ..... 4-18
  - Drought/Extreme Heat..... 4-18

Part V – Plan Update Maintenance Procedures

- Introduction ..... 5-1
- Plan Update Adoption..... 5-1
- Plan Update Implementation ..... 5-1
- Plan Update Evaluation and Maintenance ..... 5-4

**Tables**

- Table 1 – Geographical Size by Municipality ..... 2-3
- Table 2 – Population of Adjacent Counties ..... 2-5
- Table 3 – Population and Households of Minor Civil Divisions..... 2-5
- Table 4 – Est. Seasonal Resident Population ..... 2-6
- Table 5 – Top Employers in Oneida County ..... 2-7
- Table 6 – Land Use in Oneida County ..... 2-9

Table 7 – Equalized Value by Civil Division..... 2-27  
Table 8a – Value of County Owned Properties ..... 2-28  
Table 8b – Value of City Owned Properties..... 2-28  
Table 8c – Value of Town Owned Properties ..... 2-29  
Table 9 – Tornado Wind and Damage Scale ..... 3-4  
Table 10 – Reported Tornadoes in Oneida County ..... 3-5  
Table 11 – Probability of Intensity for Given Tornado in Oneida County ..... 3-9  
Table 12 – Dams in Oneida County ..... 3-14  
Table 13 – Improvement Values of Structures in Floodplains in Oneida County .... 3-18  
Table 14 – Significant Hazardous Materials Spills..... 3-22  
Table 15 – Bench Mark for Progress 2004 - 2009 Plan ..... 4-2  
Table 16 – Summary of Mitigation Strategies ..... 4-20

**Maps**

Map 1 – Location Map..... 2-2  
Map 2 – Generalized Land Use..... 2-10  
Map 3 – Surface Water & Dams ..... 2-13  
Map 4 – Floodplains & Watersheds..... 2-14  
Map 5 – Transportation Map ..... 2-18  
Map 6 – Utilities ..... 2-20  
Map 7 – Fire Service ..... 2-23  
Map 8 – Police Service ..... 2-24  
Map 9 – Ambulance Service..... 2-25  
Map 10 – Critical Community Facilities..... 2-26  
Map 11 – Tornado Vulnerability ..... 3-8  
Map 12 – Flood Vulnerability ..... 3-17  
Map 13 –Rhinelanders Warning Siren Coverage ..... 4-11

**Appendixes**

Appendix A – Local Unit Survey..... A-1  
Appendix B – Resolutions of Plan Update Adoption ..... B-1



**Introduction**

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

**Disaster Mitigation Act of 2000**

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

- The Act establishes a new requirement for local governments and tribal organizations to prepare an All Hazards Mitigation Plan in order to be eligible for funding from FEMA through the Pre-Disaster Mitigation Assistance Program and Hazard Mitigation Grant Program.
- The Act establishes a requirement that natural hazards such as tornados, floods, wildfires need to be addressed in the risk assessment and vulnerability analysis parts of the All Hazards Mitigation Plan. Manmade such as hazardous waste spills is encouraged but not required to be addressed.
- The Act authorizes up to seven percent of Hazard Mitigation Grant Program funds available to a state after a federal disaster to be used for development of state, local, and tribal organization All Hazards Mitigation Plans.
- The Act establishes November 1, 2004 as the date by which local governments and tribal organizations are to prepare and adopt their respective plans in order to be eligible for the FEMA Hazard Mitigation Grant Program and November 1, 2003 Pre-Disaster Mitigation Program.
- If a plan is not prepared by November 1, 2004, and a major disaster is declared, in order for a local government or tribal organization to be eligible to receive funding through the Hazard Mitigation Grant Program, they must agree to prepare an All Hazards Mitigation Plan within one year.

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

**The Five Parts of an All Hazards Mitigation Plan Update**

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

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

**Development of the All Hazards Mitigation Plan Update**

The Oneida County Emergency Management Department received a Planning Grant in 2008 to update its All Hazards Mitigation Plan through the Pre-Disaster Mitigation (PDM) Program.

In late 2008, the North Central Wisconsin Regional Planning Commission (NCWRPC) finalized a work agreement with Oneida County and began preparation of the All Hazards Mitigation Plan at the request of the County Emergency Management Director in September of 2008.

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

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

**Key Elements Of The Update To The Original 2005 Plan**

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

- ✓ Review of Recommended Revisions - The final Crosswalk for the original plan approval recommended improving the descriptions of vulnerability in terms of existing and future buildings and infrastructure. The Update

expands the level of detail in the inventory of existing facilities and adds a new section on Future Growth and Development in Oneida County.

- ✓ Review and update of planning area chapter - The planning area description and inventory was expanded and improved with additional information and updated statistics.
- ✓ Expanded Hazard Coverage - New hazards addressed in the Update include: lightning, hail, extreme cold and extreme heat.
- ✓ Review and update of risk assessment - The risk assessment was updated with documentation on recent hazard events and utilization of the **HAZUS** flood module. The priority level of hazards facing the County was also reviewed and updated.
- ✓ Review and update of Mitigation Strategy - The mitigation strategies chapter begins with a complete progress report on the strategies from the 2005 plan, establishment of new set of strategies for next five-year cycle and an updated prioritization of projects.

**All Hazards Mitigation Plan Update Taskforce**

The Oneida County All Hazard Mitigation Plan Update was prepared under the guidance of an advisory taskforce that consisted of a broad cross section of government, agency and interest group representatives from across the County. Periodic meetings were held with the NCWRPC staff, the County Emergency Management Director (Ken Korten Hof), and the Task Force to provide input on the types of hazards to be considered, appropriate mitigation strategies, and to review draft reports. Task Force members and their representation are as follows:

Brian Gehrig	Print Pak Company / Pine Lake Town Board
Larry Greshner	County Board
Karl Jennrich	Oneida County Planning and Zoning Administrator
Dan Kuzlik	University of Wisconsin Extension - Oneida County
Clarence Puza	Oneida County Haz-Mat Chief
Mike Romportal	Oneida County Land Information Officer
Terry Williams	Chief, Rhinelander Fire Department

**Local Government Involvement**

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

In October of 2009 a hazard mitigation issues survey was sent to each town chairperson and clerk, see APPENDIX A, requesting which hazards are a concern, input on past and future mitigation measures, and to document other

information that could be incorporated into the All Hazards Mitigation Plan Update. Responses were received from 14 of 20 towns. A significant amount of information was gleaned from these questionnaires and incorporated into the planning document. Town representatives were also invited to the Agency Involvement Meeting; refer to that section, below.

The City of Rhinelander was formally introduced to the update process at a separate meeting on January 25, 2010. City Administrator Bill Bell, Fire Chief Terry Williams, Police Chief Mike Steffes, and the Public Works Foreman were in attendance. The participants at this meeting provided information on hazards that have significance to the area, discussed critical facilities and provided mitigation strategy ideas for the plan.

**Neighboring Community Involvement**

One of the requirements of the update process was to include neighboring communities. In previous plans, the NCWRPC experienced low attendance in response to invitations to county emergency management staff from surrounding counties. As a result, NCWRPC staff teleconferenced during the update process with staff from Vilas, Forest, Langlade, Lincoln and Price counties. Ideas were exchanged about All Hazards Mitigation planning processes and strategies between the various counties.

**Local and Regional Agency Involvement**

Another requirement of the update process was to involve local and regional agencies that have a role in hazard mitigation activities, and agencies that have the authority to regulate development, as well as businesses, academia, and other private and non-private interests. To meet this objective, the NCWRPC invited a diverse group of stakeholders to discuss potential hazard mitigation strategies.

The meeting was held on January 25, 2010 at the Oneida County Law Enforcement Center in Rhinelander. Agencies and organizations represented include the following:

- Lennie Drewson - Woodruff Police
- Doug Duchac - St. Mary's Hospital / Oneida County EMS
- Jeff Feese - Howard Young Medical Center / Oneida EMS
- Dave Jaeger - Minocqua Police
- Kyle Johnson - Woodboro First Responders
- Nick Scholtes - Oneida County Highway Dept.
- Matt Szczupaj - Minocqua First Responders
- Jeff Viegut - Town of Lynne
- Terry Williams - Rhinelander Fire

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

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

During the meeting a number of issues were discussed. Meeting attendees brought up issues with early warning. Warning sirens and NOAA weather radios were discussed. Evacuation and shelter issues were also brought up. The recreational nature of the County was brought up regarding the implication of providing shelter for people such as campers. A variety of other issues were discussed briefly.

### **Public Review Process and Plan Adoption**

Opportunities for public comment were provided to review the Plan Update during the drafting stage and prior to Plan approval. All meetings were properly posted and open to the public. A copy of the draft was made available on the Internet. Comments and questions about the Plan were directed to the Oneida County Emergency Management Department.

A public informational meeting on the draft update was held at the Oneida County Law Enforcement Center on May 3, 2010. Notices were posted in the local newspapers. Unfortunately, no members of the public chose to attend this meeting. In addition, no comments were received via U.S. Mail or email as a result of this meeting.

A public hearing will be scheduled by the County Emergency Management Committee prior to forwarding to County Board for approval. Following the public hearing, the plan update will be forwarded to the County Board for final adoption. The adopting resolution will be included in Appendix B along with details on any plan changes resulting from hearing comments and County Board action.

Each local unit was asked to adopt the plan update for its jurisdiction at their own properly posted and open public meeting, see APPENDIX B for the County and other local units resolutions of adoption.

### **Incorporated Plans, Studies, Reports And Technical Data**

Many plans, reports, and technical data were referenced and incorporated into the Oneida County All Hazards Mitigation Plan Update. The following is comprehensive list of the data was used:

- Oneida County Comprehensive Plan Draft
- Oneida County Emergency Operations Plan
- Emergency Action Plans – various dams within county
- Flood Insurance Study...for Oneida County and Incorporated Areas

- FIRM Maps for Oneida County
- Hazard Analysis for the State of Wisconsin
- Land and Water Resource Management Plan – Oneida County
- Zoning Ordinance – Oneida County
- State of Wisconsin Hazard Mitigation Plan
- Oneida County All Hazards Mitigation Plan 2005

**Contact Information**

Ken Kortenhof, Director  
Oneida County Emergency Management  
Oneida County Law Enforcement  
2000 East Winnebago Street  
Rhinelander, WI 54501

715-361-5167

[kkortenhof@co.oneida.wi.us](mailto:kkortenhof@co.oneida.wi.us)

**INTRODUCTION**

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

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

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

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

**GENERAL GEOGRAPHY****LOCATION**

Oneida County is located in north central Wisconsin (See Map 1). The largest urban area is the City of Rhinelander. There are also the unincorporated "villages" within the Towns of Lake Tomahawk, Minocqua/Woodruff and Three Lakes distinguishable by their downtown-like business districts. The County is bounded on the north by Vilas County, on the east by Forest, on the south by Langlade and Lincoln, and on the west by Price County.

Oneida County lies 268 miles north of Milwaukee; 135 miles northeast of Green Bay; 60 miles north of Wausau and 200 miles north of Madison. Major metropolitan areas outside of Wisconsin with transportation linkages to Oneida County are Chicago, 340 miles southeast; Minneapolis-St. Paul, 242 miles southwest; and Duluth, 200 miles northwest.

**CIVIL DIVISIONS**

There are 21 municipalities (20 towns and 1 city) in the Oneida County planning area. The City of Rhinelander is the County Seat. These units of government provide the basic structure of the decision-making framework. The County has a total surface area of 1,235 square miles, of which about 10 % is water. The area and proportion of the County within each civil division is presented in Table 1.

Insert Map 1 Location

<b>Table 1 Geographical Size by Civil Division</b>				
	<b>Area in square miles</b>			
<b>Municipality</b>	<b>Water area</b>	<b>Land area</b>	<b>Total area</b>	<b>Area as % of County</b>
Cassian town	3.36	64.99	68.35	5.5%
Crescent town	3.37	29.34	32.71	2.6%
Enterprise town	2.24	56.69	58.92	4.8%
Hazelhurst town	3.87	31.18	35.05	2.8%
Lake Tomahawk town	4.90	34.31	39.21	3.2%
Little Rice town	5.56	68.11	73.67	6.0%
Lynn town	1.50	70.50	72.00	5.8%
Minocqua town	17.29	150.80	168.09	13.6%
Monico town	0.46	54.10	54.56	4.4%
Newbold town	13.94	79.06	93.0	7.5%
Nokomis town	3.61	33.39	37.0	3.0%
Pelican town	2.70	51.45	54.15	4.4%
Piehl town	0.59	37.39	37.98	3.1%
Pine Lake town	4.41	40.60	45.01	3.6%
Schoepke town	4.53	46.05	50.58	4.1%
Stella town	1.96	35.32	37.29	3.0%
Sugar Camp town	9.15	88.87	98.02	7.9%
Three Lakes town	18.38	81.50	99.88	8.1%
Woodboro town	2.36	34.59	36.95	3.0%
Woodruff town	7.04	28.53	35.57	2.9%
Rhineland city	0.17	7.72	7.88	0.64%
Oneida County	111.39	1,124.49	1,235.87	100.0%

Source: U.S. Census and NCWRPC

**TOPOGRAPHY**

Oneida County is in the Northern Highlands area of Wisconsin. The surface of the County is a gently undulating plain, dotted with numerous lakes and swamps. There are some relatively prominent drift hills in the northeast. The soil varies from a fine sand to sandy loam and loam. The elevation is generally between 1,500 and 1,800 feet, with most of the land only slightly higher than the level of the lakes and streams.

The drainage pattern in the County is typical of a glaciated region: irregular and poorly defined. It is characterized by numerous lakes, bogs and marshes. Most

of the County is drained by the Wisconsin River and its tributaries. The Wolf and its tributaries drain a small area in the southeastern part of the County. Watersheds in the extreme northwest corner drain via Squaw Creek and in to the Flambeau-Chippewa system, which empties into the upper Mississippi River.

### **CLIMATE**

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

In winter, the average temperature is 14 degrees F., and the average daily minimum temperature is 4 degrees. The lowest temperature on record is -42 degrees, which occurred in 1996. The number of days at or below 0 degrees has varied from 9 in 1931 to 53 in 1950. In summer, the average temperature is 66 degrees and the average daily maximum temperature is 77 degrees. The highest recorded temperature is 100 degrees, which occurred in 2006. The number of days at or above 90 degrees has varied from 1 in 1951 to 35 in 1933.

Total annual precipitation is about 30.66 inches. Of this, about 70% usually falls in April through September. Thunderstorms occur on about 34 days each year. Hail falls on an average of two days a year. Average seasonal snowfall is 53 inches. The prevailing wind is from the southwest, with the highest average wind speed of 12 mph during spring.

### **DEMOGRAPHIC AND ECONOMIC PROFILE**

#### **POPULATION AND HOUSEHOLDS**

The official state 2008 population estimate for Oneida County shows a population of 38,903 people for the County. This represents a nearly 6% increase over the 2000 Census reported population of 36,776 people. Since 1990, the population of Oneida County has increased by 23% or by 7,224 people. Oneida has outpaced most of its neighbors except Vilas (refer to Table 2). If the growth rate continues at the current level, there will be approximately 41,159 people in Oneida County in 2016, and 43,546 people in 2024.

Population concentrations and trends are important when prioritizing hazard mitigation strategies. Approximately 26 percent of the population is classified by the Census as urban and 74 percent is rural. Rhinelander is the most densely populated and developed area in the County. Other areas of population concentrations include the Towns of Minocqua, Woodruff and Three Lakes. Map 2 shows areas of residential population concentrations in the County. Overall population density of the County is 33 persons-per-square-mile and ranges from a high of 1002.5 in the City of Rhinelander to a low of 2.5 in the Town of Piehl.

<b>County</b>	<b>2000</b>	<b>2008</b>	<b># Change</b>	<b>% Change</b>
Oneida	36,776	38,903	2,127	5.8%
Vilas	21,033	23,044	2,011	9.6%
Forest	10,024	10,393	369	3.7%
Langlade	20,740	21,680	940	4.5%
Lincoln	29,641	30,681	1,040	3.5%
Price	15,822	16,088	266	1.7%
Wisconsin	5,363,675	5,675,156	311,441	5.8%

Source: U.S. Census, WisDOA and NCWRPC

Between 2000 and 2008, most communities within the County have experienced an increase in their population base (refer to Table 3). The greatest amount of growth occurred in the Town of Lake Tomahawk with an 18% increase between 2000 and 2008. The City of Rhinelander also exhibited strong growth of nearly 15%, aided by annexation and large new apartment complexes (150 units). Woodruff followed closely with nearly 13%. The Towns of Minocqua, Pine Lake and Stella each grew about 10% over this time frame.

