Winnebago County, Illinois Multi-Hazard Mitigation Plan

A 2014 Update of the 2007 Winnebago Countywide MHMP
Multi-Hazard Mitigation Plan
Winnebago County, Illinois

Adoption Date: -- ______________________ --

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Acknowledgements

The Winnebago County Multi-Hazard Mitigation Plan would not have been possible without the incredible feedback, input, and expertise provided by the County leadership, citizens, staff, federal and state agencies, and volunteers. We would like to give special thank you to the citizens not mentioned below who freely gave their time and input in hopes of building a stronger, more progressive County. Winnebago County gratefully acknowledges the following people for the time, energy and resources given to create the Winnebago County Multi-Hazard Mitigation Plan.

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Jamie Evans - Chief, Police Department, Village of Roscoe
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Jim Wise - Village Administrator, Village of Cherry Valley
Don Krizan - Civil Engineer Senior, Highway Department, Winnebago County
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Section 1. Introduction

Hazard mitigation is any sustained action to reduce or eliminate long-term risk to human life and property from hazards. The Federal Emergency Management Agency (FEMA) makes reducing hazards one of its primary goals; hazard-mitigation planning and the subsequent implementation of mitigation projects, measures, and policies is a primary mechanism in achieving FEMA’s goal.

The Multi-Hazard Mitigation Plan (MHMP) is a requirement of the Federal Disaster Mitigation Act of 2000 (DMA 2000). The development of a local government plan is required in order to maintain eligibility for certain federal disaster assistance and hazard mitigation funding programs. In order for the National Flood Insurance Program (NFIP) communities to be eligible for future mitigation funds, they must adopt an MHMP.

In recognition of the importance of planning in mitigation activities, FEMA created Hazus Multi-Hazard (Hazus-MH), a powerful geographic information system (GIS)-based disaster risk assessment tool. This tool enables communities of all sizes to estimate losses from floods, hurricanes, earthquakes, and other natural hazards and to measure the impact of various mitigation practices that might help reduce those losses.

Winnebago County completed their first Multi-Hazard Mitigation Plan in 2007. Throughout the five-year planning cycle, the Winnebago County mitigation planning team reconvened to monitor, evaluate, and update the plan on an annual basis. The Natural Hazards Research and Mitigation Group at Southern Illinois University Carbondale (SIU) assisted Winnebago County in developing their MHMP update. SIU guided the planning process, performed the hazard risk assessment, and assisted in identifying sound mitigation activities. This document hereby serves as Winnebago County’s Multi-Hazard Mitigation Plan update.
Section 2. Planning Process

2.1 Timeline
The MHMP process is broken into a series of five meetings. These meetings were organized by SIU and hosted by the Winnebago County Highway Department. At these five meetings, various tasks were completed by SIU and the Winnebago County mitigation planning team:

Meeting 1: The purpose of Meeting 1 was to introduce the MHMP process and organize resources. SIU gathered local resources that contributed to the detailed county risk assessment.

Meeting 2: SIU presented the county’s historical hazards. Based on this information, the planning team identified natural hazards to include in the plan, and ranked hazards by potential damages and occurrences. The planning team also provided SIU with disaster scenarios for the county risk assessment.

Meeting 3: SIU presented the draft risk assessment, derived from the Hazus-MH and GIS modeling of the identified disasters, to the planning team. The general public was invited to this meeting through a series of newspaper articles and/or radio spots. At the end of the meeting, SIU encouraged the general public to ask questions and provide input to the planning process, fulfilling one of FEMA’s requirements for public input.

Meeting 4: This meeting consisted of a “brainstorming session.” The planning team lent local knowledge to identify and prioritize mitigation strategies and projects that can address the threats identified in the risk assessment. FEMA requires the plan to contain mitigation strategies specific to each hazard and for each incorporated area within the county.

Meeting 5: The planning team reviewed the draft plan, proposed revisions, and accepted the plan after SIU incorporated the necessary changes. Subsequently, SIU forwarded the county MHMP to the mitigation staff at the Illinois Emergency Management Agency (IEMA) for review prior to submitting it to FEMA.

2.2 Planning Team Information
Joseph Vanderwerff, County Engineer, heads the planning team. The planning team includes representatives from various county departments, municipalities, and public and private utilities. Table 2-1 identifies the planning team individuals and the organizations they represent.

<table>
<thead>
<tr>
<th>Jurisdiction</th>
<th>Name</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Village of Cherry Valley</td>
<td>Jim Claeyssen</td>
<td>Village President</td>
</tr>
<tr>
<td>Village of Cherry Valley</td>
<td>Jim Wise</td>
<td>Village Administrator</td>
</tr>
<tr>
<td>Village of Cherry Valley</td>
<td>Chuck Freeman</td>
<td>Director of Public Works</td>
</tr>
<tr>
<td>Village of Durand</td>
<td>Gary Haughton</td>
<td>Village President</td>
</tr>
<tr>
<td>City of Loves Park</td>
<td>Darryl Lindberg</td>
<td>Mayor</td>
</tr>
<tr>
<td>City of Loves Park</td>
<td>Dan Jacobson</td>
<td>Director of Public Works</td>
</tr>
<tr>
<td>City of Loves Park</td>
<td>Andrew Quintanilla</td>
<td>Zoning Officer</td>
</tr>
<tr>
<td>Jurisdiction</td>
<td>Name</td>
<td>Title</td>
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<tr>
<td>Village of Machesney Park</td>
<td>Jerry Bolin</td>
<td>Village President</td>
</tr>
<tr>
<td></td>
<td>Chad Hunter</td>
<td>Superintendent of Public Works</td>
</tr>
<tr>
<td></td>
<td>Carrie Houston</td>
<td>Planning &amp; Zoning Specialist</td>
</tr>
<tr>
<td>Village of New Milford</td>
<td>Dennis McMullen*</td>
<td>Village Engineer</td>
</tr>
<tr>
<td>Village of Pecatonica</td>
<td>Dan Barber</td>
<td>Village President</td>
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<tr>
<td></td>
<td>Robert Smith</td>
<td>Chief of Police</td>
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<tr>
<td></td>
<td>Bill Faller</td>
<td>Superintendent, CUSD 321</td>
</tr>
<tr>
<td>City of Rockford</td>
<td>Marcy Leach</td>
<td>Engineering Operations Manager</td>
</tr>
<tr>
<td></td>
<td>Dean Kurth</td>
<td>Environmental Storm Water Project Manager</td>
</tr>
<tr>
<td></td>
<td>Thaddeus Mack</td>
<td>Planner/Building Plans Examiner</td>
</tr>
<tr>
<td></td>
<td>Joseph Corl</td>
<td>Division Chief, Fire Department</td>
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<tr>
<td>Village of Rockton</td>
<td>Dale Adams</td>
<td>Mayor</td>
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<tr>
<td></td>
<td>Gordy Nygren</td>
<td>Public Works Manager</td>
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<tr>
<td>Village of Roscoe</td>
<td>Dave Krienke</td>
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<td></td>
<td>Jamie Evans</td>
<td>Chief of Police</td>
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<td></td>
<td>Emily Roen</td>
<td>Village Engineer</td>
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<tr>
<td>City of South Beloit</td>
<td>Ken Morse</td>
<td>Fire Chief</td>
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<td></td>
<td>Jeff Reininger</td>
<td>Public Works Director</td>
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<tr>
<td>Village of Winnebago</td>
<td>Franklin Eubank</td>
<td>Village President</td>
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<tr>
<td></td>
<td>Chad Insko</td>
<td>Director of Utilities</td>
</tr>
<tr>
<td></td>
<td>Todd Stockburger</td>
<td>Chief of Police</td>
</tr>
<tr>
<td>County of Winnebago</td>
<td>Joe Vanderwerff</td>
<td>County Engineer</td>
</tr>
<tr>
<td></td>
<td>Wayne Vlk</td>
<td>Assistant County Engineer</td>
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<td></td>
<td>Frank Hodina</td>
<td>Civil Engineer Senior</td>
</tr>
<tr>
<td></td>
<td>Don Krizan</td>
<td>Civil Engineer Senior</td>
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<tr>
<td></td>
<td>Chris Dornbus</td>
<td>Director, Development Services</td>
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<tr>
<td></td>
<td>Steve Girard</td>
<td>Building Official</td>
</tr>
<tr>
<td></td>
<td>Troy Krup</td>
<td>Planning &amp; Zoning Officer</td>
</tr>
<tr>
<td></td>
<td>Burnie Turner</td>
<td>Director, WinGIS</td>
</tr>
<tr>
<td></td>
<td>Dave Peters</td>
<td>Database Administrator, WinGIS</td>
</tr>
<tr>
<td></td>
<td>Sally Claassen</td>
<td>Director, Purchasing &amp; Facilities</td>
</tr>
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<td></td>
<td>Todd Marshall</td>
<td>Director, Environmental Health</td>
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<tr>
<td></td>
<td>Jerry Wiltfang</td>
<td>Director, Emergency Operations</td>
</tr>
<tr>
<td>Agencies</td>
<td>Fred Diehl</td>
<td>Chairman, Winnebago County LEPC; RPS205 Director of Security Services</td>
</tr>
<tr>
<td></td>
<td>David Lindberg</td>
<td>Assistant Operations Manager, Rockford Airport</td>
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<td></td>
<td>Steve Ernst</td>
<td>Executive Director, RMAP</td>
</tr>
<tr>
<td></td>
<td>Colleen Hoesly</td>
<td>Metropolitan Planner, RMAP</td>
</tr>
<tr>
<td></td>
<td>Colin Belle</td>
<td>Metropolitan Planner, RMAP</td>
</tr>
<tr>
<td>Utilities</td>
<td>Mike Owens</td>
<td>Comcast</td>
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<td></td>
<td>Paul Callighan</td>
<td>ComEd</td>
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<td></td>
<td>Paulo Javier</td>
<td>Frontier Communications</td>
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<td></td>
<td>Gary Owens</td>
<td>Illinois American Water - South Beloit</td>
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<td></td>
<td>David Pietryla</td>
<td>Nicor</td>
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<tr>
<td></td>
<td>Eric Stromberg</td>
<td>North Park Public Water District</td>
</tr>
<tr>
<td></td>
<td>Alice Ohrtmann</td>
<td>Rock River Water Reclamation District (RRWRD)</td>
</tr>
<tr>
<td></td>
<td>Terry Stoll</td>
<td>Rock River Water Reclamation District (RRWRD)</td>
</tr>
</tbody>
</table>

*Also representing the Villages of Cherry Valley and Rockton
The DMA 2000 planning regulations require that planning team members from each jurisdiction actively participate in the MHMP process. The planning team was actively involved on the following components:

- Attending the MHMP meetings
- Providing available assessment and parcel data and historical hazard information
- Reviewing and providing comments on the draft plans
- Coordinating and participating in the public input process
- Coordinating the formal adoption of the plan by the county

Two MHMP kickoff meetings were held in Rockford on 01/07/2014 and 01/22/2014. Representatives from SIU explained the rationale behind the MHMP program and answered questions from the participants. SIU representatives provided an overview of Hazus-MH and described the timeline and the process of the mitigation planning project.

The planning team met on 01/07/2014, 01/22/2014, 03/25/2014, 06/25/2014, 06/26/2014 and 07/23/2014. Each meeting was approximately two hours in length. Appendix A includes the minutes for each meeting. During these meetings, the planning team successfully identified critical facilities, reviewed hazard data and maps, identified and assessed the effectiveness of existing mitigation measures, established mitigation projects, and assisted with preparation of the public participation information.

2.3 Public Involvement

The Winnebago County Planning Team solicited public input during the planning process, and a public meeting (Meeting 3) was held on 06/25/2014 to review the county’s risk assessment. Appendix A contains the minutes from the public meeting. Appendix B contains press releases and/or articles sent to local newspapers throughout the public input process.

2.4 Neighboring Community Involvement

The planning team invited participation from various representatives of county government, local city and town governments, community groups, local businesses, and universities. The planning team also invited participation from adjacent counties to obtain their involvement in the planning process. Table 2-2 summarizes details of neighboring stakeholders’ involvement.

<table>
<thead>
<tr>
<th>Person Participating</th>
<th>Neighboring Jurisdiction</th>
<th>Title/Organization</th>
<th>Participation Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bard Bartell</td>
<td>Boone County</td>
<td>Boone County EMA</td>
<td>Reviewed plan; offered comments</td>
</tr>
<tr>
<td>Terrance Groves</td>
<td>Stephenson County</td>
<td>Stephenson County EMA</td>
<td>Reviewed plan; offered comments</td>
</tr>
<tr>
<td>Candace Humphrely</td>
<td>Ogle County</td>
<td>Ogle County EMA</td>
<td>Reviewed plan; offered comments</td>
</tr>
</tbody>
</table>

2.5 Review of Technical Documents

The planning team identified representatives from key agencies to assist in the planning process. SIU obtained technical data, reports, and studies from these agencies. Table 2-3 summarizes these organizations and their contributions.
2.6 Review of Existing Plans

Winnebago County and its local communities utilized a variety of planning documents to direct community development. These documents include land use plans, comprehensive plans, emergency response plans, municipal ordinances, and building codes. The planning process incorporated the existing natural hazard mitigation elements from previous planning efforts. Table 2-4 lists the plans, studies, reports, and ordinances used to develop the plan.

Table 2-4: Documents Utilized in the MHMP Planning Process

<table>
<thead>
<tr>
<th>Author(s)</th>
<th>Title</th>
<th>Description</th>
<th>Utilized in Section</th>
</tr>
</thead>
<tbody>
<tr>
<td>FEMA</td>
<td>2006 Winnebago County Flood Insurance Study</td>
<td>A compilation and presentation of flood risk data for specific watercourses, lakes, and flood hazard areas within Winnebago County.</td>
<td>2, 4 and 5</td>
</tr>
<tr>
<td>Winnebago County</td>
<td>2012 GIS Database</td>
<td>Parcel, Assessor, and Critical Facility Data for Winnebago County.</td>
<td>4</td>
</tr>
<tr>
<td>Winnebago County</td>
<td>2007 Multi-Hazard Mitigation Plan</td>
<td>Multi-hazard, multi-jurisdictional plan for the communities within Winnebago County.</td>
<td>2, 3, 4, and 5</td>
</tr>
<tr>
<td>Winnebago County</td>
<td>2014 Emergency Response Plan</td>
<td>Emergency Response Plan that identifies facilities that use or store Hazardous Material and Extremely Hazardous Substances within Winnebago County. It also identifies routes that are likely to be used in the transport of EHS.</td>
<td>2, 3 and 4</td>
</tr>
<tr>
<td>Winnebago County</td>
<td>2030 Land Resource Management Plan</td>
<td>A comprehensive land use plan that offers a vision of how the unincorporated areas of Winnebago County will grow and develop over the next 20 years.</td>
<td>2</td>
</tr>
</tbody>
</table>
### 2.7 Jurisdiction Participation Information

SIU intends this plan to meet the requirements of the DMA 2000 and for each incorporated jurisdiction to adopt it. Table 2-5 lists the incorporated communities included in this multi-jurisdictional plan.

<table>
<thead>
<tr>
<th>Jurisdiction Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Winnebago County</td>
</tr>
<tr>
<td>Village of Cherry Valley</td>
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<tr>
<td>Village of Durand</td>
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<tr>
<td>City of Loves Park</td>
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<tr>
<td>Village of Machesney Park</td>
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<tr>
<td>Village of New Milford</td>
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<tr>
<td>Village of Pecatonica</td>
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<td>City of Rockford</td>
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<td>Village of Rockton</td>
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<tr>
<td>Village of Roscoe</td>
</tr>
<tr>
<td>City of South Beloit</td>
</tr>
<tr>
<td>Shirland School District #134</td>
</tr>
<tr>
<td>Village of Winnebago</td>
</tr>
<tr>
<td>North Park Public Water District (NPPWD)</td>
</tr>
<tr>
<td>Rock River Water Reclamation District (RRWRD)</td>
</tr>
</tbody>
</table>

### 2.8 Adoption by Local Government

SIU delivered the draft plan to the Winnebago County multi-hazard mitigation planning team for review on 07/23/2014. SIU subsequently incorporated any comments from the planning team into the plan.
Upon FEMA approval, the planning team will present and recommend the plan to the County Commissioners for adoption, who adopted it on <adoption date>. The planning team will work with the county and its jurisdictions to ensure all parties adopt the plan. Appendix C includes resolution adoptions of this plan.

### 2.9 Jurisdiction Participation

DMA 2000 regulations require that each jurisdiction participate in the planning process. Table 2-6 lists each jurisdiction and describes its participation in the construction of this plan. All members of the planning team actively participated in the MHMP meetings, provided available GIS data and historical hazard information, reviewed and provided comments on the draft plans, coordinated and participated in the public input process, and coordinated the county’s formal adoption of the plan.

<table>
<thead>
<tr>
<th>Jurisdiction Name</th>
<th>Participating Member</th>
<th>Participation Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Winnebago County</td>
<td>Joe Vanderwerff</td>
<td>Reviewed plan; offered comments</td>
</tr>
<tr>
<td>Cherry Valley</td>
<td>Jim Claeyssen</td>
<td>Reviewed plan; offered comments</td>
</tr>
<tr>
<td>Durand</td>
<td>Gary Haughton</td>
<td>Reviewed plan; offered comments</td>
</tr>
<tr>
<td>Loves Park</td>
<td>Darryl Lindberg</td>
<td>Reviewed plan; offered comments</td>
</tr>
<tr>
<td>Machesney Park</td>
<td>Jerry Bolin</td>
<td>Reviewed plan; offered comments</td>
</tr>
<tr>
<td>New Milford</td>
<td>Dennis McMullen</td>
<td>Reviewed plan; offered comments</td>
</tr>
<tr>
<td>Pecatonica</td>
<td>Dan Barber</td>
<td>Reviewed plan; offered comments</td>
</tr>
<tr>
<td>Rockford</td>
<td>Marcy Leach</td>
<td>Reviewed plan; offered comments</td>
</tr>
<tr>
<td>Rockton</td>
<td>Dale Adams</td>
<td>Reviewed plan; offered comments</td>
</tr>
<tr>
<td>Roscoe</td>
<td>Dave Krienke</td>
<td>Reviewed plan; offered comments</td>
</tr>
<tr>
<td>South Beloit</td>
<td>Ken Morse</td>
<td>Reviewed plan; offered comments</td>
</tr>
<tr>
<td>Shirland School District #134</td>
<td>John Ulferts</td>
<td>Reviewed plan; offered comments</td>
</tr>
<tr>
<td>Village of Winnebago</td>
<td>Franklin Eubank</td>
<td>Reviewed plan; offered comments</td>
</tr>
<tr>
<td>North Park Public Water District (NPPWD)</td>
<td>Eric Stromberg</td>
<td>Reviewed plan; offered comments</td>
</tr>
<tr>
<td>Rock River Water Reclamation District (RRWRD)</td>
<td>Alice Ohrtmann</td>
<td>Reviewed plan; offered comments</td>
</tr>
</tbody>
</table>
Section 3. County Profile

3.1 County Background
Winnebago County was established in January 1836. The County was named after the Winnebago Tribe, a Siouan-speaking tribe of Native Americans that once occupied large parts of what is now Illinois, Wisconsin, and Iowa. After the Black Hawk War of 1832, the area was settled on the banks of the Rock River in what is now the City of Rockford. Located halfway between Chicago and Galena, this early settlement was known as “Midway Village” but was soon changed to Rockford, after the ford that existed across the Rock River. The River played a major role in the development of the region, serving as the major source of power while the rich soils of the area helped the area grown rapidly.

Figure 3-1 displays the geographical location of Winnebago County and its incorporated municipalities. Winnebago County covers 519 square miles and is located in north-central Illinois, 90 miles northwest of Chicago and 60 miles south of Madison, Wisconsin. It is bordered by Wisconsin on the north, Boone County on the east, Ogle County on the south, and Stephenson County on the west. The City of Rockford is the County Seat, and other cities include Loves Park and South Beloit. There are eight villages in Winnebago County: Cherry Valley, Durand, Machesney Park, New Milford, Pecatonica, Roscoe, Rockton, and Winnebago. There are fourteen townships: Burritt, Cherry Valley, Durand, Harlem, Harrison, Laona, Owen, Pecatonica, Rockford, Rockton, Roscoe, Seward, Shirland, and Winnebago.
Figure 3-1: Winnebago County's Geographic Location
3.2 Topography
Winnebago County is situated within the Central Lowlands Province, Rock River Hill County Subsection of the Till Plains Section physiographic division of Illinois (Figure 3-2). The topography is gently rolling ground moraine, with occasional eskers, kames, marginal moraines, and outwash. Elevations in the county range from >980 feet above mean sea level to <680 feet above mean sea level.

Figure 3-2: Physiographic Divisions of Winnebago County and Surrounding Terrain

3.3 Climate
Winnebago County has a continental climate which features warm summers and cold winters with wide temperature variations. According to the National Weather Service, the average annual temperature is 53.51°F. The highest temperature on record is 111°F and the lowest is -23°F. Average annual precipitation is 40.09 inches, with most precipitation occurring in spring and summer months. Average annual snowfall is approximately 15.00 inches. Average annual humidity is 80.84%. Average annual wind speed is 20.44 mph.
3.4 Demographic
Winnebago County’s population is 295,266, an increase of 2.93% from 2000 to 2010 (U.S. Census Bureau, 2010 Census). The population is spread through 14 townships: Burritt, Cherry Valley, Durand, Harlem, Harrison, Laona, Owen, Pecatonica, Rockford, Rockton, Roscoe, Seward, Shirland, and Winnebago. Table 3-1 includes the breakdown of population by township. Winnebago County has 12 incorporated jurisdictions, including: Cherry Valley, Davis Junction, Durand, Lake Summerset, Loves Park, Machesney Park, New Milford, Pecatonica, Rockford, Rockton, South Beloit, and Winnebago. The largest incorporated jurisdiction in Winnebago County is Rockford, which has a population of approximately 152,871 (U.S. Census Bureau, 2010 Census).

<table>
<thead>
<tr>
<th>Township</th>
<th>2010 Population</th>
<th>Percent of County</th>
</tr>
</thead>
<tbody>
<tr>
<td>Burritt</td>
<td>947</td>
<td>0.32%</td>
</tr>
<tr>
<td>Cherry Valley</td>
<td>19,831</td>
<td>6.72%</td>
</tr>
<tr>
<td>Durand</td>
<td>2,394</td>
<td>0.81%</td>
</tr>
<tr>
<td>Harlem</td>
<td>40,158</td>
<td>13.60%</td>
</tr>
<tr>
<td>Harrison</td>
<td>670</td>
<td>0.23%</td>
</tr>
<tr>
<td>Laona</td>
<td>1,250</td>
<td>0.42%</td>
</tr>
<tr>
<td>Owen</td>
<td>3,803</td>
<td>1.29%</td>
</tr>
<tr>
<td>Pecatonica</td>
<td>4,355</td>
<td>1.47%</td>
</tr>
<tr>
<td>Rockford</td>
<td>178,527</td>
<td>60.46%</td>
</tr>
<tr>
<td>Rockton</td>
<td>16,441</td>
<td>5.57%</td>
</tr>
<tr>
<td>Roscoe</td>
<td>19,694</td>
<td>6.67%</td>
</tr>
<tr>
<td>Seward</td>
<td>917</td>
<td>0.31%</td>
</tr>
<tr>
<td>Shirland</td>
<td>988</td>
<td>0.33%</td>
</tr>
<tr>
<td>Winnebago</td>
<td>5,291</td>
<td>1.79%</td>
</tr>
</tbody>
</table>

3.5 Economy
The American Community Survey (2008-2012) reported that the civilian labor force comprised 60.8% of the workforce in Winnebago County. Table 3-2 includes the employment distribution by industrial sector. Manufacturing, retail trade, and education represent the largest sectors, employing 56.1% of the workforce. The annual per capita income in Winnebago County is $24,404 (American Community Survey, 2008-2012).

<table>
<thead>
<tr>
<th>Industrial Sector</th>
<th>2008-2012 County Distribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture, forestry, fishing, hunting, and mining</td>
<td>0.5%</td>
</tr>
<tr>
<td>Construction</td>
<td>5.0%</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>22.0%</td>
</tr>
<tr>
<td>Wholesale trade</td>
<td>2.4%</td>
</tr>
<tr>
<td>Retail trade</td>
<td>11.3%</td>
</tr>
<tr>
<td>Transportation, warehousing and utilities</td>
<td>5.8%</td>
</tr>
<tr>
<td>Information</td>
<td>1.7%</td>
</tr>
<tr>
<td>Finance, insurance, real estate, and rental/leasing</td>
<td>4.9%</td>
</tr>
<tr>
<td>Professional, technical services</td>
<td>7.8%</td>
</tr>
<tr>
<td>Educational, health, and social services</td>
<td>22.8%</td>
</tr>
<tr>
<td>Arts, entertainment, recreation</td>
<td>7.7%</td>
</tr>
</tbody>
</table>
### 3.6 Industry

Winnebago County’s major employers include Chrysler, Rockford Public Schools and Rockford Health Systems. Table 3-3 lists the major employers and the approximate number of employees in Winnebago County.

<table>
<thead>
<tr>
<th>Employer</th>
<th>Industry</th>
<th>Approximate Number of Employees</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chrysler</td>
<td>Automotive</td>
<td>4,500</td>
</tr>
<tr>
<td>Rockford Public Schools</td>
<td>Education</td>
<td>3,730</td>
</tr>
<tr>
<td>Rockford Health System</td>
<td>Health Care</td>
<td>3,000</td>
</tr>
<tr>
<td>SwedishAmerican Health System</td>
<td>Health Care</td>
<td>2,988</td>
</tr>
<tr>
<td>UTC Aerospace</td>
<td>Aerospace</td>
<td>2,200</td>
</tr>
<tr>
<td>OSF Healthcare</td>
<td>Health Care</td>
<td>1,800</td>
</tr>
<tr>
<td>Rockford Park District</td>
<td>Government</td>
<td>1,739</td>
</tr>
<tr>
<td>Winnebago County</td>
<td>Government</td>
<td>1,731</td>
</tr>
<tr>
<td>Wal-Mart Stores</td>
<td>Retail</td>
<td>1,611</td>
</tr>
<tr>
<td>Woodward</td>
<td>Aerospace</td>
<td>1,400</td>
</tr>
<tr>
<td>UPS</td>
<td>Parcel Sorting Hub</td>
<td>1,200</td>
</tr>
<tr>
<td>City of Rockford</td>
<td>Government</td>
<td>1,122</td>
</tr>
<tr>
<td>AndersonBrecon</td>
<td>Pharmaceutical</td>
<td>1,100</td>
</tr>
<tr>
<td>Harlem Consolidated Schools</td>
<td>Education</td>
<td>1,099</td>
</tr>
<tr>
<td>Belivdere Schools</td>
<td>Education</td>
<td>967</td>
</tr>
<tr>
<td>Lowe’s</td>
<td>Distribution</td>
<td>900</td>
</tr>
<tr>
<td>Kraft Foods</td>
<td>Food</td>
<td>850</td>
</tr>
<tr>
<td>NCO Group</td>
<td>Telemarketing</td>
<td>800</td>
</tr>
<tr>
<td>Taylor Co</td>
<td>Ice Cream Machines</td>
<td>725</td>
</tr>
</tbody>
</table>

Source: [Winnebago County Regional Planning and Economic Development](#)

### 3.7 Land Use and Development Trends

Figure 3-3 depicts the land use within Winnebago County. The predominant land covers in Winnebago County are cultivated crops and hay/pasture, followed by deciduous forest and low/medium intensity urban development (National Land Cover Data Set, 2011). Agricultural lands are found almost everywhere in Winnebago. Deciduous forest cover is primarily found along the Rock River, Pecatonica River, Sugar River, and Kishwaukee River. Significant urban development is concentrated along the eastern boundary of the county and includes the municipalities of Rockford, Roscoe, Rockton, Loves Park and Machesney Park, with rural development to the west.
Figure 3-3: Land Use in Winnebago County
Winnebago County has adopted a 2030 Land Resource Management Plan to implement its vision for the future of the County. The land use decisions and growth management strategies found in the plan aim to preserve Winnebago County’s unique quality of life, which results from its ability to balance the rural and urban characters that make up the county. Figure 3-4 shows the planned future development of the County.

Figure 3-4: Future Land Use in Winnebago County
3.8 Major Lakes, Rivers, and Watersheds

Winnebago County has several water bodies, with Rock River being the most significant. According to the USGS, Winnebago County consists of five drainage basins: Kishwaukee, Lower Rock, Middle Rock, Pecatonica, and Sugar. Figure 3-5 depicts the hydrologic units within Winnebago County.

Figure 3-5: Major Lakes and Rivers in Winnebago County

The Rock River flows south through the county for a distance of 33.2 stream miles. Headwaters of the Rock River begin in the lake region of Fond du Lac County, Wisconsin. Within Winnebago County the Rock River flows through the communities of South Beloit, Rockton, Roscoe, Machesney Park, Loves Park, and Rockford. There are numerous tributaries that feed into the Rock River. The southeast tributaries of the Rock River include: Killbuck Creek, Kishwaukee River, South Branch Kishwaukee River, Madigan Creek, Keith Creek, Spring Creek, Buckbee Creek, South Ditch, Main Drainage Ditch, Ditch No. 3 and Manning
Creek. The northeast tributaries of the Rock River include: Will Creek, McDonald Creek, South Kinnikinnick Creek, North Kinnikinnick Creek, Dry Creek, South Branch Dry Creek, and Turtle Creek. The central west tributaries of the Rock River include: North Kent Creek, South Kent Creek, unnamed Tributary to South Kent Creek, Kilburn Creek and Mud Creek.

The Pecatonica River System differs markedly from others in Winnebago County. The main stem has a flat slope and the river valley is very wide, being cut through alluvium. The Pecatonica River System includes: Pecatonica River, Unnamed Tributary to Pecatonica River, Sugar River, Otter Creek, North Branch Otter Creek, Raccoon Creek, Randall Creek, and South Branch Otter Creek.
Section 4. Risk Assessment

The goal of mitigation is to reduce future hazard impacts including loss of life, property damage, disruption to local and regional economies, and the expenditure of public and private funds for recovery. Sound mitigation requires rigorous risk assessment. A risk assessment involves quantifying the potential loss resulting from a disaster by assessing the vulnerability of buildings, infrastructure, and people. This assessment identifies the characteristics and potential consequences of a disaster, how much the disaster could affect the community, and the impact on community assets. A risk assessment consists of three components—hazard identification, vulnerability analysis, and risk analysis.

4.1 Hazard Identification

4.1.1 Existing Plans
SIU and the planning team reviewed local planning documents (Table 2-4) to identify historical hazards and help identify risk.

4.1.2 National Hazard Records
To assist the planning team, SIU compiled historical storm event data from the National Climatic Data Center (NCDC). NCDC records are estimates of damage reported to the National Weather Service from various local, state, and federal sources. However, these estimates are often preliminary in nature and may not match the final assessment of economic and property losses.

The NCDC data included 231 reported events in Winnebago County from 1955-Feb 2014 (the most updated information as of the date of this plan). The following hazard-profile sections each include a summary table of events related to each hazard type. Table 4-1 summarizes meteorological hazards reported by NCDC for Winnebago County. Figures 4-1 summarize the relative frequency of NCDC reported meteorological hazards and the percent of total damage associated with each hazard for Winnebago County. Full details of individual hazard events are on the NCDC website. In addition to NCDC data, SIU mapped Storm Prediction Center (SPC) data associated with tornadoes, strong winds, and hail using SPC-recorded latitudes and longitudes. Appendix D includes a map of these events.

Table 4-1: Summary of Meteorological Hazards Reported by the NCDC for Winnebago County

<table>
<thead>
<tr>
<th>Hazards</th>
<th>Time Period</th>
<th>Number of Events</th>
<th>Property Damage (Millions of Dollars)</th>
<th>Deaths</th>
<th>Injuries</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flooding</td>
<td>1996-2012</td>
<td>42</td>
<td>$29.63</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Severe Thunderstorm</td>
<td>1960-2012</td>
<td>343</td>
<td>$6.11</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Tornado</td>
<td>1958-2011</td>
<td>13</td>
<td>$5.44</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Winter Storm</td>
<td>1996-2014</td>
<td>44</td>
<td>$0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Extreme Heat</td>
<td>1999-2012</td>
<td>11</td>
<td>$0</td>
<td>3</td>
<td>0</td>
</tr>
</tbody>
</table>
4.1.3 FEMA Disaster Information

Since 1957, FEMA has declared 53 major disasters and 7 emergencies for the state of Illinois. Emergency declarations allow states to access FEMA funds for Public Assistance (PA); disaster declarations allow for even more PA funding, including Individual Assistance (IA) and the Hazard Mitigation Grant Program (HMGP). Winnebago County has received federal aid for sixteen declared disasters and emergencies since 1965. Figure 4-2 depicts the disasters and emergencies that have been declared for the state of Illinois and Winnebago County since 1965. Table 4-2 lists specific information for each disaster declaration in Winnebago County.
Figure 4-2: FEMA-declared Emergencies and Disasters in Illinois
Table 4-2: Details of FEMA-declared Emergencies and Disasters in Winnebago County

<table>
<thead>
<tr>
<th>Declaration Number</th>
<th>Date of Declaration</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>227</td>
<td>4/25/1967</td>
<td>Tornadoes</td>
</tr>
<tr>
<td>373</td>
<td>4/26/1973</td>
<td>Severe Storms and Flooding</td>
</tr>
<tr>
<td>438</td>
<td>6/10/1974</td>
<td>Severe Storms and Flooding</td>
</tr>
<tr>
<td>3068</td>
<td>1/16/1979</td>
<td>Blizzards and Snowstorms</td>
</tr>
<tr>
<td>997</td>
<td>7/9/1993</td>
<td>Severe Storms and Flooding</td>
</tr>
<tr>
<td>1129</td>
<td>7/25/1996</td>
<td>Severe Storms and Flooding</td>
</tr>
<tr>
<td>3134</td>
<td>1/8/1999</td>
<td>Winter Storm</td>
</tr>
<tr>
<td>3161</td>
<td>1/17/2001</td>
<td>Winter Storms</td>
</tr>
<tr>
<td>3230</td>
<td>9/7/2005</td>
<td>Hurricane Katrina Evacuation</td>
</tr>
<tr>
<td>3269</td>
<td>12/29/2006</td>
<td>Snow</td>
</tr>
<tr>
<td>1722</td>
<td>8/30/2007</td>
<td>Severe Storms and Flooding</td>
</tr>
<tr>
<td>3283</td>
<td>3/13/2008</td>
<td>Record Snow and Near Record Snow</td>
</tr>
<tr>
<td>1771</td>
<td>6/24/2008</td>
<td>Severe Storms and Flooding</td>
</tr>
<tr>
<td>1935</td>
<td>8/19/2010</td>
<td>Severe Storms and Flooding</td>
</tr>
<tr>
<td>1960</td>
<td>3/17/2011</td>
<td>Severe Winter Storm and Snowstorm</td>
</tr>
<tr>
<td>4116</td>
<td>5/10/2013</td>
<td>Severe Storms, Straight-Line Winds, and Flooding</td>
</tr>
</tbody>
</table>

4.1.4 Hazard Ranking Methodology

Based on planning team input, national datasets, and existing plans, Table 4-3 lists the hazards Winnebago County will address in the MHMP. In addition, these hazards ranked the highest based on the Risk Priority Index (RPI) discussed in section 4.1.5.

Table 4-3: Planning Team Hazard List

<table>
<thead>
<tr>
<th>Hazard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flooding</td>
</tr>
<tr>
<td>Severe Storms</td>
</tr>
<tr>
<td>Tornadoes</td>
</tr>
<tr>
<td>Hazmat</td>
</tr>
<tr>
<td>Winter Storms</td>
</tr>
<tr>
<td>Drought/Extreme Heat</td>
</tr>
<tr>
<td>Dam and Levee Failure</td>
</tr>
<tr>
<td>Earthquakes</td>
</tr>
</tbody>
</table>

4.1.5 Risk Priority Index

The RPI quantifies risk as the product of hazard probability and magnitude so planning team members can prioritize mitigation strategies for high-risk-priority hazards. Planning team members use historical hazard data to determine probability and knowledge of local conditions to determine the possible severity of a hazard. Tables 4-4 and 4-5 display the criteria the planning team used to quantify hazard probability and magnitude.
Table 4-4: Future Occurrence Ranking

<table>
<thead>
<tr>
<th>Probability</th>
<th>Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 – Highly Likely</td>
<td>Event is probable within the calendar year. Event has up to 1 in 1 year chance of occurring. (1/1=100%) History of events is greater than 33% likely per year.</td>
</tr>
<tr>
<td>3 – Likely</td>
<td>Event is probable within the next three years. Event has up to 1 in 3 years chance of occurring. (1/3=33%) History of events is greater than 20% but less than or equal to 33% likely per year.</td>
</tr>
<tr>
<td>2 – Possible</td>
<td>Event is probable within the next five years. Event has up to 1 in 5 years chance of occurring. (1/5=20%) History of events is greater than 10% but less than or equal to 20% likely per year.</td>
</tr>
<tr>
<td>1 – Unlikely</td>
<td>Event is possible within the next ten years. Event has up to 1 in 10 years chance of occurring. (1/10=10%) History of events is less than or equal to 10% likely per year.</td>
</tr>
</tbody>
</table>

Table 4-5: Hazard Magnitude

<table>
<thead>
<tr>
<th>Magnitude/Severity</th>
<th>Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>8 – Catastrophic</td>
<td>Multiple deaths. Complete shutdown of facilities for 30 or more days. More than 50% of property is severely damaged.</td>
</tr>
<tr>
<td>4 – Critical</td>
<td>Injuries and/or illnesses result in permanent disability. Complete shutdown of critical facilities for at least 14 days. More than 25% of property is severely damaged.</td>
</tr>
<tr>
<td>2 – Limited</td>
<td>Injuries and/or illnesses do not result in permanent disability. Complete shutdown of critical facilities for more than seven days. More than 10% of property is severely damaged.</td>
</tr>
<tr>
<td>1 – Negligible</td>
<td>Injuries and/or illnesses are treatable with first aid. Minor quality of life lost. Shutdown of critical facilities and services for 24 hours or less. Less than 10% of property is severely damaged.</td>
</tr>
</tbody>
</table>

The product of hazard probability and magnitude is the RPI. The planning team members ranked specified hazards based on the RPI, with larger numbers corresponding to greater risk. After evaluating the calculated RPI, the planning team adjusted the ranking to better suit the County. Table 4-6 identifies the RPI and adjusted ranking for each hazard specified by the planning team.