<b>MINOR CIVIL DIVISION</b>	<b>2000</b>	<b>2000</b>	<b>2008</b>	<b>2008</b>	<b>% '00-'08'00-'08 %</b>	
	<b>Population</b>	<b>Households</b>	<b>Population</b>	<b>Households</b>	<b>Population</b>	<b>Households</b>
Cassian town	962	402	1,041	436	8.2%	8.3%
Crescent town	2,071	797	2,144	828	3.5%	3.9%
Enterprise town	274	124	283	128	3.3%	3.3%
Hazelhurst town	1,267	528	1,382	576	9.1%	9.1%
Lake Tomahawk t	1,160	475	1,221	560	5.3%	17.9%
Little Rice town	314	138	315	138	0.3%	0.1%
Lynne town	210	92	206	90	-1.9%	-1.8%
Minocqua town	4,859	2,189	5,347	2,409	10.0%	10.0%
Monico town	364	128	372	131	2.2%	2.3%
Newbold town	2,710	1,114	2,927	1,205	8.0%	8.1%
Nokomis town	1,363	556	1,474	602	8.1%	8.2%
Pelican town	2,902	1,167	2,661	1,069	-8.3%	-8.4%
Piehl town	93	39	101	42	8.6%	8.8%
Pine Lake town	2,720	1,063	2,872	1,172	5.6%	10.3%
Schoepke town	352	156	354	157	0.6%	0.4%
Stella town	363	236	690	260	9.0%	10.3%
Sugar Camp t	1,781	708	1,934	767	8.6%	8.4%
Three Lakes t	2,339	1,031	2,460	1,098	5.2%	6.5%
Woodboro town	685	310	727	329	6.1%	6.1%
Woodruff town	1,982	866	2,169	977	9.4%	12.8%
Rhinelander city	7,735	3,214	8,223	3,687	6.3%	14.7%
<b>County Total</b>	<b>36,776</b>	<b>15,333</b>	<b>38,903</b>	<b>16,225</b>	<b>5.8%</b>	<b>5.8%</b>

Source: U.S. Census, WisDOA and NCWRPC

According to the Wisconsin Department of Workforce Development the median age in Oneida County is 44.7, equating to the fifth oldest population in the State. By 2020 it is anticipated that the average age of County residents will be 46.4 and 48.0 by 2030. This puts the County's average age well above the expected state average of 39.6 years in 2020 and 41.0 in 2030.

### **SEASONAL POPULATION**

In addition to the regular full-time resident population, Oneida County is known as a popular tourist destination. This is reflected in the make-up of its housing stock where 39% of all housing units have been identified as seasonal/recreational. The impact of this seasonal population cannot be overlooked when planning for hazards. Table 4 shows estimated seasonal residents by municipality. Determining when and for how long these seasonal residents will be in the County is problematic, but the numbers give some indication of what weekend or other peak period population levels might be.

<b>Municipality</b>	<b>Est. 2008 Seasonal Housing Units</b>	<b>Est. 2008 Seasonal Population</b>
Cassian town	631	1,507
Crescent town	232	600
Enterprise town	258	571
Hazelhurst town	610	1,463
Lake Tomahawk town	646	1,409
Little Rice town	284	648
Lynne town	197	450
Minocqua town	2,161	4,797
Monico town	76	215
Newbold town	961	2,336
Nokomis town	462	1,132
Pelican town	277	689
Piehl town	42	101
Pine Lake town	304	746
Schoepke town	462	1,044
Stella town	78	208
Sugar Camp town	616	1,552
Three Lakes town	1,931	4,326
Woodboro town	279	617
Woodruff town	677	1,503
Rhineland city	41	92
<b>County Total</b>	<b>11,036</b>	<b>25,824</b>

Source: U.S. Census and NCWRPC

Another component of the seasonal population includes short-term accommodations such as campgrounds or hotel-style lodging. The scope of this plan did not provide for a detailed inventory of accommodations, however the Wisconsin DNR completed a general inventory as part of its statewide comprehensive outdoor recreation plan. That inventory identified 3,089 hotel/motel beds, 45 bed and breakfast beds and 492 other types of beds available around the County. The DNR also identified 1,596 campsites in various campgrounds across the County as well as educational/recreational camps with capacity for 2,771 individuals.

**EMPLOYMENT**

The trade, transportation & utilities industry sector has the greatest impact on Oneida County employment having the most employees at about 4,700 jobs in 2007 which is more than 26% of total employment. Education & health is the second largest sector in the County with 3,933 positions or 22.5% of total employment. The leisure & hospitality sector has the third highest number of employees at about 2,300 or 13.2 percent.

Within the leisure & hospitality sector are two prominent sub-sectors: food service & drinking places and food & beverage stores. With the extent of lakes and recreation land, Oneida County is a popular tourist destination, creating more demand for restaurants, bars and hotels. Although food service is the number one industry sub-sector, none of these employers appear on the list of top employers in the County as jobs in food service and drinking places tend to be seasonal with many part-time positions.

<b>Company</b>	<b>Product or Service</b>	<b>Size</b>	<b>Location</b>
Sacred Heart - St. Mary's Hospital	General medical & surgical hospitals	500-999	C. of Rhinelander
Howard Young Medical Center	General medical & surgical hospitals	500-999	T. of Woodruff
Foster & Smith Inc.	Mail-order houses	500-999	C. of Rhinelander
Wal-Mart	Discount department store	500-999	C. of Rhinelander T. of Minocqua
Wausau Paper Specialty Products	Paper, except newsprint, mills	500-999	C. of Rhinelander
School District of Rhinelander	Elementary and secondary schools	250-499	Various locations
Trig's	Supermarkets & other grocery stores	250-499	C. of Rhinelander T. of Minocqua
County of Oneida	Executive & legislative offices	250-499	Various locations
Nicolet Area Technical College	Junior colleges	250-499	C. of Rhinelander T. of Minocqua
Ministry Medical Group, Inc.	Offices of physicians except mental health	250-499	C. of Rhinelander T. of Woodruff

Source: WisDWD

Healthcare sub-sectors are well represented on the top employers list (refer to Table 5) as a result of the demand for health services generated by the County's aging population. Educational services are also a large source of employment with two major educational facilities among the top employers in the County: Rhinelander School District and the Nicolet Technical College.

Identifying locations of large employment is important when prioritizing hazard mitigation strategies. Updated breakdowns of employment by municipality will not be available until the draft of the Oneida County Comprehensive Plan in late 2010. However, the listing of top employers confirms Rhinelander and Minocqua/Woodruff as the primary employment and service hubs in the County.

In addition to the seasonal swells in employment, the number of people working in a given locality fluctuates on a daily basis. The county is a net importer of labor. In other words, the County has fewer local jobs than residents who work. Over 20 % of the County's workforce enters from other counties while only about 17 % of working residents travel to work outside the county. It is difficult to predict the long-term effect of the recent downturn in the economy on the local employment picture.

### **LAND USE/LAND COVER AND DEVELOPMENT PATTERNS**

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

The Oneida County Comprehensive Plan has categorized land use in Oneida County into classifications. Aerial photos were used to digitize a land use Geographic Information System (GIS) coverage. Map 2 shows the land use and development concentrations in Oneida County. Table 6 shows the acreage and percent of each classification.

### **FORESTRY AND AGRICULTURE**

The dominant land-use in Oneida County is forestry and agriculture. Land area in the County is approximately 82 percent forested, comprised of 650,000 acres of woodland. Agricultural land covers another 4 percent of the county's land area. The main agricultural practices in the county are potatoes, some forage and hay crops, and a minor amount of cattle. There are also about 1,300 acres of cranberry production concentrated primarily in the Towns of Cassian, Minocqua, Newbold and Three Lakes. Agriculture is scattered through out the county but much of it is concentrated in the Town of Stella.

Generalized Land Use in Oneida County		
Description	Acres	Percent
Agriculture*	30,724.10	3.88%
Commercial and Industrial	3,476.71	0.44%
Governmental/ Public/Institutional	824.45	0.1%
Outdoor Recreation	1,849.57	0.23%
Residential	22,958.98	2.90%
Transportation	6,241.16	0.79%
Water	74,005.05	9.36%
Woodlands	650,557.76	82.28%
Total	790,637.78	100.0%

Source: NCWRPC

\*Includes Open Grassland and Cranberry Bogs.

**RESIDENTIAL DEVELOPMENT**

Land in residential development makes up only 2.9 percent of the total county area. Residential concentrations are scattered throughout the county (see “Population and Households” above). Much of the scattered rural development is related to direct recreational demand as various types of housing have clustered along streams and lakes.

There are a number of mobile home parks in the county. According to the U.S. Census, there were 2,179 mobile homes in 2000. This is about 8.2 percent of housing units for the County compared to about 4 percent for the entire state. This is significant due to their vulnerability in natural hazards especially tornadoes. Map 11 displays the mobile home concentrations within the County.

**COMMERCIAL AND INDUSTRIAL DEVELOPMENT**

Commercial and industrial development makes up only about 0.44 percent of the total area of the County. Land use for commercial and industrial development is also scattered throughout the county. There are two designated industrial parks in Oneida County. They are in the City of Rhinelander and Town of Three Lakes. A new "sustainable" business park is currently under development. Commercial centers are located in the City of Rhinelander, the Minocqua/Woodruff area and the Town of Three Lakes. Commercial activity in the surrounding rural area is primarily dominated by small commercial recreation operations focusing on the tourist industry.

Insert Map 2 Land Use

**SURFACE WATER**

Oneida County has a total surface area of about 790,638 acres, however, about 74,000 acres (9.36%) is comprised of surface water (see Map 4). The majority of this area is comprised of 426 named lakes and 701 unnamed lakes totaling 66,545 acres and 2,056 acres respectively. The largest natural lake is Lake Tomahawk at 3,627 acres, and the largest artificial water body is the Willow Reservoir at 5,135 acres. The deepest lake is Clear Lake, which measures approximately 100 feet at its deepest point. The County contains 830 miles of streams, of which about 192 miles are classified as trout streams. The Three Lakes area holds the world's largest chain of freshwater lakes. While most of the County drains into the Wisconsin River, a small area in the southeast drains into the Wolf River and another small area in the northwest drains through a series of river systems to the upper Mississippi River.

Oneida County contains fourteen watersheds located throughout the County. Map 5 shows the watershed boundaries. The watersheds are as follows:

- Upper South Fork Flambeau River
- Bear River
- Sugar Camp Creek
- Eagle River
- Upper Tomahawk River
- Middle Tomahawk River
- Lower Tomahawk River
- Somo River
- Rhinelander Flowage
- Pelican River
- Woodboro
- Noisy and Pine Creek
- Prairie River
- Upper Wolf River

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

**Floodplain**

The primary value of floodplains is their role in natural flood control. Flood plains represent areas where excess water can be accommodated whether through drainage by streams or through storage by wetlands and other natural detention/retention areas. Specific areas that will be inundated will depend upon the amount of water, the distance and speed that water travels, and the topography of the area. If uninterrupted by development, the areas shown on Map 5 as floodplains should be able to handle the severest (regional) flood, i.e. those that have a probability of occurring once every one hundred years.

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

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

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

In order to participate in the Federal Emergency Management Agency's (FEMA) National Flood Insurance Program, the County and the City of Rhinelander have completed a Flood Insurance Study and a Flood Insurance Rate Map (FIRM) that encompasses Oneida County. This FIRM delineates the "A" Zones including the floodway and flood fringe which are those areas inundated by the 100-year flood within the County. Oneida County is not yet scheduled for DFIRM (Digital-FIRM) development, and the County expects to remain well down on the priority list for some time. As a result, the NCWRPC digitized the FIRM for use in this plan. Although unofficial, these digital files indicate there are 54,756 acres floodplain in Oneida County, or 6.9 percent of the area of the County. Map 5 shows the approximate floodplains in Oneida County. Floodplains in Oneida are small and floods occur only during periods of exceptionally heavy rainfall or in conjunction with snowmelt. Currently, there are no repetitive loss structures, those with multiple flood insurance claims, in Oneida County.

### **Wetlands**

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

Insert Map 3 Surface Water

Insert Map 4 Floodplain

The DNR has identified the location of wetlands on their WISCLAND database. According to this, Oneida County has about 230,000 acres, or 29 percent of its total area. Map 2 shows these wetland areas in Oneida County.

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

### **Other Land Cover/Uses**

Recreational lands including parks and outdoor sports facilities total about 1,850 acres or 1/4<sup>th</sup> of 1 percent of the county area. Other lands may have recreational aspects, particularly woodlands. Governmental, public and institutional lands total about 824 acres or about 0.1% of the County area. The transportation category is primarily the roadway travel corridors for federal, state, county and local highways and roads. Sometimes overlooked, transportation land use can be significant. In Oneida County, surface transportation facilities consume about 6,241 acres of land or about 0.8 percent of total area. Note that this is more than three times as much land area as is used for commercial, industrial and institutional uses in the County.

## **FUTURE GROWTH AND DEVELOPMENT IN ONEIDA COUNTY**

Oneida County's population has increased 5.8% over the last eight years for a net gain of 2,127 residents. While the County continues to grow, the rate of growth has declined from the very high rates observed during the 1990's.

From a net growth perspective, residential migration into Oneida County has been solely responsible for all of its population growth because natural growth has been negative (more deaths than births). This growth pattern is reflective of an aging population and booming seasonal-to-permanent housing markets.

Rhineland is the largest urban area in the County and will see continued growth as the employment and shopping hub for the surrounding area. The subdivision on Timber Drive was cited as an example of new residential growth in the Rhineland area. The Town of Newbold will also likely see continued development in part as a bedroom community to Rhineland. Pelican and Crescent are also expected to see future growth as "bedroom communities" to Rhineland. Annexation is likely a principal avenue for future city growth and may ultimately shift some of the growth in surrounding towns over to the City.

Outside Rhineland, growth tends to be clustered in subdivisions near popular lakes and recreation areas, and relatively close to amenities like retail and healthcare. This will result in continued strong growth in the Towns of Woodruff, Minocqua and Hazelhurst as well as Nokomis, Sugar Camp and Three Lakes.

By 2024, Oneida County will have grown to a population of about 43,546, a gain of 6,770 residents from the 2000 Census, if the growth rate continues at the current level. In light of the recent nation-wide economic downturn, this may be an overly optimistic projection, however, it is difficult to predict the long-term effect on overall growth and development in the County.

New commercial and industrial development is expected to be gradual over time, paralleling population growth. The most significant concentrations of this development will likely be in the City of Rhinelander and the Towns of Minocqua and Woodruff. The new "sustainable" business park, being developed on Highway 8 west of Rhinelander across from the airport, will be the primary location for new industrial development in the County with about 160 acres of land for industrial and business development. The County is expected to remain a net importer of labor as a higher concentration of manufacturing, healthcare and tourism jobs draw workers from the surrounding area.

New infrastructure or public facilities will be somewhat minimal, excepting limited replacement of existing facilities. For example, the County is currently looking at expanding its Senior Center in Rhinelander. The exact site has not yet been selected, but it will likely be a larger, existing building that the County will adapt and reuse. The County will try and sell the old facility.

Another example is the City's new wastewater treatment plant under construction on Highway 17 about 3 miles south of the City. The existing plant on Boyce Drive will be removed, and a new pump station will be built in its place. The Town of Schoepke is building a replacement fire barn. The Town of Little Rice will be building an addition onto its municipal building. Rhinelander is building an addition to its fire station to accommodate its new ambulance service, and a second fire station is being built in Three Lakes. The Towns of Enterprise and Lake Tomahawk are planning new fire houses.

Other significant facilities planned or being developed include Minocqua's multi-purpose sports / festival complex just west of the "downtown" and new wireless communications infrastructure which will be developed throughout the County.

Overall, the majority of growth will occur in the towns, which, with exception of Minocqua, Woodruff & Three Lakes, don't provide extensive services, and budget constraints will curtail local government ability to develop new facilities and result in a tendency to make do with existing infrastructure and delay expansion plans.

The County's population is generally older with a median age over 44 years, versus statewide median age of 36 years. Over the next few decades, the residential base will become even older, aging much more quickly than the state as a whole. In fact, the number of persons 60 and older will likely increase to 45 percent of the population by 2030. This will have implications affecting the demand for emergency services.

**PUBLIC FACILITIES AND SERVICES****TRANSPORTATION**

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

The principal highways serving Oneida County are (north-south) US Highways 45 & 51 and State Highway 17 which serves Rhinelander and (east-west) US Highway 8. State highways 32, 47 and 70 also serve the County. These highways link the County with neighboring communities and are vital to the County's tourism and recreation-based economy.

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

The Wisconsin Department of Transportation maintains 15 bridges on state highways within the County. Oneida County itself owns another 13 bridges on various County highways. Local roads have 8 bridges in the City and another 21 bridges belonging to various towns. There are also two rail bridges.

Oneida County Social Services coordinates transit services for the elderly and disabled in the County with bus service in the Rhinelander area and vans in the Minocqua-Woodruff area. A volunteer driver network is also available.

The Canadian National Railroad also serves Oneida County. The rail line runs east-west through the southern and central part of the County with access in Rhinelander at the downtown rail yard, the mill and the airport industrial park.

The Rhinelander-Oneida County Airport is located approximately two miles west of the City of Rhinelander. This is the largest airport in the County, providing commercial service through Northwest and Great Lakes Airlines. In addition, a grass field airport that can accommodate smaller aircraft is located in Three Lakes. There are also a number of privately owned airfield facilities in the County including the Howard Young Medical Center Heliport in Woodruff.

**UTILITIES**

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

Insert Map 5 Transportation

The protection of the public water supply facilities from potential contamination from hazards such as flooding is a consideration for hazard mitigation planning. Oneida County has four public water / wastewater systems. The City of Rhinelander has the largest system in the County serving approximately 3,600 customers including commercial, industrial and residential use. The Lakeland Sanitary District serves about 1,200 customers across parts of Minocqua, Woodruff and Arbor Vitae in Vilas County. This service area is comprised of the more developed areas of those towns representing mostly residential and commercial use. The Lake Tomahawk Sanitary District serves about 500 mostly residential and commercial customers. The Three Lakes Sanitary System is the smallest in the County with about 300 customers including residential, commercial and some industrial use.