Table 4-6: Winnebago County Hazard Priority Index and Ranking

<table>
<thead>
<tr>
<th>Hazard</th>
<th>Probability</th>
<th>Magnitude/Severity</th>
<th>Risk Priority Index</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flooding</td>
<td>4</td>
<td>2</td>
<td>8</td>
<td>1</td>
</tr>
<tr>
<td>Severe Storms</td>
<td>4</td>
<td>1</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>Tornadoes</td>
<td>3</td>
<td>4</td>
<td>12</td>
<td>3</td>
</tr>
<tr>
<td>Hazmat</td>
<td>3</td>
<td>4</td>
<td>12</td>
<td>4</td>
</tr>
<tr>
<td>Winter Storms</td>
<td>4</td>
<td>1</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Drought/Extreme Heat</td>
<td>3</td>
<td>2</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Hazard</td>
<td>Probability</td>
<td>Magnitude/Severity</td>
<td>Risk Priority Index</td>
<td>Rank</td>
</tr>
<tr>
<td>-------------------------</td>
<td>-------------</td>
<td>-------------------</td>
<td>---------------------</td>
<td>------</td>
</tr>
<tr>
<td>Dam and Levee Failure</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>7</td>
</tr>
<tr>
<td>Earthquakes</td>
<td>1</td>
<td>4</td>
<td>4</td>
<td>8</td>
</tr>
</tbody>
</table>

### 4.1.6 Jurisdictional Hazard Ranking

Each jurisdiction created its own RPI because hazard susceptibility may differ by jurisdiction. During the five-year review of the plan, the planning team will update this table to ensure these jurisdictional rankings accurately reflect each community’s assessment of these hazards. Table 4-7 lists the jurisdictions and their respective hazard rankings (Ranking 1 being the highest concern). The jurisdictions made these rankings at Meeting 2, and community perceptions may change throughout the planning process.

<table>
<thead>
<tr>
<th>Jurisdiction</th>
<th>Flooding</th>
<th>Severe Storms</th>
<th>Tornadoes</th>
<th>Hazmat</th>
<th>Winter Storms</th>
<th>Drought / Heat</th>
<th>Dam / Levee Failure</th>
<th>Earthquakes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Winnebago Co.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>Cherry Valley</td>
<td>2</td>
<td>4</td>
<td>3</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Durand</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>5</td>
<td>4</td>
<td>6</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>Loves Park</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>5</td>
<td>4</td>
<td>6</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>Machesney Park</td>
<td>1</td>
<td>2</td>
<td>4</td>
<td>7</td>
<td>5</td>
<td>6</td>
<td>3</td>
<td>8</td>
</tr>
<tr>
<td>New Milford</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>Pecatonica</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Rockford</td>
<td>1</td>
<td>4</td>
<td>2</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>3</td>
<td>8</td>
</tr>
<tr>
<td>Rockton</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>Roscoe</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>South Beloit</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>Winnebago</td>
<td>1</td>
<td>3</td>
<td>2</td>
<td>6</td>
<td>4</td>
<td>5</td>
<td>7</td>
<td>-</td>
</tr>
<tr>
<td>RRWRD</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>-</td>
<td>4</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>NPPWD</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>5</td>
<td>6</td>
<td>4</td>
<td>7</td>
<td>8</td>
</tr>
</tbody>
</table>

### 4.1.7 GIS and Hazus-MH

The third step in this risk assessment is the risk analysis, which quantifies the risk to the population, infrastructure, and economy of the community. SIU quantified the hazards using GIS analyses and Hazus-MH where possible. This process reflects a Level 2 Hazus-MH analysis. A level 2 Hazus-MH analysis involves substituting selected Hazus-MH default data with local data and improving the accuracy of model predictions.

Depending upon the analysis options and the quality of data the user inputs, Hazus-MH generates a combination of site-specific and aggregated loss estimates. Hazus-MH is not intended as a substitute for detailed engineering studies; it is intended to serve as a planning aid for communities interested in assessing their risk to flood-, earthquake-, and hurricane-related hazards. This plan does not fully document the processes and procedures completed in its development, but this documentation is available upon request.

Table 4-8 indicates the analysis type (i.e. GIS, Hazus-MH, or historical records) used for each hazard assessment.
Table 4-8: Risk Assessment Tool Used for Each Hazard

<table>
<thead>
<tr>
<th>Hazard</th>
<th>Risk Assessment Tool(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flooding</td>
<td>Hazus-MH</td>
</tr>
<tr>
<td>Severe Thunderstorm</td>
<td>Historical Records</td>
</tr>
<tr>
<td>Tornadoes</td>
<td>GIS-based</td>
</tr>
<tr>
<td>Hazmat</td>
<td>GIS-based</td>
</tr>
<tr>
<td>Winter Storms</td>
<td>Historical Records</td>
</tr>
<tr>
<td>Drought / Heat</td>
<td>Historical Records</td>
</tr>
<tr>
<td>Dam Failure</td>
<td>Historical Records</td>
</tr>
<tr>
<td>Earthquakes</td>
<td>Hazus-MH</td>
</tr>
</tbody>
</table>

### 4.2 Vulnerability Assessment

#### 4.2.1 Asset Inventory

**Processes and Sources for Identifying Assets**

SIU first updated the Hazus-MH default critical facilities data using state resources. At meeting one, the planning team used their resources to further update this information. SIU and the county used local GIS data to verify the locations of all critical facilities. SIU GIS analysts incorporated these updates and corrections to the Hazus-MH data tables prior to performing the risk assessment. The updated Hazus-MH inventory contributed to a Level 2 analysis, which improved the accuracy of the risk assessment.

Updates to the default Hazus-MH data include:

- Updating the Hazus-MH defaults, critical facilities, and essential facilities based on the most recent available data sources.
- Reviewing, revising, and verifying locations of critical and essential point facilities with local input.
- Applying the essential facility updates (schools, medical care facilities, fire stations, police stations, and EOCs) to the Hazus-MH model data.
- Updating Hazus-MH reports of essential facility losses.

SIU made the following assumptions during analysis:

- SIU used Hazus-MH aggregate data to model the building exposure for all earthquake analysis. SIU assumes that the aggregate data is an accurate representation of Winnebago County.
- SIU restricts the analysis to the county boundaries. Events that occur near the county boundaries do not contain damage assessments from adjacent counties.
- SIU assumes that for each tax-assessment parcel, there is only one building that bares all the associated values (both structure and content).
- SIU assumed that for each tax-assessment parcel that all structures are wood-framed, one-story, slab-on-grade structures, unless otherwise stated in assessment records. These assumptions are based on sensitivity analyses of Hazus and regional knowledge.

**Essential Facilities List**

Table 4-9 identifies the number of essential facilities identified in Winnebago County. Essential facilities are a subset of critical facilities. Winnebago County provided a comprehensive list of critical facilities that is maintained by the WinGIS (Winnebago County GIS Department). Appendix E include a list of the
essential facilities in Winnebago County and Appendix F displays a large format map of the locations of all critical facilities within the county.

Table 4-9: Essential Facilities

<table>
<thead>
<tr>
<th>Facility</th>
<th>Number of Facilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Care Facilities</td>
<td>18</td>
</tr>
<tr>
<td>Emergency Operations Centers</td>
<td>2</td>
</tr>
<tr>
<td>Fire Stations</td>
<td>39</td>
</tr>
<tr>
<td>Police Stations</td>
<td>18</td>
</tr>
<tr>
<td>Schools</td>
<td>148</td>
</tr>
</tbody>
</table>

**Facility Replacement Costs**

Table 4-10 identifies facility replacement costs and total building exposure. Winnebago County provided local assessment data for updates to replacement costs. Table 4-10 also includes the estimated number of buildings within each occupancy class.

Table 4-10: Building Exposure

<table>
<thead>
<tr>
<th>General Occupancy</th>
<th>Estimated Total Buildings</th>
<th>Total Building Exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential</td>
<td>61,248</td>
<td>$17,362,426,152</td>
</tr>
<tr>
<td>Agriculture</td>
<td>2,207</td>
<td>$3,255,071,022</td>
</tr>
<tr>
<td>Commercial</td>
<td>1,437</td>
<td>$2,630,557,920</td>
</tr>
<tr>
<td>Education</td>
<td>563</td>
<td>$259,207,317</td>
</tr>
<tr>
<td>Government</td>
<td>62</td>
<td>$46,241,928</td>
</tr>
<tr>
<td>Religion</td>
<td>11</td>
<td>$1,900,647</td>
</tr>
<tr>
<td>Industrial</td>
<td>6</td>
<td>$11,417,643</td>
</tr>
<tr>
<td><strong>Total:</strong></td>
<td><strong>65,534</strong></td>
<td><strong>$23,566,822,629</strong></td>
</tr>
</tbody>
</table>

**4.3 Future Developments**

As the county’s population grows, the residential and urban areas will extend further into the county, placing more pressure on existing transportation and utility infrastructure while increasing the rate of farmland conversion. Winnebago County will address specific mitigation strategies in Section 5 to alleviate such issues.

Winnebago County is vulnerable to a variety of natural hazards, therefore the county government—in partnership with state government—must make a commitment to hazard mitigation. Winnebago County is committed to ensuring that county elected and appointed officials become informed leaders regarding community hazards so that they are better prepared to set and direct policies for emergency management in mitigation, preparedness, response, and recovery.

**4.4 Hazard Profile**

**4.4.1 Flooding Hazard**

**Hazard Definition for Flooding**

Flooding is a significant natural hazard throughout the United States. The type, magnitude, and severity of flooding are functions of the magnitude and distribution of precipitation over a given area, the rate at
which precipitation infiltrates the ground, the geometry and hydrology of the catchment, and flow dynamics and conditions in and along the river channel. SIU classifies floods as one of two types in this plan: upstream floods or downstream floods. Both types of floods are common in Illinois.

Upstream floods, also called flash floods, occur in the upper parts of drainage basins and are generally characterized by periods of intense rainfall over a short duration. These floods arise with very little warning and often result in locally intense damage, and sometimes loss of life, due to the high energy of the flowing water. Flood waters can snap trees, topple buildings, and easily move large boulders or other structures. Six inches of rushing water can upend a person; another 18 inches might carry off a car. Generally, upstream floods cause severe damage over relatively localized areas. Urban flooding is a type of upstream flood. Urban flooding involves the overflow of storm drain systems and can result from inadequate drainage combined with heavy rainfall or rapid snowmelt. Upstream or flash floods can occur at any time of the year in Illinois, but they are most common in the spring and summer months.

Downstream floods, sometimes called riverine floods, refer to floods on large rivers at locations with large upstream catchments. Downstream floods are typically associated with precipitation events that are of relatively long duration and occur over large areas. Flooding on small tributary streams may be limited, but the contribution of increased runoff may result in a large flood downstream. The lag time between precipitation and time of the flood peak is much longer for downstream floods than for upstream floods, generally providing ample warning for people to move to safe locations and, to some extent, secure some property against damage. Riverine flooding on the large rivers of Illinois generally occurs during either the spring or summer.

Previous Occurrences of Flooding
The NCDC database reported 42 flood events in Winnebago County since 1996. The most significant flood event occurred in 2006. On September 4, 2006 thunderstorms developed over southeast Winnebago County. Some areas of eastern Rockford received heavy rain for two to three hours. As a result, massive and severe flooding occurred. Most of the flooding occurred in and round the Keith Creek Watershed. Some of the damage included a large section of a concrete drainage ditch that was washed out on Harrison Avenue near 20th Street. Hundreds of basements were flooded, fifteen of which suffered structural damage and were deemed uninhabitable. Numerous streets and parking lots were flooded. As much as 4 to 6 feet with cars floating or submerged in the flood waters. Flood waters as deep as nine feet were reported on Alpine Park in downtown Rockford. Dozens of people were rescued from the flood waters and hundreds were evacuated from their homes as flood waters rose. Flood waters rose so fast in some areas that motorists were trapped in their cars until help arrived. At least 70 businesses sustained some level of flood damage. The highest rainfall total reported was 7.50 inches near Cherry Valley and 4.30 inches was reported on the east side of Rockford. Table 4-11 identified NCDC-recorded flooding events that caused damage, death or injury in Winnebago County. Additional details of individual hazard events are on the NCDC website.

Table 4-11: NCDC-recorded Flooding Events that caused Death, Damage or Injury in Winnebago County

<table>
<thead>
<tr>
<th>Location or County*</th>
<th>Date</th>
<th>Deaths</th>
<th>Injuries</th>
<th>Property Damage (x $1000)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Winnebago County</td>
<td>02/1997</td>
<td>1</td>
<td>0</td>
<td>$0</td>
</tr>
<tr>
<td>Rockford</td>
<td>09/2006</td>
<td>0</td>
<td>0</td>
<td>$20000</td>
</tr>
<tr>
<td>Roscoe</td>
<td>06/2008</td>
<td>0</td>
<td>0</td>
<td>$6000</td>
</tr>
<tr>
<td>Winnebago</td>
<td>08/2007</td>
<td>0</td>
<td>0</td>
<td>$2000</td>
</tr>
<tr>
<td>Rockford</td>
<td>08/2007</td>
<td>0</td>
<td>0</td>
<td>$1000</td>
</tr>
</tbody>
</table>
*NCDC records are estimates of damage compiled by the National Weather Service from various local, state, and federal sources. However, these estimates are often preliminary in nature and may not match the final assessment of economic and property losses related to a given weather event.

**Repetitive Loss Properties**

FEMA defines a repetitive loss structure as a structure covered by a contract of flood insurance issued under the NFIP that has suffered flood loss damage on two or more occasions during a 10-year period that ends on the date of the second loss, in which the cost to repair the flood damage is ≥ 25% of the market value of the structure at the time of each flood loss.

The Illinois Emergency Management Agency was contacted to determine the location of repetitive loss structures in Winnebago County. Records indicate that there are 180 repetitive loss structures within the county. The total amount paid for building replacement and building contents for damage to these repetitive loss structures is $9,726,160.44. Table 4-12 describes the repetitive loss structures for each jurisdiction.

<table>
<thead>
<tr>
<th>Jurisdiction</th>
<th>Number of Properties</th>
<th>Total Paid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cherry Valley</td>
<td>1</td>
<td>$4,400.80</td>
</tr>
<tr>
<td>Machesney Park</td>
<td>33</td>
<td>$1,740,266.06</td>
</tr>
<tr>
<td>Rockford</td>
<td>132</td>
<td>$7,417,976.18</td>
</tr>
<tr>
<td>Rockton</td>
<td>1</td>
<td>$6,553.78</td>
</tr>
<tr>
<td>Roscoe</td>
<td>13</td>
<td>$556,963.62</td>
</tr>
</tbody>
</table>

**Geographic Location of Flooding**

Flood damage in Winnebago County results from three types of floods. Floods on the Rock River generally are associated with spring snowmelt combined with ice jams and rain storms. Floods on the Pecatonica River system generally are caused by spring snowmelt combined with rainfall. Floods on the much smaller tributaries of the Rock River in Winnebago County are usually caused by intense thunderstorms which occur in the late summer, or early fall.

The majority of flood problems in Winnebago County occur in the areas near the Cities of Rockford and Loves Park. Flood peaks have been increased by recent urbanization of uplands. Urbanization often is accompanied by floodplain filling or encroachment which reduces the canal conveyance capacity and increases the rainfall runoff. Increased flooding on the main channels can produce backwater effects up tributaries thus increasing the flood hazard. Additional flood runoff is unable to flow through restricted culverts and bridges which often are clogged with sediment and debris from new construction.

**Hazard Extent for Flooding**

All floodplains are susceptible to flooding in Winnebago County. The floodplain of concern is for the 100-year flood event which is defined as areas that have a 1% change of flooding in any given year. However, flooding is dependent on various local factors including, but not limited to, impervious surfaces, amount of precipitation, river-training structures, etc.
Risk Identification for Flood Hazard
Based on historical information, future occurrence of flooding in Winnebago County is probable. According to the Risk Priority Index (RPI) and County input, flooding is ranked as the number one hazard.

\[
RPI = \text{Probability} \times \frac{\text{Magnitude}}{\text{Severity}} = \frac{\text{RPI}}{}
\]

<table>
<thead>
<tr>
<th>Probability</th>
<th>Magnitude/Severity</th>
<th>RPI</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>2</td>
<td>8</td>
</tr>
</tbody>
</table>

Critical Facilities
All critical facilities within the floodplain are vulnerable to floods. An essential facility will encounter many of the same impacts as other buildings within the flood boundary. These impacts can include structural failure, extensive water damage to the facility, and loss of facility functionality (e.g., a damaged police station cannot serve the community). Appendix E include a list of the essential facilities in Winnebago County and Appendix F displays a large format map of the locations of all critical facilities within the county.

Infrastructure
The types of infrastructure potentially impacted by a flood include roadways, utility lines/pipes, railroads, and bridges. Since an extensive inventory of the infrastructure is not available for this plan, it is important to emphasize that a flood could damage any number of these items. The impacts to these items include: broken, failed, or impassable roadways; broken or failed utility lines (e.g., loss of power or gas to community); or railway failure from broken or impassable railways. Bridges could also fail or become impassable, causing risk to motorists.

Hazus-MH Flood Analysis Using User-Defined Building Inventory
SIU used Hazus-MH to generate the flood depth grid for a 100-year return period and made calculations by clipping the USGS one-third-arc-second DEM (~10 m) to the flood boundary. Next, SIU used Hazus-MH to estimate the damages for Winnebago County by utilizing a detailed building inventory database created from assessor and parcel data. According to this analysis, there are 2,719 buildings located in the Winnebago County 100-year floodplain. The estimated damage to these structures is $289,944,020. Figure 4-3 depicts the building inventory within the 100-year floodplain and Table 4-13 shows the loss estimates by occupancy class.
Figure 4-3: Buildings within the 100-year floodplain in Winnebago County

Table 4-13: Estimated Flood Losses within the 100-year Floodplain

<table>
<thead>
<tr>
<th>Occupancy Class</th>
<th>Number of Structures</th>
<th>Estimated Building Related Losses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential</td>
<td>2281</td>
<td>$155,978,404</td>
</tr>
<tr>
<td>Commercial</td>
<td>177</td>
<td>$44,079,240</td>
</tr>
<tr>
<td>Industrial</td>
<td>118</td>
<td>$51,936,921</td>
</tr>
<tr>
<td>Agricultural</td>
<td>132</td>
<td>$36,872,630</td>
</tr>
</tbody>
</table>
### Occupancy Class

<table>
<thead>
<tr>
<th>Occupancy Class</th>
<th>Number of Structures</th>
<th>Estimated Building Related Losses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Religious</td>
<td>7</td>
<td>$1,068,478</td>
</tr>
<tr>
<td>Government</td>
<td>4</td>
<td>$8,345</td>
</tr>
<tr>
<td>Education</td>
<td>0</td>
<td>$0</td>
</tr>
<tr>
<td><strong>Total:</strong></td>
<td><strong>2719</strong></td>
<td><strong>$289,944,020</strong></td>
</tr>
</tbody>
</table>

#### Essential Facilities Damage

The analysis identified six essential facilities that are subject to flooding. Table 4-14 and Figure 4-4 identified the essential facilities within the 100-year floodplain.

**Table 4-14: Essential Facilities within the 100-year Floodplain**

<table>
<thead>
<tr>
<th>Essential Facility</th>
<th>Facility Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fire Departments</td>
<td>South Beloit Fire Station #1</td>
</tr>
<tr>
<td></td>
<td>New Milford Fire</td>
</tr>
<tr>
<td></td>
<td>South Beloit Fire (Old Fire Dept.)</td>
</tr>
<tr>
<td>Police Departments</td>
<td>South Beloit Police Department</td>
</tr>
<tr>
<td>Schools</td>
<td>Eisenhower Middle School</td>
</tr>
<tr>
<td></td>
<td>St. Peter Catholic School</td>
</tr>
</tbody>
</table>
Figure 4-4: Map of Essential Facilities within the 100-year Floodplain
Vulnerability Analysis for Flash Flooding

Flash flooding could affect any low-lying location or areas of poor drainage within the county; therefore, a significant portion of the county’s population and buildings are vulnerable to a flash flood. These structures can expect the same impacts as discussed in a riverine flood.

Appendix E includes a list of the essential facilities in Winnebago County and Appendix F displays a large format map of the locations of all critical facilities within the county.

Suggestions for Community Development Trends

Reducing floodplain development is crucial to reducing flood-related damages. Areas with recent development may be more vulnerable to drainage issues. Storm drains and sewer systems are usually most susceptible to drainage issues. Damage to these can cause back-up of water, sewage, and debris into homes and basements, causing structural and mechanical damage as well as creating public health hazards and unsanitary conditions.

4.4.2 Thunderstorm Hazard

Hazard Definition – Thunderstorm

Severe thunderstorms are weather events with one or more of the following characteristics: strong winds, large and damaging hail, and frequent lightning. Severe thunderstorms most frequently occur in Illinois during the spring and summer months, but can occur at any time. A severe thunderstorm’s impacts can be localized or can be widespread in nature. A thunderstorm is classified as severe when it meets one or more of the following criteria:

- Hail 0.75 inches or greater in diameter
- Frequent and dangerous lightning
- Wind speeds greater than or equal to 58 miles per hour

Hail

Hail is a possible product of a strong thunderstorm. Hail usually falls near the center of a storm, but strong winds occurring at high altitudes in the thunderstorm can blow the hailstones away from the storm center, resulting in damage in other areas near the storm. Hailstones range from pea-sized to baseball-sized, and some reports note hailstones larger than softballs.

Lightning

Lightning is a discharge of electricity from a thunderstorm. Lightning is often perceived as a minor hazard, but lightning damages many structures and kills or severely injures numerous people in the United States each year.

Severe Winds (Straight-Line Winds)

Straight-line winds from thunderstorms are fairly common in Illinois. Straight-line winds can cause damage to homes, businesses, power lines, and agricultural areas, and may require temporary sheltering of individuals who are without power for extended periods of time.

Previous Occurrences of Thunderstorm Hazards

The NCDC database reported 132 hailstorms in Winnebago County since 1974. Hailstorms occur nearly every year in the late spring and early summer months. The most recent reported occurrence was on November of 2012, when a powerful low pressure system across the plains states steered warmth and moisture northward for nearly two days. Hail was reported in Cherry Valley. The NCDC database reported
no occurrences of significant hail storms (such as those that cause death damage or injury) in Winnebago County.

The NCDC database reported eight lightning events in Winnebago County since 1996. The most recent reported event was on March 2011, when a line of thunderstorms moved across parts of northeast and eastern Illinois during the morning hours of May 25th producing a tornado near St. Anne as well as heavy rain and some flooding. A two story, eight unit apartment building was struck by lightning, although it is unclear if this occurred in Winnebago County. The roof was engulfed in flames and the building was a total loss. All of the 15 occupants were able to exit the building safely and no injuries were reported. Table 4-15 identifies NCDC-recorded lightning that caused damage, death, or injury in Winnebago County. Additional details of individual hazard events are on the NCDC website.

Table 4-15: NCDC-Recorded Lightning that Caused Damage, Death, or Injury in Winnebago County

<table>
<thead>
<tr>
<th>Location or County*</th>
<th>Date</th>
<th>Deaths</th>
<th>Injuries</th>
<th>Property Damage (x $1000)</th>
</tr>
</thead>
<tbody>
<tr>
<td>East Rockford</td>
<td>04/2008</td>
<td>0</td>
<td>0</td>
<td>$1</td>
</tr>
<tr>
<td>Pecatonica</td>
<td>06/2009</td>
<td>0</td>
<td>0</td>
<td>$10</td>
</tr>
<tr>
<td>Seward</td>
<td>05/2011</td>
<td>0</td>
<td>0</td>
<td>$10</td>
</tr>
<tr>
<td>Loves park</td>
<td>11/2010</td>
<td>0</td>
<td>0</td>
<td>$20</td>
</tr>
<tr>
<td>Harlem</td>
<td>05/2011</td>
<td>0</td>
<td>0</td>
<td>$400</td>
</tr>
<tr>
<td>Roscoe</td>
<td>07/2010</td>
<td>0</td>
<td>0</td>
<td>$50</td>
</tr>
<tr>
<td>Winnebago county</td>
<td>09/2006</td>
<td>0</td>
<td>0</td>
<td>$50</td>
</tr>
<tr>
<td>Total:</td>
<td></td>
<td>0</td>
<td>0</td>
<td>$5440</td>
</tr>
</tbody>
</table>

*NCDC records are estimates of damage compiled by the National Weather Service from various local, state, and federal sources. However, these estimates are often preliminary in nature and may not match the final assessment of economic and property losses related to a given weather event.

The NCDC database reported 203 wind storms in Winnebago County since 1960. Table 4-16 identifies selected NCDC-recorded wind storms that caused major damage, death, or injury in Winnebago County. Additional details of individual hazard events are on the NCDC website.

Table 4-16: Selected NCDC-Recorded Wind Storms that Caused Major Damage, Death, or Injury in Winnebago County

<table>
<thead>
<tr>
<th>Location or County*</th>
<th>Date</th>
<th>Deaths</th>
<th>Injuries</th>
<th>Property Damage (x $1000)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rockford Airport</td>
<td>05/2011</td>
<td>1</td>
<td>0</td>
<td>$50</td>
</tr>
<tr>
<td>Winnebago County</td>
<td>11/1988</td>
<td>0</td>
<td>1</td>
<td>$0.5</td>
</tr>
<tr>
<td>Loves Park</td>
<td>09/2010</td>
<td>1</td>
<td>0</td>
<td>$0.5</td>
</tr>
<tr>
<td>Winnebago County</td>
<td>05/2008</td>
<td>0</td>
<td>0</td>
<td>$10</td>
</tr>
<tr>
<td>Rockford</td>
<td>04/2009</td>
<td>0</td>
<td>0</td>
<td>$10</td>
</tr>
<tr>
<td>Winnebago County</td>
<td>10/2010</td>
<td>0</td>
<td>0</td>
<td>$10</td>
</tr>
<tr>
<td>Winnebago County</td>
<td>04/2010</td>
<td>0</td>
<td>0</td>
<td>$10</td>
</tr>
<tr>
<td>Winnebago County</td>
<td>04/2011</td>
<td>0</td>
<td>0</td>
<td>$10</td>
</tr>
<tr>
<td>Winnebago County</td>
<td>10/2010</td>
<td>0</td>
<td>0</td>
<td>$100</td>
</tr>
<tr>
<td>North Park</td>
<td>07/2011</td>
<td>0</td>
<td>0</td>
<td>$15</td>
</tr>
<tr>
<td>Winnebago County</td>
<td>05/2007</td>
<td>0</td>
<td>0</td>
<td>$2</td>
</tr>
<tr>
<td>Winnebago County</td>
<td>09/2010</td>
<td>0</td>
<td>0</td>
<td>$2</td>
</tr>
<tr>
<td>Rockton</td>
<td>06/2007</td>
<td>0</td>
<td>0</td>
<td>$20</td>
</tr>
<tr>
<td>Location or County*</td>
<td>Date</td>
<td>Deaths</td>
<td>Injuries</td>
<td>Property Damage (x $1000)</td>
</tr>
<tr>
<td>---------------------</td>
<td>--------</td>
<td>--------</td>
<td>----------</td>
<td>---------------------------</td>
</tr>
<tr>
<td>Cherry Valley</td>
<td>06/2010</td>
<td>0</td>
<td>0</td>
<td>$20</td>
</tr>
<tr>
<td>North Park</td>
<td>06/2010</td>
<td>0</td>
<td>0</td>
<td>$20</td>
</tr>
<tr>
<td>South Beloit</td>
<td>05/2011</td>
<td>0</td>
<td>0</td>
<td>$25</td>
</tr>
<tr>
<td>Countywide</td>
<td>05/2001</td>
<td>0</td>
<td>0</td>
<td>$25</td>
</tr>
<tr>
<td>Roscoe</td>
<td>03/2009</td>
<td>0</td>
<td>0</td>
<td>$50</td>
</tr>
<tr>
<td>Harlem</td>
<td>11/2010</td>
<td>0</td>
<td>0</td>
<td>$50</td>
</tr>
<tr>
<td>New Milford</td>
<td>05/2011</td>
<td>0</td>
<td>0</td>
<td>$50</td>
</tr>
<tr>
<td>Rockford</td>
<td>07/1995</td>
<td>0</td>
<td>0</td>
<td>$50</td>
</tr>
<tr>
<td>Pecatonica</td>
<td>07/2003</td>
<td>0</td>
<td>0</td>
<td>$5,000</td>
</tr>
<tr>
<td><strong>Total:</strong></td>
<td><strong>2</strong></td>
<td><strong>1</strong></td>
<td></td>
<td><strong>$5,529</strong></td>
</tr>
</tbody>
</table>

*NCDC records are estimates of damage compiled by the National Weather Service from various local, state, and federal sources. However, these estimates are often preliminary in nature and may not match the final assessment of economic and property losses related to a given weather event.

**Geographic Location of Thunderstorm Hazard**

The entire county has the same risk for occurrence of thunderstorms. They can occur at any location within the county.

**Hazard Extent for Thunderstorm Hazard**

The extent of the historical thunderstorms depends upon the extent of the storm, the wind speed, and the size of hail stones. Thunderstorms can occur at any location within the county.

**Risk Identification for Thunderstorm Hazard**

Based on historical information, the occurrence of future high winds, hail, and lightning is likely. The county should expect high winds, hail, and lightning of widely varying magnitudes in the future. According to the RPI and the County, severe thunderstorms ranked as the number two hazard.

\[
\text{RPI} = \text{Probability} \times \text{Magnitude/Severity}
\]

<table>
<thead>
<tr>
<th>Probability</th>
<th>Magnitude/Severity</th>
<th>RPI</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>x</td>
<td>x</td>
</tr>
</tbody>
</table>

**Vulnerability Analysis for Thunderstorm Hazard**

The entire county’s population and all buildings are vulnerable to a severe thunderstorm and can expect the same impacts within the affected area. This plan will therefore consider all buildings located within the county as vulnerable. Table 4-9 and 4-10 show the existing buildings and infrastructure in Winnebago County.

**Critical Facilities**

All critical facilities are vulnerable to severe thunderstorms. A critical facility will encounter many of the same impacts as any other building within the jurisdiction. These impacts include structural failure, damaging debris (trees or limbs), roofs blown off or windows broken by hail or high winds, fires caused by lightning, and loss of building functionality (e.g., a damaged police station cannot serve the community). Appendix E include a list of the essential facilities in Winnebago County and Appendix F displays a large format map of the locations of all critical facilities within the county.

**Building Inventory**

Table 4-10 displays the building exposure in terms of types and numbers of buildings for the entire county. The buildings within the county can expect impacts similar to those discussed for critical facilities. These
impacts include structural failure, damaging debris (trees or limbs), roofs blown off or windows broken by hail or high winds, fires caused by lightning, and loss of building functionality (e.g., a person cannot inhabit a damaged home, causing residents to seek shelter).

Infrastructure
A severe thunderstorm could impact roadways, utility lines/pipes, railroads, and bridges. Since the county’s entire infrastructure is vulnerable, it is important to emphasize that a severe thunderstorm could damage any number of these structures. The impacts to these structures include broken, failed, or impassable roadways; broken or failed utility lines (e.g., loss of power or gas to community); or impassable railways. Bridges could become impassable causing risk to motorists.

Potential Dollar Losses for Thunderstorm Hazard
SIU determined that Winnebago County has incurred $6,110,000 in damages relating to thunderstorms, including hail, lightning, and high winds since 1960. NCDC records are estimates of damage compiled by the National Weather Service from various local, state, and federal sources. However, these estimates are often preliminary in nature and may not match the final assessment of economic and property losses related to a given weather event. As a result, SIU cannot reliably constrain potential dollar losses for a future event; however, based on average property damage in the past decade, SIU estimates that Winnebago County incurs property damages of approximately $117,500 per year related to severe thunderstorms.

Vulnerability to Future Assets/Infrastructure for Thunderstorm Hazard
All future development within the county and all communities will remain vulnerable to these events.

Suggestions for Community Development Trends
Local officials will enhance severe storm preparedness if they sponsor a wide range of programs and initiatives to address the overall safety of county residents. The county needs to build new structures with more sturdy construction, and harden existing structures to lessen the potential impacts of severe weather. Building more warning sirens will warn the community of approaching storms to ensure the safety of Winnebago County residents.

4.4.3 Tornadoes Hazard

Hazard Definition
Tornadoes are violently rotating columns of air extending from thunderstorms to the ground. Funnel clouds are rotating columns of air not in contact with the ground; however, the violently rotating column of air can reach the ground quickly and become a tornado. If the funnel cloud picks up and blows debris, it has reached the ground and is a tornado.

Tornadoes are a significant risk to Illinois and its citizens. Tornadoes can occur at any time on any day. The unpredictability of tornadoes makes them one of Illinois’ most dangerous hazards. Tornado winds are violently destructive in developed and populated areas. Current estimates place maximum wind velocity at about 300 miles per hour, but higher values can occur. A wind velocity of 200 miles per hour results in a pressure of 102.4 pounds per square foot—a load that exceeds the tolerance limits of most buildings. Thus, it is easy to understand why tornadoes can devastate the communities they hit.

Tornadoes are classified according to the Enhanced Fujita tornado intensity scale. The Enhanced Fujita scale ranges from intensity EF0, with effective wind speeds of 40 to 70 miles per hour, to EF5 tornadoes,
with effective wind speeds of over 260 miles per hour. Table 4-17 outlines the Enhanced Fujita intensity scale.

Table 4-17: Enhanced Fujita Tornado Rating

<table>
<thead>
<tr>
<th>Enhanced Fujita Number</th>
<th>Estimated Wind Speed</th>
<th>Path Width</th>
<th>Path Length</th>
<th>Description of Destruction</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 Gale</td>
<td>40-72 mph</td>
<td>6-17 yards</td>
<td>0.3-0.9 miles</td>
<td>Light damage, some damage to chimneys, branches broken, signboards damaged, shallow-rooted trees blown over.</td>
</tr>
<tr>
<td>1 Moderate</td>
<td>73-112 mph</td>
<td>18-55 yards</td>
<td>1.0-3.1 miles</td>
<td>Moderate damage, roof surfaces peeled off, mobile homes pushed off foundations, attached garages damaged.</td>
</tr>
<tr>
<td>2 Significant</td>
<td>113-157 mph</td>
<td>56-175 yards</td>
<td>3.2-9.9 miles</td>
<td>Considerable damage, entire roofs torn from frame houses, mobile homes demolished, boxcars pushed over, large trees snapped or uprooted.</td>
</tr>
<tr>
<td>3 Severe</td>
<td>158-206 mph</td>
<td>176-566 yards</td>
<td>10-31 miles</td>
<td>Severe damage, walls torn from well-constructed houses, trains overturned, most trees in forests uprooted, heavy cars thrown about.</td>
</tr>
<tr>
<td>4 Devastating</td>
<td>207-260 mph</td>
<td>0.3-0.9 miles</td>
<td>32-99 miles</td>
<td>Complete damage, well-constructed houses leveled, structures with weak foundations blown off for some distance, large missiles generated.</td>
</tr>
<tr>
<td>5 Incredible</td>
<td>261-318 mph</td>
<td>1.0-3.1 miles</td>
<td>100-315 miles</td>
<td>Foundations swept clean, automobiles become missiles and thrown for 100 yards or more, steel-reinforced concrete structures badly damaged.</td>
</tr>
</tbody>
</table>

Previous Occurrences of Tornadoes

The NCDC database reported 13 tornadoes/funnel clouds in Winnebago County since 1958. The most recent recorded event occurred on May 2011 when a brief tornado touched down in the Rockton area between Route 251 and Interstate 90, just north of Rockton Road. Damage was observed around the Roscoe Fire Station, where a large garage door was blown in. Winds were estimated to be as high as 90-100 mph. Table 4-18 identifies NCDC-recorded tornadoes that caused damage, death, or injury in Winnebago County. Additional details of individual hazard events are on the NCDC website.

Table 4-18: NCDC-Recorded Tornadoes That Caused Damage, Death, or Injury in Winnebago County

<table>
<thead>
<tr>
<th>Location or County*</th>
<th>Date</th>
<th>EF-Scale</th>
<th>Deaths</th>
<th>Injuries</th>
<th>Property Damage (x $1000)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Harlem Township</td>
<td>11/2010</td>
<td>2</td>
<td>0</td>
<td>6</td>
<td>5000</td>
</tr>
<tr>
<td>Winnebago County</td>
<td>08/1979</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>250</td>
</tr>
<tr>
<td>Seward Township</td>
<td>05/2011</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td>Winnebago County</td>
<td>08/1958</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>25</td>
</tr>
<tr>
<td>Winnebago County</td>
<td>06/1967</td>
<td>N/A</td>
<td>0</td>
<td>0</td>
<td>25</td>
</tr>
<tr>
<td>Winnebago County</td>
<td>08/1990</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>25</td>
</tr>
</tbody>
</table>
Geographic Location for Tornado Hazard
The entire county has the same risk of tornado occurrence. Tornadoes can occur at any location within the county.

Hazard Extent for Tornado Hazard
Historical tornadoes generally moved from southwest to northeast across the county. The extent of the hazard varies in terms of the size of the tornado, its path, and its wind speed.

Risk Identification for Tornado Hazard
Based on historical information, the probability of future tornadoes in Winnebago County is likely. The county should expect tornadoes with varying magnitudes to occur in the future. Tornadoes ranked as the number three hazard according to the RPI and County.

\[
RPI = \text{Probability} \times \frac{\text{Magnitude/Severity}}{}
\]

<table>
<thead>
<tr>
<th>Probability</th>
<th>Magnitude/Severity</th>
<th>RPI</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>4</td>
<td>12</td>
</tr>
</tbody>
</table>

Vulnerability Analysis for Tornado Hazard
Tornadoes can occur within any area in the county; therefore, the entire county population and all buildings are vulnerable to tornadoes. To accommodate this risk, this plan considers all buildings located within the county as vulnerable. Tables 4-9 and 4-10 display the existing buildings and infrastructure in Winnebago County.

Critical Facilities
All critical facilities are vulnerable to tornadoes. A critical facility is susceptible to many of the same impacts as any other building within the jurisdiction. These impacts vary based on the magnitude of the tornado but can include structural failure, damaging debris (trees or limbs), roofs blown off or windows broken by hail or high winds, and loss of facility functionality (e.g., a damaged police station will no longer be able to serve the community). Appendix E include a list of the essential facilities in Winnebago County and Appendix F displays a large format map of the locations of all critical facilities within the county.

Building Inventory
Table 4-10 lists the building exposure in terms of types and numbers of buildings for the entire county. The buildings within the county can all expect the same impacts, similar to those discussed for critical facilities. These impacts include structural failure, damaging debris (trees or limbs), roofs blown off or windows broken by hail or high winds, and loss of building function (e.g., damaged home will no longer be habitable, causing residents to seek shelter).

Infrastructure
The types of infrastructure that could be impacted during a tornado include roadways, utility lines/pipes, railroads, and bridges. Since the county’s entire infrastructure is vulnerable, it is important to emphasize...
that any number of these structures could become damaged during a tornado. The impacts to these structures include broken, failed, or impassable roadways, broken or failed utility lines (e.g., loss of power or gas to community), and railway failure from broken or impassable rail lines. Bridges could fail or become impassable, causing risk to motorists.

**GIS-based Tornado Analysis**

SIU conducted two tornado scenarios for Winnebago County: (1) City of Rockford and Village of Cherry Valley and (2) City of Rockford and City of Loves Park. The planning team selected these scenarios at Meeting 2. The following analysis quantifies the anticipated impacts of tornadoes in the county in terms of numbers and types of buildings and infrastructure damaged.

SIU used GIS-overlay modeling to determine the potential impacts of an F4 tornado. The analysis used a hypothetical path based upon the F4 tornado event that runs for 13.1 miles through the City of Rockford and Village of Cherry and 14.7 miles through the City of Rockford and City of Loves Park. Table 4-19 depicts tornado damage curves and path widths utilized for the modeled scenario. The damage curve is based on conceptual wind speeds, path winds, and path lengths from the Enhanced-Fujita Scale guidelines.

**Table 4-19: Tornado Path Widths and Damage Curves**

<table>
<thead>
<tr>
<th>Fujita Scale</th>
<th>Path Width (feet)</th>
<th>Maximum Expected Damage</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>2,400</td>
<td>100%</td>
</tr>
<tr>
<td>4</td>
<td>1,800</td>
<td>100%</td>
</tr>
<tr>
<td>3</td>
<td>1,200</td>
<td>80%</td>
</tr>
<tr>
<td>2</td>
<td>600</td>
<td>50%</td>
</tr>
<tr>
<td>1</td>
<td>300</td>
<td>10%</td>
</tr>
<tr>
<td>0</td>
<td>150</td>
<td>0%</td>
</tr>
</tbody>
</table>

Degrees of damage depend on proximity to the path centerline within a given tornado path. The most intense damage occurs within the center of the damage path, with decreasing amounts of damage away from the center. To model the F4 tornado, SIU used GIS to create the desired tornado path and subsequently add buffers (damage zones) around the tornado path. Figure 4-5 and Table 4-20 illustrate the zone analysis. Figure 4-6 depicts the selected hypothetical tornado paths.
Figure 4-5: Tornado Analysis (Damage Curves) Using GIS Buffers

Table 4-20: F4 Tornado Analysis Using GIS Buffers

<table>
<thead>
<tr>
<th>Zone</th>
<th>Buffer (feet)</th>
<th>Damage Curve</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0-150</td>
<td>100%</td>
</tr>
<tr>
<td>2</td>
<td>150-300</td>
<td>80%</td>
</tr>
<tr>
<td>3</td>
<td>300-600</td>
<td>50%</td>
</tr>
<tr>
<td>4</td>
<td>600-900</td>
<td>10%</td>
</tr>
</tbody>
</table>
Modeled Impacts of a F4 Tornado in Rockford and Cherry Valley

Table 4-21 and Figure 4-8 show the results of the tornado analysis for the City of Rockford and the village of Cherry Valley. The GIS analysis estimates that the modeled tornado would damage 2,196 buildings. The estimated building losses are over $523,554,001. The building losses are an estimate of building replacement costs multiplied by the damage percent.

Table 4-21: Estimated Building Loss by Occupancy Type in Rockford and Cherry Valley

<table>
<thead>
<tr>
<th>Occupancy</th>
<th>Zone 1</th>
<th>Zone 2</th>
<th>Zone 3</th>
<th>Zone 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential</td>
<td>$77,542,482</td>
<td>$70,959,226</td>
<td>$86,932,326</td>
<td>$16,968,646</td>
</tr>
</tbody>
</table>
Modeled Impacts of a F4 Tornado in Rockford and Loves Park

Table 4-22 and Figure 4-7 show the results of the tornado analysis for the City of Rockford and the City of Loves Park. The GIS analysis estimates that the modeled tornado would damage 3,537 buildings. The estimated building losses are over $371,490,921. The building losses are an estimate of building replacement costs multiplied by the damage percent.

Table 4-22: Estimated Building Loss by Occupancy Type in Rockford and Loves Park

<table>
<thead>
<tr>
<th>Occupancy</th>
<th>Zone 1</th>
<th>Zone 2</th>
<th>Zone 3</th>
<th>Zone 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential</td>
<td>$69,373,308</td>
<td>$62,596,541</td>
<td>$77,337,876</td>
<td>$19,212,050</td>
</tr>
<tr>
<td>Commercial</td>
<td>$13,081,860</td>
<td>$11,500,474</td>
<td>$23,988,231</td>
<td>$4,342,474</td>
</tr>
<tr>
<td>Industrial</td>
<td>$44,108,916</td>
<td>$23,933,318</td>
<td>$12,035,358</td>
<td>$4,632,496</td>
</tr>
<tr>
<td>Agricultural</td>
<td>$639,477</td>
<td>$4,292,690</td>
<td>$249,192</td>
<td>$0</td>
</tr>
<tr>
<td>Religious</td>
<td>$0</td>
<td>$155,959</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>Government</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>Education</td>
<td>$0</td>
<td>$0</td>
<td>$10,701</td>
<td>$0</td>
</tr>
<tr>
<td>Total:</td>
<td>$127,203,561</td>
<td>$102,478,982</td>
<td>$113,621,358</td>
<td>$28,187,019</td>
</tr>
</tbody>
</table>
Figure 4-7: Building Inventory Affected by the EF4 Tornadoes Modeled for Winnebago County

Essential Facilities Damage
Figure 4-8 shows the geographic locations of the essential facilities affected by the two tornado scenarios. Table 4-23 identifies the affected facilities in City of Rockford and the Village of Cherry Valley. There are 15 essential facility located within 900 feet of the hypothetical tornado path in City of Rockford and the Village of Cherry Valley. Table 4-24 identifies the affected facilities in City of Rockford and the City of Loves Park. There are 15 essential facility located within 900 feet of the hypothetical tornado path in City of Rockford and the City of Loves Park.
Table 4-23: Essential Facilities Affected in Rockford and Cherry Valley

<table>
<thead>
<tr>
<th>Essential Facility</th>
<th>Facility Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Schools</td>
<td>Ellis Arts Academy</td>
</tr>
<tr>
<td></td>
<td>Grace Lutheran Preschool and Nursery</td>
</tr>
<tr>
<td></td>
<td>Harlem Middle School</td>
</tr>
<tr>
<td></td>
<td>Lewis Lemon School</td>
</tr>
<tr>
<td></td>
<td>Loves Park Elementary School</td>
</tr>
</tbody>
</table>
Table 4-24: Essential Facilities Affected in Rockford and Loves Park

<table>
<thead>
<tr>
<th>Essential Facility</th>
<th>Facility Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Schools</td>
<td>Alpine Academy</td>
</tr>
<tr>
<td></td>
<td>Embry Riddle Aeronautical University</td>
</tr>
<tr>
<td></td>
<td>Hillman School</td>
</tr>
<tr>
<td></td>
<td>Nashold School</td>
</tr>
<tr>
<td></td>
<td>Rasmussen College</td>
</tr>
<tr>
<td></td>
<td>Rockford Christian School</td>
</tr>
<tr>
<td></td>
<td>Thompson School</td>
</tr>
<tr>
<td></td>
<td>Woodside Congregational Church Preschool</td>
</tr>
<tr>
<td>Fire Departments</td>
<td>Greater Rockford Airport Fire</td>
</tr>
<tr>
<td></td>
<td>Rockford Fire Station #11</td>
</tr>
<tr>
<td></td>
<td>Rockford Fire Maintenance Facility</td>
</tr>
<tr>
<td></td>
<td>Rockford Fire Station #5</td>
</tr>
<tr>
<td></td>
<td>Rockford Fire Station #7</td>
</tr>
<tr>
<td>Care Facilities</td>
<td>Van Matre Healthsouth Rehab Hospital</td>
</tr>
</tbody>
</table>

Vulnerability to Future Assets/Infrastructure for Tornado Hazard
The entire population and all buildings are at risk because tornadoes can occur anywhere within the state, at any time. Furthermore, any future development in terms of new construction within the county is at risk. Table 4-10 includes the building exposure for Winnebago County. All critical facilities in the county are at risk. Appendix E include a list of the essential facilities in Winnebago County and Appendix F displays a large format map of the locations of all critical facilities within the county.

Suggestions for Community Development Trends
Local officials will enhance severe storm preparedness if they sponsor a wide range of programs and initiatives to address the overall safety of county residents. The county needs to build new structures with more sturdy construction, and harden existing structures to lessen the potential impacts of severe weather. Building more warning sirens will warn the community of approaching storms to ensure the safety of Winnebago County residents.
4.4.4 Hazardous Material Storage and Transportation Hazard

Hazard Definition
Illinois has numerous active transportation lines that run through many of its counties. Active railways transport harmful and volatile substances across county and state lines every day. Transporting chemicals and substances along interstate routes is commonplace in Illinois. The rural areas of Illinois have considerable agricultural commerce, meaning transportation of fertilizers, herbicides, and pesticides is common on rural roads. These factors increase the chance of hazardous material releases and spills throughout the state of Illinois.

The release or spill of certain substances can cause an explosion. Explosions result from the ignition of volatile products such as petroleum products, natural and other flammable gases, hazardous materials/chemicals, dust, and bombs. An explosion can potentially cause death, injury, and property damage. In addition, a fire routinely follows an explosion, which may cause further damage and inhibit emergency response. Emergency response may require fire, safety/law enforcement, search and rescue, and hazardous materials units.

Previous Occurrences of Hazardous Materials Storage and Transportation Hazard
Winnebago County has not experienced a significantly large-scale hazardous material incident at a fixed site or during transport resulting in multiple deaths or serious injuries. Minor releases have put local firefighters, hazardous materials teams, emergency management, and local law enforcement into action to try to stabilize these incidents and prevent or lessen harm to Winnebago County residents.

Geographic Location of Hazardous Materials Storage and Transportation Hazard
Hazardous material hazards are countywide and are primarily associated with the transport of materials via highway, railroad, and/or river barge.

Hazard Extent of Hazardous Materials Storage and Transportation Hazard
The extent of the hazardous material hazard varies both in terms of the quantity of material being transported as well as the specific content of the container.

Risk Identification of Hazardous Materials Storage and Transportation Hazard
Based on input from the planning team, the occurrence of a hazardous materials accident is likely. According to the RPI and County input, “hazardous materials storage and transport” ranked as the number four hazard in Winnebago County.

\[
\text{RPI} = \text{Probability} \times \text{Magnitude/Severity} = \text{RPI} = 3 \times 4 = 12
\]

Vulnerability Analysis for Hazardous Materials Storage and Transportation Hazard
The entire county is vulnerable to a hazardous material release and can expect impacts within the affected area. The main concern during a release or spill is the affected population. Table 4-10 includes the building exposure for Winnebago County, as determined from building inventory. This plan will therefore consider all buildings located within the county as vulnerable.
Critical Facilities
All critical facilities and communities within the county are at risk. A critical facility will encounter many of the same impacts as any other building within the jurisdiction. These impacts include structural failure due to fire or explosion and loss of function of the facility (e.g., a damaged police station can no longer serve the community). Appendix E include a list of the essential facilities in Winnebago County and Appendix F displays a large format map of the locations of all critical facilities within the county.

Building Inventory
Table 4-10 includes the building exposure including types and numbers of buildings for the entire county. Buildings within the county can expect impacts similar to those discussed for critical facilities. These impacts include structural failure due to fire or explosion or debris, and loss of function of the building (e.g., a person cannot inhabit a damaged home, causing residents to seek shelter).

Infrastructure
During a hazardous material release, the types of potentially impacted infrastructure include roadways, utility lines/pipes, railroads, and bridges. Since an extensive inventory of the infrastructure is not available to this plan, it is important to emphasize that a hazardous materials release could damage any number of these items. The impacts to these items include: broken, failed, or impassable roadways; broken or failed utility lines (e.g., loss of power or gas to community); and railway failure from broken or impassable railways. Bridges could become impassable causing risk to motorists.

ALOHA Hazardous Chemical Release Analysis
SIU used the U.S. Environmental Protection Agency’s ALOHA (Areal Locations of Hazardous Atmospheres) model to assess the impacted area for: (1) ammonia release at the intersection of Route 20 and Illinois 2 and (2) Chlorine release at the Viking Chemical Plant in Rockford. The Winnebago County planning team selected the ammonia scenarios because of significant truck traffic along major transportation routes within a relatively densely populated area. The Chlorine scenario was selected because bulk chemical were present in at the Viking Chemical Plant in Rockford.

ALOHA is a computer program designed for response to chemical accidents, as well as emergency planning and training. Ammonia, chlorine, and propane are common chemicals used in industrial operations and are found in either liquid or gas form. Rail and truck tankers haul ammonia, chlorine, and propane to and from facilities.

Ammonia is a clear colorless gas with a strong odor. Ammonia is shipped as a liquid under its own vapor pressure. The density of liquid ammonia is 6 lb/gal. Contact with the unconfined liquid can cause frostbite. Gas is generally regarded as nonflammable but does burn within certain vapor concentration limits and with strong ignition. Fire hazard increases in the presence of oil or other combustible materials. Although gas is lighter than air, vapors from a leak initially hug the ground. Prolonged exposure of containers to fire or heat may cause violent rupturing and rocketing. Long-term inhalation of low concentrations of the vapors or short-term inhalation of high concentrations have adverse health effects. Used as a fertilizer, as a refrigerant, and in the manufacture of other chemicals (NOAA Reactivity, 2007). SOURCE: http://cameochemicals.noaa.gov/chemical/4860

Chlorine is a greenish yellow gas with a pungent to suffocating odor. The gas liquefies above -35°C at ambient pressure and will liquefy from pressure applied at room temperature. Contact with unconfined liquid chlorine can cause frostbite from evaporative cooling. Chlorine does not burn but, like oxygen, supports combustion. The toxic gas can have adverse health effects from either long-term inhalation of...
low concentrations of vapors or short-term inhalation of high concentrations. Chlorine vapors are much heavier than air and tend to settle in low areas. Chlorine is commonly used to purify water, bleach wood pulp, and make other chemicals (NOAA Reactivity 2007).

SOURCE: [http://cameochemicals.noaa.gov/chemical/2862](http://cameochemicals.noaa.gov/chemical/2862)

For the ammonia scenario, SIU assumed average atmospheric and climatic conditions for the summer season with a breeze from the southwest. For the chlorine scenario, SIU assumed average atmospheric and climatic conditions for the fall season with a breeze from the south-southwest. SIU considered the seasonal conditions upon the request of the planning team and obtained average monthly conditions for Rockford from NOAA’s Monthly Weather Summary. Figures 4-9 depicts the plume origins of the two modeled hazardous chemical releases in Winnebago County.
Analysis Parameters for Ammonia Release

The ALOHA atmospheric modeling parameters for the ammonia release, depicted in Figure 4-10, were based upon a southwest wind speed of 9.3 miles per hour. The temperature was 67.8°F with 75% humidity and a cloud cover of five-tenths skies. SIU used average weather conditions for the month of June reported from NOAA for wind direction, wind speed, and temperature to simulate summer conditions.
The source of the chemical spill is a horizontal, cylindrical-shaped tank. The diameter of the tank was set to 8 feet and the length set to 33 feet (12,408 gallons). At the time of its release, it was estimated that the tank was 75% full. The ammonia in this tank is in its liquid state.

This release was based on a leak from a 2.5-inch-diameter hole, 12 inches above the bottom of the tank. According to these ALOHA parameters, this scenario would release approximately 7,720 pounds of material per minute. Figure 4-11 depicts the plume footprint generated by ALOHA.
Analysis Parameters for Chlorine Release

The ALOHA atmospheric modeling parameters for the chlorine release, depicted in Figure 4-12, were based upon a south-southwesterly wind speed of 10 miles per hour. The temperature was 44.3°F with 75% humidity and a cloud cover of five-tenths skies. SIU used average weather conditions for the month of November reported from NOAA for wind direction, wind speed, and temperature to simulate fall conditions, as requested by the planning team.

Figure 4-12: ALOHA Modeling Parameters for Chlorine Release

The source of the chemical spill is a horizontal, cylindrical-shaped tank. The diameter of the tank was set to 8 feet and the length set to 33 feet (12,408 gallons). At the time of its release, it was estimated that the tank was 75% full. The chlorine in this tank is in its liquid state.

This release was based on a leak from a 2.5-inch-diameter hole, 12 inches above the bottom of the tank. According to these ALOHA parameters, this scenario would release approximately 8,380 pounds of material per minute. Figure 4-13 depicts the plume footprint generated by ALOHA.

Figure 4-13: ALOHA Generate Plume Footprint of Chlorine Scenario
Description of Acute Exposure Guideline Levels for Hazardous Substances

AEGLs are intended to describe the risk to humans resulting from once-in-a-lifetime, or rare exposure to airborne chemical (U.S. EPA AEGL Program). The National Advisory Committee for the Development of Acute Exposure Guideline Levels for Hazardous Substances (AEGL Committee) is involved in developing these guidelines to help both national and local authorities, as well as private companies, deal with emergencies involving spills, or other catastrophic exposures. AEGLs represent threshold exposure limits for the general public and are applicable to emergency exposure periods ranging from 10 minutes to 8 hours. The three AEGLs have been defined as follows:

- **AEGL-1**: the airborne concentration, expressed as parts per million or milligrams per cubic meter (ppm or mg/m³) of a substance above which it is predicted that the general population, including susceptible individuals, could experience notable discomfort, irritation, or certain asymptomatic nonsensory effects. However, the effects are not disabling and are transient and reversible upon cessation of exposure.

- **AEGL-2**: the airborne concentration (expressed as ppm or mg/m³) of a substance above which it is predicted that the general population, including susceptible individuals, could experience irreversible or other serious, long-lasting adverse health effects or an impaired ability to escape.

- **AEGL-3**: the airborne concentration (expressed as ppm or mg/m³) of a substance above which it is predicted that the general population, including susceptible individuals, could experience life-threatening health effects or death.

Airborne concentrations below the AEGL-1 represent exposure levels that can produce mild and progressively increasing but transient and nondisabling odor, taste, and sensory irritation or certain asymptomatic, nonsensory effects. With increasing airborne concentrations above each AEGL, there is a progressive increase in the likelihood of occurrence and the severity of effects described for each corresponding AEGL. Although the AEGL values represent threshold levels for the general public, including susceptible subpopulations, such as infants, children, the elderly, persons with asthma, and those with other illnesses, it is recognized that individuals, subject to unique or idiosyncratic responses, could experience the effects described at concentrations below the corresponding AEGL.

**Results for Ammonia Release**
SIU calculated an estimate of property exposed to the ammonia spill by using the building inventory and intersecting these data with each of the AEGL levels (AEGL 3: ≥ 20.0 ppm, AEGL 2: ≥ 2.0 ppm and AEGL 1: ≥ 0.5 ppm). There are 4,625 building within the ammonia plume. Table 4-25 lists building exposure by AEGL zone. Figure 4-14 depicts the ammonia spill footprint and location of the buildings exposed. This GIS overlay analysis estimates that the full replacement cost of the buildings exposed to the ammonia plume are over $1,108,928,571.
Table 4-25: Estimated Building Exposure as a Result of the Ammonia Release

<table>
<thead>
<tr>
<th>Occupancy</th>
<th>Building Exposure</th>
<th>Number of Buildings</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>AEGL 1</td>
<td>AEGL 2</td>
</tr>
<tr>
<td>Residential</td>
<td>$726,975,126</td>
<td>$77,599,596</td>
</tr>
<tr>
<td>Commercial</td>
<td>$149,258,367</td>
<td>$9,154,080</td>
</tr>
<tr>
<td>Industrial</td>
<td>$78,848,760</td>
<td>$63,941,676</td>
</tr>
<tr>
<td>Agricultural</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>Religious</td>
<td>$962,100</td>
<td>$92,250</td>
</tr>
<tr>
<td>Government</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>Education</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>Total:</td>
<td>$956,044,353</td>
<td>$150,787,602</td>
</tr>
</tbody>
</table>

Figure 4-14: ALOHA Plume Footprint and Buildings Exposed to Ammonia Release
Essential Facilities Damage
There are 5 essential facilities within the limits of the ammonia scenario. Table 4-26 and Figure 4-15 identifies the affected facilities.

Table 4-26: Essential Facilities within the Ammonia Plume Footprint

<table>
<thead>
<tr>
<th>Essential Facility</th>
<th>Facility Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fire Departments</td>
<td>Rockford Christian School</td>
</tr>
<tr>
<td></td>
<td>Rockford Fire Station #10</td>
</tr>
<tr>
<td>Schools</td>
<td>East High School</td>
</tr>
<tr>
<td></td>
<td>Johnson School</td>
</tr>
<tr>
<td></td>
<td>Lydia Academy</td>
</tr>
</tbody>
</table>

Figure 4-15: Map of Essential Facilities within the Ammonia Plume Footprint
Results for Chlorine Release
SIU calculated an estimate of property exposed to the chlorine spill by using the building inventory and intersecting these data with each of the AEGL levels (AEGL 3: ≥ 20.0 ppm, AEGL 2: ≥ 2.0 ppm and AEGL 1: ≥ 0.5 ppm). There are 8,144 building within the chlorine plume. Table 4-27 lists building exposure by AEGL zone. Figure 4-16 depicts the ammonia spill footprint and location of the buildings exposed. This GIS overlay analysis estimates that the full replacement cost of the buildings exposed to the ammonia plume are over $2,503,082,664.

Table 4-27: Estimated Building Exposure as a Result of the Chlorine Release

<table>
<thead>
<tr>
<th>Occupancy</th>
<th>Building Exposure AEGL 1</th>
<th>Building Exposure AEGL 2</th>
<th>Building Exposure AEGL 3</th>
<th>Number of Buildings</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>AEGL 1</td>
<td>AEGL 2</td>
<td>AEGL 3</td>
<td>AEGL 1</td>
</tr>
<tr>
<td>Residential</td>
<td>$318,444,996</td>
<td>$1,022,638,056</td>
<td>$719,587,284</td>
<td>1189</td>
</tr>
<tr>
<td>Commercial</td>
<td>$26,038,116</td>
<td>$178,310,061</td>
<td>$30,583,035</td>
<td>24</td>
</tr>
<tr>
<td>Industrial</td>
<td>$76,834,356</td>
<td>$100,683,672</td>
<td>$17,237,160</td>
<td>35</td>
</tr>
<tr>
<td>Agricultural</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>0</td>
</tr>
<tr>
<td>Religious</td>
<td>$0</td>
<td>$7,828,992</td>
<td>$1,403,892</td>
<td>0</td>
</tr>
<tr>
<td>Government</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>0</td>
</tr>
<tr>
<td>Education</td>
<td>$0</td>
<td>$3,493,044</td>
<td>$0</td>
<td>0</td>
</tr>
<tr>
<td>Total:</td>
<td>$421,317,468</td>
<td>$1,312,953,825</td>
<td>$768,811,371</td>
<td>1248</td>
</tr>
</tbody>
</table>

Figure 4-16: ALOHA Plume Footprint and Buildings Exposed to Chlorine Release
Essential Facilities Damage
There are 14 essential facilities within the limits of the ammonia scenario. Table 4-28 and Figure 4-17 identifies the affected facilities.

Figure 4-17: Map of Essential Facilities within the Chlorine Plume Footprint
Table 4-28: Essential Facilities within the Chlorine Plume Footprint

<table>
<thead>
<tr>
<th>Essential Facility</th>
<th>Facility Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Schools</td>
<td>Bloom School</td>
</tr>
<tr>
<td></td>
<td>Carlson School</td>
</tr>
<tr>
<td></td>
<td>Eisenhower Middle School</td>
</tr>
<tr>
<td></td>
<td>Kindercare Learning Center</td>
</tr>
<tr>
<td></td>
<td>Luther Academy Lutheran High School</td>
</tr>
<tr>
<td></td>
<td>Lutheran High</td>
</tr>
<tr>
<td></td>
<td>Marsh School</td>
</tr>
<tr>
<td></td>
<td>Nelson School</td>
</tr>
<tr>
<td></td>
<td>North Love Christian</td>
</tr>
<tr>
<td></td>
<td>Rainbow Academy</td>
</tr>
<tr>
<td></td>
<td>University of Illinois College of Medicine</td>
</tr>
<tr>
<td>Fire Departments</td>
<td>Love Park Fire (Windsor Rd)</td>
</tr>
<tr>
<td></td>
<td>Rockford Fire Station #10</td>
</tr>
<tr>
<td></td>
<td>North Park Fire (Alpine Rd)</td>
</tr>
</tbody>
</table>

Building Inventory Damage
Table 4-10 lists the building exposure, including type and number of buildings, for the entire county. Buildings within the county can all expect impacts similar to those discussed for critical facilities. These impacts include structural failure due to fire or explosion or debris and loss of function of the building (e.g., a person cannot inhabit a damaged home, causing residents to seek shelter).

Vulnerability to Future Assets/Infrastructure for Hazardous Materials Storage and Transportation Hazard
Any new development within the county will be vulnerable to these events, especially development along major roadways.

Suggestion for Community Development Trends
Because the hazardous material hazard events may occur anywhere within the county, future development is impacted. The major transportation routes and the industries located in Winnebago County pose a threat of dangerous chemicals and hazardous materials release.

4.4.5 Winter Storm Hazard

Hazard Definition of Winter Storm Hazard
Severe winter weather consists of various forms of precipitation and weather conditions. This may include one or more of the following: freezing rain, sleet, heavy snow, blizzards, icy roadways, extreme low temperatures, and strong winds. These conditions can cause human health risks such as frostbite, hypothermia, or death and cause property damage and disrupt economic activity.
Ice (Glazing) and Sleet Storms
Ice or sleet, even in small quantities, can result in hazardous driving conditions and can cause property damage. Sleet involves raindrops that freeze completely before reaching the ground. Sleet does not stick to trees and wires. Ice storms, on the other hand, involve liquid rain that falls through subfreezing air and/or onto sub-freezing surfaces, freezing on contact with those surfaces. The ice coats trees, buildings, overhead wires, and roadways, sometimes causing extensive damage.

Ice storms are some of the most damaging winter storms in Illinois. Ice storms occur when moisture-laden Gulf air converges with the northern jet stream causing freezing rain that coats power and communication lines and trees with heavy ice. Strong winds can cause the overburdened limbs and cables to snap; leaving large sectors of the population without power, heat, or communication.

Snow Storms
Rapid accumulation of snow, often accompanied by high winds, cold temperatures, and low visibility, characterize significant snowstorms. A blizzard is categorized as a snow storm with winds of 35 miles per hour or greater and/or visibility of less than one-quarter mile for three or more hours. Strong winds during a blizzard blow falling and fallen snow, creating poor visibility and impassable roadways. Blizzards potentially result in property damage.

Blizzards repeatedly affect Illinois. Blizzard conditions cause power outages, loss of communication, and transportation difficulties. Blizzards can reduce visibility to less than one-quarter mile, and the resulting disorientation makes even travel by foot dangerous if not deadly.

Severe Cold
Severe cold involves ambient air temperatures that drop to 0°F or below. These extreme temperatures can increase the likelihood of frostbite and hypothermia. High winds during severe cold events can enhance the air temperature’s effects. Fast winds during cold weather events can lower the wind chill factor (how cold the air feels on your skin). As a result, the time it takes for frostbite and hypothermia to affect a person’s body will decrease.

Previous Occurrences of Winter Storm Hazard
The NCDC database identified 44 winter storm and extreme cold events for Winnebago County since 1996. Of the events listed on the NCDC database, no property damage, deaths, or injuries were reported. Additional details of individual hazard events are on the NCDC website. The most recent reported event occurred in January of 2014 when temperatures plummeted across northern Illinois with breezy conditions leading to wind chill values falling into the -30°F to -35°F range following a strong arctic front.

Geographic Location of Winter Storm Hazard
Severe winter storms are regional in nature. Most of the NCDC data are calculated regionally or in some cases statewide.

Hazard Extent of Winter Storm Hazard
The extent of the historical winter storms varies in terms of storm location, temperature, and ice or snowfall. A severe winter storm can occur anywhere in the county.

Risk Identification of Winter Storm Hazard
Based on historical information and input from the planning team, the occurrence of future winter storms is likely. The county should expect winter storms of varying magnitudes. According to the RPI and county input, winter storms ranked as the number five hazard.
Vulnerability Analysis of Winter Storm Hazard

Winter storm impacts are equally likely across the entire county; therefore, the entire county is vulnerable to a winter storm and can expect impacts within the affected area. Table 4-10 includes the building exposure for Winnebago County, as determined from the building inventory.

Critical Facilities

All critical facilities are vulnerable to a winter storm. A critical facility will encounter many of the same impacts as other buildings within the county. These impacts include loss of gas or electricity from broken or damaged utility lines, damaged or impassable roads and railways, broken water pipes, and roof collapse from heavy snow. Appendix E include a list of the essential facilities in Winnebago County and Appendix F displays a large format map of the locations of all critical facilities within the county.

Building Inventory

Table 4-10 lists the building exposure in terms of types and numbers of buildings for the entire county. The impacts to the general buildings within the county are similar to the damages expected to the critical facilities. These include loss of gas or electricity from broken or damaged utility lines, damaged or impassable roads and railways, broken water pipes, and roof collapse from heavy snow.

Infrastructure

During a winter storm, the types of potentially impacted infrastructure include roadways, utility lines/pipes, railroads, and bridges. Since the county’s entire infrastructure is vulnerable, it is important to emphasize that a winter storm could impact any structure. Potential impacts include broken gas and/or electricity lines or damaged utility lines, damaged or impassable roads and railways, and broken water pipes.

Potential Dollar Losses for Winter Storm Hazard

SIU determined that since 1996 Winnebago County has incurred significant property damages for some winter storms, including sleet/ice and heavy snow although it was not reported by the NCDC.

Vulnerability to Future Assets/Infrastructure for Winter Storm Hazard

Any new development within the county will remain vulnerable to these events.

Suggestions for Community Development Trends

Because winter storm events are regional in nature, future development across the county will also face winter storms.

4.4.6 Drought and Extreme Heat Hazard

Hazard Definition for Drought Hazard

Drought is a climatic phenomenon. The meteorological condition that creates a drought is below-normal rainfall. However, excessive heat can lead to increased evaporation, which enhances drought conditions. Droughts can occur in any month. Drought differs from normal arid conditions found in low-rainfall areas. Drought is the consequence of a reduction in the amount of precipitation over an undetermined length of time (usually a growing season or longer).
The severity of a drought depends on location, duration, and geographical extent. Additionally, drought severity depends on the water supply, usage demands by human activities, vegetation, and agricultural operations. Drought will affect the quality and quantity of crops, livestock, and other agricultural assets. Drought can adversely impact forested areas leading to an increased potential for extremely destructive forest and woodland fires that could threaten residential, commercial, and recreational structures.

**Hazard Definition for Extreme Heat Hazard**
Drought conditions are often accompanied by extreme heat, which is defined as temperatures that exceed the average high for the area by 10°F or more for the last for several weeks.

**Common Terms Associated with Extreme Heat**
- **Heat Wave**: Prolonged period of excessive heat often combined with excessive humidity.
- **Heat Index**: A number, in degrees Fahrenheit, which estimates how hot it feels when relative humidity is added to air temperature. Exposure to full sunshine can increase the heat index by 15°F.
- **Heat Cramps**: Muscular pains and spasms due to heavy exertion. Although heat cramps are the least severe, they are often the first signal that the body is having trouble with heat.
- **Heat Exhaustion**: Typically occurs when people exercise heavily or work in a hot, humid place where body fluids are lost through heavy sweating. Blood flow to the skin increases, causing blood flow to decrease to the vital organs, resulting in a form of mild shock. If left untreated, the victim’s condition will worsen. Body temperature will continue to rise, and the victim may suffer heat stroke.
- **Heat and Sun Stroke**: A life-threatening condition. The victim’s temperature control system, which produces sweat to cool the body, stops working. The body’s temperature can rise so high that brain damage and death may result if the body is not cooled quickly.

**Previous Occurrences for Drought and Extreme Heat**
The NCDC database reported eleven drought/heat wave events in Winnebago County since 1999. The most recent recorded event occurred on July 2012 when severe drought conditions developed across much of northern Illinois by mid July 2012 with extreme drought conditions developing during late July. Rainfall totals in the extreme drought areas between June 1st and August 1st included 3.34 inches in Rockford (38% of normal rainfall). Temperatures reached 90 degrees or higher on 21 days in July at Rockford Airport and 100 degrees or higher on 5 of those 21 days. Table 4-18 identifies NCDC-recorded drought/heat wave events that caused damage, death, or injury in Winnebago County. Additional details of individual hazard events are on the NCDC website.

<table>
<thead>
<tr>
<th>Location or County*</th>
<th>Date</th>
<th>Deaths</th>
<th>Injuries</th>
<th>Property Damage (x $1000)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Winnebago County</td>
<td>07/1999</td>
<td>2</td>
<td>0</td>
<td>$0</td>
</tr>
<tr>
<td>Winnebago County</td>
<td>08/2006</td>
<td>1</td>
<td>0</td>
<td>$0</td>
</tr>
<tr>
<td><strong>Total:</strong></td>
<td><strong>3</strong></td>
<td><strong>0</strong></td>
<td></td>
<td><strong>$0</strong></td>
</tr>
</tbody>
</table>

*NCDC records are estimates of damage compiled by the National Weather Service from various local, state, and federal sources. However, these estimates are often preliminary in nature and may not match the final assessment of economic and property losses related to a given weather event.
Geographic Location for Drought and Extreme Heat
Droughts are regional in nature. Most areas of the United States are vulnerable to the risk of drought and extreme heat.

Hazard Extent for Drought and Extreme Heat
The extent of droughts or extreme heat varies both depending on the magnitude and duration of the heat and the range of precipitation.

Risk Identification for Drought and/or Extreme Heat
Based on input from the Winnebago County planning team, drought occurrence is likely. Drought and/or extreme heat ranked as the number six hazard, according to the RPI and county input.

\[
\text{RPI} = \text{Probability} \times \text{Magnitude/Severity}
\]

Vulnerability Analysis for Drought and Extreme Heat
Drought and extreme heat are a potential threat across the entire county; therefore, the county is vulnerable to this hazard and can expect impacts within the affected area. According to FEMA, approximately 175 Americans die each year from extreme heat. Young children, elderly, and hospitalized populations have the greatest risk. The entire population and all buildings are at risk. Table 4-10 includes the building exposure for Winnebago County, as determined from the building inventory.

Critical Facilities
All critical facilities are vulnerable to drought. A critical facility will encounter many of the same impacts as any other building within the jurisdiction, which should involve little or no damage. Potential impacts include water shortages, fires as a result of drought conditions, and residents in need of medical care from the heat and dry weather. Appendix E include a list of the essential facilities in Winnebago County and Appendix F displays a large format map of the locations of all critical facilities within the county.

Building Inventory
Table 4-10 lists the building exposure, including types and numbers of buildings for the entire county. The buildings within the county can all expect impacts similar to those discussed for critical facilities. These impacts include water shortages, fires as a result of drought conditions, and residents in need of medical care from the heat and dry weather.

Infrastructure
During a drought, the types of potentially impacted infrastructure include roadways, utility lines/pipes, railroads, and bridges. The risk to these structures is primarily associated with fire, which could result from hot, dry conditions. Since the county’s entire infrastructure is vulnerable, damage to any infrastructure is possible. The impacts to these items include: impassable roadways; broken or failed utility lines (e.g., loss of power or gas to community); or impassable railways. Bridges could become impassable, causing risk to motorists.

Vulnerability to Future Assets/Infrastructure from Drought/Extreme Heat Hazard
Future development will remain vulnerable to droughts. Typically, some urban and rural areas are more susceptible than others. For example, urban areas are subject to water shortages during periods of drought. Excessive demands of densely populated areas put a limit on water resources. In rural areas,
crops and livestock may suffer from extended periods of heat and drought. Dry conditions can lead to the ignition of wildfires that could threaten residential, commercial, and recreational areas.