The protection of the wastewater facilities is an important consideration for hazard mitigation planning because of its potential to contaminate nearby waterbodies in the event of high water. Also of concern during periods of flooding is the threat of damage to infrastructure and associated facilities.

ANR Company provides a pipeline to move petroleum through the County. The line runs 7 miles from the southern part of the County to the City of Rhinelander and the 20 miles from the City to the eastern border with Forest County.

Wisconsin Public Service provides natural gas to the City of Rhinelander along with the following towns: Crescent, Enterprise, Hazelhurst, Lake Tomahawk, Minocqua, Monico, Newbold, Nokomis, Pelican, Shoepke, Stella, Piehl, Pine Lake, Sugar Camp, Three Lakes, Woodboro and woodruff.

The infrastructure of electric and telephone lines as well as broadband internet should be considered in the events of high wind, ice storms, tornadoes, flooding, and fire. Wisconsin Public Service and the Price County Cooperative provide Oneida County with electric service. American Transmission Company (ATC), maintains the major transmission facilities located in the State of Wisconsin, including Oneida County. There are seven major electrical transmission facilities located in Oneida County.

Three telephone providers: Frontier Communications, Verizon North, and Century Tel service the County. Frontier is the largest with about 60% of the County. Verizon serves about 39% of the County, and Century Tel serves only a small number of customers on the south side of the County.

Nationwide, cellular telephone systems account for about half of all 911 calls. Service coverage is based upon the handset receiving a direct line-of-sight signal from a system provider's antenna on a tower. Limitations for receiving a signal include topography and the thickness & type of building materials. Signals generally cannot travel well in dense forest cover, over tall hills, or through thick or multiple cement walls.

Insert Map 6 Utilities

**EMERGENCY SERVICES AND FACILITIES**

The type and location of public emergency services are an important consideration in hazard mitigation planning, because of the potential direct involvement of such facilities in certain hazard situations. Fire, police and ambulance service areas and station locations are shown on Maps 7 through 9.

There are nineteen fire stations that serve the local units of governments in Oneida County. The Rhinelander Fire Department is a paid full-time fire department, while the remainder of the departments rely on volunteers for this service. Three municipalities rely completely on contracted fire service, and two additional for partial contracted services for a portion of their municipality. The following municipalities have volunteer fire departments: Cassian, Crescent, Hazelhurst, Lake Tomahawk, Little Rice, Lynne, Minocqua, Monico, Newbold, Nokomis, Pine Lake, Pelican, Sugar Camp, Stella, Schoepke (Fire Dist. Alpha), Three Lakes, and Woodruff.

The Oneida County Sheriff's Department provides law enforcement service to all the municipalities. The Sheriff's Department has thirty-nine officers consisting of one Sheriff, one Chief Deputy, two lieutenants, six Detective Sergeants, five road sergeants, and twenty-four Deputies. The City of Rhinelander has a sixteen-person department consisting of one Police Chief, one Captain, two Detective Sergeants, four Sergeants, and nine Patrol Officers. The Town of Minocqua has an eleven-person department consisting of a Police Chief, one Sergeant, one Detective, and eight Patrol Officers. The Town of Woodruff has an eight-person department consisting of a Police Chief and seven Patrol Officers. The Town of Three Lakes has a four-person department consisting of a Police Chief and three Patrol Officers.

Oneida County provides a countywide ambulance service. This service covers the entire county and some outlying areas with the exception of the City of Rhinelander. The City of Rhinelander provides its own service in conjunction with its Fire Department.

The Oneida County ambulance service consists of six ambulances located throughout the County. Two full time paid staffed ambulances are located at the hospitals, one at Saint Mary's Hospital in Rhinelander, and the other at Howard Young Medical Center in Woodruff. Oneida County contracts with Saint Mary's Hospital and Howard Young Medical Center to provide EMT-Paramedic personnel to staff the ambulances. Each hospital staffs a first out ambulance at a paramedic level. An additional ambulance is located at each hospital, staffed by paid on-call personnel.

A roaming ambulance based in Nokomis moves out to one of two staging areas in the event either first-out unit goes on a call. Three outlying ambulances are located in Sugar Camp, Three Lakes, and Pelican Lake. These ambulances are staffed with on call personnel through the individual municipality.

To coordinate all these emergency services, Oneida County has created an Emergency Operations Plan (EOP) (Updated 2003). This provides a general overview for the County and Municipal emergency response personnel during response to a number of disasters. This document is used to coordinate the County and local units of government during times of response and recovery. It also provides a link between the County and municipal plans.

**CRITICAL COMMUNITY FACILITIES**

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

The two general medical and surgical hospitals in Oneida County, St. Mary's Hospital in Rhinelander and Howard Young Medical Center in Woodruff, provide professional health care to residents of the County and surrounding area. Ministry Health Care offers two health care clinics in Rhinelander with an additional clinic located in Woodruff. Aspirus offers three clinics in Oneida County. The clinics are located in Rhinelander, Woodruff and Three Lakes. Marshfield Clinic has a 65,000 square foot clinic in Minocqua.

Taylor Park Nursing and Rehabilitation Center and Friendly Village Nursing and Rehabilitation Center offer long-term nursing care in the Rhinelander area while Avanti Health and Rehabilitation Center offers long-term nursing care in Woodruff. Several assisted living locations are available in Oneida County. Several senior living apartments are located in Oneida County. Grace Lodge is located in Rhinelander along the Wisconsin River. Our House Senior Living is also located in Rhinelander, while One Penny Place is located in Woodruff.

Nursing homes are vulnerable, because of the high level of assistance with the residents that live there. The schools are another facility that are important, since hundreds of the county's children are there for much of the year. Map 10 shows the location of selected types of critical community facilities within Oneida County.

**Map 7 Fire Service**

**Map 8 Police Service**

**Map 9 Ambulance Service**

**Map 10 Critical Facilities**

**INVENTORY & VALUE OF STRUCTURES/PROPERTY IN ONEIDA COUNTY**

The value of the real estate and personal property in a community reflects the upper end of the potential for property damages in each community. The annual equalized value of each municipality represents the Department of Revenue estimate of market value (Agricultural land is included at Use Value) of all taxable property. Property tax levies of jurisdictions are apportioned to each municipality on the basis of equalized value. Table 7 lists each municipality's total equalized values for real estate, personal property, and all property and the percent each municipality represents of the county total.

<b>Table 7 Equalized Value by Municipality (2008)</b>				
<b>Municipality</b>	<b>Real Estate</b>	<b>Personal Property</b>	<b>Total</b>	<b>% of Total</b>
Cassian town	\$287,751,400	\$1,414,100	\$289,165,500	3.8%
Crescent town	\$286,178,800	\$1,981,800	\$288,160,600	3.7%
Enterprise town	\$104,692,200	\$1,548,700	\$106,240,900	1.4%
Hazelhurst town	\$409,587,200	\$1,163,800	\$410,751,000	5.3%
LakeTomahawk town	\$260,622,000	\$1,048,800	\$261,670,800	3.4%
Little Rice town	\$70,760,700	\$1,176,300	\$71,937,000	0.9%
Lynne town	\$33,020,700	\$356,600	\$33,377,300	0.4%
Minocqua town	\$1,807,614,500	\$26,695,700	\$1,834,310,200	23.9%
Monico town	\$29,467,900	\$509,800	\$29,977,700	0.4%
Newbold town	\$539,186,300	\$2,934,800	\$542,121,100	7.1%
Nokomis town	\$257,706,500	\$697,700	\$258,404,200	3.4%
Pelican town	\$345,550,300	\$9,492,300	\$355,042,600	4.6%
Piehl town	\$17,697,800	\$197,600	\$17,877,400	0.2%
Pine Lake town	\$341,503,900	\$2,017,800	\$343,521,700	4.5%
Schoepke town	\$133,435,100	\$207,800	\$133,642,900	1.7%
Stella town	\$84,895,500	\$2,238,800	\$87,134,300	1.1%
Sugar Camp town	\$402,894,700	\$3,841,400	\$406,734,100	5.3%
Three Lakes town	\$1,057,766,300	\$8,079,800	\$1,065,846,100	13.9%
Woodboro town	\$177,226,100	\$103,000	\$177,329,100	2.3%
Woodruff town	\$321,813,000	\$6,219,800	\$328,032,800	4.3%
Rhineland city	\$582,760,100	\$62,884,400	\$645,644,500	8.4%
<b>County Total</b>	<b>\$7,552,113,000</b>	<b>\$134,810,800</b>	<b>\$7,686,923,800</b>	<b>100%</b>

Source: WisDOR

The valuation of property in a community reflects the potential for property damages across the community. However, only taxable properties are included in this valuation. Tax-exempt government properties are not included. With Oneida County owning many critical facilities that are needed in times of disaster, the potential for damages to these structures could be devastating for the county. In Table 8a, the county owned critical facilities are listed with the general location

they are in and the value of the facilities. Estimates for local government facilities are given in Table 8b - c.

<b>Name</b>	<b>Value*</b>	<b>Location</b>
Courthouse	\$17,777,278	Rhineland city
Land Fill	\$1,926,975	Woodboro town
Highway Department	\$5,796,609	Rhineland city
Parks and Recreation	\$879,421	Various locations
Highway Shop	\$920,357	Minocqua town
Highway Shop	\$791,316	Monica town
Human Service Center	\$1,541,808	Rhineland city
Salt Storage	\$51,616	Schoepke town
Highway Shed	\$241,005	Three Lakes town
Radio Tower Site	\$245,543	Pelican town
Senior Center	\$593,582	Rhineland city
Koinonia Treatment Ctr	\$1,965,776	Rhineland city
Fairgrounds	\$86,932	Pine Lake town
Communications Towers	\$61,960	Various locations
School Bus Storage	\$564,725	Rhineland city
Law Enforcement Center	\$17,356,415	Rhineland city
Misc. Property	\$2,339,819	Various locations
<b>Total</b>	<b>\$53,141,137</b>	<b>Above locations</b>

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

Source: Statement of Values State of WI Local Government Property Insurance Fund.

<b>Property</b>	<b>Value*</b>
Library	\$5,503,018
Airport	\$11,797,536
Animal Shelter	\$623,639
City Shop	\$2,386,285
Police Dept	\$1,614,668
Fire Dept	\$1,281,086
City Hall	\$2,008,657
Various Parks & Recreation	\$5,454,481
Water Utility	\$821,091
Wastewater Treatment Plant	\$13,511,523
Other water/wastewater	\$5,313,302
Barnes St. Landfill	\$123,020
Cemetery	\$104,781
Misc. Other Property	\$1,986,792
<b>Total</b>	<b>\$52,529,879</b>

\*includes insured building contents

Source: Local Government Property Insurance Statement of Values

<b>Table 8c: Value of Town Owned Properties</b>		
<b>Municipality</b>	<b>Property</b>	<b>Value*</b>
Cassian town	Town Hall / Fire Dept.	\$510,000
Crescent town	Town Hall / Shop / Fire Dept.	\$620,000
	Fire Station	\$40,000
Enterprise town	Community Bldg / Storage	\$237,944
Hazelhurst town	Town Hall	\$230,000
	Fire Barn	\$380,000
LakeTomahawk town	Town Hall	\$884,380
	Fire Station / Garage	\$1,044,249
	Information Booth	\$52,749
	Legion Hall	\$200,942
	Storage	\$171,449
	Pavilion / Concession / Dugout	\$138,674
	Old Town Garage	\$159,585
Little Rice town	Town Hall / Buildings	\$553,757
Lynne town	Town Hall	\$230,000
	Fire Dept.	\$180,000
Minocqua town	Community Bldg / Courthouse	\$3,400,000
	Police Dept.	\$1,400,000
	Fire / EMS Station	\$400,000
	Fire Station (BoDiLac)	\$500,000
Monico town	Town Hall	\$230,000
Newbold town	Town Hall / Shop / Fire Dept.	\$1,100,000
	Town Garage	\$300,000
	Fire Station No. 2	\$210,000
Nokomis town	Town Hall	\$230,000
Pelican town	Town Hall / Pavilion	\$800,000
	Town Garage	\$240,000
Piehl town	Town Hall	\$230,000
Pine Lake town	Town Hall / Fire Dept.	\$510,000
	Town Shop	\$320,000
	Fire Hall No. 2	\$110,000
Schoepke town	Town Hall / Community Center	\$325,825
	Fire Station	\$329,901
	Antique Storage	\$567,091
Stella town	Town Hall / Facilities	\$669,200
Sugar Camp town	Town Hall / Shop / Fire Dept.	\$1,647,261
Three Lakes town	Museum	\$136,256
	Town Hall / Fire / Police	\$3,217,433
	Various Recreation Facilities	\$723,139
	Town Shop	\$582,502
	Cemetery Storage	\$4,711
	Airport	\$167,595
	Information Bureau	\$168,360
	Library	\$1,952,171
Fire Station	\$714,425	
Woodboro town	Town Hall	\$200,000
Woodruff town	Town Hall/Police/Fire/Garage	\$2,217,280
	Old Town Hall	\$1,070,792

Source: Local Gov. Insurance Policy Declarations & NCWRPC Estimates. \*includes contents & property in the open



**INTRODUCTION**

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

- Identification of all types of natural hazards that can affect Oneida County
- An analysis of the hazards identified as pertinent to Oneida County

The Hazard Analysis will consist of:

- Background Information
- History of previous occurrences of hazard events
- An analysis of the County’s vulnerability to future events
- An estimate of future probability and potential losses from the hazard

**HAZARD IDENTIFICATION**

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

Worksheets from the Wisconsin Guide to All-Hazards Mitigation Planning were used by the Planning Taskforce to evaluate and rank the listing of possible hazards to help identify which hazards should be included in the Plan according to threat to human safety and possible damage to property. The ranking was compared against the ranking from the original County mitigation plan.

After review of the hazard scoring exercise, the Committee decided to move flooding up in priority because flooding is a more serious, recurring problem than was reflected in the scoring. Winter storms was moved down because, while potentially serious and severe in the County, there is less opportunity for effective mitigation projects. Haz-Mat Incidents was moved up in priority because of the County's past experience with serious events and the potential for significant, devastating impacts.

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

- |  |                               |
|--|-------------------------------|
| 1. Tornado                             | 5. Forest/Wild Fires          |
| 2. Severe Thunderstorms/Lightning/Hail | 6. Winter Storms/Extreme Cold |
| 3. Flood/Dam Failure                   | 7. Drought/Extreme Heat       |
| 4. Hazardous Materials Incidents       |                               |

This Plan focuses on natural hazards that have or could cause disasters that can be mitigated on a local level. Technological or manmade hazards include things

like transportation incidents, explosions and structural fire, civil or prison disturbances, mass casualty events, war, and terrorism. Oneida County already has action plans for these types of events, so they are not included in this planning process. Low magnitude earthquakes occur in Wisconsin every few years, but none have exceeded a magnitude of 3.9, which would have vibrations similar to the passing of a semi-truck, therefore, earthquakes are not covered in this plan. Oneida County does not have coastal hazard issues and conditions for landslide or subsidence problems are not significant in the County.

Although a significant concern, human communicable diseases are not addressed in the Plan. The Oneida County Health Department and area hospitals work with the Wisconsin Department of Health Services (WDHS) and the CDC to monitor and plan for these situations.

### **HAZARD ANALYSIS**

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

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

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

Some disasters have had damages that exceeded the capabilities of local communities and State agencies. Federal assistance is then requested. Federal assistance may be offered through a variety of programs. Assistance may be directed to agricultural producers, individuals and families, businesses, or local governments. There have been 7 natural disasters in Oneida where Presidential Declaration was requested from 1971-2008. They include the following:

- 1975 Army Worm Infestation – Disaster Declaration Denied
- 1976 Drought - Disaster Declaration Approved
- 1977 High Winds and Hail - Disaster Declaration Approved
- 1984 Tornados - Disaster Declaration Approved
- 1985 Tornados/High Winds/Hail - Disaster Declaration Denied
- 1999 Severe Storms/Flooding - Disaster Declaration Approved
- 2000 Severe Storms/Flooding - Disaster Declaration Approved

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

The National Oceanic and Atmospheric Administration (NOAA) and National Climatic Data Center (NCDC) publish the National Weather Service (NWS) data describing recorded weather events and resulting deaths, injuries, and damages. From January 1, 1950 to December 31, 2008, NCDC reported 356 severe weather events for Oneida County.

Note that since the earlier NCDC data is somewhat incomplete, this report focuses on the 10-year period from 1999 to 2008 for hazard analysis purposes. Other sources of data are used to supplement the NCDC data. These sources included other plans and reports, documents from the Oneida County Emergency Management Department, past local newspaper articles, the Wisconsin Department of Natural Resources (DNR), Wisconsin Emergency Management (WEM), and the National Weather Service.

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

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

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

**HAZARD ANALYSIS: TORNADOS**

**Background on Tornado Hazard:**

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

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

<b>Table 9 Tornado Wind and Damage Scale</b>		
Tornado Scale	Wind Speeds	Damage
EF0	65 to 85 MPH	Some damage to chimneys, TV antennas, roof shingles, trees, and windows.
EF1	86 to 110 MPH	Automobiles overturned, carports destroyed, trees uprooted
EF2	111 to 135 MPH	Roofs blown off homes, sheds and outbuildings demolished, mobile homes overturned.
EF3	136 to 165 MPH	Exterior walls and roofs blown off homes. Metal buildings collapsed or are severely damaged. Forests and farmland flattened.
EF4	166 to 200 MPH	Few walls, if any, standing in well-built homes. Large steel and concrete missiles thrown far distances.
EF5	OVER 200 MPH	Homes leveled with all debris removed. Schools, motels, and other larger structures have considerable damage with exterior walls and roofs gone. Top stories demolished

*Source: National Weather Service*

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

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

**History of Tornados in Oneida County:**

Oneida County has had 19 verified tornados from 1950 to 2008 (Table 10). In addition, Oneida County reports 2 other suspected tornado incidents, and the NCDC data contains 1 funnel cloud report.