**Suggestion of Community Development Trends**

Because droughts and extreme heat are regional in nature, future development is susceptible to drought. Although urban and rural areas are equally vulnerable to this hazard, those living in urban areas may have a greater risk from the effects of a prolonged heat wave. The atmospheric conditions that create extreme heat tend to trap pollutants in urban areas, adding contaminated air to the excessively hot temperatures and creating increased health problems. Furthermore, asphalt and concrete store heat longer, gradually releasing it at night and producing high nighttime temperatures. This phenomenon is known as the “urban heat island effect.”

Local officials should address drought and extreme heat hazards by educating the public on steps to take before and during the event—for example, temporary window reflectors to direct heat back outside, staying indoors as much as possible, and avoiding strenuous work during the warmest part of the day.

### 4.4.7 Dam and Levee Failure

**Hazard Definition for Dam and Levee Failure**

Dams are structures that retain or detain water behind a large barrier. When full or partially full, the difference in elevation between the water above the dam and below creates large amounts of potential energy, creating the potential for failure. The same potential exists for levees when they serve their purpose, which is to confine flood waters within the channel area of a river and exclude that water from land or communities landward of the levee. Dams and levees can fail due to either: 1) water heights or flows above the capacity for which the structure was designed; or 2) deficiencies in the structure such that it cannot hold back the potential energy of the water. If a dam or levee fails, issues of primary concern include loss of human life/injury, downstream property damage, lifeline disruption (of concern would be transportation routes and utility lines required to maintain or protect life), and environmental damage.

Many communities view both dams and levees as permanent and infinitely safe structures. This sense of security may well be false, leading to significantly increased risks. Both downstream of dams and on floodplains protected by levees, security leads to new construction, added infrastructure, and increased population over time. Levees in particular are built to hold back flood waters only up to some maximum level, often the 100-year (1% annual probability) flood event. When that maximum is exceeded by more than the design safety margin, then the levee will be overtopped or otherwise fail, inundating communities in the land previously protected by that levee. It has been suggested that climate change, land-use shifts, and some forms of river engineering may be increasing the magnitude of large floods and the frequency of levee-failure situations.

In addition to failure that results from extreme floods above the design capacity, levees and dams can fail due to structural deficiencies. Both dams and levees require constant monitoring and regular maintenance to assure their integrity. Many structures across the U.S. have been under-funded or otherwise neglected, leading to an eventual day of reckoning in the form either of realization that the structure is unsafe or, sometimes, an actual failure. The threat of dam or levee failure may require substantial commitment of time, personnel, and resources. Since dams and levees deteriorate with age, minor issues become larger compounding problems, and the risk of failure increases.
Previous Occurrences of Dam and Levee Failure
According to the Winnebago County mitigation planning team, there are no records or local knowledge of any dam or levee failure in the county.

Risk Identification for Dam and Levee Failure
Based on operation and maintenance requirements and local knowledge of the dams and levees in Winnebago County, the probability of failure is low. However, if a high-hazard dam failed, the magnitude and severity of the damage could be great. The warning time and duration of the dam failure event would be very short. According to the RPI and county input, dam failure ranked as the number seven hazard.

\[
\text{RPI} = \text{Probability} \times \frac{\text{Magnitude}}{\text{Severity}}
\]

Geographic Location of Dams and Levees in Winnebago County
Table 4-30 list of the dams located in Winnebago County and their respective classification level. According to Winnebago County records, six dams in Winnebago County are classified as high hazard and three dams have Emergency Action Plans (EAP). An EAP is not required by the State of Illinois but is strongly recommended by the Illinois Department of Natural Resources.

<table>
<thead>
<tr>
<th>Dam Name</th>
<th>Stream/River</th>
<th>Primary Purpose</th>
<th>Hazard Potential</th>
<th>EAP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alpine Dam</td>
<td>Keith Creek</td>
<td>Flood Control</td>
<td>High</td>
<td>Yes</td>
</tr>
<tr>
<td>Cherry Valley Lower Dam</td>
<td>Madigan Creek</td>
<td>Flood Control</td>
<td>Low</td>
<td></td>
</tr>
<tr>
<td>Cherry Valley Upper Dam</td>
<td>Madigan Creek</td>
<td>Flood Control</td>
<td>Low</td>
<td></td>
</tr>
<tr>
<td>Coolidge Creek Dam</td>
<td>Coolidge Creek</td>
<td>Recreation</td>
<td>Low</td>
<td></td>
</tr>
<tr>
<td>Fordam Station Dam</td>
<td>Rock River</td>
<td>Recreation</td>
<td>Low</td>
<td></td>
</tr>
<tr>
<td>Future Roadway Dam</td>
<td>Tributary of Rock River</td>
<td></td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Kiowa Crossing Dam</td>
<td>Tributary of North Branch of Kinnikinnick Creek</td>
<td>Recreation</td>
<td>Significant</td>
<td>-</td>
</tr>
<tr>
<td>Lake Summerset Dam</td>
<td>South Branch Otter Creek</td>
<td>Recreation</td>
<td>High</td>
<td></td>
</tr>
<tr>
<td>Leving Lake Dam</td>
<td>South Branch Kent Creek</td>
<td>Flood Control</td>
<td>High</td>
<td>Yes</td>
</tr>
<tr>
<td>Olson Lake Dam</td>
<td>Willow Creek</td>
<td>Recreation</td>
<td>Low</td>
<td></td>
</tr>
<tr>
<td>Page Park Dam</td>
<td>Kent Creek</td>
<td>Flood Control</td>
<td>High</td>
<td>Yes</td>
</tr>
<tr>
<td>Pebble Creek Dam</td>
<td>Pebble Park</td>
<td>Flood Control</td>
<td>High</td>
<td></td>
</tr>
<tr>
<td>Pierce Lake Dam</td>
<td>Willow Creek</td>
<td>Recreation</td>
<td>High</td>
<td></td>
</tr>
<tr>
<td>Rockton Dam</td>
<td>Rock River</td>
<td>Hydroelectric</td>
<td>Low</td>
<td></td>
</tr>
<tr>
<td>Spring Lake Dam</td>
<td>Tributary of Spring Creek</td>
<td>Recreation</td>
<td>Significant</td>
<td>-</td>
</tr>
</tbody>
</table>

A review of the US Army Corps of Engineers National Levee Database and Winnebago County records indicated one state or federal levee within Winnebago County. Table 4-31 summarizes the National Levee Database.

<table>
<thead>
<tr>
<th>Levee System Name</th>
<th>Levee Area Acreage</th>
<th>Inspection Rating</th>
<th>Last Inspection Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kent Creek South Branch Diversion Channel</td>
<td>636.60</td>
<td>Unacceptable</td>
<td>05/10/2013</td>
</tr>
</tbody>
</table>
Hazard Extent for Dam and Levee Failure
Dams are assigned a low hazard potential classification means that failure or incorrect operation of the dam will result in no human life losses and no economic or environmental losses. Losses are principally limited to the owner’s property. A significant hazard classification means that failure or incorrect operation results in no probable loss of human life; however, dam or levee failure can cause economic loss, environmental damage, and disruption of lifeline facilities. Significant hazard potential dams are often located in predominantly rural or agricultural areas, but could be located in populated areas with a significant amount of infrastructure. A high hazard potential classification means that failure or incorrect operation has the highest risk to cause loss of human life and to significantly damage buildings and infrastructure.

According Winnebago County, six dams are classified as high hazard dams; three of which have an Emergency Action Plan (EAP). An EAP is not required by the State of Illinois but is recommended in the 2003 Illinois Dam Safety & Inspection Manual.

Accurate mapping of the risks of flooding behind levees depends on knowing the condition and level of protection the levees actually provide. FEMA and the U.S. Army Corps of Engineers are working together to make sure that flood hazard maps better reflect the flood protection capabilities of levees and that the maps accurately represent the flood risks posed to areas situated behind them. Levee owners—usually states, communities, or private individuals or organizations such as local levee districts—are responsible for ensuring that the levees they own are maintained to their original design level and condition. In order to be considered creditable flood protection structures on FEMA’s flood maps, levee owners must provide documentation to prove that the levee meets design, operation, and maintenance standards for protection against the 1% annual probability (100-year) flood.

Critical Facilities
All critical facilities within the floodplain are vulnerable to dam and levee failure. An essential facility will encounter many of the same impacts as other buildings within the flood boundary. These impacts can include structural failure, extensive water damage to the facility, and loss of facility functionality (e.g., a damaged police station cannot serve the community). Appendix E include a list of the essential facilities within Winnebago County and Appendix F displays a large format map of the locations of all critical facilities within the county.

Infrastructure
The types of infrastructure potentially impacted by a flood include roadways, utility lines/pipes, railroads, and bridges. Since an extensive inventory of the infrastructure is not available for this plan, it is important to emphasize that a flood could damage any number of these items. The impacts to these items include: broken, failed, or impassable roadways; broken or failed utility lines (e.g., loss of power or gas to community); or railway failure from broken or impassable railways. Bridges could also fail or become impassable, causing risk to motorists.

Vulnerability Analysis for Dam and Levee Failure
An Emergency Action Plan (EAP) is required to assess the effect of dam failure on these communities. In order to be considered creditable flood protection structures on FEMA’s flood maps, levee owners must provide documentation to prove the levee meets design, operation, and maintenance standards for protection against the 1% annual probability flood.
Vulnerability to Future Assets/Infrastructure for Dam and Levee Failure
The Winnebago County Zoning Board of Appeals reviews new development for compliance with local zoning ordinances.

Analysis of Community Development Trends
Areas with recent development within the county may be more vulnerable to drainage issues. Storm drains and sewer systems are usually most susceptible, which can cause the back-up of water, sewage, and debris into homes and basements, causing structural and mechanical damage as well as creating public health hazards and unsanitary conditions. Controlling floodplain development is the key to reducing flood-related damages.

4.4.8 Earthquake Hazard

Hazard Definition
An earthquake is a shaking of the earth caused by the energy released when large blocks of rock slip past each other in the earth’s crust. Imagine pressing two sandpaper blocks firmly together and trying to slide them past one another; at first they don’t move at all, but as you continue to work harder they slip past each other very quickly. Similarly, blocks of the earth’s crust (tectonic plates) are very slowly trying to slide past each other. When they build up enough energy, they quickly slip past each other, generating an earthquake.

Most earthquakes occur at tectonic plate boundaries; however, some earthquakes occur in the middle of plates, for example the New Madrid Seismic Zone or the Wabash Valley Fault System. Both of these seismic areas have a geologic history of strong quakes, and an earthquake from either seismic area could possibly affect Illinois counties. There may be other, currently unidentified faults in the Midwest also capable of producing strong earthquakes.

Strong earthquakes can collapse buildings and infrastructure, disrupt utilities, and trigger landslides, avalanches, flash floods, fires, and tsunamis. When an earthquake occurs in a populated area, it may cause death, injury, and extensive property damage. An earthquake might damage essential facilities, such as fire departments, police departments, and hospitals, disrupting emergency response services in the affected area. Strong earthquakes may also require mass relocation; however, relocation may be impossible in the short-term aftermath of a significant event due to damaged transportation infrastructure and public communication systems.

Earthquakes are usually measured by two criteria: intensity and magnitude (M). Earthquake intensity qualitatively measures the strength of shaking produced by an earthquake at a certain location and is determined from effects on people, structures, and the natural environment. Earthquake magnitude quantitatively measures the energy released at the earthquake’s subsurface source in the crust, or epicenter. SIU uses magnitude in the earthquake hazard analysis. Table 4-32 provides a comparison of magnitude and intensity, and Table 4-33 provides qualitative descriptions of intensity, for a sense of what a given magnitude might feel like.

<table>
<thead>
<tr>
<th>Magnitude (M)</th>
<th>Typical Maximum Modified Mercalli Intensity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0 – 3.0</td>
<td>I</td>
</tr>
<tr>
<td>3.0 – 3.9</td>
<td>II – III</td>
</tr>
</tbody>
</table>
### Table 4-33: Abbreviated Modified Mercalli Intensity Scale

<table>
<thead>
<tr>
<th>Mercalli Intensity</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Not felt except by a very few under especially favorable conditions.</td>
</tr>
<tr>
<td>II</td>
<td>Felt only by a few persons at rest, especially on upper floors of buildings.</td>
</tr>
<tr>
<td>III</td>
<td>Felt quite noticeably by persons indoors, especially on upper floors of buildings. Many people do not recognize it as an earthquake. Standing motorcars may rock slightly. Vibration similar to the passing of a truck. Duration estimated.</td>
</tr>
<tr>
<td>IV</td>
<td>Felt indoors by many, outdoors by few during the day. At night, some awakened. Dishes, windows, doors disturbed; walls make cracking sound. Sensation like heavy truck striking building. Standing motorcars rocked noticeably.</td>
</tr>
<tr>
<td>V</td>
<td>Felt by nearly everyone; many awakened. Some dishes, windows broken. Unstable objects overturned. Pendulum clocks may stop.</td>
</tr>
<tr>
<td>VI</td>
<td>Felt by all, many frightened. Some heavy furniture moved; a few instances of fallen plaster. Damage slight.</td>
</tr>
<tr>
<td>VII</td>
<td>Damage negligible in buildings of good design and construction; slight to moderate in well-built ordinary structures; considerable damage in poorly built or badly designed structures; some chimneys broken.</td>
</tr>
<tr>
<td>VIII</td>
<td>Damage slight in specially designed structures; considerable damage in ordinary substantial buildings with partial collapse. Damage great in poorly built structures. Fall of chimneys, factory stacks, columns, monuments and walls. Heavy furniture overthrown.</td>
</tr>
<tr>
<td>IX</td>
<td>Damage considerable in specially designed structures; well-designed frame structures thrown out of plumb. Damage great in substantial buildings, with partial collapse. Buildings shifted off foundations.</td>
</tr>
<tr>
<td>X</td>
<td>Some well-built wooden structures destroyed; most masonry and frame structures destroyed with foundations. Rails bent.</td>
</tr>
<tr>
<td>XI</td>
<td>Few, if any (masonry) structures remain standing. Bridges destroyed. Rails bent greatly.</td>
</tr>
<tr>
<td>XII</td>
<td>Damage total. Lines of sight and level are distorted. Objects thrown into the air.</td>
</tr>
</tbody>
</table>

### Previous Occurrences for Earthquakes

Historically, the most significant seismic activity in Illinois is associated with the New Madrid Seismic Zone. The New Madrid Seismic Zone produced three large earthquakes in the central U.S. with magnitudes estimated between 7.0 and 7.7 on December 16, 1811, January 23, 1812, and February 7, 1812. These earthquakes caused violent ground cracking and volcano-like eruptions of sediment (sand blows) over an area >10,500 km², and uplifted a 50 km by 23 km zone (the Lake County uplift). The shaking was felt over a total area of over 10 million km² (the largest felt area of any historic earthquake). The United States Geological Survey (USGS) and the Center for Earthquake Research and Information (CERI) at the University of Memphis estimate the probability of a repeat of the 1811-1812 type earthquakes (M7.5-8.0) is 7%-10% over the next 50 years (USGS Fact Sheet 2006-3125).
Earthquakes measured in Illinois typically vary in magnitude from very low microseismic events of M=1-3 to larger events up to M=5.4. The most recent earthquake in Illinois—as of the date of this report—was a M2.3 event in February, 2014 approximately 6 miles NNW of Mound City in Pulaski County. In Northern Illinois, the most recent earthquake was a M3.2 event in November 2013 approximately 1 mile NW of Summit in Cook County. The last earthquake in Illinois to cause minor damage occurred on April 18, 2008 near Mt. Carmel, IL and measured 5.2 in magnitude. Earthquakes resulting in more serious damage have occurred about every 70 to 90 years and are historically concentrated in southern Illinois.

**Geographic Location for Earthquake Hazard**

The two most significant zones of seismic activity in Illinois are the New Madrid Seismic Zone and the Wabash Valley Fault System. There are no earthquake epicenters recorded in Winnebago County. While large earthquakes (>M7.0) experienced during the New Madrid Events of 1811 and 1812 are unlikely in Winnebago County, moderate earthquakes (≤ 6.0M) in or in the vicinity of Winnebago County are probable. The USGS estimates the probability of a moderate M5.5 earthquake occurring in Winnebago County within the next 500-years at approximately 3% (USGS 2009).

Figure 4-18 depicts the following: (A) location of notable earthquakes in Illinois region; (B) generalized geologic bedrock map with earthquake epicenters and geologic structures; (C) geologic and earthquake epicenter map of Winnebago County.
Figure 4-18: Recorded Earthquakes in the Illinois and Geology of Winnebago County
Hazard Extent for Earthquake Hazard
Earthquake effects are possible anywhere in Winnebago County. One of the most critical sources of information that is required for accurate assessment of earthquake risk is soils data. SIU used a National Earthquake Hazards Reduction Program (NEHRP) compliant soils map provided by FEMA for the analysis. The map identifies the soils most susceptible to failure.

Risk Identification for Earthquake Hazard
Based on historical information and current USGS and SIU research and studies, future earthquakes in Winnebago County are possible, but large (>M7.0) earthquakes that cause catastrophic damage are unlikely. Figure 4-19 illustrates the probability of a M5.5 event occurring within the next 500 years in the Winnebago County region. According to the Winnebago County planning team’s assessment, earthquakes are ranked as the number eight hazard.

RPI = Probability x Magnitude/Severity

<table>
<thead>
<tr>
<th>Probability</th>
<th>x</th>
<th>Magnitude/Severity</th>
<th>RPI</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>x</td>
<td>4</td>
<td>4</td>
</tr>
</tbody>
</table>

Figure 4-19: USGS Probability Map for a M5.5 Earthquake Occurring in the Next 500 Years within Winnebago County
**Vulnerability Analysis for Earthquake Hazard**
Earthquakes could impact the entire county equally; therefore, the entire county’s population and all buildings are vulnerable to an earthquake. To accommodate this risk, this plan considers all buildings located within the county as vulnerable.

**Critical Facilities**
All critical facilities are vulnerable to earthquakes. A critical facility would encounter many of the same impacts as any other building within the county. These impacts include structural failure and loss of facility functionality (e.g., a damaged police station cannot serve the community). Appendix E include a list of the essential facilities in Winnebago County and Appendix F displays a large format map of the locations of all critical facilities within the county.

**Building Inventory**
Table 4-10 displays the building exposure in terms of types and numbers of buildings for the entire county. The buildings within the county can expect similar impacts to those discussed for critical facilities. These impacts include structural failure and loss of building function which could result in indirect impacts (e.g., damaged homes will no longer be habitable causing residents to seek shelter).

**Infrastructure**
During an earthquake, the types of infrastructure that shaking could impact include roadways, utility lines/pipes, railroads, and bridges. Since an extensive inventory of the infrastructure is not available to SIU, it is important to emphasize that any number of these items could become damaged in the event of an earthquake. The impacts to these items include broken, failed, or impassable roadways, broken or failed utility lines (e.g., loss of power or gas to community), and railway failure from broken or impassable railways. Bridges could also fail or become impassable, causing risk to motorists.

**Hazus-MH Analyses for Four Earthquake Scenarios**
SIU reviewed existing geological information and recommendations from the planning team for earthquake scenarios. SIU ran a deterministic and a probabilistic earthquake scenario to provide a reasonable basis for earthquake planning in Winnebago County. The deterministic scenario was a Moment Magnitude of 5.5 with the epicenter located on the Sandwich Fault Zone. The Sandwich Fault Zone is a fault zone that runs northwest from Oswego to Ogle County, transecting Lee County in Northern Illinois. The fault is generally not been active, although there was a minor earthquake in 2002, and another, slightly larger one in 2010. This represents a realistic scenario for planning purposes.

Additionally, the earthquake-loss analysis included a probabilistic scenario based on ground-shaking parameters derived from U.S. Geological Survey probabilistic seismic hazard curves for the earthquake with the 500-year return period. This scenario evaluates the average impacts of a multitude of possible earthquake epicenters with a magnitude typical of that expected for a 500-year return period.

The earthquake hazard modeling scenarios performed are:
- Magnitude 5.5 500-year probability event in Winnebago County
- Magnitude 5.5 deterministic event along the Sandwich Fault Zone

Modeling a deterministic scenario requires user input for a variety of parameters. One of the most critical sources of information required for accurate assessment of earthquake risk is soils data. SIU used a NEHRP soil classification map for Illinois in the analysis. NEHRP soil classifications portray the degree of shear-
wave amplification that can occur during ground shaking. FEMA provided the soils map and liquefaction-potential map that is the default in Hazus-MH.

Earthquake hypocenter depths in Illinois range from less than 1.0 to ~25.0 km. The deterministic scenarios used the average hypocenter depth of ~10.0 km. For this scenario type, Hazus-MH requires the user to define an attenuation function. SIU used the Toro et al. (1997) attenuation function for the deterministic earthquake scenario to maintain consistency with the USGS (2006) strong ground motion modeling in the central United States.

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

Results for 500-Year Probabilistic Scenario – General Building Stock
Tables 4-34 and 4-35 show the results of the 500-year probabilistic analysis. The total economic loss estimated for the M5.5 probabilistic earthquake is $15.29 million, which includes building and lifeline related losses based on the region’s available inventory. Hazus-MH estimates that the event would at least moderately damage approximately 281 buildings. This is 0% of the total number of buildings in the region. Hazus-MH estimates that the event would damage one building beyond repair. Building-related losses totaled $14.77 million; 29% of the estimated losses were related to the business interruption of the region. The residential occupancy class sustained the largest loss, experiencing 53% of the total loss.

Table 4-34: 500-Year Probabilistic Earthquake Damage Estimates by Building Occupancy

<table>
<thead>
<tr>
<th></th>
<th>None</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Count</td>
<td>(%)</td>
<td>Count</td>
<td>(%)</td>
<td>Count</td>
</tr>
<tr>
<td>Agriculture</td>
<td>424</td>
<td>0.39</td>
<td>6</td>
<td>0.52</td>
<td>2</td>
</tr>
<tr>
<td>Commercial</td>
<td>5,527</td>
<td>5.08</td>
<td>80</td>
<td>6.98</td>
<td>23</td>
</tr>
<tr>
<td>Educational</td>
<td>162</td>
<td>0.15</td>
<td>2</td>
<td>0.20</td>
<td>1</td>
</tr>
<tr>
<td>Government</td>
<td>115</td>
<td>0.11</td>
<td>1</td>
<td>0.12</td>
<td>0</td>
</tr>
<tr>
<td>Industrial</td>
<td>1,983</td>
<td>1.82</td>
<td>30</td>
<td>2.63</td>
<td>9</td>
</tr>
<tr>
<td>Other Residential</td>
<td>18,339</td>
<td>16.85</td>
<td>231</td>
<td>20.15</td>
<td>56</td>
</tr>
<tr>
<td>Religion</td>
<td>460</td>
<td>0.42</td>
<td>7</td>
<td>0.62</td>
<td>2</td>
</tr>
<tr>
<td>Single Family</td>
<td>81,825</td>
<td>75.18</td>
<td>787</td>
<td>68.78</td>
<td>163</td>
</tr>
<tr>
<td>Total:</td>
<td>108,834</td>
<td>1,144</td>
<td>256</td>
<td>24</td>
<td>1</td>
</tr>
</tbody>
</table>

Table 4-35: 500-Year Probabilistic Earthquake Estimates of Building Economic Losses (in Millions of Dollars)

<table>
<thead>
<tr>
<th>Category</th>
<th>Area</th>
<th>Single Family</th>
<th>Other Residential</th>
<th>Commercial</th>
<th>Industrial</th>
<th>Other</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Income Losses</td>
<td>Wage</td>
<td>0.00</td>
<td>0.03</td>
<td>0.73</td>
<td>0.10</td>
<td>0.05</td>
<td>0.91</td>
</tr>
<tr>
<td></td>
<td>Capital-Related</td>
<td>0.00</td>
<td>0.01</td>
<td>0.57</td>
<td>0.06</td>
<td>0.01</td>
<td>0.65</td>
</tr>
<tr>
<td></td>
<td>Rental</td>
<td>0.21</td>
<td>0.25</td>
<td>0.42</td>
<td>0.04</td>
<td>0.02</td>
<td>0.94</td>
</tr>
<tr>
<td></td>
<td>Relocation</td>
<td>0.74</td>
<td>0.18</td>
<td>0.29</td>
<td>0.15</td>
<td>0.15</td>
<td>1.81</td>
</tr>
</tbody>
</table>
Results for M5.5 Deterministic Scenario – General Building Stock

Tables 4-36 and 4-37 show the results for Winnebago County of the M5.5 Deterministic Scenario epicenter along the Sandwich Fault Zone. The total economic loss estimated for the M5.5 deterministic earthquake is $171.81 million, which includes building and lifeline related losses based on the region’s available inventory. Hazus-MH estimates that the event would at least moderately damage approximately 2,042 buildings. This is more than 2% of the total number of buildings in the region. Hazus-MH estimates that the event would damage 20 buildings beyond repair. Building-related losses totaled $153.30 million; 21% of the estimated losses were related to the business interruption of the region. The residential class sustained the largest loss, experiencing 51% of the total loss.

Table 4-36: M5.5 Deterministic Earthquake Damage Estimates by Building Occupancy

<table>
<thead>
<tr>
<th>Category</th>
<th>Area</th>
<th>Single Family</th>
<th>Other Residential</th>
<th>Commercial</th>
<th>Industrial</th>
<th>Other</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subtotal:</td>
<td>0.95</td>
<td>0.47</td>
<td>2.31</td>
<td>0.35</td>
<td>0.23</td>
<td></td>
<td>4.31</td>
</tr>
<tr>
<td>Capital Stock Losses</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Structural</td>
<td>1.44</td>
<td>0.38</td>
<td>0.75</td>
<td>0.44</td>
<td>0.16</td>
<td></td>
<td>3.18</td>
</tr>
<tr>
<td>Non-Structural</td>
<td>2.93</td>
<td>1.10</td>
<td>1.13</td>
<td>0.58</td>
<td>0.28</td>
<td></td>
<td>6.02</td>
</tr>
<tr>
<td>Content</td>
<td>0.35</td>
<td>0.13</td>
<td>0.32</td>
<td>0.31</td>
<td>0.07</td>
<td></td>
<td>1.17</td>
</tr>
<tr>
<td>Inventory</td>
<td>0.00</td>
<td>0.00</td>
<td>0.01</td>
<td>0.07</td>
<td>0.00</td>
<td></td>
<td>0.08</td>
</tr>
<tr>
<td>Subtotal:</td>
<td>4.72</td>
<td>1.62</td>
<td>2.21</td>
<td>1.40</td>
<td>0.51</td>
<td></td>
<td>10.45</td>
</tr>
<tr>
<td>Total:</td>
<td>5.67</td>
<td>2.09</td>
<td>4.52</td>
<td>1.75</td>
<td>0.74</td>
<td></td>
<td>14.77</td>
</tr>
</tbody>
</table>

Table 4-37: M5.5 Deterministic Earthquake Estimates of Building Economic Losses (in Millions of Dollars)

<table>
<thead>
<tr>
<th>Category</th>
<th>Area</th>
<th>Single Family</th>
<th>Other Residential</th>
<th>Commercial</th>
<th>Industrial</th>
<th>Other</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subtotal:</td>
<td>7.19</td>
<td>3.79</td>
<td>16.19</td>
<td>2.71</td>
<td>1.67</td>
<td></td>
<td>31.55</td>
</tr>
<tr>
<td>Capital Stock Losses</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Structural</td>
<td>10.11</td>
<td>2.79</td>
<td>5.23</td>
<td>3.17</td>
<td>1.14</td>
<td></td>
<td>22.44</td>
</tr>
<tr>
<td>Non-Structural</td>
<td>29.63</td>
<td>13.31</td>
<td>13.73</td>
<td>10.20</td>
<td>3.10</td>
<td></td>
<td>69.96</td>
</tr>
</tbody>
</table>

Section 4. Risk Assessment
### Vulnerability to Future Assets/Infrastructure for Earthquake Hazard

New construction, especially critical facilities, should accommodate earthquake mitigation design standards.

**Suggestions for Community Development Trends**

Community development should occur outside of the low-lying areas in floodplains with a water table within five feet of grade that is susceptible to liquefaction.

At Meeting 4, the MHMP team discussed specific mitigation strategies for reducing earthquake hazard. The discussion included strategies to harden and protect future and existing structures against the possible termination of public services and systems including power lines, water and sanitary lines, and public communication (see Section 5).
Section 5. Mitigation Strategies

5.1 Community Capability Assessment
The goal of mitigation is to reduce the future impacts of a hazard, including property damage, disruption to local and regional economies, and the amount of public and private funds spent to assist with recovery. Overall, mitigation strategies attempt to build disaster-resistant communities. Mitigation actions and projects are necessarily based on a well-constructed risk assessment (Section 4). Mitigation is an ongoing process that adapts over time to accommodate a community’s needs.

5.1.1 Successful Mitigation Projects
To be successful, mitigation must be a recurrent process that is continually striving to lessen the impact of natural hazards within the county. The following are projects that have been successfully completed after Winnebago County’s 2007 Multi-Hazard Mitigation Plan was formally adopted.

Winnebago County
Acquisition of 12 Flood Prone Structures
The U.S. Department of Homeland Security’s Federal Emergency Management Agency (FEMA) has released $1,667,191 in Hazard Mitigation Grant Program (HMGP) funds to Winnebago County, Ill., for the acquisition and removal of 12 homes in Edgemere Terrace that have been repeatedly damaged by flooding.

Winnebago County
Acquisition of 29 Flood Prone Structures and 61 Adjacent Vacant Lots
The U.S. Department of Homeland Security’s Federal Emergency Management Agency (FEMA) has released $1,446,034 in Hazard Mitigation Grant Program (HMGP) funds to Winnebago County, Ill., for the acquisition and removal of 29 structures & 61 adjacent vacant lots on Blackhawk Island that have been repeatedly damaged by flooding.

City of Rockford
Acquisition of 38 Flood Prone Structures
The City of Rockford has acquired and demolished 112 flood prone structures in the Keith Creek floodplain. Funding sources have been HMGP funds totaling $5,240,765, DCEO CDAP funds totaling $2,918,186 and DCEO IKE Buyout Program funds totaling $4,832,727.

Machesney Park
Acquisition of 26 Flood Prone Structures
Machesney Park was awarded 2.5 million dollars from the HMGP program and acquired 26 flood-prone structures on the Rock River, and converted the property to open space. Twenty-six homes were demolished with deed restriction applied to the land.

Winnebago County
Update Flood Maps
FEMA has provided funding to the Illinois State Water Survey and the USACE Rock Island District to update flood studies and flood hazard mapping in Winnebago County. A new engineering study of the hydrology and hydraulics of the Rock River took place. In addition funding has been provided to update flood studies and mapping for a limited number of tributaries to the Rock

5.1.2 National Flood Insurance Program (NFIP)

Table 5-1 includes a summary of additional information for Winnebago County participation in the NFIP. Cherry Valley, Durand, Loves Park, Machesney Park, New Milford, Pecatonica, Rockford, Roscoe, South Beloit, and the unincorporated areas of Winnebago County participate in the NFIP. Communities with a flood risk who choose not to participate in the NFIP include the Village of Winnebago. The Village of Winnebago may have elected not to participate in the NFIP because it does not have a flood risk – no FEMA-identified floodplains lie within the Village boundaries. As of 10/15/1981, the Village of Rockton has been suspended from the NFIP. Winnebago County will continue to provide information to these jurisdictions regarding the benefits of the program.

Table 5-1: Information on Winnebago County’s Participation in the NFIP*

<table>
<thead>
<tr>
<th>Community</th>
<th>Participation Date</th>
<th>FIRM Date</th>
<th>CRS Date</th>
<th>CRS Rating</th>
<th>Floodplain Ordinance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Winnebago County</td>
<td>11/19/1980</td>
<td>09/06/2006</td>
<td>N/A</td>
<td>N/A</td>
<td>08/2006</td>
</tr>
<tr>
<td>Cherry Valley</td>
<td>03/16/1981</td>
<td>02/18/2011</td>
<td>N/A</td>
<td>N/A</td>
<td>03/2004</td>
</tr>
<tr>
<td>Durand</td>
<td>09/02/1981</td>
<td>09/06/2006</td>
<td>N/A</td>
<td>N/A</td>
<td>08/2006</td>
</tr>
<tr>
<td>Loves Park</td>
<td>10/17/1978</td>
<td>02/18/2011</td>
<td>N/A</td>
<td>N/A</td>
<td>03/2011</td>
</tr>
<tr>
<td>Machesney Park</td>
<td>09/30/1981</td>
<td>09/06/2006</td>
<td>N/A</td>
<td>N/A</td>
<td>03/1995</td>
</tr>
<tr>
<td>New Milford</td>
<td>09/06/2006</td>
<td>09/06/2006</td>
<td>N/A</td>
<td>N/A</td>
<td>06/2006</td>
</tr>
<tr>
<td>Pecatonica</td>
<td>12/01/1981</td>
<td>09/06/2006</td>
<td>N/A</td>
<td>N/A</td>
<td>09/2006</td>
</tr>
<tr>
<td>Rockford</td>
<td>12/04/1979</td>
<td>09/06/2006</td>
<td>N/A</td>
<td>N/A</td>
<td>03/2011</td>
</tr>
<tr>
<td>Roscoe</td>
<td>03/01/1982</td>
<td>09/06/2006</td>
<td>N/A</td>
<td>N/A</td>
<td>03/1993</td>
</tr>
<tr>
<td>South Beloit</td>
<td>01/02/1980</td>
<td>09/06/2006</td>
<td>N/A</td>
<td>N/A</td>
<td>08/1976</td>
</tr>
</tbody>
</table>

*NFIP status and information are documented in the Community Status Book Report updated on 08/21/2014.

The county and incorporated areas do not participate in the NFIP’S Community Rating System (CRS). The CRS is a voluntary incentive program that recognizes and encourages community floodplain management activities that exceed the minimum NFIP requirements. As a result, flood insurance premium rates are discounted to reflect the reduced flood risk resulting from the community actions meeting the three goals of the CRS: (1) reduce flood losses; (2) facilitate accurate insurance rating; and (3) promote the awareness of flood insurance.

Since the establishment of the NFIP in 1978, Winnebago County had 1,379 flood insurance claims. Table 5-2 summarizes the claims since 1978.

Table 5-2: Policy and Claim Statistics* for Flood Insurance in Winnebago County

<table>
<thead>
<tr>
<th>Community</th>
<th>Closed Losses</th>
<th>Open Losses</th>
<th>CWOP Losses</th>
<th>Total Losses</th>
<th>Payments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Winnebago County</td>
<td>271</td>
<td>0</td>
<td>75</td>
<td>346</td>
<td>$3,041,205.23</td>
</tr>
<tr>
<td>Machesney Park</td>
<td>288</td>
<td>3</td>
<td>63</td>
<td>354</td>
<td>$7,435,180.64</td>
</tr>
<tr>
<td>Pecatonica</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>$39,205.85</td>
</tr>
<tr>
<td>Rockford</td>
<td>498</td>
<td>1</td>
<td>92</td>
<td>591</td>
<td>$9,149,640.87</td>
</tr>
<tr>
<td>Roscoe</td>
<td>42</td>
<td>0</td>
<td>8</td>
<td>50</td>
<td>$261,456.18</td>
</tr>
<tr>
<td>South Beloit</td>
<td>22</td>
<td>0</td>
<td>15</td>
<td>37</td>
<td>$119,766.94</td>
</tr>
</tbody>
</table>
NFIP policy and claim statistics since 1978 until the most recently updated date of 6/30/2014. Closed losses refer to losses that are paid; open losses are losses that are not paid in full; CWOP losses are losses that are closed without payment; and total losses refers to all losses submitted regardless of status. Lastly, total payments refer to the total amount paid on losses.

5.1.3 Jurisdiction Ordinances
Ordinances that directly pertain, or can pertain, to disaster mitigation are listed in Table 5-3 and are discussed in more detail, if information was provided, in this section.

Table 5-3: Winnebago County’s Jurisdiction Ordinances and Most Recent Amendment Dates

<table>
<thead>
<tr>
<th>Community Name</th>
<th>Zoning</th>
<th>Storm water Mgmt</th>
<th>Floods</th>
<th>Subdivision Control</th>
<th>Burning</th>
<th>Seismic</th>
<th>Erosion Mgmt</th>
<th>Land Use Plan</th>
<th>Building Codes</th>
</tr>
</thead>
</table>

5.1.4 Fire Insurance Ratings
Table 5-4 lists Winnebago County’s fire departments and respective information.

Table 5-4: Winnebago County Fire Departments, Insurance Ratings, and Number of Employees/Volunteers

<table>
<thead>
<tr>
<th>Facility Name</th>
<th>Fire Insurance Rating</th>
<th>Number of Employees</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blackhawk Fire</td>
<td>7/9</td>
<td>16</td>
</tr>
<tr>
<td>Cherry Valley Fire Protection District</td>
<td>4/6</td>
<td>53</td>
</tr>
<tr>
<td>Durand Fire Protection District</td>
<td>5/8</td>
<td>49</td>
</tr>
<tr>
<td>Greater Rockford Airport Fire Protection District</td>
<td>N/A*</td>
<td>6</td>
</tr>
<tr>
<td>Harlem Roscoe Fire Protection District</td>
<td>4/8</td>
<td>86</td>
</tr>
<tr>
<td>Loves Park Fire Protection District</td>
<td>5/9</td>
<td>67</td>
</tr>
<tr>
<td>New Milford Fire Protection District</td>
<td>7</td>
<td>15</td>
</tr>
<tr>
<td>North Park Fire Protection District</td>
<td>4</td>
<td>56</td>
</tr>
<tr>
<td>Northwest Fire Protection District</td>
<td>5/8</td>
<td>50</td>
</tr>
<tr>
<td>Pecatonica Fire Protection District</td>
<td>4/8</td>
<td>41</td>
</tr>
<tr>
<td>Rockford Fire Protection District</td>
<td>2</td>
<td>280</td>
</tr>
<tr>
<td>Shirland Fire Protection District</td>
<td>5/8</td>
<td>20</td>
</tr>
<tr>
<td>South Beloit Fire Protection District</td>
<td>3</td>
<td>32</td>
</tr>
<tr>
<td>West Suburban Fire Protection District</td>
<td>7/9</td>
<td>21</td>
</tr>
<tr>
<td>Win-Bur-Sew Fire Protection District</td>
<td>4/7</td>
<td>47</td>
</tr>
</tbody>
</table>
*The Greater Rockford Airport Fire only handles aircraft fires – no structure fires. There is no rating system for the level of fire protection they provide.