Date	Time CST	Location	Length Miles	Width Yards	F Scale	Deaths	Injuries	Est. Cost
6/25/50	2100	Crescent	13	880	F4	2	12	250K
6/20/53	1800	Pelican Lake	2	100	F1	0	0	25K
6/14/80	1325	Pine Lake	2	50	F1	0	3	25K
6/14/80	1422		n/a	n/a	F0	0	0	0
6/13/81	2040		n/a	n/a	F0	0	0	25K
6/13/81	2100		n/a	n/a	F2	0	0	250K
4/27/84	1437	Lake Tomahawk	16	87	F3	1	5	25M
6/8/85	1852	Minocqua	47	2640	F3	2	16	25M
7/4/86	1935	Lake Tomahawk	2	100	F2	0	0	250K
8/1/88	1820		0	20	F0	0	0	0
6/27/91	1820	Minocqua	6	400	F2	0	0	250K
8/9/93	2015	Lynne	0	50	F0	0	0	1K
8/14/00	1910	Minocqua / Lake Tomahawk	0	25	F0	0	0	0
5/1/01	2055	Minocqua / Woodruff	2	125	F1	0	0	15K
9/6/01	1609	Pelican Lake	1	30	F0	0	0	66K
4/18/02	1557	Woodboro	0	25	F0	0	0	0
4/18/02	1633	Rhineland	0	25	F0	0	0	0
7/11/04	1442	Nokomis	0	60	F0	0	0	0
7/11/04	1543	Cassian	0	10	F0	0	0	0
<b>Totals:</b>						<b>5</b>	<b>36</b>	<b>51M</b>

Source: NCDC and Oneida County

Most recently, a pair of tornados touched down on July 11, 2004. Clusters of showers and thunderstorms rolled across north-central Wisconsin during the late afternoon and early evening. A strong upper atmospheric disturbance enhanced rotation in the storms and several funnel clouds developed. Some of these funnels touched down as weak tornados. The first of these was reported about 8

miles southwest of Harshaw in the Town of Nokomis. Numerous trees were toppled onto power lines and a pontoon boat was damaged. Almost an hour later, the second tornado was reported 1 mile west of Goodnow in the Town of Cassian. A pair of tornados also touched down west of the Tomahawk airport in Lincoln County.

Severe thunderstorms were responsible for another pair of tornados in Oneida County on April 18, 2002. A warm front across Wisconsin lifted north during the afternoon and evening. Moist, unstable air behind the front led to development of the severe thunderstorms. These storms produced a total of 5 tornados in Lincoln, Marathon and Oneida counties. One of the pair in Oneida touched down in Woodboro and the other in Rhinelander. Numerous trees were snapped. The thunderstorms also produced hail and flooded roads and basements in Rhinelander.

The strongest Oneida County tornado recorded during this time period occurred on June 25, 1950. This was a F4 tornado that carved a path 13 miles long by approximately 880 yards wide in the Town of Crescent. It resulted in two deaths, twelve injuries and approximately \$250,000 in property damages including 5 homes destroyed.

In 1984 and 1985 two F3 tornados were reported in Oneida County. The 1984 tornado resulted in 1 death, 5 injuries and an estimated \$5 million in property damage including 60 homes destroyed in the Lake Tomahawk area. The storm created a path approximately 16 miles long and 87 yards wide. Oneida County received a Presidential Emergency Declaration for the removal of downed timber on public and private lands and for emergency police services. The 1985 tornado resulted in 2 deaths, 16 injured and an estimated \$25 million in property damage including 94 homes destroyed in the Minocqua area. The storm created a path approximately 47 miles long and 2,640 yards wide. A request for Presidential Disaster Declaration was denied.

#### **Tornado Vulnerability Assessment:**

Although Oneida County is mostly a rural county, there are concentrations of population scattered throughout County. Subdivisions, rural unincorporated communities like Minocqua, Three Lakes, etc. and the Rhinelander area can be regarded as more vulnerable because these areas pose more of a risk to human safety and property damage. Map 11 illustrates these areas within the County.

Mobile homes are of significant concern in assessing the hazard risks from tornados. In general, it is much easier for a tornado to damage and destroy a mobile home than standard constructed houses and buildings. Since 8.2 percent of Oneida County's housing units are mobile homes, vulnerability to health and safety along with property damage is much greater. Research by the NWS shows that between 1985 and 1998, 40 percent of all deaths in the nation from

tornados were in mobile homes, compared to 29 percent in stick-built homes, and 11 percent in vehicles.

While mobile homes are scattered throughout the County, many are concentrated in mobile home parks. Oneida County has approximately 26 mobile home parks, see Map 11 for locations. Within these park sites, there are approximately 950 individual sites. The largest is located in the City of Rhinelander with about 115 sites. The second largest is located in the Town of Minocqua with approximately 107 sites. The total number of mobile homes reported in the 2000 Census for Oneida County is 2,179.

Besides mobile homes, there are many other areas vulnerable to tornados such as campgrounds. Like mobile homes parks, campgrounds are of concern in the County because often times there is a concentration of people in them and there is little shelter provided. Map 11 also shows the location of campgrounds in the County.

Youth camps present another concern for Oneida County. Youth camps operate during the summer months and contain large populations of juveniles and young adults. Most youth camps consist of cabins used for sleeping and daily activities. A large number of these cabins are wood structures with no basements. This presents a problem for safely sheltering people in the event of a tornado.

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

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

Based on review of historic tornado events, no specific areas in the county have unusual risks. The risk for tornado is relatively uniform and a countywide concern. Tornados are a principal concern with City of Rhinelander officials

#### **Future Probability and Potential Dollar Losses – Tornados:**

Based on the historic data presented here (frequency of past events - 1999 to 2008), Oneida County can expect a tornado about once every 1.4 years on average. This equates to a probability of 0.7 or about a 70 percent chance in a given year. However, the record of past tornados appears to indicate a trend of groups of tornados occurring followed by periods with no tornados. The data also indicates a tendency for tornados to occur in pairs. Table 11 indicates the probability of tornados of a specific magnitude.

Insert Tornado Vulnerability Map

**Table 11 Probability of Intensity for any given Tornado in Oneida County**

Tornado Scale	F0	F1	F2	F3	F4	F5
Number of Reported Tornadoes*	10	3	3	2	1	0
Probability of Occurrence	53%	16%	16%	10%	5%	<1.0%

Source: National Weather Service & NCWRPC – \*Based on historical data from 1950 to 2008.

Historic data is again used to estimate potential future dollar losses due to tornado. Estimated damages resulting from various tornadoes in Oneida County range from \$0 to \$25 million. On average, Oneida County might expect damages of \$2.7 million per tornado, however, only two of these 19 historic tornadoes resulted in damages exceeding \$1 million, four others had \$250,000, and the rest were \$66,000 or less. Over the next ten-year period, tornado losses in Oneida County could approach \$19 million.

**HAZARD ANALYSIS: SEVERE THUNDERSTORM / HIGH WIND / HAIL / LIGHTNING**

**Background on Severe Thunderstorm Hazard:**

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

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

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

**History of Severe Thunderstorms in Oneida County**

The NCDC has reported 44 severe storm events for Oneida County between 1999 and 2008, discounting multiple reports for the same event. These storms typically contain some form of heavy rain and strong winds. About 19 significant

hail events, typically related to a severe thunderstorm, were listed during this time period. There were also 6 notable lightning incidents identified.

Most recently, thunderstorm winds downed several trees near Enterprise on July 29, 2008. Thunderstorms developed in unstable air ahead of a cold front that pushed east across Wisconsin. The storms produced large hail, wind damage and three weak tornados.

Four of the seven requests for disaster declaration involving Oneida County have been associated with severe thunderstorms since 1971. In July of 2000, a strong line of thunderstorms went through the County with heavy rains causing the widespread flooding that resulted in a Presidential Disaster Declaration for the County.

Throughout the month of July 1999, the northwestern portion of Wisconsin received an unusual amount of thunderstorm activity. The cumulative damage from these events led to a Presidential Disaster Declaration for ten counties including Oneida. The storms resulted in 2 people being killed by falling trees in the County, damage to nearly 200 homes and blockage of all major highways and secondary roads in the northern third of the County and 50,000 people without electricity in the area. Wind gusts up to 100 mph were measured.

Despite extensive damages from high wind, hail and lightning, the June 1985 thunderstorm that even generated a tornado was denied disaster declaration. Property and crop damages totaled \$2.1 million. However, back in July of 1977, high wind and hail damage did warrant a Presidential Emergency Declaration.

In June of 1997, baseball size hail damaged nearly 200 vehicles in Minocqua. Hail 5.5 inches in diameter was reported in Rhinelander in May of 1994. This hail event was widespread from Minocqua to Monico.

On July 30, 2006, a cabin in Minocqua was struck by lightning. The electrical and plumbing heated up and started the floor on fire. In August of 2002, lightning caused fires in a pavilion and a cabin at a campground in Woodruff. On June 23, 2002, lightning struck a tree at a scout camp on Crystal Lake and traveled through the ground, injuring two 13-year old boys in their tent. One suffered serious burns and blurred vision. The other received less severe burns. On July 18, 2001, lightning struck a warehouse in Rhinelander causing a fire that destroyed the building. Parts of the warehouse were used by a moving company and as the office of a taxi company. Damages were around \$750,000. In 1994, a person in Minocqua was injured by lightning.

**Severe Thunderstorm Vulnerability Assessment:**

The National Weather Service can forecast and track a line of thunderstorms that may be likely to produce severe high winds, hail, and lightning but where these related hazards form or touch down and how powerful they might be, remains

unpredictable. The distribution of thunderstorms and related hazard events have been widely scattered throughout the County.

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

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

Based on review of the historic patterns of thunderstorms associated with high wind, hail, or lightning, there are no specific municipalities that have unusual risks. The events are relatively uniform and a countywide concern.

#### **Future Probability and Potential Dollar Losses - Severe Thunderstorms:**

Based on historical frequency, Oneida County can expect 4.4 thunderstorm events per year on average. In other words, the probability is 1.0 or a 100% chance of multiple storms in a given year. The probability of a thunderstorm with damaging hail in Oneida County is also at 1.0 or 100% chance with about 1.9 incidents in a given year. The probability of a significant lightning event is about 0.6 or a 60% chance in a given year.

According to the NCDC, historic thunderstorm events with associated high wind averaged \$58,000 in damage per incident. There was insufficient data to calculate average hail damages. Historic thunderstorm events with associated lightning averaged \$125,000 in property damage. Losses in Oneida County associated with severe thunderstorms including high wind and lightning could approach \$3.3 million over the next ten-year period.

### **HAZARD ANALYSIS: FLOODING/DAM FAILURE**

#### **Background on Flood Hazard:**

There are a variety of classifications for flooding including coastal, dam failure, flash, lake, riverine, stormwater and urban/small stream. Oneida County has the potential for all these types except coastal. The following descriptions of the types of flooding are compiled from various FEMA and

other notable hazard planning sources:

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

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

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

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

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

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

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

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

Major floods in Oneida County tend to occur in the spring when melting snow adds to normal runoff and in summer or early fall after intense rainfalls. Flooding occurs in the spring due to snowmelt and frozen soil. This build up continues

until the river or stream overflows its banks, for as long as a week or two and then slowly recedes inch by inch. The timing and location of this type of flooding is fairly predictable and allows ample time for evacuation of people and protection of property.

Flooding is a significant hazard in Oneida County, particularly because it borders the Wisconsin River. As described in Part II, there are approximately 830 miles of streams in Oneida County within fourteen main watersheds.

Floodplains exist along the Wisconsin River and the tributaries that feed into it. These floodplains are narrow along tributaries and lakes but extensive throughout the County. Floodplains are described in Part II and shown on Map 4 of this plan. The Federal Emergency Management Agency (FEMA) identified these floodplains on Flood Insurance Rate Maps (FIRMs), and the North Central Wisconsin Regional Planning Commission digitized them into a GIS coverage for planning purposes.

There are 42 dams in Oneida County (See Map 3 and Table 12). These dams serve many useful purposes including agricultural uses, providing recreational areas, electrical power generation, erosion control, water level control and flood control. According to the DNR, Oneida County has 20 large dams (including Hat Rapids, Rainbow Reservoir and Willow Reservoir), which have a structural height of over 20 feet. The Wisconsin DNR regulates all dams on waterways to some degree, however the small dams are not stringently regulated for safety purposes. The federal government has jurisdiction over large dams that produce hydroelectricity. At least two of the dams have the ability to produce hydroelectricity in Oneida County: Hat Rapids and the Rhinelander Paper Mill.

A dam can fail for a number of reasons such as excessive rainfall or melting snow. It can also be the result of poor construction or maintenance, flood damage, weakening caused by burrowing animals or vegetation, surface erosion, vandalism or a combination of these factors. Dam failures can happen with little warning resulting in the loss of life and significant property damage in an extensive area downstream of the dam.

The WDNR assigns hazard ratings to large dams within the state. When assigning hazard ratings, two factors are considered: existing land use and land use controls (zoning) downstream of the dam. Dams are classified into three categories that identify the potential hazard to life and property downstream should the dam fail. A high hazard indicates that a failure would most probably result in the loss of life. A significant hazard indicates a failure could result in extensive property damage. A low hazard exists where failure would result in only minimal property damage and loss of life is unlikely. For Oneida County, there are four dams that have a high hazard rating: Willow Reservoir, Minocqua, Rainbow Reservoir and the Rhinelander Paper Company. North Pelican Lake and Burnt Rollways have a significant rating, while the rest are rated low.

<b>Table 12</b>		<b>Oneida County Dams</b>			
<u>Township</u>	<b>Name</b>	<b>Size</b>	<b>Hydraulic &amp; Structure Height (ft)</b>	<b>Hazard Potential</b>	<b>Most Recent Inspection</b>
Cassian	Spruce Lake	Large	5.0/7.0	Low	08/27/91
	Laux	Small	6.0/9.0	Low	06/18/68
Crescent	Hat Rapids	Large	20.0/30.0	Low	NA
Hazelhurst	Lake Katherine	Small	2.0/4.0	Low	
	Hazelhurst Canal	Small	Na/4.2	NA	
Lake Tomahawk	Horsehead	Small	5.0/6.0	Low	
Little Rice	Felser, Carl R.	Small	4.0/7.0	NA	05/09/01
	Shot & Hook Club	Large	11.0/11.0		
	Little Rice River	Large	12.0/15.0	Low	11/06/92
	Willow River Reservoir	Large	12.0/27.0	High	
Lynne	Willow Region	Small	3.0/5.0	Low	04/23/03
Minocqua	Franklin Lake	Small	1.0/3.0	NA	NA
	Squirrel Lake	Large	5.0/7.0	Low	NA
Minocqua	Skunk Lake	Small	1.0/2.0	NA	NA
	Minocqua	Large	10.0/10.0	High	NA
Newbold	Two Sisters Lake	Small	2.0/4.0	NA	NA
	Rainbow Reservoir	Large	21.0/27.0	High	
	Pickrel Canal	Large	N/A	NA	
	Pickrel Control	Large	N/A	NA	
	Fredrichs	Small	1.0/5.0	Low	
Nokomis	Swamp Lake	Small	2.0/5.0	Low	06/21/74
Pelican	North Pelican Lake	Large	5.0/10.0	Significant	
	Midget Lake Outlet	Small	2.0/4.0	NA	NA
	George Lake	Small	3.0/3.0	NA	04/12/01
City of Rhinelander	Rhinelander	Large	32.0/35.0	High	
Sugar Camp	Lake McDonald Dam	Small	.4/NA	NA	NA
Sugar Camp	Sowinski, Henry No. 1	Small	4.0/6.0	NA	NA
	Sowinski, Henry No. 2	Small	1.0/2.0	NA	NA
	Sugar Camp	Large	6.0/10.0	Low	
	Lower Nine Mile	Large	9.0/13.0	Low	NA
Three Lakes	Rice Lake	Small	1.0/3.0	NA	NA
	Burnt Rollways	Large	9.0/13.0	Significant	NA
	Seven Mile	Large	6.0/10.0	Low	
	Range Line Lake Dam	Small	2.0/8.0		
	Scott Creek	Large	7.0/11.0	Low	06/20/89
	Maple Lake	Large	7.0/12.0	Low	10/25/01
	Thunder Lake	Small	2.8/4.1	Low	08/22/02
Woodboro	Oneida Lake	Small	1.0/2.0	Low	
	Hancock Lake	Large	6.0/11.0	Low	10/10/02
Woodboro	Jennie Creek	Small	6.0/8.0	Low	
Woodruff	Fish Hatchery	Large	5.0/7.2		
	Gilmore Lake	Small	1.0/4.0	Low	

**History of Flooding in Oneida County:**

Flooding was the principal cause of damage in two of five Presidential Disaster Declarations in Oneida County from 1971 to 2008. The most recent declaration

as of this Plan occurred in 2000. Between July 2 and 10, the County received heavy rainfall resulting in three urban small stream flood and two additional flood reports. Oneida County was one of thirty counties included in the Disaster Declaration. As a result, twelve towns, the City of Rhinelander and the County Highway Department reported damages of approximately \$146,000. An additional administrative cost of about \$5,000 brought the total flood damage request to about \$151,000. Private sector damages tabulated by Oneida County Emergency Management was about \$191,000. NCDC reported damages of \$180,000.