5.2 Mitigation Goals

In Section 4 of this plan, the risk assessment identified Winnebago County as prone to several hazards. The mitigation planning team members understand that although they cannot eliminate hazards altogether, Winnebago County can work towards building disaster-resistant communities. Below is a generalized list of goals, objectives, and actions. The goals represent long-term, broad visions of the overall vision the county would like to achieve for mitigation. The objectives are strategies and steps that will assist the communities in attaining the listed goals.

**Goal 1: Lessen the impacts of hazards to new and existing infrastructure**

Objective: Retrofit critical facilities and structures with structural design practices and equipment that will withstand natural disasters and offer weather-proofing.

Objective: Equip public facilities and communities to guard against damage caused by secondary effects of hazards.

Objective: Minimize the amount of infrastructure exposed to hazards.

Objective: Evaluate and strengthen the communication and transportation abilities of emergency services throughout the county.

Objective: Improve emergency sheltering in Winnebago County.

**Goal 2: Create new or revise existing plans/maps for Winnebago County**

Objective: Support compliance with the NFIP for each jurisdiction in Winnebago County.

Objective: Review and update existing, or create new, community plans and ordinances to support hazard mitigation.

Objective: Conduct new studies/research to profile hazards and follow up with mitigation strategies.

**Goal 3: Develop long-term strategies to educate Winnebago County residents on the hazards affecting their county**

Objective: Raise public awareness on hazard mitigation.

Objective: Improve education and training of emergency personnel and public officials.

5.3 Mitigation Actions/Plans

Upon completion of the risk assessment and development of the goals and objectives, the mitigation planning committee reviewed a list of the six mitigation measure categories from the FEMA State and Local Mitigation Planning How-to Guides. The measures are listed as follows:
**Prevention:** Government, administrative, or regulatory actions or processes that influence the way land and buildings are developed and built. These actions also include public activities to reduce hazard losses. Examples include planning and zoning, building codes, capital improvement programs, open space preservation, and storm water management regulations.

**Property Protection:** Actions that involve the modification of existing buildings or structures to protect them from a hazard or removal from the hazard area. Examples include acquisition, elevation, structural retrofits, storm shutters, and shatter-resistant glass.

**Public Education and Awareness:** Actions to inform and educate citizens, elected officials, and property owners about the hazards and potential ways to mitigate them. Such actions include outreach projects, real estate disclosure, hazard information centers, and school-age and adult education programs.

**Natural Resource Protection:** Actions that, in addition to minimizing hazard losses, preserve or restore the functions of natural systems. These actions include sediment and erosion control, stream-corridor restoration, watershed management, forest and vegetation management, and wetland restoration and preservation.

**Emergency Services:** Actions that protect people and property during and immediately after a disaster or hazard event. Services include warning systems, emergency response services, and protection of critical facilities.

**Structural Projects:** Actions that involve the construction of structures to reduce the impacts of a hazard. Such structures include dams, levees, floodwalls, seawalls, retaining walls, and safe rooms.

After Meeting 3, held on 06/25/2014, the mitigation planning team was presented with the task of individually listing potential mitigation activities using the FEMA evaluation criteria. The planning team brought their mitigation ideas to Meeting 4, held on 06/26/2014. FEMA uses their evaluation criteria STAPLE+E (stands for social, technical, administrative, political, legal, economic and environmental) to assess the developed mitigation strategies.

**Social:**
- Will the proposed action adversely affect one segment of the population?
- Will the action disrupt established neighborhoods, break up voting districts, or cause the relocation of lower income people?

**Technical:**
- How effective is the action in avoiding or reducing future losses?
- Will it create more problems than it solves?
- Does it solve the problem or only a symptom?
- Does the mitigation strategy address continued compliance with the NFIP?

**Administrative:**
- Does the jurisdiction have the capability (staff, technical experts, and/or funding) to implement the action, or can it be readily obtained?
- Can the community provide the necessary maintenance?
- Can it be accomplished in a timely manner?

**Political:**
- Is there political support to implement and maintain this action?
- Is there a local champion willing to help see the action to completion?
- Is there enough public support to ensure the success of the action?
- How can the mitigation objectives be accomplished at the lowest cost to the public?
Legal:
- Does the community have the authority to implement the proposed action?
- Are the proper laws, ordinances, and resolutions in place to implement the action?
- Are there any potential legal consequences?
- Is there any potential community liability?
- Is the action likely to be challenged by those who may be negatively affected?
- Does the mitigation strategy address continued compliance with the NFIP?

Economic:
- Are there currently sources of funds that can be used to implement the action?
- What benefits will the action provide?
- Does the cost seem reasonable for the size of the problem and likely benefits?
- What burden will be placed on the tax base or local economy to implement this action?
- Does the action contribute to other community economic goals such as capital improvements or economic development?
- What proposed actions should be considered but be “tabled” for implementation until outside sources of funding are available?

Environmental:
- How will this action affect the environment (land, water, endangered species)?
- Will this action comply with local, state, and federal environmental laws and regulations?
- Is the action consistent with community environmental goals?

5.4 Implementation and Analysis of Mitigation Projects
Implementation of the mitigation plan is critical to the overall success of the mitigation planning process. The first step is to decide, based upon many factors, which action will be undertaken first. In order to pursue the top priority first, an analysis and prioritization of the actions is important. Some actions may occur before the top priority due to financial, engineering, environmental, permitting, and site control issues. Public awareness and input of these mitigation actions can increase knowledge to capitalize on funding opportunities and monitoring the progress of an action.

At Meeting 4, the planning team prioritized mitigation actions based on a number of factors. The factors were the STAPLE+E criteria listed in Table 5-5. For each incorporated jurisdiction, a rating of high, medium, or low was assessed for each mitigation item and is listed next to each item in Table 5-6 through 5-20.

Table 5-5: Summary of STAPLE+E Criteria

| S – Social | Mitigation actions are acceptable to the community if they do not adversely affect a particular segment of the population, do not cause relocation of lower income people, and if they are compatible with the community’s social and cultural values. |
| T – Technical | Mitigation actions are technically most effective if they provide a long-term reduction of losses and have minimal secondary adverse impacts. |
| A – Administrative | Mitigation actions are easier to implement if the jurisdiction has the necessary staffing and funding. |
| P – Political | Mitigation actions can truly be successful if all stakeholders have been offered an opportunity to participate in the planning process and if there is public support for the action. |
| L – Legal | It is critical that the jurisdiction or implementing agency have the legal authority to implement and enforce a mitigation action. |
### Economic

Budget constraints can significantly deter the implementation of mitigation actions. Hence, it is important to evaluate whether an action is cost-effective, as determined by a cost benefit review, and possible to fund.

### Environmental

Sustainable mitigation actions that do not have an adverse effect on the environment, comply with federal, state, and local environmental regulations, and are consistent with the community’s environmental goals, have mitigation benefits while being environmentally sound.

For each mitigation action related to infrastructure, new and existing infrastructure was considered. Additionally, the mitigation strategies address continued compliance with the NFIP. While an official cost-benefit review was not conducted for any of the mitigation actions, the estimated costs were discussed. The overall benefits were considered when prioritizing mitigation items from high to low. An official cost-benefit review is conducted prior to the implementation of any mitigation actions. Tables 5-6 through 5-20 presents mitigation projects for each incorporated jurisdiction developed by the planning committee, as well as actions that are ongoing or already completed. The objective of this updated plan is to generate proactive mitigation strategies with clear goals and objectives.

The Winnebago County Highway Department will be the local champion for the mitigation actions. The Winnebago County Board and the city and town councils will be an integral part of the implementation process. Federal and state assistance will be necessary for a number of the identified actions.
Table 5-6: List of Mitigation Strategies Developed at Meeting 4 for Winnebago County*

<table>
<thead>
<tr>
<th>Mitigation Item</th>
<th>Goals and Objects Satisfied</th>
<th>Hazards Addressed</th>
<th>Priority</th>
<th>Comments</th>
</tr>
</thead>
</table>
| Public Education / Awareness                        | Goal: Develop long-term strategies to educate County residents on the hazards affecting their community.  
Objective: Raise public awareness of hazard mitigation | All Hazards        | High     | Ongoing within Winnebago County.                                                                                                       |
| Devote Section of County Website to Hazard Mitigation Awareness | Goal: Develop long-term strategies to educate residents on the hazards affecting their community.  
Objective: Raise public awareness of hazard mitigation | All Hazards        | High     | Ongoing mitigation item. Winnebago County website is utilized.                                                                          |
| Family Disaster Plans & IEMAs Kits                  | Goal: Lessen the impacts of hazards to County residents.  
Objective: Strengthen communication between County residents and emergency services | All Hazards        | High     | Winnebago County currently has designated heating/cooling shelters and plans to distribute the locations of the shelters to residents in the county. |
| Special Needs Population List                        | Goal: Lessen the impacts of hazards to new and existing infrastructure.  
Objective: Evaluate and strengthen the communication and transportation abilities of emergency services | All Hazards        | High     | Nursing homes within Winnebago county currently have mutual aid agreements in place. This agreement includes developing and maintaining a special needs population list for each nursing home. |
| Provided and Publicize Location of Safe Rooms and / or Shelters | Goal: Lessen the impacts of hazards to new and existing infrastructure.  
Objective: Improve emergency sheltering in the county | All Hazards        | High     | Winnebago County currently has designated heating/cooling shelters and plans to distribute the locations of the shelters to residents in the county. |
| Establish Local Emergency Planning Committee         | Goal: Create new or revise existing plans/maps.  
Objective: Review and update existing, or create new community plans and ordinances | All Hazards        | High     | Shortly after the enactment of SARA Title III the Winnebago County Local Emergency Planning Committee was formed. The Winnebago County LEPC holds an annual Public Luncheon and Emergency Plan Discussion. |
<table>
<thead>
<tr>
<th>Mitigation Item</th>
<th>Goals and Objects Satisfied</th>
<th>Hazards Addressed</th>
<th>Priority</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mutual Aid Agreements</td>
<td>Goal: Lessen the impacts of hazards to new and existing infrastructure</td>
<td>All Hazards</td>
<td>High</td>
<td>Winnebago County Local Emergency Planning Committee (LEPC) oversees the various mutual aid agreements within the county.</td>
</tr>
<tr>
<td></td>
<td>Objective: Evaluate and strengthen the communication and transportation abilities of emergency services</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Back-up Generators for Critical Facilities</td>
<td>Goal: Lessen the impacts of hazards to new and existing infrastructure</td>
<td>All Hazards</td>
<td>High</td>
<td>Certain critical facilities within Winnebago County have alternative power sources in the event of a hazardous event.</td>
</tr>
<tr>
<td></td>
<td>Objective: Equip public facilities and communities to guard against damage caused by secondary effects on hazards</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Enhance Communication Systems</td>
<td>Goal: Lessen the impacts of hazards to new and existing infrastructure</td>
<td>All Hazards</td>
<td>High</td>
<td>The County plans to improve emergency alarms in rural areas.</td>
</tr>
<tr>
<td></td>
<td>Objective: Equip public facilities and communities to guard against damage caused by secondary effects on hazards</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Data Acquisition for Future Hazard Mitigation Planning</td>
<td>Goal: Create new or revise existing plans/maps</td>
<td>All Hazards</td>
<td>High</td>
<td>Winnebago County continues to assist the Illinois State Water Survey with FEMA-directed flood risk-map reviews and comments.</td>
</tr>
<tr>
<td></td>
<td>Objective: Review and update existing GIS datasets</td>
<td></td>
<td></td>
<td>WinGIS maintains a list of critical and essential facilities in the county.</td>
</tr>
<tr>
<td>First Responder Training</td>
<td>Goal: Develop long-term strategies to educate residents on the hazards affecting their community</td>
<td>All Hazards</td>
<td>High</td>
<td>Ongoing within Winnebago County.</td>
</tr>
<tr>
<td></td>
<td>Objective: Improve education and training of emergency personnel and public officials</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Develop Safety Procedures for Earthquakes</td>
<td>Goal: Improve emergency sheltering and procedures in the event of an earthquake</td>
<td>Earthquakes</td>
<td>High</td>
<td>Winnebago County will work to develop mutual aid agreements in event of an earthquake.</td>
</tr>
<tr>
<td></td>
<td>Objective: Review and update existing, or create new community earthquake plans</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mitigation Item</td>
<td>Goals and Objects Satisfied</td>
<td>Hazards Addressed</td>
<td>Priority</td>
<td>Comments</td>
</tr>
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<td>--------------------------------------------</td>
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</tr>
<tr>
<td>Burn Ordinances</td>
<td>Goal: Create new or revise existing plans/maps&lt;br&gt;Objective: Review and update existing, or create new community plans and ordinances</td>
<td>Extreme Heat and Drought</td>
<td>High</td>
<td>This mitigation item is ongoing and is addressed by current ordinances. The County will continue to maintain update these ordinances.</td>
</tr>
<tr>
<td>Participate in the NFIP</td>
<td>Goal: Create new or revise existing plans/maps&lt;br&gt;Objective: Support compliance with the NFIP</td>
<td>Flooding / Dam and Levee Failure</td>
<td>High</td>
<td>Ongoing within Winnebago County. The county will continue to educate and encourage communities/jurisdictions to join the NFIP.</td>
</tr>
<tr>
<td>Participate in the Community Rating System</td>
<td>Goal: Create new or revise existing plans/maps&lt;br&gt;Objective: Support compliance with the NFIP</td>
<td>Flooding / Dam and Levee Failure</td>
<td>High</td>
<td>Winnebago County will investigate the feasibility of joining the CRS.</td>
</tr>
<tr>
<td>Property Acquisition (Buyouts) &amp; Property Relocation</td>
<td>Goal: Lessen the impacts of hazards to new and existing infrastructure&lt;br&gt;Objective: Minimize the amount of infrastructure exposed to hazards</td>
<td>Flooding / Dam and Levee Failure</td>
<td>High</td>
<td>Winnebago County currently works and will continue to identify areas where buyouts and property relocations make the most sense. Several projects have already been completed with Federal assistance. The County will continue to seek federal funding for future property acquisitions.</td>
</tr>
<tr>
<td>Structure Elevation</td>
<td>Goal: Lessen the impacts of hazards to new and existing infrastructure&lt;br&gt;Objective: Minimize the amount of infrastructure exposed to hazards</td>
<td>Flooding / Dam and Levee Failure</td>
<td>High</td>
<td>Currently, the flood protection elevation is set at Base Flood Elevation + 1 foot; flood protection overlay districts are included in the proposed Unified Development Ordinance.</td>
</tr>
<tr>
<td>Floodplain and Stormwater Management Ordinances</td>
<td>Goal: Create new or revise existing plans/maps&lt;br&gt;Objective: Review and update existing, or create new community plans and ordinances</td>
<td>Flooding / Dam and Levee Failure</td>
<td>High</td>
<td>Winnebago County has building code restrictions and flood protection requirements in place. The County will continue to maintain and update these ordinances.</td>
</tr>
<tr>
<td>Mitigation Item</td>
<td>Goals and Objects Satisfied</td>
<td>Hazards Addressed</td>
<td>Priority</td>
<td>Comments</td>
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</tr>
<tr>
<td>Dam Failure Emergency Response Plan</td>
<td>Goal: Create new or revise existing plans/maps</td>
<td>Flooding / Dam and Levee Failure</td>
<td>High</td>
<td>Winnebago County Emergency Services participate in response planning for such events.</td>
</tr>
<tr>
<td></td>
<td>Objective: Review and update existing, or create new community plans and ordinances</td>
<td></td>
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</tr>
<tr>
<td>Open Space Preservation</td>
<td>Goal: Lessen the impacts of hazards to new and existing infrastructure</td>
<td>Flooding / Dam and Levee Failure</td>
<td>High</td>
<td>Flood protection overlay districts and conservation design are included in the proposed Unified Development Ordinance.</td>
</tr>
<tr>
<td></td>
<td>Objective: Keep the floodplain and other hazardous areas open and free from development</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Install Sump Pumps</td>
<td>Goal: Lessen the impacts of hazards to new and existing infrastructure</td>
<td>Flooding / Dam and Levee Failure</td>
<td>High</td>
<td>This mitigation item is ongoing within Winnebago County and is part of the building code requirement for specified sites.</td>
</tr>
<tr>
<td></td>
<td>Objective: Minimize potential damage to foundations and household/critical facility utilities</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emergency Plan / Protocol for HAZMAT Releases</td>
<td>Goal: Create new or revise existing plans/maps</td>
<td>HAZMAT</td>
<td>High</td>
<td>Winnebago County requires HAZMAT response plans for specified building sites and facilities.</td>
</tr>
<tr>
<td></td>
<td>Objective: Review and update existing, or create new community plans and ordinances</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Develop Alternate Traffic Routes</td>
<td>Goal: Create new or revise existing plans/maps</td>
<td>HAZMAT</td>
<td>High</td>
<td>This mitigation item is ongoing. Example: The Health Department has specified certain water protection routes for directing commercial traffic that might represent a threat to water resources.</td>
</tr>
<tr>
<td></td>
<td>Objective: Review and update existing, or create new community plans and ordinances</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HAZMAT Spill, Removal and Disposal Procedure</td>
<td>Goal: Create new or revise existing plans/maps</td>
<td>HAZMAT</td>
<td>High</td>
<td>This mitigation item is ongoing and is overseen by the Winnebago County LEPC.</td>
</tr>
<tr>
<td></td>
<td>Objective: Review and update existing, or create new community plans and ordinances</td>
<td></td>
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</tr>
<tr>
<td>Anchoring of Manufactured Homes and Exterior Attachments</td>
<td>Goal: Lessen the impacts of hazards to new and existing infrastructure</td>
<td>Severe Storms / Tornadoes</td>
<td>High</td>
<td>This mitigation item is ongoing within Winnebago County and is part of the building code requirement for specified structures.</td>
</tr>
<tr>
<td></td>
<td>Objective: Minimize the amount of infrastructure exposed to hazards</td>
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<tr>
<td>Mitigation Item</td>
<td>Goals and Objects Satisfied</td>
<td>Hazards Addressed</td>
<td>Priority</td>
<td>Comments</td>
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</tbody>
</table>
| Ordinance for Higher Construction Standards / Techniques in Regards to Severe Storms | Goal: Create new or revise existing plans/maps  
Objective: Review and update existing, or create new community plans and ordinances | Severe Storms / Tornadoes | High     | This mitigation item is ongoing within Winnebago County and is part of the building code requirement. Example: Per current building code, 90 mph, 2-3 second gusts must be withstood by certain building categories. |
| Install Snow Fences                                           | Goal: Lessen the impacts of hazards to new and existing infrastructure  
Objective: Minimize the amount of infrastructure exposed to hazards | Winter Storms            | High     | This mitigation item is ongoing and is regular practice of the Highway Department. |

*All strategies are ranked as high priority because they relate to programs and policies currently in effect/ongoing or to programs and policies in which Winnebago County is currently planning to implement.

Table 5-7: List of Mitigation Strategies Developed at Meeting 4 for Cherry Valley

<table>
<thead>
<tr>
<th>Mitigation Item</th>
<th>Goals and Objects Satisfied</th>
<th>Hazards Addressed</th>
<th>Priority</th>
<th>Comments</th>
</tr>
</thead>
</table>
| Devote Section of Website to Hazard Mitigation Awareness       | Goal: Develop long-term strategies to educate residents on the hazards affecting their community  
Objective: Raise public awareness of hazard mitigation | All Hazards              | High     | Cherry Valley identified that the village website is the most used medium for awareness and access to information. A section of the village website will be devoted to hazard mitigation awareness. |
| First Responder Training                                      | Goal: Develop long-term strategies to educate residents on the hazards affecting their community  
Objective: Improve education and training of emergency personnel and public officials | All Hazards              | High     | Ongoing within Cherry Valley. The Village wishes to provide additional training and education for Management team, as well as Public Works Crews through NIMS training. |
| Back-up Generators for Critical Facilities                    | Goal: Lessen the impacts of hazards to new and existing infrastructure  
Objective: Equip public facilities and communities to guard against damage caused by secondary effects on hazards | All Hazards              | High     | Cherry Valley will be adding back-up generators to another well house as well as to new public work facilities (Spring 2015). |
<table>
<thead>
<tr>
<th>Mitigation Item</th>
<th>Goals and Objects Satisfied</th>
<th>Hazards Addressed</th>
<th>Priority</th>
<th>Comments</th>
</tr>
</thead>
</table>
| Active Tree Management | Goal: Lessen the impacts of hazards to new and existing infrastructure  
  Objective: Active tree management near critical facilities and essential facilities to minimize risk of damage | All Hazards | High | Cherry Valley will be implementing additional action plans to minimize tree damage to power lines as well as other infrastructure. |
| Special Needs Population List | Goal: Lessen the impacts of hazards to new and existing infrastructure  
  Objective: Evaluate and strengthen the communication and transportation abilities of the emergency services | All Hazards | Low | The special needs population in Cherry Valley continues to grow and will be one of the larger demographic groups. |
| Public Education / Awareness | Goal: Develop long-term strategies to educate residents on the hazards affecting their community  
  Objective: Raise public awareness of hazard mitigation | All Hazards | Medium | Cherry Valley plans to distribute materials to residents at strategic times to raise awareness of potential hazard. In addition, the Village will look into enhancing communication between other agencies. |
| Develop Safety Procedures for Earthquakes | Goal: Lessen the impacts of hazards to new and existing infrastructure  
  Objective: Review and update existing, or create new community plans and ordinances | Earthquakes | High | Cherry Valley plans to develop an emergency plan in the event an earthquake. |
| Burn Ordinances | Goal: Lessen the impacts of hazards to new and existing infrastructure  
  Objective: Review and update existing, or create new community plans and ordinances | Extreme Heat | High | Cherry Valley plans to develop an ordinance that restricts outdoor burning during periods of drought and extreme heat. |
| Floodplain Ordinances | Goal: Lessen the impacts of hazards to new and existing infrastructure  
  Objective: Review and update existing, or create new community plans and ordinances | Flooding / Dam and Levee Failure | High | Cherry Valley will continue to improve the village’s floodplain ordinances to restrict development with the floodplain. |
<table>
<thead>
<tr>
<th>Mitigation Item</th>
<th>Goals and Objects Satisfied</th>
<th>Hazards Addressed</th>
<th>Priority</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stormwater Management Ordinances</td>
<td>Goal: Lessen the impacts of hazards to new and existing infrastructure</td>
<td>Flooding / Dam and Levee Failure</td>
<td>Medium</td>
<td>Cherry Valley wishes to plan for new flow and direct it to access of outflow.</td>
</tr>
<tr>
<td></td>
<td>Objective: Review and update existing, or create new community plans and ordinances</td>
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</tr>
<tr>
<td>Emergency Plan / Protocol for HAZMAT Releases</td>
<td>Goal: Lessen the impacts of hazards to new and existing infrastructure</td>
<td>HAZMAT</td>
<td>High</td>
<td>Cherry Valley plans to develop an emergency plan in the event of a HAZMAT release. The village has identified the importance of reinforced situational awareness, identification of potential hazards, and the need to communicate with other disciplines.</td>
</tr>
<tr>
<td></td>
<td>Objective: Review and update existing, or create new community plans and ordinances</td>
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<tr>
<td>HAZMAT Spill, Removal, and Disposal Procedure</td>
<td>Goal: Lessen the impacts of hazards to new and existing infrastructure</td>
<td>HAZMAT</td>
<td>Medium</td>
<td>Cherry Valley has identified the need to develop a HAZMAT Spill, Removal, and Disposal Procedure.</td>
</tr>
<tr>
<td></td>
<td>Objective: Review and update existing, or create new community plans and ordinances</td>
<td></td>
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</tr>
<tr>
<td>Bury Power Lines</td>
<td>Goal: Lessen the impacts of hazards to new and existing infrastructure</td>
<td>Severe Storms / Tornadoes</td>
<td>High</td>
<td>Cherry Valley wishes to seek funding to convert existing power lines. This will minimize loss of energy at critical times of need.</td>
</tr>
<tr>
<td></td>
<td>Objective: Minimize the amount of infrastructure exposed to hazards</td>
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<td></td>
</tr>
<tr>
<td>Ordinance for Higher Construction Standards</td>
<td>Goal: Lessen the impacts of hazards to new and existing infrastructure</td>
<td>Severe Storms / Tornadoes</td>
<td>Medium</td>
<td>Cherry Valley will continue to improve the village’s construction ordinances to develop construction standards specific to weather/climate stressors.</td>
</tr>
<tr>
<td></td>
<td>Objective: Review and update existing, or create new community plans and ordinances</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Install Snow Fences</td>
<td>Goal: Lessen the impacts of hazards to new and existing infrastructure</td>
<td>Winter Storms</td>
<td>High</td>
<td>Cherry Valley would like to seek funding to install snow fences in areas prone to drifting snow accumulation.</td>
</tr>
<tr>
<td></td>
<td>Objective: Minimize the amount of infrastructure exposed to hazards</td>
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<td></td>
</tr>
</tbody>
</table>
Mitigation Item | Goals and Objects Satisfied | Hazards Addressed | Priority | Comments
--- | --- | --- | --- | ---
Heating and Cooling Shelters | Goal: Lessen the impacts of hazards to new and existing infrastructure  
Objective: Improve emergency sheltering | Winter Storms / Extreme Heat | Medium | Cherry Valley wishes to seek funding to increase the number of heating and cooling shelters in the village.

Table 5-8: List of Mitigation Strategies Developed at Meeting 4 for Durand

| Mitigation Item | Goals and Objects Satisfied | Hazards Addressed | Priority | Comments
--- | --- | --- | --- | ---
Special Needs Population List | Goal: Lessen the impacts of hazards to new and existing infrastructure  
Objective: Evaluate and strengthen the communication and transportation abilities of the emergency services | All Hazards | High | The special needs population in Durand continues to grow and will be one of the larger demographic groups. The Village will indicate all nursing homes, Sr. Living Complexes and other Special Needs residents and contact information to this list.

Mutual Aid Agreements | Goal: Lessen the impacts of hazards to new and existing infrastructure  
Objective: Evaluate and strengthen the communication and transportation abilities of emergency services | All Hazards | High | Currently, the Durand Fire Department has mutual aid agreements with other local departments. Durand Police Department is also involved with mutual aid agreements.

Back-up Generators for Critical Facilities | Goal: Lessen the impacts of hazards to new and existing infrastructure  
Objective: Equip public facilities and communities to guard against damage caused by secondary effects on hazards | All Hazards | High | The Village currently has one large generator to assure their ability to operate pumps in the event of a prolonged power outage. The village also has several smaller portable generators to insure power for radio communication.

First Responder Training | Goal: Develop long-term strategies to educate residents on the hazards affecting their community  
Objective: Improve education and training of emergency personnel and public officials | All Hazards | High | Durand wishes to improve first responder training in the city. This will be handled by the Durand Fire and EMS.
<table>
<thead>
<tr>
<th>Mitigation Item</th>
<th>Goals and Objects Satisfied</th>
<th>Hazards Addressed</th>
<th>Priority</th>
<th>Comments</th>
</tr>
</thead>
</table>
| Devote Section of Website to Hazard Mitigation Awareness | Goal: Develop long-term strategies to educate residents on the hazards affecting their community  
Objective: Raise public awareness of hazard mitigation                                                                                                             | All Hazards       | Low      | The Village of Durand is currently redesigning their website. A section of the village website can be devoted to hazard mitigation awareness.                                                                  |
| Enhance / Create Alternate Emergency Operations Center | Goal: Lessen the impacts of hazards to new and existing infrastructure  
Objective: Improve EOC emergency sheltering                                                                                                                          | All Hazards       | Medium   | Durand’s primary EOC is the Durand Fire Department. The secondary EOC is the Village Hall and/or Durand School.                                                                                       |
| Back-up Water Supply                                 | Goal: Lessen the impacts of hazards to new and existing infrastructure  
Objective: Equip public facilities and communities to guard against damage caused by secondary effects on hazards                                                                                     | All Hazards       | Medium/High | The Village’s portable generator is capable of providing power to the well in order to keep the elevated water tower filled.                                                                 |
| Burn / Water Ban Ordinances                          | Goal: Create new or revise existing plans/maps  
Objective: Review and update existing, or create new community plans and ordinances                                                                                             | Extreme Heat and Drought | High     | The Village currently has existing burning ordinances as well as a water ban ordinance that can be implemented when needed.                                                                          |
| Floodplain Ordinances                                | Goal: Create new or revise existing plans/maps  
Objective: Review and update existing, or create new community plans and ordinances                                                                                            | Flooding / Dam and Levee Failure | High     | Durand will continue to maintain update floodplain ordinances.                                                                                                                                     |
| Stormwater Management Ordinances                     | Goal: Create new or revise existing plans/maps  
Objective: Review and update existing, or create new community plans and ordinances                                                                                                             | Flooding / Dam and Levee Failure | Low      | Durand has discussed developing and adopting a stormwater management ordinance but no action has been taken nor will be acted on in the near future.                                                  |
<table>
<thead>
<tr>
<th>Mitigation Item</th>
<th>Goals and Objects Satisfied</th>
<th>Hazards Addressed</th>
<th>Priority</th>
<th>Comments</th>
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</thead>
<tbody>
<tr>
<td>Culvert Replacement</td>
<td>Goal: Lessen the impacts of hazards to new and existing infrastructure</td>
<td>Flooding / Dam and Levee Failure</td>
<td>Medium</td>
<td>Durand currently monitors high flow areas. The Village will seek funding to replace culverts on an as needed basis.</td>
</tr>
<tr>
<td></td>
<td>Objective: Minimize the amount of infrastructure exposed to hazards</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emergency Plan / Protocol for HAZMAT Releases</td>
<td>Goal: Create new or revise existing plans/maps</td>
<td>HAZMAT</td>
<td>Medium</td>
<td>Durand Fire Department will continue to work with the Winnebago County LEPC to improve the County's HAZMAT response plans.</td>
</tr>
<tr>
<td></td>
<td>Objective: Review and update existing, or create new community plans and ordinances</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HAZMAT Spill, Removal, and Disposal Procedure</td>
<td>Goal: Create new or revise existing plans/maps</td>
<td>HAZMAT</td>
<td>Medium</td>
<td>Durand Fire Department will continue to work with the Winnebago County LEPC to improve the County's HAZMAT response plans.</td>
</tr>
<tr>
<td></td>
<td>Objective: Review and update existing, or create new community plans and ordinances</td>
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</tr>
<tr>
<td>Anchoring of Manufactured Homes and Exterior Attachments</td>
<td>Goal: Lessen the impacts of hazards to new and existing infrastructure</td>
<td>Severe Storms / Tornadoes</td>
<td>Medium</td>
<td>Current building codes address this issue including anchoring of utility sheds.</td>
</tr>
<tr>
<td></td>
<td>Objective: Minimize the amount of infrastructure exposed to hazards</td>
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</tbody>
</table>