Flooding of roads and basements was reported in the area from Pelican Lake to Rhinelander. Small streams and creeks overflowed their banks and rural areas suffered some crop damage. The Wisconsin River reached flood stage (6 ft) near Lake Tomahawk between July 9 and 10 due to the previous two days of heavy rainfall. There was widespread flooding of lowland and wooded areas. A boat ramp and part of a parking lot also became submerged.

In 1999, Oneida County received another Presidential Disaster Declaration after severe storms passed through the area causing wind and water related damages. The Declaration included ten counties in the northern portion of the state.

In addition to the 1999 and 2000 flooding events, the NCDC reports five additional flooding events since 1999. The most recent occurred in March of 2005 when above normal temperatures resulted in considerable snow melt which combined with rain to cause minor flooding on several rivers. In July 2003, thunderstorms dumped 6 inches of rain around Pelican Lake causing flash flooding. In April of 2002, severe storms resulted in urban and small stream flooding that caused flooded roads and basements in Rhinelander. Earlier in April of 2002, rainfall and snowmelt caused flooding of roads and low-lying areas across eastern Oneida County. Rhinelander again had urban and small stream flooding in September of 2001.

Rhinelander's flooding woes are due in part to surrounding environmental conditions, inadequate storm water systems, and lack of coordination in the operations of area dams. Existing, under sized culverts and storm sewers constrict the flow of storm water draining to the Pelican River resulting in backing up of floodwaters. A significant concern with this situation is the flooding of one of the City's water supply wells and regular threatening of the drinking water treatment plant.

Improved coordination of operations between the Hat Rapids Dam and the Mill Dam downtown would ease flooding of residential areas and protect an elderly housing facility from the threat of flooding in close proximity.

Oneida County has not experienced a dam failure with any loss of life or substantial property damage. However, on July 14, 2002 the Oneida County Sheriff's department received a report of a large piece of concrete falling off the Rainbow Flowage Dam. Wisconsin Valley Improvement investigated the report and found the dam to be structurally safe.

**Flood Vulnerability Assessment:**

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

- Infrastructure – flooded public facilities
- Roadways – washouts, inundated roadways, debris clean-up
- Residential structures – flooded basements, damaged septic systems
- Businesses – loss of commerce
- Agriculture - inundated cropland

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

One of the first reports to reference in assessing vulnerability to structures during flooding is the Wisconsin Repetitive Loss Report. The Repetitive Loss Report provides information to the status of repetitive loss properties by community. FEMA classifies a repetitive loss structure “when more than one flood insurance claim of at least \$1,000 is made within a ten-year period”. The information is used as a floodplain management tool and to supplement information provided by communities for flood mitigation grants administered by WEM. According to the report, there are no repetitive loss structures within Oneida County.

Since no structures are listed in the Repetitive Loss Report, structures within floodplains were analyzed, see methodology outlined below. The floodplain boundaries within Oneida County are shown on Map 4. Table 13 shows the number of structures in each municipality identified as "vulnerable to flooding" according to proximity to floodplains. There were a total of 2,833 structures identified in the designated floodplain boundaries, see Map 12. Estimated value of structures located within the floodplain in Oneida County is over \$313 million.

Insert Flood Vulnerability Map

<b>Table 13</b>			
<b>Improvement Values for Structures in Floodplains</b>			
<b>Municipality</b>	<b># of Structures</b>	<b>Average Value</b>	<b>Total Value</b>
Cassian	98	\$106,388	\$10,426,024
Crescent	16	\$120,052	\$1,920,832
Enterprise	54	\$100,093	\$5,405,022
Hazelhurst	27	\$126,096	\$3,404,592
Lake Tomahawk	63	\$104,266	\$6,568,758
Little Rice	96	\$83,921	\$8,056,416
Lynne	56	\$40,584	\$2,272,704
Minocqua	599	\$144,383	\$86,485,417
Monico	8	\$58,459	\$467,672
Newbold	278	\$115,195	\$32,024,210
Nokomis	158	\$111,066	\$17,548,428
Pelican	78	\$93,012	\$7,254,936
Piehl	14	\$63,799	\$893,186
Pine Lake	184	\$119,607	\$22,007,688
Schoepke	159	\$71,951	\$11,440,209
Stella	59	\$103,613	\$6,113,167
Sugar Camp	172	\$99,318	\$17,082,696
Three Lakes	409	\$100,123	\$40,950,307
Woodboro	82	\$108,242	\$8,875,844
Woodruff	162	\$119,075	\$19,290,150
Rhineland	61	\$81,477	\$4,970,097
<b>Oneida County</b>	<b>2,833</b>	<b>\$110,645,</b>	<b>\$313,458,355</b>

Source: WDOA and NCWRPC, 2008.

***Methodology – Structures within Floodplains:***

1. NCWRPC digitized (electronically traced) the individual FEMA FIRM floodplain maps into a GIS coverage for the County.
2. A building address point coverage was obtained from Oneida County GIS data.
3. The floodplain coverage was then combined with the building point coverage to identify those structures within the floodplain boundary.
4. Total structures with the floodplain were then tabulated by municipality.
5. Average assessed value data was used to estimate total value for the identified vulnerable structures by municipality.

In addition to structural damage from flooding, there has been significant damages to public roadways, particularly to roadway surfaces, culverts and bridges. Floods have inundated roadways in the County from a period of a few days up to as much as three months. Such interruptions in the County transportation network cause travel delays through detours.

The primary impact from damages to roadways is to businesses. The monetary impact is unknown but past floods have restricted public access and even closed businesses. Tourism is an important industry in the County and several campgrounds, lodges and restaurants may be affected by flooding.

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

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

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

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

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

The areas considered to have a higher risk for impact from flooding include those communities with structures in floodplains as shown in Map 12. Flooding is a top hazard concern with officials from the City of Rhineland.

#### **Future Probability and Potential Dollar Losses – Flood:**

Based on the historic data presented here (frequency of past events - 1999 to 2008), Oneida County can expect a flood event about every 1.4 years on average. This equates to a probability of 0.7 or about a 70 percent chance in a given year. However, the impact of many of these events is relatively minor. During the 10-year period, two of the recorded floods resulted in a Presidential Disaster Declaration. Taking this into consideration, the County might expect a significant flood every 5 years on average. This equates to a probability of 0.2 or a 20 percent chance in a given year.

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

Historic data is again used to estimate potential future dollar losses due to flood. Based on the 2000 flood event for which we have fairly good loss figures, Oneida County can anticipate property and crop losses of approximately \$342,000, on average, between the public and private sector for each significant flood occurrence. Over the next ten-year period, flood losses in Oneida County could approach \$684,000.

FEMA offers a loss estimation tool known as HAZUS. HAZUS is a computer model, which is multi-hazard in nature in that it has modules for flood, earthquake and hurricane. However, the flood component is the only element applicable to Oneida County. The loss estimates generated by HAZUS are intended to be used for planning to reduce risk and prepare for response and recovery. In its first application in Oneida County, a basic Level 1 analysis is performed with limited updating of default data. A county-wide 100-year level is used as the analysis scenario although somewhat of a worst-case as this level of flooding has not been seen in recent times and the reservoir system tends to control flooding. For this scenario, HAZUS estimates over \$35 million in building losses (\$13M building, \$23M content and \$1/4M inventory) and another \$1/2M in business interruption losses. In addition, HAZUS goes beyond direct economic loss by estimating other damage factors such as debris generation and shelter requirements. In the 100-year flood scenario, HAZUS estimates that 2,047 tons or 82 truckloads of debris would be generated, and that 377 households would be displaced from their homes due to flooding and associated evacuation with about 181 people needing temporary emergency shelter.

### **HAZARD ANALYSIS: HAZARDOUS MATERIALS INCIDENTS**

#### **Background on Hazardous Materials Incidents Hazard:**

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

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

Agency (EPA) list of extremely hazardous substances, identified at 40 CFR Part 355.

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

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

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

To provide a high level of hazardous materials response capabilities to local communities, Wisconsin Emergency Management contracts with eight Regional or "Level A" Hazardous Materials Response Teams. The Regional team for Oneida County is located at Wausau. The 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.

County or "Level B" Teams respond to chemical incidents which require a lower level of protective gear but still exceed the capabilities of standard fire departments. Currently, there are 36 counties that have a "Level B" team. Those teams may provide assistance to surrounding counties and are approved by the local Emergency Planning Committees. Oneida County currently has a county or "Level B" Hazardous Response Team. The "Level B" team is made up of fire personnel from the Rhinelander Fire Department and area volunteer fire departments. In addition to the county or "Level B" hazardous Response team,

members from the Rhinelander Fire Department are also a “Level A” Chemical Assessment Team (CAT) for the Wausau Regional or “Level A” Team. The Oneida County HazMat Team has the capabilities to respond to incidents that require the highest personal protection and respiratory protection available.

#### **History of Hazardous Materials Incidents in Oneida County:**

Since 1999 Oneida County has recorded numerous hazardous material spills. Most of these spills consisted of small amounts of product that did not meet the reporting requirements. In most cases these incidents were quickly resolved by the response of a local municipal fire department.

Approximately 18 of the hazardous material spills since 1999 were more serious. Most of these required a response by the County Level B Hazardous Material Response Team. The following Table 14 demonstrates the date, location and description of the spills.

The latest incident reported here occurred on April 12, 2007. A semi-truck was damaged after hitting some rocks when turning into Menards in Rhinelander. As a result of the accident, approximately 35 gallons of hydraulic fluid and 5 gallons of diesel fuel spilled on the pavement. Response involved Oneida County Emergency Management, Wisconsin DNR and Rhinelander's police, fire and public works departments. The spill was cleaned using sand and oil dry. The WisDNR followed up with the responsible parties.

<b>Table 14 Significant Hazardous Material Spills</b>			
<b>Date</b>	<b>Location</b>	<b>Description</b>	<b>Cost</b>
02/16/99	Rhinelander	Hydrochloric Acid Incident (no spill)	\$2,258.13
03/15/99	Rhinelander	Oil spill 200-300 gallons	N/A
04/28/99	Stella	Pesticide spill 3 gallons	\$4,219.25
05/18/01	Rhinelander	Anhydrous Ammonia leak at the Paper Mill	N/A
05/31/01	Rhinelander	Petroleum spill into the drain at Twist Drill	N/A
07/11/01	Rhinelander	Sodium Hydroxide spill 150 gallons	N/A
08/16/01	Monico	Petroleum spill	\$11,416.50
12/12/01	Crescent	Mineral Oil under 162 gallons	\$3,864.19
05/24/02	Stella	20 gallons hydraulic fluid/5-10 gallons diesel fuel	\$3,450.00
07/10/03	Rhinelander	Mercury spill	\$222.97
04/23/04	Nokomis	Suspicious substance found - nitroglycerin	N/A
05/12/04	Rhinelander	Diesel Fuel leak as a result of a damaged tank	\$982.76
07/23/04	Rhinelander	Natural Gas leak due to road construction	N/A
12/31/04	Hazelhurst	Gasoline Tanker accident - 8,800 gallon spill/burn	\$22,486.79
05/10/05	Rhinelander	Diesel Fuel leak as a result of a damaged tank	\$1,496
11/25/07	Rhinelander	Liquid Alum spill	N/A
02/02/07	Rhinelander	Ammonia leak at ice arena	N/A
04/12/07	Rhinelander	Hydraulic fluid and diesel fuel due to truck damage	N/A

Source: Oneida County Emergency Management

#### **Vulnerability Assessment:**

Some of the risk factors that make hazardous materials incidents a keen concern in Oneida County are reviewed below:

### Fixed Facilities

Ten facilities within Oneida County have reported that they had an extremely hazardous substance present at any one time in the amount equal to or exceeding the chemical-specific Threshold Planning Quantity (TPQ). Of these facilities, four indicated having substances subject to EPA reporting requirements. Most of the substances are used for retail and paper production.

The most common extremely hazardous substances at fixed facilities in the County are:

1. Sulfuric Acid
2. Anhydrous Ammonia
3. Chlorine

### Highway

Trucks carry the bulk of hazardous materials to and through the County. Regular shipments of gasoline, propane, acid and other substances are delivered across Wisconsin. Every roadway in the County is a potential route for hazardous material transport, but major transportation routes are Federal and State Highways 51, 45, 17, and 32 (See Map 3 Transportation Routes in Part II).

### Railroad

The Canadian National Railroad another mode for the transportation of hazardous material, provides 41 miles of track through Oneida County (see Map 3). Although trucks transport most of the hazardous materials in the state and U.S., rail can carry significantly larger loads of hazardous materials.

No statistics are available regarding the types of extremely hazardous substances transported annually throughout Oneida County, but the potential exists for the transportation of any extremely hazardous substance listed on the U.S. EPA's list or OSHA's toxic and Hazardous Material List. These substances are transported in containers that range from ten-ounce agricultural packages to 196,000 pounds of rail car quantities.

### Pipeline

ANR Pipeline Company provides a pipeline to move petroleum through the County. It runs 7 miles from the southern part of the County to the City of Rhinelander, and then 20 miles from the City of Rhinelander to the eastern County line to Forest County.

Based on the location of the fixed facilities, the City of Rhinelander has a higher probability of chemical release. A hazardous materials incident can have far reaching impacts, however, those communities which are traversed by major

highways, rail or pipeline are also susceptible to a higher risk, refer to Maps 5 and 6.

### **Future Probability & Potential Dollar Losses – Hazardous Materials Incidents:**

Based upon historical data presented (frequency of past events), Oneida County can expect about 1.8 significant hazardous material spills per year on average. This equates to a probability of 1.0 or a 100% chance in a given year. In addition to a significant event, the County can expect numerous smaller spills that often go unreported. These events still require resources and the response of local fire departments.

Historical data from hazardous material spills that have a known response cost, was used to determine an average cost for a hazardous material spill response. Nine incidents have associated response costs ranging from \$222.97 to \$22,486.79. Using this data, Oneida County can expect an average hazardous material response cost of \$5,599.62. This potential cost is only reflective of the Hazardous Materials Response Team. Additional clean-up and disposal costs may apply. Costs of smaller less significant spills are usually absorbed by Fire Department budgets. These costs are hard to estimate as they are seldom reported and recorded. Over the next ten-year period Oneida County can expect \$100,793 in hazmat response costs as a result of hazardous materials incidents.

### **HAZARD ANALYSIS: FOREST FIRES / WILDFIRES**

#### **Background on Forest Fire / Wildfire Hazard:**

A forest fire is an uncontrolled fire occurring in a forest or in woodlands outside the limits of incorporated villages or cities. A wildfire is any instance of uncontrolled burning in brush, marshes, grasslands or field lands. For the purpose of this analysis, both of these kinds of fires are being considered together.

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

#### **History of Forest Fire / Wildfire in Oneida County:**

The Wisconsin DNR maintains a database of wildfire data. This data represents the most comprehensive source of information for analyzing fire trends in an area such as Oneida County. However, the data is only current through 2005, so a 20-year span is used for analysis. Between 1985 and 2005, there was an

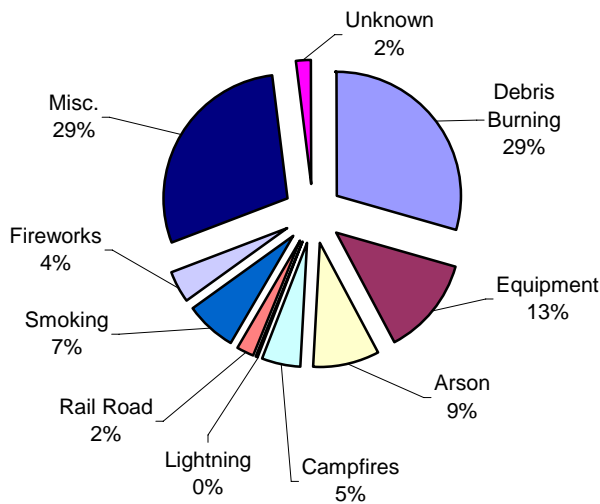
average of 46 fires that have burned 64 acres, annually. The typical fire in Oneida County burns about 1.4 acres.

May is the leading month for wildfire in Oneida with 32% of the total number of fires between 1985 and 2005. However, wildfires have occurred in each month of the year in Oneida.

The Town of Minocqua experienced the most wildfires between 1985 and 2005 with 146. However, the Town of Monico leads the County in total acres burned with 349. The Town of Piehl had the fewest fires with 8 over that period. Piehl also had the least area burned, among non-urban areas, with only 14 acres affected.

The chart below breaks down the causes of wildfire within Oneida County between 1985 and 2005 as classified by the WDNR. The principle cause of wildfire in Oneida County and Wisconsin as a whole is debris burning which resulted in 268 or 29% of wildfires within the County. Equipment is the next leading category at 13% and includes vehicle, motor and other machinery related causes except railroad. Miscellaneous includes a variety of factors such as power lines, structure fires, and improper ash disposal. Arson resulted in nearly 9% of wildfires and includes "playing with matches" and experimenting with fire. Lightning, the only natural cause of fire, was responsible for less than 1%.