Table 5-9: List of Mitigation Strategies Developed at Meeting 4 for Loves Park

<table>
<thead>
<tr>
<th>Mitigation Item</th>
<th>Goals and Objects Satisfied</th>
<th>Hazards Addressed</th>
<th>Priority</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public Education / Awareness</td>
<td>Goal: Develop long-term strategies to educate County residents on the hazards affecting their community</td>
<td>All Hazards</td>
<td>High</td>
<td>Loves Park will work with Winnebago County to improve Public Education and Awareness.</td>
</tr>
<tr>
<td></td>
<td>Objective: Raise public awareness of hazard mitigation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mutual Aid Agreements</td>
<td>Goal: Lessen the impacts of hazards to new and existing infrastructure</td>
<td>All Hazards</td>
<td>High</td>
<td>Loves Park will work with the Winnebago County Local Emergency Planning Committee (LEPC) to develop and improve various mutual aid agreements within the county.</td>
</tr>
<tr>
<td></td>
<td>Objective: Evaluate and strengthen the communication and transportation abilities of emergency services</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Mitigation Item</td>
<td>Goals and Objects Satisfied</td>
<td>Hazards Addressed</td>
<td>Priority</td>
<td>Comments</td>
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</table>
| **Back-up Generators for Critical Facilities** | Goal: Lessen the impacts of hazards to new and existing infrastructure  
Objective: Equip public facilities and communities to guard against damage caused by secondary effects on hazards | All Hazards | High | Loves Park wishes to seek funding to obtain back-up generators for critical facilities within the village. |
| **First Responder Training** | Goal: Develop long-term strategies to educate residents on the hazards affecting their community  
Objective: Improve education and training of emergency personnel and public officials | All Hazards | High | Loves Park wishes to improve first responder training in the city and will work with Winnebago County on this mitigation item. |
| **Develop Safety Procedures for Earthquakes** | Goal: Improve emergency sheltering and procedures in the event of an earthquake  
Objective: Review and update existing, or create new community earthquake plans | Earthquakes | Low | The City of Loves Park will work with Winnebago County to develop mutual aid agreements in event of an earthquake. |
| **Burn Ordinances** | Goal: Create new or revise existing plans/maps  
Objective: Review and update existing, or create new community plans and ordinances | Extreme Heat and Drought | Low | The City of Loves Park will continue to maintain update burn ordinances. |
| **Develop educational materials, both web-based and in paper form, on the benefits of the NFIP** | Goal: Develop long-term strategies to educate County residents on the hazards affecting their community  
Objective: Raise public awareness of flooding and flood insurance | Flooding / Dam and Levee Failure | High | Loves Park participates in the NFIP and will continue to educate its residents on the benefits of the NFIP. |
| **Culvert Replacement** | Goal: Lessen the impacts of hazards to new and existing infrastructure  
Objective: Minimize the amount of infrastructure exposed to hazards | Flooding / Dam and Levee Failure | High | Loves Park wishes to seek funding to replace culverts in the city. |
<table>
<thead>
<tr>
<th>Mitigation Item</th>
<th>Goals and Objects Satisfied</th>
<th>Hazards Addressed</th>
<th>Priority</th>
<th>Comments</th>
</tr>
</thead>
</table>
| Install Sump Pumps                    | Goal: Lessen the impacts of hazards to new and existing infrastructure  
Objective: Minimize potential damage to foundations and household/critical facility utilities                                      | Flooding / Dam and Levee Failure                        | High     | This mitigation item is ongoing.                                         |
| Emergency Plan / Protocol for HAZMAT Releases | Goal: Create new or revise existing plans/maps  
Objective: Review and update existing, or create new community plans and ordinances                                                                          | HAZMAT            | High     | The City of Loves Park will work with the Winnebago County LEPC to improve the County’s HAZMAT response plans. |
| HAZMAT Spill, Removal and Disposal Procedure | Goal: Create new or revise existing plans/maps  
Objective: Review and update existing, or create new community plans and ordinances                                                                      | HAZMAT            | High     | The City of Loves Park will work with the Winnebago County LEPC to improve the County’s HAZMAT response plans. |
| Develop Alternate Traffic Routes      | Goal: Create new or revise existing plans/maps  
Objective: Review and update existing, or create new community plans and ordinances                                                                      | HAZMAT            | Medium   | The City of Loves Park will work with the Winnebago County LEPC to improve the County’s HAZMAT response plans. |
| Bury Power Lines                      | Goal: Lessen the impacts of hazards to new and existing infrastructure  
Objective: Minimize the amount of infrastructure exposed to hazards                                                                                       | Severe Storms / Tornadoes                               | High     | The City of Loves Park would like to convert above ground power lines to minimize the amount of infrastructure exposed to severe storms and tornadoes. |
| Harden Infrastructure                 | Goal: Lessen the impacts of hazards to new and existing infrastructure  
Objective: Minimize the amount of infrastructure exposed to hazards                                                                                            | Severe Storms / Tornadoes                               | Medium   | The City of Loves Park wishes to seek funding to harden existing infrastructure in the event of severe storms and tornadoes. |
| Install Snow Fences                   | Goal: Lessen the impacts of hazards to new and existing infrastructure  
Objective: Minimize the amount of infrastructure exposed to hazards                                                                                       | Winter Storms                                             | Medium   | This mitigation item is ongoing in the County the Highway Department. The City of Loves Park will work with the County to improve this mitigation item. |
<table>
<thead>
<tr>
<th>Mitigation Item</th>
<th>Goals and Objects Satisfied</th>
<th>Hazards Addressed</th>
<th>Priority</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heating and Cooling Shelters</td>
<td>Goal: Lessen the impacts of hazards to new and existing infrastructure</td>
<td>Winter Storms / Extreme Heat</td>
<td>Medium</td>
<td>The City of Loves Park wishes to seek funding to increase the number of heating and cooling shelters for its residents.</td>
</tr>
<tr>
<td></td>
<td>Objective: Improve emergency sheltering</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Public Education / Awareness</td>
<td>Goal: Develop long-term strategies to educate residents on the hazards affecting their community</td>
<td>All Hazards</td>
<td>High</td>
<td>Machesney Park plans to work with Winnebago County to distribute materials to residents at strategic times to raise awareness of potential hazard.</td>
</tr>
<tr>
<td></td>
<td>Objective: Raise public awareness of hazard mitigation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mutual Aid Agreements</td>
<td>Goal: Create new or revise existing plans/maps</td>
<td>All Hazards</td>
<td>High</td>
<td>Machesney Park will work with the Winnebago County Local Emergency Planning Committee (LEPC) and other Agencies in the County to develop and improve mutual aid agreements within the county.</td>
</tr>
<tr>
<td></td>
<td>Objective: Evaluate and strengthen the communication and transportation abilities of emergency services</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Back-up Generators for Critical Facilities</td>
<td>Goal: Lessen the impacts of hazards to new and existing infrastructure</td>
<td>All Hazards</td>
<td>High</td>
<td>Machesney Park wishes to seek funding to obtain back-up generators for critical facilities.</td>
</tr>
<tr>
<td></td>
<td>Objective: Equip public facilities and communities to guard against damage caused by secondary effects on hazards</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Data Acquisition for Future Hazard Mitigation Planning</td>
<td>Goal: Create new or revise existing plans/maps</td>
<td>All Hazards</td>
<td>High</td>
<td>Machesney park will continues to assist WinGIS in maintaining its list of critical and essential facilities in the county</td>
</tr>
<tr>
<td></td>
<td>Objective: Review and update existing GIS datasets</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Establish Local Emergency Planning Committee</td>
<td>Goal: Create new or revise existing plans/maps</td>
<td>All Hazards</td>
<td>Low</td>
<td>Machesney Park will work with the Winnebago County Local Emergency Planning Committee (LEPC).</td>
</tr>
<tr>
<td></td>
<td>Objective: Evaluate and strengthen the communication and transportation abilities of emergency services</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mitigation Item</td>
<td>Goals and Objects Satisfied</td>
<td>Hazards Addressed</td>
<td>Priority</td>
<td>Comments</td>
</tr>
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<td>---------------------------------------------</td>
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</tr>
<tr>
<td>Family Disaster Plans &amp; Kits</td>
<td>Goal: Lessen the impacts of hazards to residents</td>
<td>All Hazards</td>
<td>Medium</td>
<td>Machesney Park will work with Winnebago County to distribute Family Disaster Plans and Kits to residents.</td>
</tr>
<tr>
<td></td>
<td>Objective: Strengthen communication between residents and emergency services</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Special Needs Population List</td>
<td>Goal: Lessen the impacts of hazards to new and existing infrastructure</td>
<td>All Hazards</td>
<td>Medium</td>
<td>Machesney Park will work to develop and maintain a special needs population list to strengthen the emergency services.</td>
</tr>
<tr>
<td></td>
<td>Objective: Evaluate and strengthen the communication and transportation abilities of emergency services</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Provided and Publicize Location of Safe Rooms and / or Shelters</td>
<td>Goal: Lessen the impacts of hazards to new and existing infrastructure</td>
<td>All Hazards</td>
<td>Medium</td>
<td>Machesney Park will work to develop, maintain, and distribute a list of the safe rooms and shelters to its residents.</td>
</tr>
<tr>
<td></td>
<td>Objective: Improve emergency sheltering in the county</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Enhance Communication Systems</td>
<td>Goal: Lessen the impacts of hazards to new and existing infrastructure</td>
<td>All Hazards</td>
<td>Medium</td>
<td>Machesney Park plans to improve the emergency communication system currently in place.</td>
</tr>
<tr>
<td></td>
<td>Objective: Equip public facilities and communities to guard against damage caused by secondary effects on hazards</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Active Tree Management</td>
<td>Goal: Lessen the impacts of hazards to new and existing infrastructure</td>
<td>All Hazards</td>
<td>Medium</td>
<td>Machesney Park will be implementing additional action plans to minimize tree damage to power lines as well as other infrastructure.</td>
</tr>
<tr>
<td></td>
<td>Objective: Active tree management near critical facilities and essential facilities to minimize risk of damage</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Develop Safety Procedures for Earthquakes</td>
<td>Goal: Improve emergency sheltering and procedures in the event of an earthquake</td>
<td>Earthquakes</td>
<td>Low</td>
<td>Machesney Park will work with Winnebago County will work to develop mutual aid agreements in event of an earthquake.</td>
</tr>
<tr>
<td></td>
<td>Objective: Review and update existing, or create new community earthquake plans</td>
<td></td>
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</tr>
<tr>
<td>Mitigation Item</td>
<td>Goals and Objects Satisfied</td>
<td>Hazards Addressed</td>
<td>Priority</td>
<td>Comments</td>
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<tr>
<td>----------------------------------------</td>
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</tr>
<tr>
<td>Burn Ordinances</td>
<td>Goal: Create new or revise existing plans/maps Objectives: Review and update existing, or create new community plans and ordinances</td>
<td>Extreme Heat and Drought</td>
<td>Medium</td>
<td>Machesney Park will continue to maintain update burn ordinances.</td>
</tr>
<tr>
<td>Participate in the Community Rating System</td>
<td>Goal: Create new or revise existing plans/maps Objectives: Support compliance with the NFIP</td>
<td>Flooding / Dam and Levee Failure</td>
<td>High</td>
<td>Machesney Park will work with Winnebago County will investigate the feasibility of joining the CRS.</td>
</tr>
<tr>
<td>Participate in the NFIP</td>
<td>Goal: Create new or revise existing plans/maps Objectives: Support compliance with the NFIP</td>
<td>Flooding / Dam and Levee Failure</td>
<td>High</td>
<td>Machesney Park participates in the NFIP and will continue to maintain compliance with the NFIP by evaluating and improving existing ordinances.</td>
</tr>
<tr>
<td>Develop educational materials, both web-based and in paper form, on the benefits of the NFIP</td>
<td>Goal: Develop long-term strategies to educate County residents on the hazards affecting their community Objectives: Raise public awareness of flooding and flood insurance</td>
<td>Flooding / Dam and Levee Failure</td>
<td>High</td>
<td>Machesney Park participates in the NFIP and will continue to education its residents on the benefits of the NFIP.</td>
</tr>
<tr>
<td>Property Acquisition (Buyouts) &amp; Property Relocation</td>
<td>Goal: Lessen the impacts of hazards to new and existing infrastructure Objectives: Minimize the amount of infrastructure exposed to hazards</td>
<td>Flooding / Dam and Levee Failure</td>
<td>High</td>
<td>Machesney Park currently works and will continue to identify areas where buyouts and property relocations make the most sense. Several projects have already been completed with Federal assistance. Machesney Park will continue to seek federal funding for future property acquisitions.</td>
</tr>
<tr>
<td>Floodplain and Stormwater Management Ordinances</td>
<td>Goal: Create new or revise existing plans/maps Objectives: Review and update existing, or create new community plans and ordinances</td>
<td>Flooding / Dam and Levee Failure</td>
<td>High</td>
<td>Machesney Park has building code restrictions and flood protection requirements in place. The village will continue to maintain and update these ordinances.</td>
</tr>
<tr>
<td>Mitigation Item</td>
<td>Goals and Objects Satisfied</td>
<td>Hazards Addressed</td>
<td>Priority</td>
<td>Comments</td>
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</tr>
<tr>
<td>Open Space Preservation</td>
<td>Goal: Lessen the impacts of hazards to new and existing infrastructure</td>
<td>Flooding / Dam and Levee Failure</td>
<td>High</td>
<td>Machesney Park wishes to seek funding to improve open space preservation and decrease the amount of infrastructure exposed to flooding.</td>
</tr>
<tr>
<td></td>
<td>Objective: Keep the floodplain and other hazardous areas open and free from development</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Identification of Floodplain Structures</td>
<td>Goal: Lessen the impacts of hazards to new and existing infrastructure</td>
<td>Flooding / Dam and Levee Failure</td>
<td>High</td>
<td>Machesney Park created a conservation overlay district which identified all structures in the floodway.</td>
</tr>
<tr>
<td></td>
<td>Objective: Examine flood loss areas and generate a comprehensive list of structures located in floodplains</td>
<td></td>
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</tr>
<tr>
<td>Dam Failure Emergency Response Plan</td>
<td>Goal: Create new or revise existing plans/maps</td>
<td>Flooding / Dam and Levee Failure</td>
<td>Low</td>
<td>Machesney Park will work with Winnebago County Emergency Services to participate in response planning for such events.</td>
</tr>
<tr>
<td></td>
<td>Objective: Review and update existing, or create new community plans and ordinances</td>
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</tr>
<tr>
<td>Structure Elevation</td>
<td>Goal: Lessen the impacts of hazards to new and existing infrastructure</td>
<td>Flooding / Dam and Levee Failure</td>
<td>Medium</td>
<td>Machesney park wishes to seek funding to elevate structures in flood prone areas.</td>
</tr>
<tr>
<td></td>
<td>Objective: Minimize the amount of infrastructure exposed to hazards</td>
<td></td>
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</tr>
<tr>
<td>Emergency Plan / Protocol for HAZMAT Releases</td>
<td>Goal: Create new or revise existing plans/maps</td>
<td>HAZMAT</td>
<td>High</td>
<td>Machesney Park will work with the Winnebago County LEPC to improve the County’s HAZMAT response plans.</td>
</tr>
<tr>
<td></td>
<td>Objective: Review and update existing, or create new community plans and ordinances</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Develop Alternate Traffic Routes</td>
<td>Goal: Create new or revise existing plans/maps</td>
<td>HAZMAT</td>
<td>Medium</td>
<td>Machesney Park will work with the Winnebago County LEPC to improve the County’s HAZMAT response plans.</td>
</tr>
<tr>
<td></td>
<td>Objective: Review and update existing, or create new community plans and ordinances</td>
<td></td>
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</tr>
<tr>
<td>Bury Power Lines</td>
<td>Goal: Lessen the impacts of hazards to new and existing infrastructure</td>
<td>Severe Storms / Tornadoes</td>
<td>Medium</td>
<td>Machesney Park wishes to seek funding to convert existing power lines. This will minimize loss of energy at critical times of need.</td>
</tr>
<tr>
<td></td>
<td>Objective: Minimize the amount of infrastructure exposed to hazards</td>
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</tbody>
</table>
### Mitigation Item

<table>
<thead>
<tr>
<th>Mitigation Item</th>
<th>Goals and Objects Satisfied</th>
<th>Hazards Addressed</th>
<th>Priority</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Install Snow Fences</td>
<td>Goal: Lessen the impacts of hazards to new and existing infrastructure</td>
<td>Winter Storms</td>
<td>Medium</td>
<td>This mitigation item is ongoing. Machesney Park will work with the County to improve this mitigation item.</td>
</tr>
<tr>
<td></td>
<td>Objective: Minimize the amount of infrastructure exposed to hazards</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heating and Cooling Shelters</td>
<td>Goal: Lessen the impacts of hazards to new and existing infrastructure</td>
<td>Winter Storms / Extreme Heat</td>
<td>Medium</td>
<td>Machesney Park wishes to seek funding to increase the number of heating and cooling shelters for its residents. The Village Hall is set up as a cooling shelter.</td>
</tr>
<tr>
<td></td>
<td>Objective: Improve emergency sheltering</td>
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</tr>
</tbody>
</table>

#### Table 5-11: List of Mitigation Strategies Developed at Meeting 4 for New Milford

<table>
<thead>
<tr>
<th>Mitigation Item</th>
<th>Goals and Objects Satisfied</th>
<th>Hazards Addressed</th>
<th>Priority</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public Education / Awareness</td>
<td>Goal: Develop long-term strategies to educate residents on the hazards affecting their community</td>
<td>All Hazards</td>
<td>High</td>
<td>The Village of New Milford has a website that residents can get information about Emergency Procedures. Data is updated every three months.</td>
</tr>
<tr>
<td></td>
<td>Objective: Raise public awareness of hazard mitigation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Provided and Publicize Location of Safe Rooms and / or Shelters</td>
<td>Goal: Lessen the impacts of hazards to new and existing infrastructure</td>
<td>All Hazards</td>
<td>High</td>
<td>The Village of New Milford is currently trying to establish shelter space for residents of the mobile home park. There was an agreement with New Milford School prior to closing.</td>
</tr>
<tr>
<td></td>
<td>Objective: Improve emergency sheltering in the county</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Back-up Generators for Critical Facilities</td>
<td>Goal: Lessen the impacts of hazards to new and existing infrastructure</td>
<td>All Hazards</td>
<td>High</td>
<td>New Milford wishes to seek funding to obtain back-up generators for the Village Hall. This would also allow for the Village Hall to be used as a heating/cooling center.</td>
</tr>
<tr>
<td></td>
<td>Objective: Equip public facilities and communities to guard against damage caused by secondary effects on hazards</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Floodplain and Stormwater Management Ordinances</td>
<td>Goal: Create new or revise existing plans/maps</td>
<td>Flooding / Dam and Levee Failure</td>
<td>Medium</td>
<td>New Milford has ordinances and procedures in place to coincide with Winnebago County’s ordinances. The village will continue to maintain and update these ordinances.</td>
</tr>
<tr>
<td></td>
<td>Objective: Review and update existing, or create new community plans and ordinances</td>
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</tbody>
</table>
## Mitigation Strategies

<table>
<thead>
<tr>
<th>Mitigation Item</th>
<th>Goals and Objects Satisfied</th>
<th>Hazards Addressed</th>
<th>Priority</th>
<th>Comments</th>
</tr>
</thead>
</table>
| Emergency Plan / Protocol for HAZMAT Releases        | Goal: Create new or revise existing plans/maps  
Objective: Review and update existing, or create new community plans and ordinances               | HAZMAT            | Medium   | New Milford will continue to work with the Winnebago County LEPC to improve the County’s HAZMAT response plans. |
| Install Tornado Safe Room                            | Goal: Lessen the impacts of hazards to new and existing infrastructure  
Objective: Improve emergency sheltering                                                             | Severe Storms / Tornadoes | High     | The Village is working to secure funding to provide a safe room for residents of the mobile home parks. |
| Anchoring of Manufactured Homes and Exterior Attachments | Goal: Lessen the impacts of hazards to new and existing infrastructure  
Objective: Minimize the amount of infrastructure exposed to hazards                                 | Severe Storms / Tornadoes | Medium   | Through stricter ordinances and building codes, the Village is currently working with Mobile Home owners to ensure each unit is anchored properly. |
| Heating and Cooling Shelters                         | Goal: Lessen the impacts of hazards to new and existing infrastructure  
Objective: Improve emergency sheltering in the county                                                | Winter Storms / Drought and Extreme Heat                          | High     | The Village would like to use the Village Hall as a heating / cooling shelter. A backup generator will need to be obtained along with local coordination from Board members and residents. |

### Table 5-12: List of Mitigation Strategies Developed at Meeting 4 for Pecatonica

<table>
<thead>
<tr>
<th>Mitigation Item</th>
<th>Goals and Objects Satisfied</th>
<th>Hazards Addressed</th>
<th>Priority</th>
<th>Comments</th>
</tr>
</thead>
</table>
| Public Education / Awareness                       | Goal: Develop long-term strategies to educate residents on the hazards affecting their community  
Objective: Raise public awareness of hazard mitigation                                             | All Hazards       | High     | This will be overseen by the Village Board, thru press releases and Village website notices pertaining to mitigation issues. |
| Develop a Disaster Plan                             | Goal: Develop Disaster plan  
Objective: To inform Citizens of who to call and where to go in case of a disaster.            | All Hazards       | High     | This will be overseen by the Public Works/ Public Safety Committee.  
We have a base plan on record currently but need to update. |

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**Section 5. Mitigation Strategies**
<table>
<thead>
<tr>
<th>Mitigation Item</th>
<th>Goals and Objects Satisfied</th>
<th>Hazards Addressed</th>
<th>Priority</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emergency Planning Committee</td>
<td>Goal: Develop an Emergency Planning Committee</td>
<td>All Hazards</td>
<td>High</td>
<td>Village President to set up ADHOC committee.</td>
</tr>
<tr>
<td></td>
<td>Objective: To review and update existing, or create new community plans.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Back-up Generators for Critical Facilities</td>
<td>Goal: Lessen the impacts of hazards to new and existing infrastructure</td>
<td>All Hazards</td>
<td>Medium</td>
<td>The Village will attempt to secure funding to purchase generators for all Village buildings. This will be addressed by full Village Board.</td>
</tr>
<tr>
<td></td>
<td>Objective: Equip public facilities and communities to guard against damage caused by secondary effects on hazards</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Develop Procedures Specific to Earthquakes and Educate Public</td>
<td>Goal: Develop Procedures specific to Earthquakes</td>
<td>Earthquakes</td>
<td>Low / Medium</td>
<td>This mitigation item will be assigned to emergency planning committee.</td>
</tr>
<tr>
<td></td>
<td>Objective: Establish guidelines and procedures in case of an earthquake</td>
<td></td>
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</tr>
<tr>
<td>Burn / Water Ban Ordinances</td>
<td>Goal: Create new or revise existing plans/maps</td>
<td>Extreme Heat / Drought</td>
<td>Medium</td>
<td>Public works / Public safety committee will review ordinances on a yearly basis.</td>
</tr>
<tr>
<td></td>
<td>Objective: Review and update existing, or create new community plans and ordinances</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Culvert / Storm Drain Repair</td>
<td>Goal: Culvert / Storm drain Repair</td>
<td>Flooding / Dam and Levee Failure</td>
<td>Low</td>
<td>This mitigation item will be addressed by the Public Works Director. Plan already in place but will be updated and reviewed yearly.</td>
</tr>
<tr>
<td></td>
<td>Objective: Ensure all culverts and storm drains are working properly and evaluate if others are needed.</td>
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</tr>
<tr>
<td>Floodplain Ordinances</td>
<td>Goal: Create new or revise existing plans/maps</td>
<td>Flooding / Dam and Levee Failure</td>
<td>Medium</td>
<td>The Public Works / Public Safety Committee will address the subject.</td>
</tr>
<tr>
<td></td>
<td>Objective: Review and update existing, or create new community plans and ordinances</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mitigation Item</td>
<td>Goals and Objects Satisfied</td>
<td>Hazards Addressed</td>
<td>Priority</td>
<td>Comments</td>
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</tr>
<tr>
<td>Identification of Structures in Floodplains</td>
<td>Goal: Identification of Structures in floodplains</td>
<td>Flooding / Dam and Levee Failure</td>
<td>Medium</td>
<td>This will be addressed by the emergency planning committee.</td>
</tr>
<tr>
<td></td>
<td>Objective: To create a list of all Structures located in Floodplains.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emergency Plan / Protocol for HAZMAT Releases</td>
<td>Goal: Create new or revise existing plans/maps</td>
<td>HAZMAT</td>
<td>Medium</td>
<td>The Pecatonica Fire – Police and Public works departments all have current plans in place.</td>
</tr>
<tr>
<td></td>
<td>Objective: Review and update existing, or create new community plans and ordinances</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>HAZMAT Spill, Removal, and Disposal Procedure</td>
<td>Goal: Create new or revise existing plans/maps</td>
<td>HAZMAT</td>
<td>Medium</td>
<td>Public Works Department has plan in place in conjunction with the Police Department.</td>
</tr>
<tr>
<td></td>
<td>Objective: Review and update existing, or create new community plans and ordinances</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Active Tree Management</td>
<td>Goal: Lessen the impacts of hazards to new and existing infrastructure</td>
<td>Severe Storms / Tornadoes</td>
<td>Low</td>
<td>This mitigation item is ongoing and is handled by the Public works department.</td>
</tr>
<tr>
<td></td>
<td>Objective: Active tree management near critical facilities and essential facilities to minimize risk of damage</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Provide and Publicize Shelters / Safe Rooms</td>
<td>Goal: Provide and Publicize Shelters / Safe Rooms</td>
<td>Severe Storms / Tornadoes</td>
<td>Medium</td>
<td>This mitigation item is ongoing and the Village has set buildings for this purpose. This will be handled by the Emergency planning Committee.</td>
</tr>
<tr>
<td></td>
<td>Objective: To Inform the Public of where they can go in case of a severe storm.</td>
<td></td>
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</tr>
<tr>
<td>Winter Storms - Dissemination of Information</td>
<td>Goal: Provide contacts for residents if snowed in.</td>
<td>Winter Storms</td>
<td>High</td>
<td>Will be addressed by emergency planning committee.</td>
</tr>
<tr>
<td></td>
<td>Objective: To inform Residents of whom to call if they are stranded at home or in town.</td>
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<td></td>
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</tr>
<tr>
<td>Heating and Cooling Shelters</td>
<td>Goal: Lessen the impacts of hazards to new and existing infrastructure</td>
<td>Winter Storms / Extreme Heat</td>
<td>Low</td>
<td>The Village has two Buildings assigned for this but will try to establish two more shelters in different areas of the Village.</td>
</tr>
<tr>
<td></td>
<td>Objective: Improve emergency sheltering</td>
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</tbody>
</table>
Table 5-13: List of Mitigation Strategies Developed at Meeting 4 for Rockford

<table>
<thead>
<tr>
<th>Mitigation Item</th>
<th>Goals and Objects Satisfied</th>
<th>Hazards Addressed</th>
<th>Priority</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Create Evacuation Notification Strategies</td>
<td>Goal: Improve Emergency Response procedures</td>
<td>All Hazards</td>
<td>High</td>
<td>Currently in progress with expected completion end of 2014 - mid 2015. Funding source from City of Rockford general funds. PW Emergency Manager, ESDA Coordinator, and Police oversee this mitigation item.</td>
</tr>
<tr>
<td></td>
<td>Objective: Create Evacuation Notification Strategies</td>
<td></td>
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</tr>
<tr>
<td>Create a Public Works Recovery Plan</td>
<td>Goal: Improve Emergency Response procedures</td>
<td>All Hazards</td>
<td>High</td>
<td>To be completed by end of 2014 Funding source from City of Rockford general funds. PW Emergency Manager oversee this mitigation item.</td>
</tr>
<tr>
<td></td>
<td>Objective: Create a Public Works Recovery Plan</td>
<td></td>
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</tr>
<tr>
<td>Create and Update Mutual Aid Agreements with Outside Agencies and Contractors</td>
<td>Goal: Improve Emergency Response procedures</td>
<td>All Hazards</td>
<td>High</td>
<td>Expected completion end of 2014 – mid 2015. Funding source from City of Rockford general funds. PW Emergency Manager, ESDA Coordinator, and Police oversee this mitigation item.</td>
</tr>
<tr>
<td></td>
<td>Objective: Create and Update Mutual Aid Agreements with Outside Agencies and Contractors</td>
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</tr>
<tr>
<td>Follow In Place Plans/Procedures/Strategies for Hazard Situations</td>
<td>Goal: Improve Emergency Response procedures</td>
<td>All Hazards</td>
<td>High</td>
<td>Currently in progress. Funding source from City of Rockford general funds. All City of Rockford Departments oversee this mitigation item.</td>
</tr>
<tr>
<td></td>
<td>Objective: Follow In Place Plans/Procedures/Strategies for Hazard Situations</td>
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</tr>
<tr>
<td>Run Public Service Announcements and Educational Material for Each Hazard</td>
<td>Goal: Improve safety for our citizens during disasters</td>
<td>All Hazards</td>
<td>High</td>
<td>Currently in progress. Funding source from City of Rockford general funds. PIO, PW Emergency Manager, ESDA Coordinator, and Police oversee this mitigation item.</td>
</tr>
<tr>
<td></td>
<td>Objective: Run Public Service Announcements and Educational Material for Each Hazard</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Follow Load Restrictions on Building Design, Fire Suppression and Electrical/Plumbing Requirements</td>
<td>Goal: Improve safety for our citizens during disasters</td>
<td>All Hazards</td>
<td>High</td>
<td>Currently in progress. Funding source from City of Rockford general funds. The Building Code Official oversees this mitigation item.</td>
</tr>
<tr>
<td></td>
<td>Objective: Follow Load Restrictions on Building Design, Fire Suppression and Electrical/Plumbing Requirements</td>
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<tr>
<td>Mitigation Item</td>
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</table>
| Train Additional Staff in Emergency Management                                | Goal: Improve Emergency Response procedures  
Objective: Train Additional Staff in Emergency Management                                    | All Hazards              | Medium   | Currently in progress with expected completion by end of 2015. Funding source from City of Rockford general funds. PW Emergency Manager, ESDA Coordinator, and Police oversee this mitigation item. |
| Map City Wells and Cone of Influence                                          | Goal: Monitor Water Supply  
Objective: Map city wells and cone of influence                                            | Extreme Heat and Drought | High     | Maps have been completed. Funding source was from the City of Rockford water funds. The Water Superintendent oversees this mitigation item.                                                                 |
| Map Groundwater Ordinances and Plume of Contamination                        | Goal: Monitor Water Supply  
Objective: Map groundwater ordinances & plume of contamination                                 | Extreme Heat and Drought | High     | Ordinances have been mapped from 2006 to present, additional research is required for earlier ordinances. Funding source from the City of Rockford general funds. The Stormwater Administrator-GIS oversees this mitigation item. |
| Provide and publicize heating and cooling shelters                            | Goal: Plan for Drought  
Objective: Provide and publicize heating and cooling shelters                                    | Extreme Heat and Drought | High     | This mitigation item is ongoing. Funding source from the City of Rockford general funds. PIO and ESDA Coordinator oversee this mitigation item.                                                               |
| Regularly Check for Leaks to Minimize Water Supply Losses                    | Goal: Monitor Water Supply  
Objective: Regularly Check for Leaks to Minimize Water Supply Losses                         | Extreme Heat and Drought | Low      | This mitigation item is ongoing with no completion date expected. Funding source from City of Rockford water funds. The Water Superintendent oversee this mitigation item.                                         |
| Begin Integrated Planning For Water Quality Improvements                     | Goal: Monitor Water Supply  
Objective: Begin Integrated Planning For Water Quality Improvements                          | Extreme Heat and Drought | Medium   | The City of Rockford applied for technical assistance from EPA June 2014 to start a pilot planning project with RRWRD. If assistance is granted the expected pilot completion end date is 2015. Funding sources for continued planning efforts is limited. The Stormwater Administrator, City Engineer, Water Superintendent oversee this mitigation item. |
| Install Rain Gauges Throughout City to Better Understand Rainfall Trends     | Goal: Monitor Water Supply  
Objective: Install rain gauges throughout city to better understand rainfall trends              | Extreme Heat and Drought | Medium   | Design is underway with an expected completion date of mid- 2015; Funding sources from the City of Rockford Water and CIP funds.                                                                               |
<table>
<thead>
<tr>
<th>Mitigation Item</th>
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<th>Hazards Addressed</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Restrict Water Usage During Drought Events</td>
<td>Goal: Require water conservation during drought conditions</td>
<td>Extreme Heat and Drought</td>
<td>Medium</td>
<td>This mitigation item is ongoing when required. Funding source from the City of Rockford Water funds. The Water Superintendent oversees this mitigation item.</td>
</tr>
<tr>
<td>Rewrite City’s Stormwater Ordinance and Stormwater Technical Manual</td>
<td>Goal: Adopt and enforce building codes and development standards</td>
<td>Flooding / Dam and Levee Failure</td>
<td>High</td>
<td>Draft Ordinance is complete and draft technical manual underway; expected completion end of 2014. Funding source from City of Rockford general funds. The Stormwater Administrator oversees this mitigation item.</td>
</tr>
<tr>
<td>Enforce Flood Mitigation, Flood Control, Stormwater Management</td>
<td>Goal: Adopt and enforce building codes and development standards</td>
<td>Flooding / Dam and Levee Failure</td>
<td>High</td>
<td>SOPs have been created providing guidance on inspection, maintenance and enforcement measures. Ordinance revisions are underway for enforcement and code hearing process for all ordinance violations. Funding source from City of Rockford general funds. The Stormwater Administrator oversees this mitigation item.</td>
</tr>
<tr>
<td>Enforce Post Construction Management Requirements</td>
<td>Goal: Adopt and enforce building codes and development standards</td>
<td>Flooding / Dam and Levee Failure</td>
<td>High</td>
<td>This mitigation item is part of the new stormwater ordinance. Agreement and maintenance templates have been completed and used on projects. Ordinance revisions are underway for enforcement and code hearing process for all ordinance violations. Funding source from City of Rockford general funds. The Stormwater Administrator oversees this mitigation item.</td>
</tr>
<tr>
<td>Continue To Map Priority Acquisition And Unsuitable For Development Areas</td>
<td>Goal: Limit or restrict development in floodplain areas</td>
<td>Flooding / Dam and Levee Failure</td>
<td>High</td>
<td>This mitigation item is ongoing. Expected completion end of 2016. Funding source from City of Rockford general funds. The Stormwater Administrator-GIS oversees this mitigation item.</td>
</tr>
<tr>
<td>Mitigation Item</td>
<td>Goals and Objects Satisfied</td>
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</table>
| Enforce Landscaping And Buffer Requirements, Open Space Requirements, Impervious Ratio Requirements | Goal: Limit or restrict development in floodplain areas  
Objective: Enforce landscaping and buffer requirements, open space requirements | Flooding / Dam and Levee Failure                                                                 | High                  | This mitigation item is ongoing and is enforced through Zoning/Building permits. Zoning Officer and Building Code Official oversee this mitigation item.                                                           |
| Map Structures Located Within Floodplains and Map Repetitive Loss and Substantially Damaged Properties | Goal: Improve Flood Risk Assessment  
Objective: Map structures located within floodplains and map repetitive loss and substantially damaged properties | Flooding / Dam and Levee Failure                                                                 | High                  | This mitigation item is ongoing. Expected completion end of 2015, basic map completed but new floodplain maps are expected in 2015. Funding source from City of Rockford general funds. The Stormwater Administrator-GIS oversee this mitigation item. |
| Develop Flood Risk Map Educational Materials for New FEMA Maps                   | Goal: Improve Flood Risk Assessment  
Objective: Develop flood risk map educational materials for new FEMA Maps                   | Flooding / Dam and Levee Failure                                                                 | High                  | The City of Rockford has received technical assistance from FEMA to help create these materials. Expected completion in early 2015. The City wishes to seek additional funding with limited funding source from general funds. The Stormwater Administrator oversees this mitigation item. |
| Replace Water Level Gauges at Page Park And Levings Lake Dam; Install Water Level Gauge at Alpine Dam | Goal: Improve Flood Risk Assessment  
Objective: Replace water level gauges at Page Park and Levings Lake Dam; Install water level gauge at Alpine Dam | Flooding / Dam and Levee Failure                                                                 | High                  | Design underway and expected completion mid- 2015. Funding sources are from Water and CIP funds. The Stormwater Administrator and Water Superintendent oversees this mitigation item.                                         |
| Participate in the Community Rating System                                       | Goal: Manage the floodplain beyond minimum requirements  
Objective: Participate in the Community Rating System                                        | Flooding / Dam and Levee Failure                                                                 | High                  | Expected application completion end of 2015. Funding source from City of Rockford general funds. The Stormwater Administrator oversees this mitigation item.                                                                 |
| Improve Compliance with the NFIP                                                 | Goal: Manage the floodplain beyond minimum requirements  
Objective: Improve compliance with the NFIP                                                  | Flooding / Dam and Levee Failure                                                                 | High                  | This mitigation item is ongoing. Limited funding source from City of Rockford general funds. The Stormwater Administrator oversees this mitigation item.                                                                 |
<table>
<thead>
<tr>
<th>Mitigation Item</th>
<th>Goals and Objects Satisfied</th>
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<th>Priority</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flood-Proof, Relocate, Elevate and Demolish At-Risk Properties</td>
<td>Goal: Manage the floodplain beyond minimum requirements</td>
<td>Flooding / Dam and Levee Failure</td>
<td>High</td>
<td>This mitigation item is ongoing with no expected completion date due to lack of funds for City to accomplish. The City of Rockford will seek additional funding. This mitigation items is enforced through building permits and is overseen by the Stormwater Administrator and Building Code Official.</td>
</tr>
<tr>
<td>Complete Alpine Dam Rehabilitation</td>
<td>Goal: Conduct regular maintenance for drainage systems and flood control structures</td>
<td>Flooding / Dam and Levee Failure</td>
<td>High</td>
<td>This mitigation item is ongoing. Plans are complete and easements have been obtained however there is a lack of funding to accomplish this item. The City of Rockford will seek additional funding sources. The Stormwater Administrator and City Engineer oversee this mitigation item.</td>
</tr>
<tr>
<td>Continue Watershed Assessment and Planning</td>
<td>Goal: Form Partnerships to support floodplain management</td>
<td>Flooding / Dam and Levee Failure</td>
<td>Low</td>
<td>Several watersheds have been completed with one underway. The City of Rockford wishes to seek additional funding. Funding is an issue for continued studies, current funding source is CIP. The Stormwater Administrator oversees this mitigation item.</td>
</tr>
<tr>
<td>Review and Update Emergency Plan and Protocol for HAZMAT Releases</td>
<td>Goal: Review and update emergency procedures for hazard materials</td>
<td>HAZMAT</td>
<td>Medium</td>
<td>This mitigation item is ongoing. Funding source from the City of Rockford general funds. The Fire Department oversees this mitigation item.</td>
</tr>
<tr>
<td>Review and Update HAZMAT Spill, Removal and Disposal Procedures</td>
<td>Goal: Review and update emergency procedures for hazard materials</td>
<td>HAZMAT</td>
<td>Medium</td>
<td>This mitigation item is ongoing. Funding source from the City of Rockford general funds. The Fire Department oversees this mitigation item.</td>
</tr>
<tr>
<td>Enforce Tree and Brush Trimming / Pruning Requirements / Planting and Removal Requirements</td>
<td>Goal: Reduce Impacts to Infrastructure</td>
<td>Severe Storms / Tornadoes</td>
<td>High</td>
<td>This mitigation item is ongoing. Ordinance revisions are underway for enforcement and code hearing process for all ordinance violations. Funding source from the City of Rockford general funds. The Street Superintendent and Neighborhood Standards oversee this mitigation item.</td>
</tr>
<tr>
<td>Mitigation Item</td>
<td>Goals and Objects Satisfied</td>
<td>Hazards Addressed</td>
<td>Priority</td>
<td>Comments</td>
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</tr>
<tr>
<td>Provide and Publicize Heating and Cooling Shelters</td>
<td>Goal: Educate citizens and property owners on severe weather conditions</td>
<td>Severe Storms / Tornadoes</td>
<td>Medium</td>
<td>This mitigation item is ongoing. Funding source from the City of Rockford general funds. The PIO and ESDA Coordinator oversee this mitigation item.</td>
</tr>
<tr>
<td></td>
<td>Objective: Provide and publicize heating and cooling shelters</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Follow Parking Restrictions for Emergency Events,</td>
<td>Goal: Reduce Impacts to Roadways</td>
<td>Severe Storms / Winter Storms</td>
<td>Medium</td>
<td>This mitigation item is ongoing when required. Funding source from the City of Rockford parking and general funds. The Parking Contractor, Street Superintendent, and police oversee this mitigation item.</td>
</tr>
<tr>
<td>Follow Salting and Plowing Policies</td>
<td>Objective: Follow parking restrictions for emergency events, follow salting and plowing policies</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Educate Property Owners About Freezing Pipes</td>
<td>Goal: Educate citizens and property owners on severe weather conditions</td>
<td>Winter Storms</td>
<td>Medium</td>
<td>This mitigation item is ongoing. Funding source from the City of Rockford Water funds. The Water Superintendent oversees this mitigation item.</td>
</tr>
<tr>
<td></td>
<td>Objective: Educate property owners about freezing pipes</td>
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</tbody>
</table>