**Fire Causes in Oneida Co. 1985-2005**



Source: WDNR

**Forest Fire / Wildfire Vulnerability Assessment:**

Oneida County has 300,000 acres of forestland, or 38 percent of the total land area, scattered throughout the County. The potential for property damage from fire increases each year as more recreational and retirement homes are developed on wooded land.

Rural buildings may be more vulnerable because of lack of access. Access to buildings off main roads is sometimes long, narrow driveways with minimal vertical clearance making it hard for emergency vehicles to combat fires. These buildings also may not have much of a defensible space because of little area between the structures themselves and highly flammable vegetation.

Campgrounds are also a concern because of campfires. Oneida County has state, federal and numerous privately owned campgrounds throughout the County. Locations of the campgrounds are shown on Map 11.

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

The WDNR has completed a statewide evaluation of fire risk, referred to as the CAR or Communities At Risk assessment. This assessment uses extensive DNR geo-databases to analyze and map hazardous woodland fuel types and the degree of the intermixing of development with wildlands. The maps identify the level of risk for each community on a scale of very high, high, moderate, or low, and also have a community of concern designation. The Towns of Crescent, Hazelhurst, Nokomis and Pine Lake are rated very high. Cassian, Woodboro, Lake Tomahawk, Woodruff, Newbold, Sugar Camp, Three Lakes, Stella and Pelican have a high risk level and the Towns of Little Rice and Minocqua are designated communities-of-concern. The Towns of Enterprise, Lynne, Monico, Piehl, Schoepke and the City of Rhinelander are rated low risk for wildfire.

**Future Probability and Potential Dollar Losses – Forest/Wild Fires:**

Forest and wild fires are relatively common occurrences in Oneida County. Over the last 20 years, there has been an average of 46 fires per year in the County. In other words, the probability is 1.0 or 100% chance of wildfire each year.

Because of the relatively small impact of typical individual fires in the County, loss data is not tracked. This makes it difficult to develop an estimate of potential future dollar losses. However, with 46 fires per year, the County should expect some fires to "get out of hand" with the potential to easily exceed the \$1.4 million in damages of the Cottonville Fire that recently occurred in southern Wisconsin.

**HAZARD ANALYSIS: WINTER STORMS / EXTREME COLD****Background on Winter Storms/Extreme Cold Hazard:**

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

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

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

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

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

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

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

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

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

Dangerously cold conditions can be the result of the combination of cold temperatures and high winds. The combination of cold temperatures and high wind creates a perceived temperature known as "wind chill". Wind chill is the apparent temperature that describes the combined effect of wind and air temperatures on exposed skin. When wind blows across the skin, it removes the

insulating layer of warm air adjacent to the skin. When all factors are the same, the faster the wind blows the greater the heat loss, which results in a colder feeling. As winds increase, heat is carried away from the body at a faster rate, driving down both the skin temperature and eventually the internal body temperature.

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

#### **History of Winter Storms/Extreme Cold in Oneida County:**

The NCDC has reported 37 major winter storm events for Oneida County between 1999 and 2008. All of these storms contained some form of snow, sleet, freezing rain, or ice conditions.

Most recently, an April 10, 2008 winter storm produced 9.9 inches of snow at Rhinelander. As strong low pressure system moved northeast from the southern plains into Wisconsin. This resulted in a prolonged period of heavy, wet snow that caused power outages. The snow was accompanied at times by thunder and lightning and strong winds with gusts in excess of 30 mph.

On April 16, 2003 the north-central part of the state was affected by an ice storm that brought significant freezing rain and sleet. Dozens of traffic accidents were reported on icy roads. The weight of accumulated freezing rain downed trees, limbs and power lines. A total of 15,000 people were without power into the morning of the 18<sup>th</sup>. Oneida County Emergency Management in conjunction with the American Red Cross opened a shelter for people without power. In addition, two 911-radio repeaters lost power and operated on back-up battery or generator power for an extended period of time.

Between March 14 and 15 of 2002, Minocqua had 15.1 inches of snow. On November 10, 2006, Rhinelander recorded 12.5 inches of snow which was a 24-hour snowfall record for November. On November 15, 1996, Oneida County experienced one of the worst ice storms in a few decades. Trees, power lines and roads were coated with up to 2 inches of ice. Damages were extensive and power was out over 3-days for some. Shelters were set up to keep people warm.

Blizzard conditions affected Oneida County on January 29, 1996 when a powerful arctic cold front roared across central and northeast Wisconsin. Strong winds gusting as high as 45 mph whipped fresh, powdery snow into a fury, resulting in zero visibility and icy roads. Cold temperatures and wind created wind chill readings in the 30 to 50 below zero range.

The National Weather Service issues wind chill advisories when wind chill readings of -20 to -34 degrees are expected. Wind chill warnings are issued

when wind chill values are expected at or below -35 degrees. The NCDC has reported 5 extreme cold events for Oneida County between 1999 and 2008.

The most recent extreme cold event was on February 10, 2008. Strong northwest winds behind a departing low-pressure system brought cold air into Wisconsin. Temperatures fell into the 10 to 20 below zero range at most locations overnight and combined with 10 to 30 mph winds, with gusts up to 40 mph, to produce bitter cold wind chills. Wind chills reached -45 at Rhinelander. In February 1996, actual temperature reached 48 degrees below zero near Rhinelander during a five-day cold spell. Wind chill readings were 50 to 70 degrees below zero.

**Winter Storms / Extreme Cold Vulnerability Assessment:**

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

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

- Infrastructure – operation of emergency services, operation of public facilities and schools
- Utilities – down power and telephone lines
- LP Gas at residences freezing in temps below -40 degrees.
- Septic systems - freezing
- Transportation – automobile accidents, roadway plowing, salting/sanding
- Residential – roofs
- Businesses – commerce
- Agricultural - livestock

Based on review of the historic events of winter storms and extreme cold, there are no specific areas in the county that have unusual risks. The risk for winter storms and extreme cold is relatively uniform and a countywide concern.

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

Based on historical frequency, Oneida County can expect 3.7 significant winter storms per year on average. In other words the probability is 1.0 or a 100 % chance in a given year.

For extreme cold temperatures, based on historical frequency, Oneida County can expect an occurrence about every 2 years on average for a probability of 0.5 or a 50% chance in a given year. Although, since extreme cold temperatures often accompany winter storms, a probability of 100% chance in a given year cannot be ruled out.

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

### **HAZARD ANALYSIS: DROUGHT / EXTREME HEAT**

#### **Background on Drought / Extreme Heat Hazard:**

A drought is an extended period of unusually dry weather, which may be accompanied by extreme heat (temperatures which are 10 or more degrees above the normal high temperature for the period). There are basically two types of drought in Wisconsin: agricultural and hydrologic. Agricultural drought is a dry period of sufficient length and intensity that markedly reduces crop yields. Hydrologic drought is a dry period of sufficient length and intensity to affect lake and stream levels and the height of the groundwater table. These two types of drought may, but do not necessarily, occur at the same time.

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

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

**History of Drought / Extreme Heat in Oneida County:**

National Weather Service reports indicate that much of Wisconsin including Oneida County has been under drought conditions since 2005 and the Governor has declared a state of emergency to get assistance to the state's agricultural sectors. The extended dry conditions posed serious challenges for farmers from drought stressed crops to issues providing feed for livestock.

Oneida County was one of 64 counties that were included in a Presidential Emergency Declaration for the drought of 1976-1977. Statewide agricultural losses during this drought were set at \$624 million. Oneida County suffered fire losses in local forests and farmers suffered great loss of potato and hay crops. A number of wells in the County went dry and financial assistance was needed to drill new ones. Federal monies totaled only 19% of losses attributed to the drought.

Oneida County also experienced the drought of 1987-1988 and a dry spell in 1999.

Since 1999, the NCDC lists 1 incidence of excessive heat. Between July 23 and July 31, 1999, consecutive days of high temperatures combined with high humidity levels again resulted in numerous heat related illnesses. The heat caused some roads to buckle.

**Drought / Extreme Heat Vulnerability Assessment:**

Droughts can have a dramatic effect on the potato and other farms located throughout Oneida County. With agriculture being an important sector of the County's economy, droughts have disastrous effects. Even small droughts of limited duration can significantly reduce crop growth and yields, adversely affecting farm income. More substantial events can decimate croplands and result in total loss, hurting the local economy.

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

Another significant area of impact from drought includes the tourism sector of the economy. As lake levels go down, there is less tourism seen in the County. Recent drought conditions have left lake levels down significantly, and many boat launches cannot be used.

Droughts can trigger other natural and man-made hazards as well. They greatly increase the risk of forest fires and wildfires because of extreme dryness. In

addition, the loss of vegetation in the absence of sufficient water can result in flooding, even from average rainfall, following drought conditions.

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

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

The areas most susceptible to drought conditions would be agricultural towns. Agricultural land is scattered throughout the County but largely the Towns of Cassian, Crescent, Newbold, Nokomis, Schoepke, Stella, Sugar Camp, and Three Lakes.

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

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

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

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

Normally, central Wisconsin is known for its cold winters, however, extreme heat waves will affect Oneida County in the future. Oneida County can expect a heat wave once every 10 years for a 10 percent chance in a given year based on the historic data presented.

**INTRODUCTION**

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

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

- Benchmark Progress of Previous Plan 2004-2009
- Review of Mitigation Goals
- Prioritize Identified Mitigation Strategies
- Establish Mitigation Action Plan

**PROGRESS REPORT 2004 - 2009**

Table 15 identifies the completed, deleted or deferred mitigation actions from the original 2004 Plan. For each action recommendation, a brief status report is provided which describes the progress made on that measure. If an item remains unchanged, a description is provided as to why no action has been taken and whether that item is deferred to the new plan.

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

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

<b>2004-2009 Plan Measure</b>	<b>Progress Report</b>	<b>Original Status</b>	<b>New Status</b>
Continue to promote the increased use of National Oceanic and Atmospheric Administration (NOAA) weather radios	Received grant to purchase and distribute NOAA alert radios. County EM promotes and sells the radios.	On-going	On-going
Continue to add/update Emergency Management Department link off their existing County web site	Website actively maintained with hazard information.	On-going	On-going
Promote the planting of windbreaks to protect farmsteads, buildings & open fields from high winds	A number of plantings have been installed around the County, but more is needed.	On-going	On-going
Review local building codes to improve structures' ability to withstand greater wind velocities	Uniform Dwelling Code (UDC) has been updated, taking precedence. Ongoing regulation of new buildings and renovations.	2004	Completed Removed from list
Continued training for Law Enforcement, Fire, EMS, First Responders and the public in i.d. of dangerous weather formations	County coordinates training sessions with National Weather Service each year.	Annually	Annually
Identify buildings that could be utilized for tornado shelters	A number of buildings have been identified. Some have been evaluated and used, while some need further study. More comprehensive approach needed.	On-going	2012
Identify and construct tornado shelters in areas where deficient	County has applied for funds for this recommendation and been denied.	On-going	2012
Require and promote construction standards and techniques (tornado)	New state mandates for the Uniform Dwelling Code (UDC) has taken this out of local hands.	2004	Removed from list
Encourage builders and owners of manufactured and mobile homes to use tie-downs with ground anchors	Found to be ineffective.	2004	Removed from list
Incorporate floodplain management in comprehensive planning	In progress - Floodplain development and wetland preservation issues being addressed in County Plan process.	2006	2010
Update aerial photography used by the County Land Information Dept GIS County coverage	Scheduled - Digital orthophotography to be taken in 2010 with Oneida as part of regional consortium.	2005	2010
Utilize grants through the DOT to repair minor flood damage to roadways	As needed with periodic flooding events in the County.	On-going	As needed
Develop a dam break analysis and Emergency Action Plan (EAP) for one high risk dam and two significant risk dams	Analysis and action plans now completed for each dam within the County that requires them.	2005	Completed Removed from list

<b>2004-2009 Plan Measure</b>	<b>Progress Report</b>	<b>Original Status</b>	<b>New Status</b>
Encourage the development of snow fences	A number have been installed but more are needed.	Ongoing	Ongoing
Promote winter awareness, including home and travel safety measures	County does annual winter awareness "PR" campaign.	Ongoing	Ongoing
Encourage farmers that irrigate to use the WI Irrigation Scheduling Program (WISP)	Ongoing efforts of the County UWEX Agricultural Agent and FSA Office.	2004	Ongoing
County should be prepared on how to inform farmers during times of drought	Ongoing efforts of the County UWEX Agricultural Agent and FSA Office.	Ongoing	Ongoing
Inform farmers on purchasing crop insurance	Ongoing efforts of the County UWEX Agricultural Agent and FSA Office.	Ongoing	Ongoing
Provide outreach efforts to homeowners on protecting homes and structures from wildfires	Looked on as more of a DNR role. County to work on expanding participation through activities like brochure distribution, etc.	Ongoing	Ongoing
Provide ample training for volunteer fire fighters for larger fires.	Regular training and exercises being conducted cooperatively by the DNR, Oneida County & local municipal FDs.	Ongoing	Ongoing
Identify and map Fire Zones	First set of maps complete. Adjust recommendation to regular update for all-hazards use.	2005	2010
Continue support of Level B Emergency Response Team to respond to hazardous spill situations	On-going and active county level haz mat team.	2004	On-going
Prevent or reduce hazmat exposure by separation & buffering between industrial and other land uses	Standard zoning practice - determined to not require special mention within mitigation plan.	2004	Removed from list

**LOCAL HAZARD MITIGATION GOALS**

The mitigation strategy is based on a set of goals to reduce or avoid long-term vulnerabilities to the hazards identified in the Risk Assessment. The goals were established by the previous Mitigation Plan Taskforce during the development of the original plan. The update Plan Taskforce reviewed the goals and concurred that these goals continue to represent the desired conditions to strive for through the mitigation efforts of the County and municipalities.

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

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

**PRIORITIZATION OF STRATEGIES**

The Mitigation Planning Committee considered a number of factors in identifying and ranking proposed mitigation strategies. The matrix, below, describes the factors incorporated into the prioritization process. The resulting priority of each strategy is shown in the summary Table 16.

**Prioritization Factors for Oneida County Mitigation Strategies**

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

Members of the Taskforce scored each strategy on ease of implementation and cost-benefit using a 3 point scale where 3 was more favorable and 1 less favorable. Weighting factors were assigned to reflect the priority of hazard type the strategy was designed to address and whether it was a multi-jurisdictional effort. Scores were averaged and then scaled to determine the high, medium or low priority shown in Table 16.

**MITIGATION ACTION PLAN**

The mitigation strategies are organized by hazard beginning with some overall strategies that apply to a number of different hazards and are listed under the category, “all hazards”. For each hazard, a goal was established as to what the County intends to achieve by implementing the specific action strategies and is based on the risk assessment findings. Each action strategy is then briefly described and followed by a discussion of the jurisdictions/agencies that will pursue the action including the proposed lead jurisdiction/agency.

Each section of this part is broken down as follows:

**Goal:**

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

**Action:**

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

**Participating Jurisdictions:**

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

The chapter concludes with a summary of the recommended mitigation strategies shown in Table 16. Table 16 also contains project cost estimates where available and potential time frames.

**Hazard: All Hazards****Goal:**

Prepare and protect residents and visitors from all hazards.

**Action 1:**

The County will continue to promote use of National Oceanic and Atmospheric Administration (NOAA) weather radios as a primary notification system for weather advisories to the general public and special locations. NOAA Weather Radio (NWR) is a nationwide network of radio stations broadcasting continuous weather information direct from a nearby National Weather Service office. NWR broadcasts National Weather Service warnings, watches, forecasts and other hazard information 24 hours a day. NWR is not only for tornados, but also for other hazards as well making it a single source for comprehensive weather and emergency information. NWR also broadcasts

warning and post-event information for all types of hazards--both natural and environmental (such as chemical releases or oil spills).

***Participating Jurisdictions for Action 1:***

Lead agency will be Oneida County Emergency Management. Jurisdictions participating in this action will include: Oneida County, City of Rhinelander, and all Towns particularly the Towns of Minocqua, Three Lakes and Woodruff. The Town of Lynne also expressed special interest in this action through its mitigation issues survey response.

**Action 2:**

The County will continue to add and update information on its Emergency Management Department web site. The web site should contain information describing the types of natural and man-made hazard disasters in the County and how to respond when a hazard threatens. The site should also contain information on ordinances pertaining to hazards, locations of tornado shelters, and links to other sites with useful information on related matters such as burning permits and weather conditions.

***Participating Jurisdictions for Action 2:***

Lead agency will be Oneida County Emergency Management. The only directly participating jurisdiction will be Oneida County.

**Action 3:**

The county-wide emergency response zone atlas should be updated. Often referred to as a fire zone atlas, these atlas books were originally conceived to help direct fire fighting and evacuation operations in rural areas at high risk for wildfire. A number of counties across the state have developed, or are developing these atlases, typically sponsored by WisDNR. Recognizing their potential value in responding to a wide variety of hazard events, many counties are utilizing them as a tool in responding to and managing other situations beyond fire.

Zones are drawn around groups of structures based on factors related to access and evacuation. The zones are named, colored-coded and indexed for ease of reference. Atlas books are distributed to police, fire and EMS units responsible for responding to emergency situations in rural areas of the county covered by the atlas.

***Participating Jurisdictions for Action 3:***

Lead agency will be Oneida County Emergency Management in conjunction with the Wisconsin Department of Natural Resources. Jurisdictions participating in this action will include Oneida County, City of Rhinelander, and all Towns including corresponding police and fire departments.

**Action 4:**

The County should continue and promote the training of Law Enforcement Officers, Municipal Fire Department Members, Emergency Medical Services Personnel, and Municipal First Responders in the identification of dangerous weather patterns. The

National Weather Service provides this type of training through their Weather Spotter Program. Oneida County should continue to sponsor this training annually.

***Participating Jurisdictions for Action 4:***

Lead agency will be Oneida County Emergency Management in conjunction with the National Weather Service - Green Bay. Jurisdictions participating in this action will include Oneida County, City of Rhinelander, and all Towns including corresponding police and fire departments, EMS and First Responders.

**Action 5:**

Shelter related concerns were identified during the development of this All-Hazards Plan. Issues identified included mobile home parks, campgrounds and seasonal housing, among others. To address these concerns, the County should work to develop a countywide disaster shelter plan. The City of Rhinelander should work cooperatively with Oneida County to create detailed plans specific to the City. One issue with shelters may stem from lack of knowledge regarding existence of shelters and procedures for use. Plan distribution and public informational efforts are recommended.

The plan should identify available shelters by function and determine where coverage is deficient. The function of a shelter is to protect people during a disaster event, to accommodate displaced people in the aftermath, or both. Existing facilities (schools, churches, public buildings, etc.) should be evaluated for suitability or locations determined for new structures. Mobile home parks, campgrounds and County parks within the County lack shelters and are a particular concern.

Establish zones to help people to identify which shelter they should go to and procedures for notification. It is also important to evaluate shelters for suitability for various types of hazards. For example, a shelter located within a floodplain may not be the best place to send people during a storm that could result in flooding. Adequate heat (and back-up source of energy to run it) is an important consideration when seeking to shelter people during a winter weather power outage. Local sponsors should be identified to help maintain shelters and ensure they are open in time of need. Transportation options should also be considered especially for the elderly and those with disabilities. The transportation and subsequent shelter of persons with special medical or other needs are critical factors to address.

***Participating Jurisdictions for Action 5:***

Lead agencies will be Oneida County Emergency Management and the City of Rhinelander. Jurisdictions participating in this action will include Oneida County, City of Rhinelander, and all Towns. The American Red Cross Chapter should also be consulted.

**Action 6:**

In response to the mitigation issues survey, the Towns of Enterprise and Stella each identified the need to cut back trees and brush along certain town roads to help prevent those roads from becoming impassible during storms.

***Participating Jurisdictions for Action 6:***

Lead agencies will be the Towns of Enterprise and Stella. These Towns will be the only directly participating jurisdiction. Other jurisdictions may participate in this type of action as the need arises.

**Action 7:**

In response to the mitigation issues survey, the need for new fire stations with emergency shelter was identified by the Towns of Enterprise, Lake Tomahawk, Little Rice, and Schoepke. Little Rice is evaluating options of adding a second fire station or contracting with a neighboring fire department in order to provide additional response capabilities to southwest parts of the Town.

***Participating Jurisdictions for Action 7:***

Lead agencies will be the Towns of Enterprise, Lake Tomahawk, Little Rice and Schoepke. These Towns will be the only directly participating jurisdictions.

**Action 8:**

The Towns of Sugar Camp and Stella identified a need to install emergency generators in order to ensure the continued operation of critical facilities (i.e. town hall and fire station) during a power outage.

***Participating Jurisdictions for Action 8:***

Lead agencies will be the Towns of Sugar Camp and Stella. These Towns will be the only directly participating jurisdictions.

**Action 9:**

Due to on-going changes in regulations and technology, Oneida County and local government emergency services must continue working together to further upgrade emergency communications equipment. Current upgrades being planned include mandated frequency narrow-banding, installation of additional radio tower in Minocqua area, and establishing dispatch back-up systems between Oneida and Vilas Counties.

***Participating Jurisdictions for Action 9:***

Lead agency will be Oneida County Emergency Management. Jurisdictions participating in this action will include Oneida County, City of Rhinelander, and all Towns.

**Hazard: Tornadoes****Goal:**

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

**Action 10:**

The County and the local units of governments should identify buildings that will provide protection to the public in the event of a tornado or other hazard. There are a number of buildings in the County that can accommodate people during a tornado or other hazard. Closed school buildings are maintained by the District and may have the potential to act as a shelter if needed. Part of this effort would be to work with building owners to reach understanding on use of facilities as shelter. Refer also to recommendation 7, above.

***Participating Jurisdictions for Action 10:***

Lead agency will be Oneida County Emergency Management. Participating jurisdictions will include: Oneida County, City of Rhinelander, and all Towns.

**Action 11:**

Upon identifying existing buildings that could provide protection, the County and its local units of governments should identify areas that remain deficit in tornado shelters. Shelters should be planned and constructed in these areas. Structures available to the public during tornado warnings should be publicized by a number of sources such as area newspapers, signs, county maps, and the County web site.

Funding for the construction of shelters may be available through the Wisconsin Department of Commerce's Committee Development Block Grant (CDBG). Oneida County did apply for funding to build shelters but was not awarded. Refer also to recommendation 7, above.

***Participating Jurisdictions for Action 11:***

Lead agency will be Oneida County Emergency Management. Participating jurisdictions will include: Oneida County, City of Rhinelander, and all Towns.

**Action 12:**

Early warning related concerns were identified during several different parts of the plan process. The Town of Lynne indicated that it wants to obtain a warning siren on its mitigation issues survey. At the Local and Regional Agency Involvement Meeting, Minocqua Police and First Responders officials indicated a need for sirens in the Squirrel Lake and Bodilac areas due to the amount of seasonal housing in those areas.

Rhinelander officials discussed early warning at the City Involvement Meeting. Map 13 shows the City's existing warning siren coverage. The need for an additional warning siren to reinforce coverage of the downtown has been identified. The siren would be placed at the north end of the downtown area to better reach the concentration of restaurants and businesses where occupants may have a more difficult time hearing the siren. Funding has been a stumbling block.

***Participating Jurisdictions for Action 12:***

Lead agencies will be City of Rhinelander and the Towns of Lynne and Minocqua. These communities would be the only directly participating jurisdictions.

Insert Map City Siren Coverage

**Hazard: Severe Thunderstorms / Hail / Lightning / Wind****Goal:**

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

**Action 13:**

The County should continue to promote the planting of windbreaks to protect farmsteads, buildings, and open fields from high winds. Established trees and shrubs can slow wind on the downwind side of a windbreak for a distance of 10 times the height of the trees. The windbreaks can also reduce soil erosion, act as snow fences, provide wildlife food and cover, and offer a number of other benefits.

There are resources available for area landowners use to help install and pay for windbreaks. The County Land and Water Conservation Department provide assistance to help establish windbreaks. Windbreaks can also be established through the Conservation Reserve Program (CRP), Conservation Enhancement Reserve Program (CREP), Conservation Security Program (CSP), and Environmental Quality Incentive Program (EQIP) from the USDA Natural Resource Conservation Service (NRCS).

***Participating Jurisdictions for Action 13:***

Lead agency will be Oneida County Land Conservation Department. Oneida County works cooperatively with NRCS on this activity. Participating jurisdictions will include: Oneida County and all Towns.

**Action 14:**

Due to the wide variety of variety of recreation activities throughout the County, public awareness of proven lightening safety guidelines to reduce risk should be promoted. Areas of concern include golf courses, country clubs, parks (particularly major parks such as Hodag Park in Rhinelander, ball fields (and other athletic fields), public beaches and boat launches. Efforts should be made to get managers and staff of such facilities "up to speed" with procedures and training for lightning safety. Another common measure is erecting of signs that inform people when to get out of the water or off a golf course (etc.) when lightening threatens.

***Participating Jurisdictions for Action 14:***

Lead agency will be Oneida County Emergency Management. Participating jurisdictions will include: Oneida County, City of Rhinelander, and all Towns.

**Hazard: Flooding / Dam Failure****Goal:**

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

**Goal:**

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

**Action 15:**

The County and local units of government will incorporate floodplain management in their comprehensive plans currently being developed under state mandate. Determining and enforcing acceptable land uses through planning and regulation may not prevent inevitable flooding in flood-prone areas, but planning and regulation can alleviate the risk of damage by limiting exposure in such hazard areas.

***Participating Jurisdictions for Action 15:***

Lead agency will be Oneida County Planning & Zoning. Participating jurisdictions will include: Oneida County, City of Rhinelander, and all Towns.

**Action 16:**

Work with owners/operators of the Mill Dam and Hat Rapids Dam and others as appropriate to coordinate operations during high-flow to reduce flooding in the City. Rhinelander's flooding woes are due in part to a lack of coordination in the operations of area dams. Improved coordination of operations between the Hat Rapids Dam and the Mill Dam downtown would ease flooding of residential areas and protect an elderly housing facility from the threat of flooding in close proximity.

***Participating Jurisdictions for Action 16:***

Lead agencies will be City of Rhinelander and Oneida County Land Conservation. Participating jurisdictions will include: City of Rhinelander and Oneida County in conjunction with dam owners/operators.

**Action 17\*:**

Communities within Oneida County currently participating in the National Flood Insurance Program (NFIP) should work to ensure continued compliance. Compliance primarily entails adopting and enforcing floodplain management regulations that meet minimum criteria. Oneida County and the City of Rhinelander are in the program. All towns are included under the umbrella of the County through the state mandated county shoreland zoning.

***Participating Jurisdictions for Action 17:***

Lead agencies include Oneida County Planning and Zoning and the City of Rhinelander. The only directly participating jurisdictions are Oneida County and the City of Rhinelander.

**Action 18\*:**

Oneida County should seek to mitigate the impacts of flooding through the voluntary acquisition and demolition of structures in the floodplain, particularly those with flood damage. Property owners should be informed of their floodplain status and related insurance issues. A survey to gauge interest in buy-out and relocation of properties

within the floodplain is recommended to help evaluate the County's options in capturing part of a major stream of federal mitigation dollars.

***Participating Jurisdictions for Action 18:***

Lead agencies include Oneida County Planning and Zoning and Emergency Management. Participating jurisdictions will include: Oneida County and City of Rhinelander.

**Action 19:**

The City and County should work with the Wisconsin DNR and FEMA to advance floodplain map modernization. Oneida County is not yet scheduled for floodplain / Flood Insurance Rate Map (FIRM) modernization. However, the City of Rhinelander has expressed interest in updated / improved floodplain mapping to assist in dealing with their flood related issues. The "modernized", updated maps are referred to as DFIRMs or Digital Flood Insurance Rate Maps can serve as important planning tools for disaster response, mitigation, and land use. Flood zones could be more accurately depicted for insurance and zoning purposes. Risk assessment could also be improved for future updates of this plan.

***Participating Jurisdictions for Action 19:***

Lead agencies include Oneida County Planning and Zoning and Emergency Management. Participating jurisdictions will include: Oneida County and City of Rhinelander.

**Action 20:**

The City of Rhinelander should develop a storm water management plan. Rhinelander's flooding woes are due in part to surrounding environmental conditions, and inadequate storm water systems. Existing, under sized culverts and storm sewers constrict the flow of storm water draining to the Pelican River resulting in backing up of floodwaters. A significant concern with this situation is the flooding of one of the City's water supply wells and regular threatening of the drinking water treatment plant. By determining how to handle storm water, drainage problems are not allowed to build on one another, thereby minimizing future flooding.

***Participating Jurisdictions for Action 20:***

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

**Action 21:**

The City of Rhinelander will enlarge the Barnes Street culvert to relieve back-up of storm water draining to the Pelican River. This addresses a significant concern with the flooding of one of the City's water supply wells and regular threatening of the drinking water treatment plant.

***Participating Jurisdictions for Action 21:***

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

**Action 22:**

The need to enlarge the Highway 45 culvert south of Highway 8 was identified in its mitigation issues survey by the Town of Monico. The Town should work with the Wisconsin Department of Transportation to address this culvert and reduce back-up of flood waters.

***Participating Jurisdictions for Action 22:***

Lead agency will be the Town of Monico. USH 45 is under State jurisdiction and requires WisDOT participation to effect this action.

**Action 23:**

Affected towns should look at improving drainage around or elevating town roads at risk of washout or overtopping during flood conditions. In response to the mitigation issues survey, the Towns of Enterprise and Stella each identified this need. Such areas may become isolated and inaccessible during or after a disaster event hampering access by law enforcement or rescue personnel.

***Participating Jurisdictions for Action 23:***

Lead agencies will be the Towns of Enterprise and Stella. These Towns will be the only directly participating jurisdiction. Other jurisdictions may participate in this type of action as the need arises.

**Action 24:**

The aerial photography that is used with the County Geographic Information System (GIS) should be updated. Updated photography could be used to identify structures that were constructed or demolished in the flood zones. This could serve as an important planning tool.

***Participating Jurisdictions for Action 24:***

Lead agency will be the Oneida County Land Information Office. Oneida County will be the only directly participating jurisdiction.

**Action 25:**

The County and its municipalities should utilize grants through the Wisconsin DOT to repair minor flood damage to roadways. Mitigation efforts through this program should reconstruct the flood-damaged roadways to a point where future flooding would not cause additional damage. This program can be utilized for minor damage outside a Presidential Disaster Declaration.

***Participating Jurisdictions for Action 25:***

Lead agency will be Oneida County Highway Department and City of Rhineland. Participating jurisdictions include Oneida County, City of Rhineland, and all Towns as the need arises.

**Hazard: Hazardous Materials Incidents****Goal:**

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

**Action 26:**

The County should continue to support a Level B Emergency Response Team to respond to hazardous spill situations. Several factors support this, such as the concentration of fixed-facilities in Rhineland and around the County, the level of traffic carrying hazardous materials over the major transportation routes, the rail line and the pipeline. Maintaining the Level B Team provides more immediate response to incidents that require a Hazardous Material Team response.

***Participating Jurisdictions for Action 26:***

Lead agencies will be Oneida County Emergency Management along with the Oneida County HazMat Team and the Local Emergency Planning Committee. Participating jurisdictions include Oneida County, City of Rhineland, and all Towns.

**Hazard: Forest Fires and Wildfires****Goal:**

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

**Action 27:**

The County and DNR should continue to make outreach efforts to homeowners on protecting their homes and structures from wildfires. Since Oneida County is mostly rural with many industrial woodland parcels, emphasis should be placed on building construction materials and establishing defensible areas around structures. Roofs and exterior siding should be made of ignition-resistant materials. At least 30 feet should be left between homes and surrounding combustible vegetation. Outreach efforts can exist in the form of web sites, local newspaper articles, and pamphlets to homeowners.

***Participating Jurisdictions for Action 27:***

Lead agencies will be Oneida County Emergency Management with WisDNR. Oneida County will be the only directly participating jurisdiction.

**Action 28:**

Local fire departments should provide more training for responding to larger fires.

***Participating Jurisdictions for Action 28:***

Lead agencies will be Oneida County Emergency Management and fire districts serving Oneida County. Participating jurisdictions will include: Oneida County, City of Rhinelander, and all Towns.

**Action 29:**

Support establishment of Firewise Communities across the County. The national Firewise Communities program is a multi-agency program, which promotes partnerships between community leaders, homeowners, planners, developers and others to promote wildfire preparedness - before a fire starts. The Firewise approach emphasizes local community responsibility for designing and maintaining safe communities through land use planning, mitigation activities, collective decision-making and effective response.

Firewise Communities/USA is a project of the National Wildfire Coordinating Group's Wildland/Urban Interface Working Team and is the latest component of the Firewise program. According to the NWCG, the Firewise Communities concept "provides citizens with the knowledge necessary to maintain an acceptable level of fire readiness, while ensuring firefighters that they can use equipment more efficiently during a wildland fire emergency."

Becoming a Firewise Community involves a 7-step process.

- Step 1: Contact Firewise
- Step 2: Site visit with local Firewise Communities USA representatives
- Step 3: Community representatives create a multi-discipline Firewise board/committee
- Step 4: Assessment & evaluation
- Step 5: Create plan – Create agreed-upon, area-specific solutions to its WUI fire issues
- Step 6: Implement solutions – Local solutions are implemented following a schedule designed by the local Firewise board and WUI specialist.
- Step 7: Apply for recognition

***Participating Jurisdictions for Action 29:***

Lead agency will be the respective jurisdictions. Jurisdictions participating in this action will include: Oneida County, City of Rhinelander, and all Towns.

**Action 30:**

Towns with high risk of wildfire should develop Community Wildfire Protection Plans (CWPPs). In Oneida County, the majority of towns have been identified by WDNR as very high or high risk for wildfire including: Crescent, Hazelhurst, Nokomis, Pine Lake, Cassian, Woodboro, Lake Tomahawk, Woodruff, Newbold, Sugar Camp, Three Lakes, Stella and Pelican. Little Rice and Minocqua are designated communities-of-concern.

A CWPP identifies and prioritizes areas for hazardous fuels reduction treatments and recommends types and methods of treatment that will protect at-risk areas and critical infrastructure. WisDNR has grant funding available for community wildfire protection planning.

***Participating Jurisdictions for Action 30:***

Lead agency will be the respective jurisdictions. Jurisdictions participating in this action will include: Oneida County, City of Rhinelander, and all Towns.

**Hazard: Winter Storms / Extreme Cold**

**Goal:**

Create safety awareness to citizens and travelers of Oneida County to protect them during and after winter storm events.