Table 5-14: List of Mitigation Strategies Developed at Meeting 4 for Rockton

<table>
<thead>
<tr>
<th>Mitigation Item</th>
<th>Goals and Objects Satisfied</th>
<th>Hazards Addressed</th>
<th>Priority</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Public Education / Awareness</td>
<td>Goal: Develop long-term strategies to educate residents on the hazards affecting their community</td>
<td>All Hazards</td>
<td>High</td>
<td>Rockton plans to update its website to include emergency information for residents.</td>
</tr>
<tr>
<td></td>
<td>Objective: Raise public awareness of hazard mitigation</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Back-up Generators for Critical Facilities</td>
<td>Goal: Lessen the impacts of hazards to new and existing infrastructure</td>
<td>All Hazards</td>
<td>High</td>
<td>Rockton wishes to seek funding to obtain additional back-up generators for critical facilities. The village currently provides back-up generators at the critical municipal facilities.</td>
</tr>
<tr>
<td></td>
<td>Objective: Equip public facilities and communities to guard against damage caused by secondary effects on hazards</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mitigation Item</td>
<td>Goals and Objects Satisfied</td>
<td>Hazards Addressed</td>
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</tr>
<tr>
<td>Enhance Communication Systems</td>
<td>Goal: Lessen the impacts of hazards to new and existing infrastructure</td>
<td>All Hazards</td>
<td>Medium</td>
<td>Rockton plans to improve the emergency communication system currently in place.</td>
</tr>
<tr>
<td></td>
<td>Objective: Equip public facilities and communities to guard against damage caused by secondary effects on hazards</td>
<td></td>
<td></td>
<td>Rockton will be implementing additional action plans to minimize tree damage to power lines as well as other infrastructure.</td>
</tr>
<tr>
<td>Active Tree Management</td>
<td>Goal: Lessen the impacts of hazards to new and existing infrastructure</td>
<td>All Hazards</td>
<td>Medium</td>
<td>Rockton will be implementing additional action plans to minimize tree damage to power lines as well as other infrastructure.</td>
</tr>
<tr>
<td></td>
<td>Objective: Active tree management near critical facilities and essential facilities to minimize risk of damage</td>
<td></td>
<td></td>
<td>Rockton will be implementing additional action plans to minimize tree damage to power lines as well as other infrastructure.</td>
</tr>
<tr>
<td>Mutual Aid Agreements</td>
<td>Goal: Create new or revise existing plans/maps</td>
<td>All Hazards</td>
<td>Medium/High</td>
<td>Rockton will work with the Winnebago County Local Emergency Planning Committee (LEPC) and other Agencies in the County to develop and improve mutual aid agreements within the county.</td>
</tr>
<tr>
<td></td>
<td>Objective: Evaluate and strengthen the communication and transportation abilities of emergency services</td>
<td></td>
<td></td>
<td>Rockton will work with the Winnebago County Local Emergency Planning Committee (LEPC) and other Agencies in the County to develop and improve mutual aid agreements within the county.</td>
</tr>
<tr>
<td>Establish Local Emergency Planning Committee</td>
<td>Goal: Create new or revise existing plans/maps</td>
<td>All Hazards</td>
<td>Medium/High</td>
<td>Rockton will develop a Local Emergency Planning Committee and work with the Winnebago County Local Emergency Planning Committee (LEPC).</td>
</tr>
<tr>
<td></td>
<td>Objective: Evaluate and strengthen the communication and transportation abilities of emergency services</td>
<td></td>
<td></td>
<td>Rockton will develop a Local Emergency Planning Committee and work with the Winnebago County Local Emergency Planning Committee (LEPC).</td>
</tr>
<tr>
<td>Identification of Floodplain Structures</td>
<td>Goal: Lessen the impacts of hazards to new and existing infrastructure</td>
<td>Flooding / Dam and Levee Failure</td>
<td>High</td>
<td>Rockton plans to create a comprehensive list of structures located in the floodplain.</td>
</tr>
<tr>
<td></td>
<td>Objective: Examine flood loss areas and generate a comprehensive list of structures located in floodplains</td>
<td></td>
<td></td>
<td>Rockton plans to create a comprehensive list of structures located in the floodplain.</td>
</tr>
<tr>
<td>Structure Elevation</td>
<td>Goal: Lessen the impacts of hazards to new and existing infrastructure</td>
<td>Flooding / Dam and Levee Failure</td>
<td>High</td>
<td>The Village has been proactive in requiring any new or modified structure to be constructed a minimum of 1 foot above the 100 year flood elevation.</td>
</tr>
<tr>
<td>Mitigation Item</td>
<td>Goals and Objects Satisfied</td>
<td>Hazards Addressed</td>
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</table>
| Floodplain and Stormwater Ordinances  | Goal: Create new or revise existing plans/maps  
Objective: Review and update existing, or create new community plans and ordinances | Flooding / Dam and Levee Failure | High     | The Village will continue to maintain and update their ordinances to comply with the County and State requirements.                     |
| Open Space Preservation                | Goal: Lessen the impacts of hazards to new and existing infrastructure  
Objective: Keep the floodplain and other hazardous areas open and free from development | Flooding / Dam and Levee Failure | High     | The Village is proactive in its ordinances on open space maintenance policies to ensure land is used for this purpose throughout the village. |
| Develop Alternate Traffic Routes      | Goal: Create new or revise existing plans/maps  
Objective: Review and update existing, or create new community plans and ordinances | HAZMAT                      | Low      | Rockton will work with the Winnebago County LEPC to improve the County’s HAZMAT response plans.                                      |
| HAZMAT Spill, Removal and Disposal Procedure | Goal: Create new or revise existing plans/maps  
Objective: Review and update existing, or create new community plans and ordinances | HAZMAT                      | Medium   | Rockton will work with the Winnebago County LEPC to improve the County’s HAZMAT response plans.                                      |
| Bury Power Lines                      | Goal: Lessen the impacts of hazards to new and existing infrastructure  
Objective: Active tree management near critical facilities and essential facilities to minimize risk of damage | Severe Storms / Tornadoes   | High     | The Village has been working with Rock Energy to bury all new and relocated facilities.                                               |
| Install Snow Fences                   | Goal: Lessen the impacts of hazards to new and existing infrastructure  
Objective: Minimize the amount of infrastructure exposed to hazards | Winter Storms                | Low      | This mitigation item is ongoing in the County the Highway Department. Rockton will work with the County to improve this mitigation item.   |
| Heating and Cooling Shelters          | Goal: Lessen the impacts of hazards to new and existing infrastructure  
Objective: Improve emergency sheltering | Winter Storms / Extreme Heat | Medium   | Rockton wishes to seek funding to increase the number of heating and cooling shelters for its residents.                            |
### Table 5-15: List of Mitigation Strategies Developed at Meeting 4 for Roscoe

<table>
<thead>
<tr>
<th>Mitigation Item</th>
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<th>Hazards Addressed</th>
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<tbody>
<tr>
<td>Back-up Generators for Critical Facilities</td>
<td>Goal: Lessen the impacts of hazards to new and existing infrastructure</td>
<td>All Hazards</td>
<td>High</td>
<td>Roscoe wishes to seek funding to obtain additional back-up generators for critical facilities.</td>
</tr>
<tr>
<td></td>
<td>Objective: Equip public facilities and communities to guard against damage caused by secondary effects on hazards</td>
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<tr>
<td>Enhance Communication Systems</td>
<td>Goal: Lessen the impacts of hazards to new and existing infrastructure</td>
<td>All Hazards</td>
<td>Medium</td>
<td>Roscoe plans to improve the emergency communication system currently in place.</td>
</tr>
<tr>
<td></td>
<td>Objective: Equip public facilities and communities to guard against damage caused by secondary effects on hazards</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Active Tree Management</td>
<td>Goal: Lessen the impacts of hazards to new and existing infrastructure</td>
<td>All Hazards</td>
<td>Medium</td>
<td>Roscoe will implement additional action plans to minimize tree damage to power lines as well as other infrastructure.</td>
</tr>
<tr>
<td></td>
<td>Objective: Active tree management near critical facilities and essential facilities to minimize risk of damage</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mutual Aid Agreements</td>
<td>Goal: Lessen the impacts of hazards to new and existing infrastructure</td>
<td>All Hazards</td>
<td>Medium/High</td>
<td>Roscoe will work with the Winnebago County Local Emergency Planning Committee (LEPC) and other Agencies in the County to develop and improve mutual aid agreements within the county.</td>
</tr>
<tr>
<td></td>
<td>Objective: Evaluate and strengthen the communication and transportation abilities of emergency services</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Establish Local Emergency Planning Committee</td>
<td>Goal: Create new or revise existing plans/maps</td>
<td>All Hazards</td>
<td>Medium/High</td>
<td>Roscoe will develop a Local Emergency Planning Committee and work with the Winnebago County Local Emergency Planning Committee (LEPC).</td>
</tr>
<tr>
<td></td>
<td>Objective: Evaluate and strengthen the communication and transportation abilities of emergency services</td>
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</tr>
<tr>
<td>Mitigation Item</td>
<td>Goals and Objects Satisfied</td>
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| Develop Safety Procedures for Earthquakes                                      | Goal: Improve emergency sheltering and procedures in the event of an earthquake
|                                                                              | Objective: Review and update existing, or create new community plans and ordinances      | Earthquake              | Low      | Roscoe will work to develop an earthquake safety procedure for the village. |
| Burn Ordinances                                                               | Goal: Create new or revise existing plans/maps
|                                                                              | Objective: Review and update existing, or create new community plans and ordinances      | Extreme Heat and Drought | Low      | Roscoe will continue to maintain update burn ordinances.                 |
| Participate in the Community Rating System                                     | Goal: Create new or revise existing plans/maps
|                                                                              | Objective: Support compliance with the NFIP                                               | Flooding / Dam and Levee Failure | Medium | Roscoe will investigate the feasibility of joining the CRS.              |
| Identification of Floodplain Structures                                       | Goal: Lessen the impacts of hazards to new and existing infrastructure
|                                                                              | Objective: Examine flood loss areas and generate a comprehensive list of structures located in floodplains | Flooding / Dam and Levee Failure | Medium | Roscoe will work to identify all flood prone structures in the village. |
| Develop Alternate Traffic Routes                                              | Goal: Create new or revise existing plans/maps                                           | HAZMAT                  | Low      | Roscoe will work to develop alternate traffic routes in the event of a HAZMAT release. |
| HAZMAT Spill, Removal, and Disposal Procedure                                 | Goal: Create new or revise existing plans/maps
|                                                                              | Objective: Review and update existing, or create new community plans and ordinances      | HAZMAT                  | Medium   | Roscoe will continue to work with the Winnebago County LEPC to improve the County's HAZMAT response plans. |
| Install Snow Fences                                                           | Goal: Lessen the impacts of hazards to new and existing infrastructure
<p>|                                                                              | Objective: Minimize the amount of infrastructure exposed to hazards                      | Winter Storms           | Medium   | Roscoe will work with the County to improve this mitigation item.        |</p>
<table>
<thead>
<tr>
<th>Mitigation Item</th>
<th>Goals and Objects Satisfied</th>
<th>Hazards Addressed</th>
<th>Priority</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heating and Cooling Shelters</td>
<td>Goal: Lessen the impacts of hazards to new and existing infrastructure</td>
<td>Winter Storms / Extreme Heat</td>
<td>Medium</td>
<td>Roscoe wishes to seek funding to increase the number of heating and cooling shelters for its residents.</td>
</tr>
<tr>
<td></td>
<td>Objective: Improve emergency sheltering</td>
<td></td>
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<tr>
<td>Table 5-16: List of Mitigation Strategies Developed at Meeting 4 for South Beloit</td>
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</tr>
<tr>
<td>Public Education / Awareness</td>
<td>Goal: Develop long-term strategies to educate residents on the hazards affecting their community</td>
<td>All Hazards</td>
<td>High</td>
<td>South Beloit will increase its public education at the library, sewer billing and city websites. Press releases will also be distributed.</td>
</tr>
<tr>
<td></td>
<td>Objective: Raise public awareness of hazard mitigation</td>
<td></td>
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</tr>
<tr>
<td>Develop Education Materials on the benefits of the NFIP</td>
<td>Goal: Develop long-term strategies to educate residents on the hazards affecting their community</td>
<td>Flooding / Dam and Levee Failure</td>
<td>High</td>
<td>Material will be available at the city hall.</td>
</tr>
<tr>
<td></td>
<td>Objective: Raise public awareness of flooding and flood insurance</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Special Needs Population List</td>
<td>Goal: Lessen the impacts of hazards to new and existing infrastructure</td>
<td>All Hazards</td>
<td>High</td>
<td>Nursing homes currently have mutual aid agreements in place. This agreement includes developing and maintaining a special needs population list for each nursing home.</td>
</tr>
<tr>
<td></td>
<td>Objective: Evaluate and strengthen the communication and transportation abilities of emergency services</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Provided and Publicize Location of Safe Rooms and / or Shelters</td>
<td>Goal: Lessen the impacts of hazards to new and existing infrastructure</td>
<td>All Hazards</td>
<td>Low</td>
<td>South Beloit currently has designated heating/cooling shelters and plans to distribute the locations of the shelters to residents in the county.</td>
</tr>
<tr>
<td></td>
<td>Objective: Improve emergency sheltering in the county</td>
<td></td>
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</tr>
<tr>
<td>Mitigation Item</td>
<td>Goals and Objects Satisfied</td>
<td>Hazards Addressed</td>
<td>Priority</td>
<td>Comments</td>
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<td>---------------------------------</td>
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</tr>
<tr>
<td>Mutual Aid Agreements</td>
<td>Goal: Lessen the impacts of hazards to new and existing infrastructure</td>
<td>All Hazards</td>
<td>High</td>
<td>South Beloit currently has mutual aid agreements in place for the Fire Departments and Public Works.</td>
</tr>
<tr>
<td></td>
<td>Objective: Evaluate and strengthen the communication and transportation abilities of emergency services</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Back-up Generators for Critical Facilities</td>
<td>Goal: Lessen the impacts of hazards to new and existing infrastructure</td>
<td>All Hazards</td>
<td>High</td>
<td>City Hall, Police and Fire Department, and the Sewer Plant have portable generators.</td>
</tr>
<tr>
<td></td>
<td>Objective: Equip public facilities and communities to guard against damage caused by secondary effects on hazards</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Data Acquisition for Future Hazard Mitigation Planning</td>
<td>Goal: Create new or revise existing plans/maps</td>
<td>All Hazards</td>
<td>High</td>
<td>WinGIS maintains a list of critical and essential facilities in the county.</td>
</tr>
<tr>
<td></td>
<td>Objective: Review and update existing GIS datasets</td>
<td></td>
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</tr>
<tr>
<td>First Responder Training</td>
<td>Goal: Develop long-term strategies to educate residents on the hazards affecting their community</td>
<td>All Hazards</td>
<td>High</td>
<td>Ongoing with Fire and Police.</td>
</tr>
<tr>
<td></td>
<td>Objective: Improve education and training of emergency personnel and public officials</td>
<td></td>
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</tr>
<tr>
<td>Participate in the NFIP</td>
<td>Goal: Create new or revise existing plans/maps</td>
<td>Flooding / Dam and Levee Failure</td>
<td>High</td>
<td>Ongoing. The South Beloit will contribute to map revisions.</td>
</tr>
<tr>
<td></td>
<td>Objective: Support compliance with the NFIP</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Property Acquisition (Buyouts)</td>
<td>Goal: Lessen the impacts of hazards to new and existing infrastructure</td>
<td>Flooding / Dam and Levee Failure</td>
<td>Low</td>
<td>South Beloit will continue to seek funding for future property acquisitions.</td>
</tr>
<tr>
<td></td>
<td>Objective: Minimize the amount of infrastructure exposed to hazards</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Structure Elevation</td>
<td>Goal: Lessen the impacts of hazards to new and existing infrastructure</td>
<td>Flooding / Dam and Levee Failure</td>
<td>Medium</td>
<td>Ordinances in the village requires all new structures to be raised above the flood level.</td>
</tr>
<tr>
<td></td>
<td>Objective: Minimize the amount of infrastructure exposed to hazards</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Mitigation Item</td>
<td>Goals and Objects Satisfied</td>
<td>Hazards Addressed</td>
<td>Priority</td>
<td>Comments</td>
</tr>
<tr>
<td>-----------------------------------------------------</td>
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<td>--------------------------------------------------------------------------</td>
</tr>
</tbody>
</table>
| Floodplain and Stormwater Management Ordinances      | Goal: Create new or revise existing plans/maps  
Objective: Review and update existing, or create new community plans and ordinances | Flooding / Dam and Levee Failure | High     | South Beloit has building code restrictions and flood protection requirements in place. South Beloit will continue to maintain and update these ordinances. |
| Open Space Preservation                              | Goal: Lessen the impacts of hazards to new and existing infrastructure  
Objective: Keep the floodplain and other hazardous areas open and free from development | Flooding / Dam and Levee Failure | Medium   | South Beloit will continue working to preserve green space along Turtle Creek and Rock River. |
| Install Backflow Values and Sump Pumps               | Goal: Lessen the impacts of hazards to new and existing infrastructure  
Objective: Minimize potential damage to foundations and household/critical facility utilities | Flooding / Dam and Levee Failure | High     | This mitigation item is ongoing through city ordinances.                |
| Anchoring of Manufactured Homes and Exterior Attachments | Goal: Lessen the impacts of hazards to new and existing infrastructure  
Objective: Minimize the amount of infrastructure exposed to hazards | Severe Storms / Tornadoes     | High     | Current building codes address this issue including anchoring.          |
| Ordinance for Higher Construction Standards / Techniques Regarding Severe Storms | Goal: Create new or revise existing plans/maps  
Objective: Review and update existing, or create new community plans and ordinances | Severe Storms / Tornadoes     | High     | South Beloit will continue to maintain and update this ordinance.       |
| Active Tree Management                               | Goal: Lessen the impacts of hazards to new and existing infrastructure  
Objective: Active tree management near critical facilities and essential facilities to minimize risk of damage | All Hazards                   | Medium   | South Beloit will be implementing additional action plans to minimize tree damage to power lines as well as other infrastructure. |
### Table 5-17: List of Mitigation Strategies Developed at Meeting 4 for Winnebago Village

<table>
<thead>
<tr>
<th>Mitigation Item</th>
<th>Goals and Objects Satisfied</th>
<th>Hazards Addressed</th>
<th>Priority</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emergency Plan / Protocol for HAZMAT Releases</td>
<td>Goal: Lessen the impacts of hazards to new and existing infrastructure</td>
<td>HAZMAT</td>
<td>Low</td>
<td>South Beloit plans to develop an emergency plan in the event of a HAZMAT release and will work with the Winnebago County LEPC.</td>
</tr>
<tr>
<td></td>
<td>Objective: Review and update existing, or create new community plans and ordinances</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>HAZMAT Spill, Removal and Disposal Procedure</td>
<td>Goal: Create new or revise existing plans / maps</td>
<td>HAZMAT</td>
<td>Low</td>
<td>South Beloit plans to develop an emergency plan in the event of a HAZMAT release and will work with the Winnebago County LEPC.</td>
</tr>
<tr>
<td></td>
<td>Objective: Review and update existing, or create new community plans and ordinances</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heating and Cooling Shelters</td>
<td>Goal: Lessen the impacts of hazards to new and existing infrastructure</td>
<td>Winter Storms / Extreme Heat</td>
<td>Medium</td>
<td>South Beloit wishes to seek funding to increase the number of heating and cooling shelters in the village.</td>
</tr>
<tr>
<td></td>
<td>Objective: Improve emergency sheltering</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Public Education / Awareness</td>
<td>Goal: Develop long-term strategies to educate residents on the hazards affecting their community</td>
<td>All Hazards</td>
<td>High</td>
<td>The Village Board plans to improve public education and awareness of hazard mitigation. Potential funding sources have not be identified at this point.</td>
</tr>
<tr>
<td></td>
<td>Objective: Raise public awareness of hazard mitigation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mutual Aid Agreements</td>
<td>Goal: Create new or revise existing plans/maps</td>
<td>All Hazards</td>
<td>High</td>
<td>The Village of Winnebago will work with the Winnebago County Local Emergency Planning Committee (LEPC) and other Agencies in the County to develop and improve mutual aid agreements within the county.</td>
</tr>
<tr>
<td></td>
<td>Objective: Evaluate and strengthen the communication and transportation abilities of emergency services</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mitigation Item</td>
<td>Goals and Objects Satisfied</td>
<td>Hazards Addressed</td>
<td>Priority</td>
<td>Comments</td>
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</tbody>
</table>
| Back-up Generators for Critical Facilities | Goal: Lessen the impacts of hazards to new and existing infrastructure  
Objective: Equip public facilities and communities to guard against damage caused by secondary effects on hazards | All Hazards | High | The Village Board will oversee this project. Potential funding sources and start/end date have not been identified at this point. |
| Participate in the NFIP | Goal: Create new or revise existing plans/maps  
Objective: Support compliance with the NFIP | Flooding / Dam and Levee Failure | High | The Village of Winnebago participates in the NFIP and will continue to maintain compliance with the NFIP by evaluating and improving existing ordinances. |
| Floodplain and Stormwater Management Ordinances | Goal: Create new or revise existing plans/maps  
Objective: Review and update existing, or create new community plans and ordinances | Flooding / Dam and Levee Failure | High | The Village of Winnebago has building code restrictions and flood protection requirements in place. The Village Board will continue to maintain and update these ordinances. |
| Harden Infrastructure | Goal: Lessen the impacts of hazards to new and existing infrastructure  
Objective: Minimize the amount of infrastructure exposed to hazards | Severe Storms / Tornadoes | High | The Village of Winnebago wishes to seek funding to harden existing infrastructure in the event of severe storms and tornadoes. The Village Board will oversee this project. No start/end date has been selected at this time. |
| Develop Alternate Traffic Routes | Goal: Create new or revise existing plans/maps  
Objective: Review and update existing, or create new community plans and ordinances | HAZMAT | Medium | The Village of Winnebago will work with the Winnebago County LEPC to improve the County’s HAZMAT response plans. The project will be overseen by the Village Board. |
| Install Snow Fences | Goal: Lessen the impacts of hazards to new and existing infrastructure  
Objective: Minimize the amount of infrastructure exposed to hazards | Winter Storms | High | The Village Board will oversee this project. Potential funding sources and start/end date have not been identified at this point. |
| Heating and Cooling Shelters | Goal: Lessen the impacts of hazards to new and existing infrastructure  
Objective: Improve emergency sheltering | Winter Storms / Extreme Heat | Medium | The Village Board will oversee this project and informally initiated through the village, school district, and fire department. |
<table>
<thead>
<tr>
<th>Mitigation Item</th>
<th>Goals and Objects Satisfied</th>
<th>Hazards Addressed</th>
<th>Priority</th>
<th>Comments</th>
</tr>
</thead>
</table>
| Burn Ordinances                             | Goal: Create new or revise existing plans/maps  
Objective: Review and update existing, or create new community plans and ordinances | Extreme Heat and Drought | High     | The Village Board will oversee this project. The goal is to implement a new burn ordinance. |
| Emergency and Crisis Response Plan with Enhanced Security Measures | Goal: Create new or revise existing plans/maps  
Objective: Review and update existing, or create new community plans and ordinances | All Hazards            | High     | Shirland School District has an Emergency and Crisis Response Plan in place for 2014-2015. This plan will be implemented on the first day of school and remain in effect until a revised plan is disseminated to all staff and Response Agencies. Each classroom is equipped with a copy of this plan stored at the exit of the classroom. |
| Back-up Generators for Critical Facilities  | Goal: Lessen the impacts of hazards to new and existing infrastructure  
Objective: Equip public facilities and communities to guard against damage caused by secondary effects on hazards | All Hazards            | High     | Shirland School District experiences frequent power outages. The School District would like to seek funding to obtain a back-up generator. |
| Public Education / Awareness                | Goal: Develop long-term strategies to educate County residents on the hazards affecting their community  
Objective: Raise public awareness of hazard mitigation | All Hazards            | High     | Ongoing within Shirland School District.                                                   |
<table>
<thead>
<tr>
<th>Mitigation Item</th>
<th>Goals and Objects Satisfied</th>
<th>Hazards Addressed</th>
<th>Priority</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Family Disaster Plans &amp; IEMA Kits</td>
<td>Goal: Lessen the impacts of hazards to County residents</td>
<td>All Hazards</td>
<td>Medium</td>
<td>Ongoing mitigation item in the County. The Health Department will distribute information packets prior to and immediately following hazardous events. Shirland School District will actively participate.</td>
</tr>
<tr>
<td></td>
<td>Objective: Strengthen communication between County residents and emergency services</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mutual Aid Agreements</td>
<td>Goal: Lessen the impacts of hazards to new and existing infrastructure</td>
<td>All Hazards</td>
<td>High</td>
<td>The Shirland School District has mutual aid agreements with Local Emergency Officials in the event of a Hazardous Event.</td>
</tr>
<tr>
<td></td>
<td>Objective: Evaluate and strengthen the communication and transportation abilities of emergency services</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Develop Emergency Management Team</td>
<td>Goal: Create or revise existing plans/maps</td>
<td>All Hazards</td>
<td>High</td>
<td>Shirland School District currently has a School Emergency Management Team and are integrated into the Unified Command Structure.</td>
</tr>
<tr>
<td></td>
<td>Objective: Review and update existing, or create new community plans and ordinances</td>
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</tbody>
</table>

Table 5-19: List of Mitigation Strategies Developed at Meeting 4 for Rock River Water Reclamation District (RRWRD)

<table>
<thead>
<tr>
<th>Mitigation Item</th>
<th>Goals and Objects Satisfied</th>
<th>Hazards Addressed</th>
<th>Priority</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mutual Aid Agreements</td>
<td>Goal: Create or revise existing plans/maps</td>
<td>All Hazards</td>
<td>Medium</td>
<td>RRWRD will formalize existing agreements. RRWRD does not anticipate accumulating any cost for this strategy, no funding will be sought after.</td>
</tr>
<tr>
<td></td>
<td>Objective: Evaluate and strengthen the communication and transportation abilities of emergency services</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Back-up Generators for Critical Facilities</td>
<td>Goal: Lessen the impacts of hazards to new and existing infrastructure</td>
<td>All Hazards</td>
<td>High</td>
<td>All critical lift stations and WWTPs have back-up generators.</td>
</tr>
<tr>
<td></td>
<td>Objective: Equip public facilities and communities to guard against damage caused by secondary effects on hazards</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>
### Table 5-20: List of Mitigation Strategies Developed at Meeting 4 for North Park Public Water District (NPPWD)

<table>
<thead>
<tr>
<th>Mitigation Item</th>
<th>Goals and Objects Satisfied</th>
<th>Hazards Addressed</th>
<th>Priority</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Harden Infrastructure</td>
<td>Goal: Lessen the impacts of hazards to new and existing infrastructure</td>
<td>Severe Storms / Tornadoes</td>
<td>High</td>
<td>RRWRD has completed the planning stage to harden existing infrastructure. Construction is slated to being in 2015. RRWRD is applying for an IEPA loan to help fund this project.</td>
</tr>
<tr>
<td></td>
<td>Objective: Minimize the amount of infrastructure exposed to hazards</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Public Education / Awareness</td>
<td>Goal: Develop long-term strategies to educate residents on the hazards affecting their community</td>
<td>All Hazards</td>
<td>Medium</td>
<td>NPPWD plans to raise awareness of the danger to water utilities during extreme cold (i.e., frozen services)</td>
</tr>
<tr>
<td></td>
<td>Objective: Raise public awareness of hazard mitigation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Family Disaster Plans &amp; Kits</td>
<td>Goal: Develop long-term strategies to educate residents on the hazards affecting their community</td>
<td>All Hazards</td>
<td>Medium</td>
<td>NPPWD would like obtain funding for family disaster plans &amp; kits to stress the importance of safe drinking water.</td>
</tr>
<tr>
<td></td>
<td>Objective: Raise public awareness of hazard mitigation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Back-up Generators for Critical Facilities</td>
<td>Goal: Lessen the impacts of hazards to new and existing infrastructure</td>
<td>All Hazards</td>
<td>High</td>
<td>NPPWD wishes to seek funding to obtain back-up generators for critical water facilities within the Machesney park, Roscoe and Loves Park area.</td>
</tr>
<tr>
<td></td>
<td>Objective: Equip public facilities and communities to guard against damage caused by secondary effects on hazards</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Structure Elevation</td>
<td>Goal: Lessen the impacts of hazards to new and existing infrastructure</td>
<td>Flooding / Dam and Levee Failure</td>
<td>Low</td>
<td>NPPWD has identified several structures that would benefit from structure elevation renovations. NPPWD will seek federal funding for future projects.</td>
</tr>
<tr>
<td>Mitigation Item</td>
<td>Goals and Objects Satisfied</td>
<td>Hazards Addressed</td>
<td>Priority</td>
<td>Comments</td>
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</tr>
<tr>
<td>Install Sump Pumps</td>
<td>Goal: Lessen the impacts of hazards to new and existing infrastructure</td>
<td>Flooding / Dam and Levee Failure</td>
<td>Medium</td>
<td>NPPWD would like to seek funding to install backflow assemblies to protect cross contamination of public water.</td>
</tr>
<tr>
<td></td>
<td>Objective: Minimize potential damage to foundations and household/critical facility utilities</td>
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</tr>
<tr>
<td>Harden Infrastructure</td>
<td>Goal: Lessen the impacts of hazards to new and existing infrastructure</td>
<td>Severe Storms / Tornadoes</td>
<td>Medium</td>
<td>NPPWD wishes to seek funding to harden existing water infrastructure in the event of severe storms and tornadoes.</td>
</tr>
<tr>
<td></td>
<td>Objective: Minimize the amount of infrastructure exposed to hazards</td>
<td></td>
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</tr>
<tr>
<td>Bury Power Lines</td>
<td>Goal: Lessen the impacts of hazards to new and existing infrastructure</td>
<td>Severe Storms / Tornadoes</td>
<td>Low</td>
<td>NPPWD would like to convert above ground power lines to minimize the amount of infrastructure exposed to severe storms and tornadoes.</td>
</tr>
<tr>
<td></td>
<td>Objective: Minimize the amount of infrastructure exposed to hazards</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Emergency Plan / Protocol for HAZMAT Releases</td>
<td>Goal: Create new or revise existing plans/maps</td>
<td>HAZMAT</td>
<td>High</td>
<td>NPPWD will work with the Winnebago County LEPC to improve the County’s HAZMAT response plans.</td>
</tr>
<tr>
<td></td>
<td>Objective: Review and update existing, or create new community plans and ordinances</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HAZMAT Spill, Removal and Disposal Procedure</td>
<td>Goal: Create new or revise existing plans/maps</td>
<td>HAZMAT</td>
<td>High</td>
<td>NPPWD will work with the Winnebago County LEPC to improve the County’s HAZMAT response plans.</td>
</tr>
<tr>
<td></td>
<td>Objective: Review and update existing, or create new community plans and ordinances</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Burn Ordinances</td>
<td>Goal: Create new or revise existing plans/maps</td>
<td>Extreme Heat and Drought</td>
<td>Low</td>
<td>NPPWD will continue to work with the municipalities it serves to maintain/update burn ordinances.</td>
</tr>
<tr>
<td></td>
<td>Objective: Review and update existing, or create new community plans and ordinances</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heating and Cooling Shelters</td>
<td>Goal: Lessen the impacts of hazards to new and existing infrastructure</td>
<td>Winter Storms / Extreme Heat</td>
<td>Medium</td>
<td>NPPWD will continue to work with the municipalities it serves to increase the number of heating and cooling shelters for its residents.</td>
</tr>
<tr>
<td></td>
<td>Objective: Improve emergency sheltering</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mitigation Item</td>
<td>Goals and Objects Satisfied</td>
<td>Hazards Addressed</td>
<td>Priority</td>
<td>Comments</td>
</tr>
<tr>
<td>---------------------------------</td>
<td>-----------------------------------------------------------------------------------------------</td>
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<td>--------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Develop Safety Procedures for Earthquakes</td>
<td>Goal: Improve emergency sheltering and procedures in the event of an earthquake</td>
<td>Earthquakes</td>
<td>Low</td>
<td>NPPWD will work with Winnebago County will work to develop mutual aid agreements in event of an earthquake.</td>
</tr>
<tr>
<td></td>
<td>Objective: Review and update existing, or create new community earthquake plans</td>
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</tbody>
</table>
5.5 Multi-Jurisdictional Mitigation Strategy

As a part of the multi-hazard mitigation planning requirements, at least two identifiable mitigation action items have been addressed for each hazard listed in the risk assessment and for each jurisdiction covered under this plan.

Each of the eight incorporated communities within and including Winnebago County was invited to participate in brainstorming sessions in which goals, objectives, and strategies were discussed and prioritized. Each participant in these sessions was armed with possible mitigation goals and strategies provided by FEMA, as well as information about mitigation projects discussed in neighboring communities and counties. All potential strategies and goals that arose through this process are included in this plan. The county planning team used FEMA’s evaluation criteria to gauge the priority of all items. A final draft of the disaster mitigation plan was presented to all members to allow for final edits and approval of the priorities.
Section 6. Plan Maintenance

6.1 Monitoring, Evaluation, and Updating the MHMP
Throughout the five-year planning cycle, the Winnebago County Highway Department will reconvene the mitigation planning team to monitor, evaluate, and update the plan on an annual basis. Additionally, a meeting will be held in 2018 to address the five-year update of this plan. Members of the planning committee are readily available to engage in email correspondence between annual meetings. If the need for a special meeting, due to new developments or the occurrence of a declared disaster in the county, the team will meet to update mitigation strategies. Depending on grant opportunities and fiscal resources, mitigation projects may be implemented independently by individual communities or through local partnerships.

The committee will review the county goals and objectives to determine their relevance to changing situations in the county. In addition, state and federal policies will be reviewed to ensure they are addressing current and expected conditions. The committee will also review the risk assessment portion of the plan to determine if this information should be updated or modified. The parties responsible for the various implementation actions will report on the status of their projects, and will include which implementation processes worked well, any difficulties encountered, how coordination efforts are proceeding, and which strategies should be revised.

Updates or modifications to the MHMP during the five-year planning process will require a public notice and a meeting prior to submitting revisions to the individual jurisdictions for approval. The plan will be updated via written changes, submissions as the committee deems appropriate and necessary, and as approved by the Winnebago County Board.

The GIS data used to prepare the plan was obtained from existing county GIS data as well as data collected as part of the planning process. This updated Hazus-MH GIS data has been returned to the county for use and maintenance in the county’s system. As newer data becomes available, these updated data will be used for future risk assessments and vulnerability analyses.

6.2 Implementation through Existing Programs
The results of this plan will be incorporated into ongoing planning efforts since many of the mitigation projects identified as part of this planning process are ongoing. Winnebago County and its incorporated jurisdictions will update the zoning plans and ordinances listed in Table 5-3 as necessary and as part of regularly scheduled updates. Each community will be responsible for updating its own plans and ordinances.

6.3 Continued Public Involvement
Continued public involvement is critical to the successful implementation of the MHMP. Comments from the public on the MHMP will be received by the Winnebago County Highway Department and forwarded to the mitigation planning team for discussion. Education efforts for hazard mitigation will be an ongoing effort of Winnebago County. The public will be notified of periodic planning meetings through notices in the local newspaper. Once adopted, a copy of the MHMP will be maintained in each jurisdiction and in the Winnebago County Highway Department.
References


Definitions

100-year Floodplain

Areas subject to inundation by the 1-percent-annual-chance flood event.

Critical Facility

A structure, because of its function, size, service area, or uniqueness, that has the potential to cause serious bodily harm, extensive property damage, or disruption of vital socioeconomic activities if it is destroyed or damaged or if its functionality is impaired. This includes, but are not limited to, water and wastewater treatment facilities, municipal buildings, education facilities, and non-emergency healthcare facilities.

Community Rating System (CRS)

A voluntary program for National Flood Insurance Program (NFIP) participating communities. The goals of the CRS are to reduce flood damages to insurable property, strengthen and support the insurance aspects of the NFIP, and encourage a comprehensive approach to floodplain management.

Comprehensive Plan

A document, also known as a "general plan," covering the entire geographic area of a community and expressing community goals and objectives. The plan lays out the vision, policies, and strategies for the future of the community, including all the physical elements that will determine the community’s future developments.

Disaster Mitigation Act of 2000 (DMA 2000)

The largest legislation to improve the planning process. It was signed into law on October 30, 2000. This new legislation reinforces the importance of mitigation planning and emphasizes planning for disasters before they occur.

Essential Facility

A subset of critical facilities that represent a substantial hazard to human life in the event of failure. This includes (but not limited to) hospital and fire, rescue, ambulance, emergency operations centers, and police stations.

Federal Emergency Management Agency

An independent agency created in 1979 to provide a single point of accountability for all federal activities related to disaster mitigation and emergency preparedness, response, and recovery.

Hazard

A source of potential danger or adverse condition.

Hazard Mitigation

Any sustained action to reduce or eliminate long-term risk to human life and property from hazards.
| **Hazard Mitigation Grant Program (HMPG)** | Authorized under Section 404 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act, HMGP is administered by FEMA and provides grants to states, tribes, and local governments to implement hazard mitigation actions after a major disaster declaration. |
| **Hazus-MH** | A geographic information system (GIS)-based disaster risk assessment tool. |
| **Multi-Hazard Mitigation Planning** | Identify policies and actions that can be implemented over the long term to reduce risk and future losses from various hazardous events. |
| **National Flood Insurance Program** | Administered by the Federal Emergency Management Agency, which works closely with nearly 90 private insurance companies to offer flood insurance to property owners and renters. In order to qualify for flood insurance, a community must join the NFIP and agree to enforce sound floodplain management standards. |
| **Planning Team** | A group composed of government, private sector, and individuals with a variety of skills and areas of expertise, usually appointed by a city or town manager, or chief elected official. The group finds solutions to community mitigation needs and seeks community acceptance of those solutions. |
| **Risk Priority Index** | Quantifies risk as the product of hazard probability and magnitude so planning team members can prioritize mitigation strategies for high-risk-priority hazards. |
| **Risk Assessment** | Quantifies the potential loss resulting from a disaster by assessing the vulnerability of buildings, infrastructure, and people. |
| **Strategy** | A collection of actions to achieve goals and objectives. |
| **Vulnerability** | Describes how exposed or susceptible to damage an asset is. Vulnerability depends on an asset's construction, contents, and the economic value of its functions. |
## Acronyms

<table>
<thead>
<tr>
<th>A</th>
<th>AEGL – Acute Exposure Guideline Levels</th>
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<tbody>
<tr>
<td></td>
<td>ALOHA – Areal Locations of Hazardous Atmospheres</td>
</tr>
<tr>
<td>C</td>
<td>CERI – Center for Earthquake Research and Information</td>
</tr>
<tr>
<td></td>
<td>CRS – Community Rating System</td>
</tr>
<tr>
<td>D</td>
<td>DEM – Digital Elevation Model</td>
</tr>
<tr>
<td></td>
<td>DFIRM – Digital Flood Insurance Rate Map</td>
</tr>
<tr>
<td></td>
<td>DMA – Disaster Mitigation Act of 2000</td>
</tr>
<tr>
<td>E</td>
<td>EMA – Emergency Management Agency</td>
</tr>
<tr>
<td></td>
<td>EPA – Environmental Protection Agency</td>
</tr>
<tr>
<td>F</td>
<td>FEMA – Federal Emergency Management Agency</td>
</tr>
<tr>
<td></td>
<td>FIRM – Flood Insurance Rate Map</td>
</tr>
<tr>
<td>G</td>
<td>GIS – Geographic Information System</td>
</tr>
<tr>
<td>H</td>
<td>Hazus-MH – Hazards USA Multi-Hazard</td>
</tr>
<tr>
<td></td>
<td>HMGP – Hazard Mitigation Grant Program</td>
</tr>
<tr>
<td></td>
<td>HUC – Hydrologic Unit Code</td>
</tr>
<tr>
<td>I</td>
<td>IA – Individual Assistance</td>
</tr>
<tr>
<td></td>
<td>IDOT – Illinois Department of Transportation</td>
</tr>
<tr>
<td></td>
<td>IEMA – Illinois Emergency Management Agency</td>
</tr>
<tr>
<td>M</td>
<td>MHMP – Multi-Hazard Mitigation Plan</td>
</tr>
<tr>
<td>N</td>
<td>NCDC – National Climatic Data Center</td>
</tr>
<tr>
<td>Acronym</td>
<td>Definition</td>
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<tr>
<td>---------</td>
<td>------------</td>
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<tr>
<td>NEHRP</td>
<td>National Earthquake Hazards Reduction Program</td>
</tr>
<tr>
<td>NFIP</td>
<td>National Flood Insurance Program</td>
</tr>
<tr>
<td>NOAA</td>
<td>National Oceanic and Atmospheric Administration</td>
</tr>
<tr>
<td>PA</td>
<td>Public Assistance</td>
</tr>
<tr>
<td>PPM</td>
<td>Parts Per Million</td>
</tr>
<tr>
<td>RPI</td>
<td>Risk Priority Index</td>
</tr>
<tr>
<td>SIU</td>
<td>Southern Illinois University Carbondale</td>
</tr>
<tr>
<td>SPC</td>
<td>Storm Prediction Center</td>
</tr>
<tr>
<td>USGS</td>
<td>United States Geological Survey</td>
</tr>
</tbody>
</table>
Appendices

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WINNEBAGO COUNTY MULTI-HAZARD MITIGATION PLANNING
INTRODUCTION TO THE KICKOFF MEETING

Tuesday, January 7, 2014
10:00 a.m.
Winnebago County Highway Department

I. Welcome by Don Krizan (WCHD) & introductions by participants (sign-in sheet attached)

II. Review of Mitigation Planning by Krizan:
   i. Plan availability on Winnebago County website (http://winnebago.iagov): Departments - Highway Department - Additional Pages/Highway Programs & Information - Adopted County Wide Multi-Hazard Mitigation Plan (MHP)
   ii. The Planning Team - MHP pgs. 11-14
   iii. Plan Maintenance - MHP pgs. 150-151

III. Discussion of Advisory Group / Public Participation and In-Kind Match Documentation:
   i. Krizan cited resource people and agencies including the airport authority, colleges & other schools, utilities, railroads, WinGIS, fire police, development planners & building inspectors, healthcare providers.
   ii. Jim Wise (Village of Cherry Valley) recommended including the local National Guard.
   iii. Marcy Leach (City of Rockford) suggested the Winnebago County Local Emergency Planning Committee (http://www.winnebagomap.org) includes many of the resource people and agencies we are seeking.
   iv. Krizan pointed out that it will be beneficial to gather input regarding historical hazards events and that local historians, librarians, and interested volunteers might be enlisted for data gathering.
   v. Krizan reported that all participating jurisdictions and agencies involved in this update process will be asked to provide salary/benefit rates for each individual participant. Correspondence regarding this matter will be sent to all parties in the near future.