**Action 31:**

The County should encourage the development of snow fences using natural vegetation for public safety. Using snow fences or “living snow fences” (rows of trees or other vegetation) can limit blowing and drifting of snow over critical roadway segments. Assistance can be provided by the County Land and Water Conservation Department and NRCS to develop windbreaks. Windbreaks would be advantageous to the County Highway Department and towns to prevent blowing and drifting on roadways.

***Participating Jurisdictions for Action 31:***

Lead agencies will be Oneida County Land Conservation and Highway Departments. Participating jurisdictions will include: Oneida County and all Towns.

**Action 32:**

The County should promote winter hazards awareness, including home and travel safety measures, such as avoiding travel during winter storms. If travel cannot be avoided, having a shovel, sand, warm clothing, food, water, etc. should be encouraged to have in vehicles. Other winter / extreme cold problems identified by the County Mitigation Planning Committee include freezing of septic systems and residential LP Gas (extreme cold).

***Participating Jurisdictions for Action 32:***

Lead agency will be Oneida County Emergency Management. Oneida County will be the only directly participating jurisdiction.

**Hazard: Drought / Extreme Heat**

**Goal:**

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

**Goal:**

Create safety awareness in citizens of Oneida County to help protect themselves during extreme heat events.

**Action 33:**

The County should promote heat hazards awareness, including home and travel safety measures. Include suggestions regarding checking on neighbors or other known that live alone or that may be at a disadvantage in fending for themselves.

***Participating Jurisdictions for Action 33:***

Lead agency will be Oneida County Emergency Management. Oneida County will be the only directly participating jurisdiction.

**Action 34:**

The County should encourage farmers that irrigate to use irrigation scheduling programs and drip or misting systems. Also work with corporate growers. Research-based programs can assist growers in determining frequency and amounts of irrigation throughout the growing season. It can be extremely helpful during a drought.

***Participating Jurisdictions for Action 34:***

Lead agencies will be Oneida County Land Conservation and Oneida County UW-Extension. Oneida County will be the only directly participating jurisdiction.

**Action 35:**

The County should be prepared on how to inform farmers during times of drought. This could include feed assistance or financial assistance programs and managing crops and livestock during drought conditions.

***Participating Jurisdictions for Action 35:***

Lead agencies will be Oneida County Land Conservation and Oneida County UW-Extension. Oneida County will be the only directly participating jurisdiction.

**Action 36:**

The County should inform farmers on the advantages/disadvantages of crop insurance to preserve economic stability for farmers during a drought.

***Participating Jurisdictions for Action 36:***

Lead agencies will be Oneida County UW-Extension with FSA. Oneida County will be the only directly participating jurisdiction.

**Table 17 - Summary of Mitigation Strategies**

Mitigation Measures (See Expanded Text in Plan)	Cost Estimate	Existing and Potential Resources to Implement	Responsible Units	Project** Timeframe	Priority Level
<b>ALL HAZARDS</b>					
1 Continue to promote the increased use of National Oceanic and Atmospheric Administration (NOAA) weather radios.	Staff Time	Covered by radio sales	County EM Dept / Town of Lynne	On-going	High
2 Continue to add/update Emergency Management Department link off their existing County web site.	Staff Time	Dept. Budget	County EM Dept	On-going	High
3 Maintain County Emergency Response Zone Atlas - update, reprint and distribute.	\$20,000	WisDNR Funding	County EM Dept	2010	High
4 Continue training for Law Enforcement, Fire, EMS, First Responders, and the public in the identification of dangerous weather formations.	Staff Time	National Weather Service	County EM Dept	Annual	High
5 Consider county-wide disaster shelter plan including i.d. of potential available shelters, needs of special populations and facilities such as campgrounds, mobile home parks etc.	\$30,000	General Fund / Dept. Budget	County EM Dept / City of Rhineland	2012	High
6 Cut back brush and trees along town roads where necessary to prevent road being closed during storms.	Costs to be determined	General Fund	Town of Enterprise / Town of Stella	On-going	Medium
7 Build new/replacement firestation with emergency shelter. Consider 2nd station or contract additional coverage for sw end of town (Little Rice).	Costs to be determined	General Fund / Dept. Budget / Fire Hazard Grants	Enterprise/ Lk Tomahawk/ Little Rice/ Schoepke	2013	Medium
8 Install emergency generators to ensure operation of critical facilities during power outage or other disaster event.	\$20,000 ea.	General Fund	Sugar Camp / Stella	2011	Medium
9 Upgrade emergency communications equipment.	\$550,000	General Fund / OJA Funding Programs	County / City / All Towns	2011	High
<b>TORNADO</b>					
10 Identify buildings that will provide protection to the public in the event of a tornado warning.	Staff Time	Dept. Budget	County / City / All Towns	2012	High
11 Identify and construct tornado shelters in areas where deficient.	\$200,000	CDBG Program	Lake Tomahawk / Little Rice	2012	Medium
12 Install emergency warning sirens.	\$23,000 ea.	General Fund	Rhineland / Lynne / Minocqua	2014	Medium
<b>SEVERE THUNDERSTORM / HAIL / LIGHTNING / WIND</b>					
13 Promote the planting of windbreaks to protect farmsteads, buildings & open fields from high winds.	Staff Time	NRCS funding programs	County LCD / NRCS	On-going	Medium
14 Promote lightning safety guidelines at areas of concern such as golf courses, country clubs, parks, beaches and other recreation facilities.	Staff Time	Dept. Budget	County EM Dept / City of Rhineland / All Towns	On-going	Medium

Mitigation Measures (See Expanded Text in Plan)	Cost Estimate	Existing and Potential Resources to Implement	Responsible Units	Project** Timeframe	Priority Level
<b>FLOOD / DAM FAILURE</b>					
15 Incorporate floodplain management into comprehensive planning.	Staff Time	Dept. Budget	County P&Z Dept	2010	Medium
16 Work w/ owners/operators of the Mill Dam and Hat Rapids Dam (& others as appropriate) to coordinate operations during high flow to reduce flooding in City.	Staff Time	Dept. Budget	City of Rhinelanders County LCD and Dam Owners	On-going	Medium
17 Continue compliance in the National Flood Insurance Program - NFIP: County / City of Rhinelanders.*	Staff Time	Dept. Budget	County / City of Rhinelanders	On-going	Medium
18 After significant flood events investigate voluntary acquisition and demolition of buildings in floodplain with flood damage.*	Cost to be determined	Mitigation Grants	County / City of Rhinelanders	As needed	Medium
19 The City and County should work with WDNR and FEMA to schedule and advance floodplain map modernization.	Cost to be determined	FEMA	County / City of Rhinelanders	2015	Medium
20 The City should develop a stormwater management plan.	Cost TBD	General Fund / DNR	City of Rhinelanders	2011	Medium
21 Enlarge Barnes St. culvert to relieve back-up of stormwater draining to the Pelican River.	Cost to be determined	General Fund / ARRA	City of Rhinelanders	2010	Medium
22 Work w/ WisDOT to enlarge Hwy 45 culvert south of Hwy 8.	Cost TBD	WisDOT	Town of Monaco	2010	Medium
23 ID and repair segments of town road subject to wash out. Clean out and improve town road drainage ditches as needed.	Cost to be determined	General Fund / Local Road Aids / TRIP Program	Town of Enterprise / Town of Stella	On-going	Medium
24 Update aerial photography used by the County Land Information Department - County GIS Coverage.	\$90,000	Dept. Budget / WROC	County Land Info Dept.	2010	Medium
25 Utilize grants through the DOT to repair minor flood damage to roadways.	Cost to be determined	WisDOT funding program	County Hwy Dept / Rhinelanders/Towns	As needed	Medium
<b>HAZARDOUS MATERIALS INCIDENTS</b>					
26 Continue support for the Level B Emergency Response team to respond to hazardous spill situations.	\$20,000	Dept. Budget	County EM Dept	On-going	Medium
<b>FOREST FIRE / WILDFIRE</b>					
27 Continue to provide outreach efforts to homeowners on protecting homes and structures from wildfires.	Staff Time	Dept. Budget	County EM Dept / WDNR	On-going	Medium
28 Provide ample training for volunteer fire fighters for larger fires.	Staff Time	Dept. Budgets	Local Fire Depts / WDNR	On-going	Medium
29 Support establishment of Firewise Communities across the County.	Staff Time	Dept. Budget	County EM Dept / All Towns	On-going	Medium
30 Develop Community Wildfire Protection Plans in high risk Towns.	\$30,000 ea.	WDNR National Fire Plan funding	County / City / All Towns	2014	Low
<b>WINTER STORMS / EXTREME COLD</b>					
31 Use natural vegetation to create "living snow fences".	Costs vary	NRCS funding programs	Co. Hwy Dept./LCD	On-going	Low
32 Promote winter hazard awareness, including home and travel safety measures such as dealing w/ freezing septic or LP gas.	Staff Time	Dept. Budget	County EM Dept	On-going	Medium
<b>DROUGHT / EXTREME HEAT</b>					
33 Promote heat hazards awareness, including protecting oneself and watching out for others.	Staff Time	Dept. Budget	County EM Dept.	On-going	Low

Mitigation Measures (See Expanded Text in Plan)	Cost Estimate	Existing and Potential Resources to Implement	Responsible Units	Project** Timeframe	Priority Level
34 Encourage farmers that irrigate to use irrigation scheduling programs and drip/misting systems.	Staff Time	Dept. Budget	County UW-Ext. Dept / County LCD	On-going	Low
35 County should be prepared on how to inform farmers during times of drought.	Staff Time	Dept. Budget	Co. UW-Ext. Dept	On-going	Low
36 Inform farmers on purchasing crop insurance.	Staff Time	Dept. Budget	Co. UW-Ext. / FSA	On-going	Low

\* Denotes actions related to compliance with NFIP

\*\*Actual project implementation dependant on funding and staff availability

**INTRODUCTION**

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

**PLAN UPDATE ADOPTION**

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

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

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

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

**PLAN UPDATE IMPLEMENTATION****ADMINISTRATIVE RESPONSIBILITIES**

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

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

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

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

#### **PROMOTE SUCCESS OF IDENTIFIED PROJECTS**

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

#### **INCORPORATION INTO OTHER LOCAL PLANNING MECHANISMS**

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

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

A number of upcoming planning efforts have been identified for incorporation of the All Hazards Mitigation Plan. Upcoming planning efforts at the County or local level include: Community Wildfire Protection Plans (CWPPs) and a county-wide Farmland Preservation Plan.

Currently, the County's All Hazard Mitigation Plan is already being incorporated into another planning process, the Oneida County Comprehensive Plan, as follows.

### **Oneida County Comprehensive Plan**

The following concepts were considered when developing the Oneida County and local unit comprehensive plans, based on the nine elements of the Wisconsin comprehensive planning law:

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

**PLAN UPDATE EVALUATION AND MAINTENANCE**

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

The Plan will be reviewed and evaluated on an annual basis. Within this period, the Oneida County Emergency Management Director will evaluate incoming information against the contents of the Plan as needed to prepare for revisions. It is recommended that the County Emergency Management Committee discuss evaluation and revisions to the Plan one year from its adoption and annually thereafter as it fits the Committee's scheduling. The Emergency Management Director is encouraged to consult/coordinate with the NCWRPC at the time of revision.

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

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

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

## **Appendix A – Local Unit Survey**

---





## ONEIDA COUNTY EMERGENCY MANAGEMENT

2000 E Winnebago Street  
Rhinelander, WI 54501  
Phone (715) 361-5167  
Fax (715) 361-5223

*Director: Kenneth S.  
Kortenhof*

*E-mail: [kkortenhof@co.oneida.wi.us](mailto:kkortenhof@co.oneida.wi.us)*

*Program Assistant: Dawn  
Robinson*

### **MEMORANDUM**

**TO:** Town Chairpersons and Clerks

**FROM:** Ken Kortenhof, Oneida County Emergency Management

**DATE:** October 21, 2009

**RE:** Oneida County All Hazard Mitigation Plan Survey

---

Oneida County has received a grant through the Federal Emergency Management Agency (FEMA) to complete an update of its existing All Hazard Mitigation Plan for the purposes of reducing the County's vulnerability to the impacts of natural hazards. Local governments must have an approved, up-to-date, local plan to remain eligible for certain FEMA disaster funds that would be available after a disaster declaration. By participating and being included in the County Plan, local units of government can satisfy the requirement.

The County is being assisted by the North Central Wisconsin Regional Planning Commission (NCWRPC) to develop this plan. We are currently seeking information from local officials. The enclosed survey has been created for this purpose.

Please complete and return the survey to me by December 1, 2009. Your participation in completing this survey is critical in completing a plan that satisfies FEMA's requirements. We will keep you apprised of future meetings and provide opportunity to review drafts of the report. If you have any questions in the meantime, please feel free to call me at 715-361-5167 or Darryl Landeau of the NCWRPC at 715-849-5510 extension 308.

Thank you.

**Oneida County All Hazard Mitigation Plan  
Local Government Survey**

1. Town of \_\_\_\_\_
  
2. Which of the following hazards (if any) do you consider your community to be more vulnerable than others? (check all that apply)
  - Flooding
  - Dam Failures
  - Drought
  - Forest Fires and Wildfires
  - Insect Infestation
  - Thunderstorms
  - Lightning
  - Hail
  - High Winds
  - Tornados
  - Winter Storms (heavy snow, freezing rain)
  - Other \_\_\_\_\_

If you checked any of the above, please describe why your community is more vulnerable to each of those hazards over others.

3. Please identify any public or private facilities or specific areas of the community that may be more vulnerable to a natural hazard.



7. Is there a need for emergency shelters in your community?

Yes

No

If so, where are some possible locations to place or construct a shelter facility?

8. Please describe any areas in your community that became isolated and inaccessible during or after a past disaster where access by law enforcement or rescue personnel was hampered?

9. One of the plan requirements is to quantify the value of critical infrastructure such as government buildings and property. Your Statement of Values form from the Local Government Property Insurance Fund or a similar declarations page from a private insurer provides this information. If you would be willing to provide us a copy of this form for your town, we would greatly appreciate it. Please include the copy when you return this survey or mail separately to the address below.

10. Please feel free to comment on any other related issues to this plan.

**Please return completed surveys to:**

Ken Kortenhof, Oneida Co Emergency Mgmt, 2000 E Winnebago St, Rhinelander, WI 54501

**THANK YOU FOR YOUR ASSISTANCE**

## **Appendix B – Resolutions of Plan Adoption**

---



RESOLUTION # 78-2010

1 Resolution offered by Supervisors of the Emergency Management Committee.

2  
3 Resolved by the Board of Supervisors of Oneida County, Wisconsin:

4  
5 WHEREAS, Oneida County recognizes the threat that natural hazards pose to people  
6 and property; and

7  
8 WHEREAS, under taking hazard mitigation actions before disasters occur will reduce  
9 the potential for harm to people and property and save tax dollars; and

10  
11 WHEREAS, an adopted all hazards mitigation plan is required as a condition of future  
12 grant funding for mitigation projects; and

13  
14 WHEREAS, Oneida County participated jointly in the planning process with the other  
15 units of government within the County to prepare an All Hazards Mitigation Plan;

16  
17 NOW, THEREFORE, BE IT RESOLVED: that the Oneida County Board of  
18 Supervisors, hereby adopts the Oneida County All Hazards Mitigation Plan as an official plan;  
19 and

20  
21 BE IT FURTHER RESOLVED: that the Oneida County Emergency Management  
22 Department will submit, on behalf of the participating municipalities, the adopted All Hazards  
23 Mitigation Plan to Wisconsin Emergency Management and Federal Emergency Management  
24 Agency officials for final review and approval.  
25

26  
27 Approved by the Emergency Management Committee this 25 day August of 2010.

28  
29 Vote Required: Majority = \_\_\_\_\_ 2/3 Majority = \_\_\_\_\_ 3/4 Majority = \_\_\_\_\_

30  
31 The County Board has the legal authority to adopt: Yes  No \_\_\_\_\_ as reviewed by the  
32 Corporation Counsel, \_\_\_\_\_, Date: 8/25/10

33  
34 Offered and passage moved by:

35 DoDome  
Supervisor

36 Matt Matteson  
Supervisor

37 Jack  
Supervisor

38  
39  
40  
41  
42  
43  
44  
45  
Supervisor

Supervisor

46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60  
61  
62  
63  
64  
65  
66  
67  
68  
69  
70  
71  
72

Seconded by: \_\_\_\_\_

18 Ayes

\_\_\_\_\_ Nays

2 Absent

\_\_\_\_\_ Abstain

*1 Vacant*

X Adopted

by the County Board of Supervisors this *21st.* day of *Sept.* 2010.

\_\_\_\_\_ Defeated

<i>Mary Bartelt</i>	<i>Ted Cushing</i>
Mary Bartelt, Clerk	Ted Cushing, County Board Chair

**Resolution #78-2010**

BOARD MBR	AYE	NAY	ABS	ABSTAIN
Hintz	✓			
Holewinski	✓			
Fried	✓		≠	
Wolk	✓			
Martinson	✓			
Baier	✓			
Berard	✓			
Hoffman	✓			
Sharon	✓			
Rudolph	✓			
Metropulos			/	
O'Melia	✓			
Paszak	✓			
Matteson	✓			
Thompson	✓			
Dean			/	
Greschner <i>VACANT</i>				<i>1 Vacant</i>
Vandervest	✓			
Pederson	✓			
Young	✓			
Cushing	✓			
TOTALS	<i>18</i>		<i>2</i>	<i>1 Vacant</i>

September 21, 2010