IV. Discussion of future meetings and update deadline:
   i. Wise and Leach voiced opinion that the tentative schedule of meetings and activities for this update is too tight and that additional time will be required.
   ii. Krizan indicated that an extension of the deadline is currently being sought.
   iii. With consideration given to the availability of SJU’s Project Manager, Amanda Dumetz, the Kickoff Meeting was rescheduled for Wednesday, January 22nd, at 10:00 a.m., at the Winnebago County Highway Department.

V. Krizan will distribute a brief summary of the meeting topics and the list of participants.

VI. Adjournment

Respectfully submitted,

Don Krizan
WINNEBAGO COUNTY MULTI-HAZARD MITIGATION PLANNING
KICKOFF MEETING (MEETING III)

Minutes

Wednesday, January 22, 2014
10:00 a.m.
Winnebago County Highway Department

I. Welcome by Don Krizan, WCHD

II. Introductions by participants (sign-in sheet attached) & introduction of special guests:
   i. Prof. Nicholas Pinter, Program Director, Natural Hazards Research & Mitigation Group, SIU
   ii. Amanda Dampitz, Project Manager, Natural Hazards Research & Mitigation Group, SIU

III. Advisory Group Update:
   i. Fred Dickel, Chairman, WC Local Emergency Planning Committee, contacted regarding participation (Krizan)
   ii. Updating of liability email list underway (Krizan)
   iii. National Guard contact established by Jan Wise, Village of Cherry Valley

IV. Planning Group reminders reviewed (Krizan)
   i. Documentation of historical hazards/events
   ii. Salary-benefit information request

V. Update presentalation (Pinter/Dampitz)

VI. Discussion / next steps
   i. Review/update of community profiles
   ii. Review/update of critical facilities list
   iii. Utilizing WebGIS & County website for providing access to critical facilities data
   iv. Collecting/Assembling historical hazard information
   v. Meeting No. 2 to be held Feb. 18th or 25th, or early March, possibly at RMAP

VII. Adjournment

Respectfully submitted,

Don Krizan
<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Location</th>
<th>Item #</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>March 10</td>
<td>9:00 AM</td>
<td>Winnebago County</td>
<td>1</td>
<td>Meeting</td>
</tr>
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<td></td>
<td></td>
<td>Emergency Management Office</td>
<td>2</td>
<td>Agenda Items</td>
</tr>
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<td></td>
<td></td>
<td>3</td>
<td>Action Items</td>
</tr>
</tbody>
</table>
Appendix A: MHMP Meeting Minutes

### WINNEBAGO COUNTY MULTI-HAZARD MITIGATION PLANNING MEETING 2: REVIEW OF HISTORICAL HAZARDS

**Minutes**

**Tuesday, March 25, 2014**

10:00 a.m.

RMAP Regional Design Center, 315 N. Main Street, Rockford

1. Welcome by Don Krizan, WCBD
   1.1 The Plan Update is intended to enhance, not duplicate, plans to deal with hazards and hazard mitigation in Winnebago County.
   1.2 A hazard mitigation plan and its periodic updates are a requirement of the federal government for receiving pre-disaster mitigation funds to support plan implementation.
   1.3 The topic of this meeting is to initiate the process of listing and prioritizing the hazards to be addressed in the plan.

2. Introductions by participants (sign-in sheet attached)

3. Remarks regarding information to be provided by Planning Group (Krizan)
   3.1 Critical/essential facilities reports
   3.2 Salary rates for public (non-federally funded) employees; occupation titles for non-public partners
   3.3 In-kind match submittals for Quarterly Report to be submitted April 15th

4. Acknowledgments (Krizan)
   4.1 Planning Subgroup: Jim Wise, Mary Lesh, Thaddeus Mar, Luc Corl, Jamie Evans
   4.2 Historical data collection: Thaddeus Mar
   4.3 Agency critical facilities reporting: County & municipal staff

5. Review, discussion, selection, prioritization of hazards & identification of hazards for modeling presented by Nicholas Pinter and Amanda Dampert, NIU
   5.1 Selection & prioritization results (meeting participants):

<table>
<thead>
<tr>
<th>Jurisdiction</th>
<th>Hazard</th>
<th>Flooding</th>
<th>Severe Storms</th>
<th>Tornadoes</th>
<th>Hazmat</th>
<th>Winter Storms</th>
<th>Drought/Heat</th>
<th>Levee/Flood Damage</th>
<th>Earthquakes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Winnebago County</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Cherry Valley</td>
<td>2</td>
<td>4</td>
<td>3</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
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</tr>
</tbody>
</table>

5.2 Selection & location of hazard scenarios to be modeled (Dampert & meeting participants):
   5.2.1 Flood: 100-year flood
   5.2.2 Tornado: F4 Scenario through Rockford/Cherry Valley
   5.2.3 Tornado: F4 Scenario through Rockford/Loves Park
   5.2.4 Hazmat: transportation accident on Rt-20 and I-290 (sodium)
   5.2.5 Hazmat: building leak at Viking Chemical, 1827 10th Ave, Rockford (chlorine)
   5.2.6 Earthquake: Deterministic 5.5M, epicenter in Rockford
   5.2.7 Earthquake: 5.0M, 50-year probability, epicenter in Rockford
   5.2.8 Earthquake: 5.5M, 50-year probability, epicenter in Rockford

6. Next steps (Dampert)
   6.1 Meeting 3: Detailed Risk Assessment (public)
   6.1.1 SIU will present the draft detailed risk assessment to the Planning Group and to the public.
   6.1.2 Public questions and comments will be welcomed.

6.2 Meeting 4: Developing Mitigation Strategies
   6.2.1 SIU will assist the Planning Group in identifying and prioritizing mitigation strategies and projects that address the threats identified in the risk assessment.
   6.2.2 At this point in the Update process, a draft of the updated plan can be assembled.
   6.2.3 Meeting dates are to be determined.

7. Adjournment

Respectfully submitted,

Don Krizan
Winnebago County Multi-Hazard Mitigation Planning
Meeting 3: Public Meeting

Agenda
Wednesday, June 25, 2014
7:00 p.m.
RMAP Regional Design Center, 315 N. Main Street, Rockford

I. Welcome by Don Krizan, WCHID

II. Introduction by participants (sign-in sheet attached) & introduction of guests:
   i. Prof. Nicholas Pinter, Program Director, Natural Hazards Research & Mitigation Group, SRU
   ii. Amanda Dampitz, Project Manager, Natural Hazards Research & Mitigation Group, SRU

III. Brief Overview of Winnebago County Plan Status (Krizan)

IV. Presentation (Pinter)
   i. Natural Hazards and Historical Disasters in Winnebago County
   ii. Introduction to Mitigation Strategies

V. Discussion / Next Steps (Pinter & Krizan)
   i. Review of selected Hazards for individual Jurisdictions with potential adjustments
   ii. Collection of pertinent information for plan
   iii. Meeting 4 to be held on June 26, 9:00 am at RMAP

VI. Adjournment

Appendix A: MHMP Meeting Minutes
Winnebago County Multi-Hazard Mitigation Planning
Meeting 4: Mitigation Strategies

Agenda
Thursday, June 26, 2014
9:00 a.m.
RMAP Regional Design Center, 315 N. Main Street, Rockford

I. Welcome by Don Krizan, WCHD

II. Introduction by participants (sign-in sheet attached) & introduction of guests:
   i. Amanda Dampetz, Project Manager, Natural Hazards Research & Mitigation Group, SIU

III. Reminders (Krizan)
   i. Collection of pertinent information for plan
   ii. Outline of plan completion schedule
   iii. 1. Revising deadlines
        i. July 18th – Mitigation strategies submitted to Krizan
        ii. July 21st – SIU submits plan to Winnebago County for review
        iii. Early Sept. – Submit plan to EMA

IV. Presentation (Dampetz)
   i. Introduction to Mitigation Strategies and Review of Successful Mitigation Projects

V. Developing Mitigation Strategies Workshop (Dampetz)

VI. Discussion / Next Steps (Krizan and Dampetz)
   i. Collection of pertinent information for plan
   ii. Review of upcoming deadlines
   iii. Meeting 5 to be held on July 23, 9:00 am at RMAP

VII. Adjournment
Appendix A: MHMP Meeting Minutes
Appendix B. Local Press Release and Newspaper Articles
Winnebago County Multi-Hazard Mitigation Plan

Appendix B: Local Newspaper Articles
Public Meeting of the Winnebago County Multi-Hazard Mitigation Planning Group

You are here: Home > Departments > Highway Department > Highway News > Press Releases & Traffic Alerts > Press Release: Public Meeting of the Winnebago County Multi-Hazard Mitigation Planning Group

Date: Tuesday, June 10, 2014

Press Room
FOR IMMEDIATE RELEASE
June 10, 2014

Contact:
Don Kitzan
Winnebago County Highway Department
don.kitzan@wincoill.us / 815-319-4000

WINNEBAGO COUNTY BOARD CHAIRMAN
SCOTT CHRISTIANSEN ANNOUNCES

Public Meeting of the Winnebago County Multi-Hazard Mitigation Planning Group

The Winnebago County Multi-Hazard Mitigation Plan Steering Committee will host a public information and strategy planning session at 7:00 p.m. on Wednesday, June 26th, at the Regional Design Center, 315 N. Main Street, in Rockford. Through a grant funded by the Federal Emergency Management Agency (FEMA), the County has formed an alliance with Southern Illinois University Carbondale (SIU) to identify potential natural hazards and produce an Update to the current Multi-Hazard Mitigation Plan (MHMP).

A planning group, comprised of the County, municipalities, other agencies, and utilities, has selected a list of potential hazards that could occur within the County, and is in the process of developing a list of mitigation measures intended to eliminate or reduce the negative impact of these hazards. The list of hazards includes flooding, severe storms, tornadoes, hazardous materials releases, winter storms, extreme heat and drought, dam failures, and earthquakes. Examples of mitigation projects include construction of storm shelters, purchase of properties that lie in flood-prone areas, enhancement of fire protection capabilities, and further coordination of emergency response teams.

Since funds for mitigation projects are only available to jurisdictions that have a FEMA-approved MHMP, completion of the Update by FEMA’s December 31st deadline is critical for those communities currently planning or implementing mitigation projects.

The public is invited to attend this June 26th meeting to learn about the MHMP Update and to provide the planning group with input regarding the planning process.

For more information about the MHMP, please refer to the Winnebago County website at http://www.wincoill.us or contact Don Kitzan at the Winnebago County Highway Department, (815) 319-4000.

Appendix B: Local Newspaper Articles
For more information about the MHMIP, please refer to the Winnebago County website at http://www.wincoill.us or contact Don Kriizan at the Winnebago County Highway Department, (815) 315-4000.

Appendix B: Local Newspaper Articles
Appendix C. Adopting Resolutions
Resolution #______________

ADOPTING THE WINNEBAGO COUNTY MULTI-HAZARD MITIGATION PLAN

WHEREAS, Winnebago County recognizes the threat that natural hazards pose to people and property; and

WHEREAS, undertaking hazard mitigation actions before disasters occur will reduce the potential for harm to people and property and save taxpayer dollars; and

WHEREAS, an adopted multi-hazard mitigation plan is required as a condition of future grant funding for mitigation projects; and

WHERAS, Winnebago County participated jointly in the planning process with the other local units of government within the County to prepare a Multi-Hazard Mitigation Plan;

NOW, THEREFORE, BE IT RESOLVED, that Winnebago County hereby adopts the Winnebago County Multi-Hazard Mitigation Plan as an official plan; and

BE IT FURTHER RESOLVED that the Winnebago County Highway Department will submit on behalf of the participating municipalities the adopted Multi-Hazard Mitigation Plan to the Illinois Department of Homeland Security and the Federal Emergency Management Agency for final review and approval.

ADOPTED THIS _____________ Day of __________________, 2014.

__________________________________________
County Board Chairman

__________________________________________
County Board Member

__________________________________________
County Board Member

__________________________________________
County Board Member

__________________________________________
County Board Member

__________________________________________
Attested by: County Clerk
Resolution #____________

ADOPTING THE WINNEBAGO COUNTY MULTI-HAZARD MITIGATION PLAN

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

WHEREAS, undertaking hazard mitigation actions before disasters occur will reduce the potential for harm to people and property and save taxpayer dollars; and

WHEREAS, an adopted multi-hazard mitigation plan is required as a condition of future grant funding for mitigation projects; and

WHEREAS, the Village of Cherry Valley participated jointly in the planning process with the other local units of government within the County to prepare a Multi-Hazard Mitigation Plan;

NOW, THEREFORE, BE IT RESOLVED, that the Village of Cherry Valley hereby adopts the Winnebago County Multi-Hazard Mitigation Plan as an official plan; and

BE IT FURTHER RESOLVED that the Winnebago County Highway Department will submit on behalf of the participating municipalities the adopted Multi-Hazard Mitigation Plan to the Illinois Department of Homeland Security and the Federal Emergency Management Agency for final review and approval.

ADOPTED THIS ______________ Day of __________________, 2014.

________________________________________
Village President

________________________________________
Village Council Member

________________________________________
Village Council Member

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Village Council Member

________________________________________
Village Council Member

________________________________________
Attested by: Village Clerk
Resolution #______________

ADOPTING THE WINNEBAGO COUNTY MULTI-HAZARD MITIGATION PLAN

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

WHEREAS, undertaking hazard mitigation actions before disasters occur will reduce the potential for harm to people and property and save taxpayer dollars; and

WHEREAS, an adopted multi-hazard mitigation plan is required as a condition of future grant funding for mitigation projects; and

WHEREAS, the Village of Durand participated jointly in the planning process with the other local units of government within the County to prepare a Multi-Hazard Mitigation Plan;

NOW, THEREFORE, BE IT RESOLVED, that the Village of Durand hereby adopts the Winnebago County Multi-Hazard Mitigation Plan as an official plan; and

BE IT FURTHER RESOLVED that the Winnebago County Highway Department will submit on behalf of the participating municipalities the adopted Multi-Hazard Mitigation Plan to the Illinois Department of Homeland Security and the Federal Emergency Management Agency for final review and approval.

ADOPTED THIS _____________ Day of _________________, 2014.

_______________________________
Village President

_______________________________
Village Council Member

_______________________________
Village Council Member

_______________________________
Village Council Member

_______________________________
Village Council Member

_______________________________
Attested by: Village Clerk
Resolution #______________

ADOPTING THE WINNEBAGO COUNTY MULTI-HAZARD MITIGATION PLAN

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

WHEREAS, undertaking hazard mitigation actions before disasters occur will reduce the potential for harm to people and property and save taxpayer dollars; and

WHEREAS, an adopted multi-hazard mitigation plan is required as a condition of future grant funding for mitigation projects; and

WHEREAS, the City of Loves Park participated jointly in the planning process with the other local units of government within the County to prepare a Multi-Hazard Mitigation Plan;

NOW, THEREFORE, BE IT RESOLVED, that the City of Loves Park hereby adopts the Winnebago County Multi-Hazard Mitigation Plan as an official plan; and

BE IT FURTHER RESOLVED that the Winnebago County Highway Department will submit on behalf of the participating municipalities the adopted Multi-Hazard Mitigation Plan to the Illinois Department of Homeland Security and the Federal Emergency Management Agency for final review and approval.

ADOPTED THIS _____________ Day of __________________, 2014.

________________________________
City Board Chairman

________________________________
City Board Member

________________________________
City Board Member

________________________________
City Board Member

______________________________
City Board Member

________________________________
Attested by: City Clerk
Resolution #____________

ADOPTING THE WINNEBAGO COUNTY MULTI-HAZARD MITIGATION PLAN

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

WHEREAS, undertaking hazard mitigation actions before disasters occur will reduce the potential for harm to people and property and save taxpayer dollars; and

WHEREAS, an adopted multi-hazard mitigation plan is required as a condition of future grant funding for mitigation projects; and

WHEREAS, the Village of Machesney Park participated jointly in the planning process with the other local units of government within the County to prepare a Multi-Hazard Mitigation Plan;

NOW, THEREFORE, BE IT RESOLVED, that the Village of Machesney Park hereby adopts the Winnebago County Multi-Hazard Mitigation Plan as an official plan; and

BE IT FURTHER RESOLVED that the Winnebago County Highway Department will submit on behalf of the participating municipalities the adopted Multi-Hazard Mitigation Plan to the Illinois Department of Homeland Security and the Federal Emergency Management Agency for final review and approval.

ADOPTED THIS _____________ Day of _________________, 2014.

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Village President

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Village Council Member

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Village Council Member

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Village Council Member

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Village Council Member

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Attested by: Village Clerk
Resolution #____________

ADOPTING THE WINNEBAGO COUNTY MULTI-HAZARD MITIGATION PLAN

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

WHEREAS, undertaking hazard mitigation actions before disasters occur will reduce the potential for harm to people and property and save taxpayer dollars; and

WHEREAS, an adopted multi-hazard mitigation plan is required as a condition of future grant funding for mitigation projects; and

WHEREAS, the Village of New Milford participated jointly in the planning process with the other local units of government within the County to prepare a Multi-Hazard Mitigation Plan;

NOW, THEREFORE, BE IT RESOLVED, that the Village of New Milford hereby adopts the Winnebago County Multi-Hazard Mitigation Plan as an official plan; and

BE IT FURTHER RESOLVED that the Winnebago County Highway Department will submit on behalf of the participating municipalities the adopted Multi-Hazard Mitigation Plan to the Illinois Department of Homeland Security and the Federal Emergency Management Agency for final review and approval.

ADOPTED THIS _____________ Day of _________________, 2014.

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Village President

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Village Council Member

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Village Council Member

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Village Council Member

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Village Council Member

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Attested by: Village Clerk
Resolution #_____________

ADOPTING THE WINNEBAGO COUNTY MULTI-HAZARD MITIGATION PLAN

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

WHEREAS, undertaking hazard mitigation actions before disasters occur will reduce the potential for harm to people and property and save taxpayer dollars; and

WHEREAS, an adopted multi-hazard mitigation plan is required as a condition of future grant funding for mitigation projects; and

WHEREAS, the Village of Pecatonica participated jointly in the planning process with the other local units of government within the County to prepare a Multi-Hazard Mitigation Plan;

NOW, THEREFORE, BE IT RESOLVED, that the Village of Pecatonica hereby adopts the Winnebago County Multi-Hazard Mitigation Plan as an official plan; and

BE IT FURTHER RESOLVED that the Winnebago County Highway Department will submit on behalf of the participating municipalities the adopted Multi-Hazard Mitigation Plan to the Illinois Department of Homeland Security and the Federal Emergency Management Agency for final review and approval.

ADOPTED THIS _____________ Day of _________________, 2014.

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Village President

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Village Council Member

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Village Council Member

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Village Council Member

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Village Council Member

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Village Council Member

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Attested by: Village Clerk
Resolution #____________

ADOPTING THE WINNEBAGO COUNTY MULTI-HAZARD MITIGATION PLAN

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

WHEREAS, undertaking hazard mitigation actions before disasters occur will reduce the potential for harm to people and property and save taxpayer dollars; and

WHEREAS, an adopted multi-hazard mitigation plan is required as a condition of future grant funding for mitigation projects; and

WHEREAS, the City of Rockford participated jointly in the planning process with the other local units of government within the County to prepare a Multi-Hazard Mitigation Plan;

NOW, THEREFORE, BE IT RESOLVED, that the City of Rockford hereby adopts the Winnebago County Multi-Hazard Mitigation Plan as an official plan; and

BE IT FURTHER RESOLVED that the Winnebago County Highway Department will submit on behalf of the participating municipalities the adopted Multi-Hazard Mitigation Plan to the Illinois Department of Homeland Security and the Federal Emergency Management Agency for final review and approval.

ADOPTED THIS _____________ Day of __________________, 2014.

________________________________________
City Board Chairman

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City Board Member

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City Board Member

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City Board Member

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City Board Member

Attested by: City Clerk
Resolution #____________

ADOPTING THE WINNEBAGO COUNTY MULTI-HAZARD MITIGATION PLAN

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

WHEREAS, undertaking hazard mitigation actions before disasters occur will reduce the potential for harm to people and property and save taxpayer dollars; and

WHEREAS, an adopted multi-hazard mitigation plan is required as a condition of future grant funding for mitigation projects; and

WHEREAS, the Village of Rockton participated jointly in the planning process with the other local units of government within the County to prepare a Multi-Hazard Mitigation Plan;

NOW, THEREFORE, BE IT RESOLVED, that the Village of Rockton hereby adopts the Winnebago County Multi-Hazard Mitigation Plan as an official plan; and

BE IT FURTHER RESOLVED that the Winnebago County Highway Department will submit on behalf of the participating municipalities the adopted Multi-Hazard Mitigation Plan to the Illinois Department of Homeland Security and the Federal Emergency Management Agency for final review and approval.

ADOPTED THIS _____________ Day of ___________________, 2014.

___________________________________
Village President

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Village Council Member

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Village Council Member

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Village Council Member

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Village Council Member

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Attested by: Village Clerk
Resolution #______________

ADOPTING THE WINNEBAGO COUNTY MULTI-HAZARD MITIGATION PLAN

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

WHEREAS, undertaking hazard mitigation actions before disasters occur will reduce the potential for harm to people and property and save taxpayer dollars; and

WHEREAS, an adopted multi-hazard mitigation plan is required as a condition of future grant funding for mitigation projects; and

WHEREAS, the Village of Roscoe participated jointly in the planning process with the other local units of government within the County to prepare a Multi-Hazard Mitigation Plan;

NOW, THEREFORE, BE IT RESOLVED, that the Village of Roscoe hereby adopts the Winnebago County Multi-Hazard Mitigation Plan as an official plan; and

BE IT FURTHER RESOLVED that the Winnebago County Highway Department will submit on behalf of the participating municipalities the adopted Multi-Hazard Mitigation Plan to the Illinois Department of Homeland Security and the Federal Emergency Management Agency for final review and approval.

ADOPTED THIS _____________ Day of _________________, 2014.

________________________________________
Village President

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Village Council Member

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Village Council Member

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Village Council Member

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Village Council Member

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Attested by: Village Clerk
Resolution #______________

ADOPTING THE WINNEBAGO COUNTY MULTI-HAZARD MITIGATION PLAN

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

WHEREAS, undertaking hazard mitigation actions before disasters occur will reduce the potential for harm to people and property and save taxpayer dollars; and

WHEREAS, an adopted multi-hazard mitigation plan is required as a condition of future grant funding for mitigation projects; and

WHEREAS, the City of South Beloit participated jointly in the planning process with the other local units of government within the County to prepare a Multi-Hazard Mitigation Plan;

NOW, THEREFORE, BE IT RESOLVED, that the City of South Beloit hereby adopts the Winnebago County Multi-Hazard Mitigation Plan as an official plan; and

BE IT FURTHER RESOLVED that the Winnebago County Highway Department will submit on behalf of the participating municipalities the adopted Multi-Hazard Mitigation Plan to the Illinois Department of Homeland Security and the Federal Emergency Management Agency for final review and approval.

ADOPTED THIS _____________ Day of __________________, 2014.

________________________________________
City Board Chairman

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City Board Member

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City Board Member

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City Board Member

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City Board Member

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Attested by: City Clerk
Resolution #__________

ADOPTING THE WINNEBAGO COUNTY MULTI-HAZARD MITIGATION PLAN

WHEREAS, the Shirland School District #134 recognizes the threat that natural hazards pose to people and property; and

WHEREAS, undertaking hazard mitigation actions before disasters occur will reduce the potential for harm to people and property and save taxpayer dollars; and

WHEREAS, an adopted multi-hazard mitigation plan is required as a condition of future grant funding for mitigation projects; and

WHEREAS, the Shirland School District #134 participated jointly in the planning process with the other local units of government within the County to prepare a Multi-Hazard Mitigation Plan;

NOW, THEREFORE, BE IT RESOLVED, that the Shirland School District #134 hereby adopts the Winnebago County Multi-Hazard Mitigation Plan as an official plan; and

BE IT FURTHER RESOLVED that the Winnebago County Highway Department will submit on behalf of the participating municipalities the adopted Multi-Hazard Mitigation Plan to the Illinois Department of Homeland Security and the Federal Emergency Management Agency for final review and approval.

ADOPTED THIS _____________ Day of _________________, 2014.

________________________________________
School Board President

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School Board Vice President

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School Board Member

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School Board Member

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School Board Member

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Attested by: School Board Clerk
Resolution #____________

ADOPTING THE WINNEBAGO COUNTY MULTI-HAZARD MITIGATION PLAN

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

WHEREAS, undertaking hazard mitigation actions before disasters occur will reduce the potential for harm to people and property and save taxpayer dollars; and

WHEREAS, an adopted multi-hazard mitigation plan is required as a condition of future grant funding for mitigation projects; and

WHEREAS, the Village of Winnebago participated jointly in the planning process with the other local units of government within the County to prepare a Multi-Hazard Mitigation Plan;

NOW, THEREFORE, BE IT RESOLVED, that the Village of Winnebago hereby adopts the Winnebago County Multi-Hazard Mitigation Plan as an official plan; and

BE IT FURTHER RESOLVED that the Winnebago County Highway Department will submit on behalf of the participating municipalities the adopted Multi-Hazard Mitigation Plan to the Illinois Department of Homeland Security and the Federal Emergency Management Agency for final review and approval.

ADOPTED THIS _____________ Day of _________________, 2014.

_________________________________________
Village President

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Village Council Member

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Village Council Member

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Village Council Member

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Village Council Member

Attested by: Village Clerk
Resolution #____________

ADOPTING THE WINNEBAGO COUNTY MULTI-HAZARD MITIGATION PLAN

WHEREAS, the North Park Public Water District recognizes the threat that natural hazards pose to people and property; and

WHEREAS, undertaking hazard mitigation actions before disasters occur will reduce the potential for harm to people and property and save taxpayer dollars; and

WHEREAS, an adopted multi-hazard mitigation plan is required as a condition of future grant funding for mitigation projects; and

WHEREAS, the North Park Public Water District participated jointly in the planning process with the other local units of government within the County to prepare a Multi-Hazard Mitigation Plan;

NOW, THEREFORE, BE IT RESOLVED, that the North Park Public Water District hereby adopts the Winnebago County Multi-Hazard Mitigation Plan as an official plan; and

BE IT FURTHER RESOLVED that the Winnebago County Highway Department will submit on behalf of the participating municipalities the adopted Multi-Hazard Mitigation Plan to the Illinois Department of Homeland Security and the Federal Emergency Management Agency for final review and approval.

ADOPTED THIS _____________ Day of _________________, 2014.

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Board of Trustees Chairman

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Board of Trustees Member

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Board of Trustees Member

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Board of Trustees Member

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Board of Trustees Member

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Attested by: Board of Trustees Clerk
Resolution #____________

ADOPTING THE WINNEBAGO COUNTY MULTI-HAZARD MITIGATION PLAN

WHEREAS, the Rock River Water Reclamation District recognizes the threat that natural hazards pose to people and property; and

WHEREAS, undertaking hazard mitigation actions before disasters occur will reduce the potential for harm to people and property and save taxpayer dollars; and

WHEREAS, an adopted multi-hazard mitigation plan is required as a condition of future grant funding for mitigation projects; and

WHEREAS, the Rock River Water Reclamation District participated jointly in the planning process with the other local units of government within the County to prepare a Multi-Hazard Mitigation Plan;

NOW, THEREFORE, BE IT RESOLVED, that the Rock River Water Reclamation District hereby adopts the Winnebago County Multi-Hazard Mitigation Plan as an official plan; and

BE IT FURTHER RESOLVED that the Winnebago County Highway Department will submit on behalf of the participating municipalities the adopted Multi-Hazard Mitigation Plan to the Illinois Department of Homeland Security and the Federal Emergency Management Agency for final review and approval.

ADOPTED THIS _____________ Day of _________________, 2014.

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Board of Trustees Chairman

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Board of Trustees Member

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Board of Trustees Member

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Board of Trustees Member

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Board of Trustees Member

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Attested by: Board of Trustees Clerk
Appendix D. Historical Hazards

See Attached Large Format Map and Newspaper Clippings
Appendix E. List of Essential Facilities

Not all data is available for every facility. Other facility specifics may be available upon request.

Emergency Operations Center Facilities

<table>
<thead>
<tr>
<th>Facility Name</th>
<th>Address</th>
<th>City</th>
<th>Replacement Cost (in $1000)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rockford Fire &amp; 911 Center</td>
<td>204 S First St</td>
<td>Rockford</td>
<td>$3,300</td>
</tr>
<tr>
<td>Winnebago County Justice Center</td>
<td>650 W State St</td>
<td>Rockford</td>
<td></td>
</tr>
</tbody>
</table>

Fire Station Facilities

<table>
<thead>
<tr>
<th>Facility Name</th>
<th>Address</th>
<th>City</th>
<th>Replacement Cost (in $1000)</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blackhawk Fire</td>
<td>3738 S Main St</td>
<td>Rockford</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cherry Valley Fire</td>
<td>120 E State St</td>
<td>Cherry Valley</td>
<td></td>
<td>Station #1</td>
</tr>
<tr>
<td>Cherry Valley Fire</td>
<td>4919 Blackhawk Rd</td>
<td>Rockford</td>
<td></td>
<td>Station #1</td>
</tr>
<tr>
<td>Durand Fire</td>
<td>115 W Howard St</td>
<td>Durand</td>
<td></td>
<td>Station #1</td>
</tr>
<tr>
<td>Durand Fire</td>
<td>17255 Goodrich Rd</td>
<td>Durand</td>
<td></td>
<td>Station #1</td>
</tr>
<tr>
<td>Greater Rockford Airport Fire</td>
<td>60 Airport Dr</td>
<td>Rockford</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Harlem Roscoe Fire</td>
<td>825 Ralston Rd</td>
<td>Machesney Park</td>
<td></td>
<td>Station #2</td>
</tr>
<tr>
<td>Harlem Roscoe Fire</td>
<td>13974 Willowbrook Rd</td>
<td>Roscoe</td>
<td>$1,300</td>
<td>Station #3</td>
</tr>
<tr>
<td>Harlem Roscoe Fire</td>
<td>13974 Willowbrook Rd</td>
<td>Roscoe</td>
<td>$600</td>
<td>Training Tower</td>
</tr>
<tr>
<td>Harlem Roscoe Fire</td>
<td>10544 Main St</td>
<td>Roscoe</td>
<td>$4,100</td>
<td>Station #1</td>
</tr>
<tr>
<td>Loves Park Fire</td>
<td>400 Grand Ave</td>
<td>Loves Park</td>
<td>$1,116,973</td>
<td></td>
</tr>
<tr>
<td>Loves Park Fire</td>
<td>1527 Windsor Rd</td>
<td>Loves Park</td>
<td>$784,973</td>
<td></td>
</tr>
<tr>
<td>New Milford Fire</td>
<td>2177 Will James Rd</td>
<td>Rockford</td>
<td></td>
<td></td>
</tr>
<tr>
<td>North Park Fire</td>
<td>600 Wood Ave</td>
<td>Machesney Park</td>
<td></td>
<td></td>
</tr>
<tr>
<td>North Park Fire</td>
<td>3924 N Alpine Rd</td>
<td>Rockford</td>
<td></td>
<td></td>
</tr>
<tr>
<td>North Park Fire</td>
<td>2191 Harlem Rd</td>
<td>Loves Park</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Northwest Fire</td>
<td>3222 N Central Ave</td>
<td>Rockford</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Northwest Fire</td>
<td>6420 Old River Rd</td>
<td>Rockford</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pecatonica Fire</td>
<td>1221 Main St</td>
<td>Pecatonica</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rockford Fire</td>
<td>528 Woodlawn Ave</td>
<td>Rockford</td>
<td>$2,500</td>
<td>Station #1</td>
</tr>
<tr>
<td>Rockford Fire</td>
<td>3407 Rural St</td>
<td>Rockford</td>
<td>$2,000</td>
<td>Station #10</td>
</tr>
<tr>
<td>Rockford Fire</td>
<td>1004 7th St</td>
<td>Rockford</td>
<td>$1,500</td>
<td>Station #2</td>
</tr>
<tr>
<td>Rockford Fire</td>
<td>2959 Shaw Woods Dr</td>
<td>Rockford</td>
<td>$2,000</td>
<td>Station #4</td>
</tr>
<tr>
<td>Rockford Fire</td>
<td>3329 W State St</td>
<td>Rockford</td>
<td>$2,500</td>
<td>Station #6</td>
</tr>
<tr>
<td>Rockford Fire</td>
<td>4979 Falcon Rd</td>
<td>Rockford</td>
<td>$4,000</td>
<td>Station #7</td>
</tr>
<tr>
<td>Rockford Fire</td>
<td>505 Sherman Ave</td>
<td>Rockford</td>
<td>$2,500</td>
<td>Station #8</td>
</tr>
<tr>
<td>Rockford Fire &amp; 911 Center</td>
<td>204 S First St</td>
<td>Rockford</td>
<td>$3,300</td>
<td>Headquarters</td>
</tr>
<tr>
<td>Rockford Fire</td>
<td>2323 Sawyer Rd</td>
<td>Rockford</td>
<td></td>
<td>Maintenance Facility</td>
</tr>
<tr>
<td>Rockford Fire</td>
<td>2117 Calgary Ct</td>
<td>Rockford</td>
<td>$2,500</td>
<td>Station #11</td>
</tr>
<tr>
<td>Rockford Fire</td>
<td>391 N Trainer Rd</td>
<td>Rockford</td>
<td>$1,500</td>
<td>Station #5</td>
</tr>
<tr>
<td>Rockford Fire</td>
<td>2416 Halsted Rd</td>
<td>Rockford</td>
<td>$2,500</td>
<td>Station #9</td>
</tr>
<tr>
<td>Rockford Fire</td>
<td>1520 S Main St</td>
<td>Rockford</td>
<td>$2,000</td>
<td>Station #3 (to be discontinued 2015)</td>
</tr>
<tr>
<td>Rockford Fire</td>
<td>802 Marchesano</td>
<td>Rockford</td>
<td>$5,000</td>
<td>Station #3 (under construction; to be completed 2015)</td>
</tr>
<tr>
<td>Rockton Fire</td>
<td>201 N Blackhawk</td>
<td>Rockton</td>
<td></td>
<td>Station #1</td>
</tr>
<tr>
<td>Shirland Fire</td>
<td>13086 Mitchell St</td>
<td>Shirland</td>
<td></td>
<td>Station #1</td>
</tr>
<tr>
<td>South Beloit Fire</td>
<td>429 Gardner St</td>
<td>South Beloit</td>
<td>$5,000</td>
<td>Station #1</td>
</tr>
<tr>
<td>South Beloit Fire (Old Fire Dept)</td>
<td>402 Clark St</td>
<td>South Beloit</td>
<td></td>
<td></td>
</tr>
<tr>
<td>West Suburban Fire</td>
<td>3816 W State St</td>
<td>Rockford</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Win-Bur-Sew Fire</td>
<td>110 E Main St</td>
<td>Winnebago</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Appendix E: List of Essential Facilities

### Police Station Facilities

<table>
<thead>
<tr>
<th>Facility Name</th>
<th>Address</th>
<th>City</th>
<th>Replacement Cost (in $1000)</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cherry Valley Police</td>
<td>806 E State St</td>
<td>Cherry Valley</td>
<td>$1,554</td>
<td></td>
</tr>
<tr>
<td>Durand Police</td>
<td>308 W Main St</td>
<td>Durand</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Illinois State Police</td>
<td>16450 W State Rd</td>
<td>Pecatonica</td>
<td>$1,554</td>
<td></td>
</tr>
<tr>
<td>Loves Park Police</td>
<td>540 Loves Park Dr</td>
<td>Loves Park</td>
<td>$1,554</td>
<td></td>
</tr>
<tr>
<td>Machesney Park Sheriff</td>
<td>300 Roosevelt Rd</td>
<td>Machesney Park</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pecatonica Police</td>
<td>405 Main St</td>
<td>Pecatonica</td>
<td>$1,554</td>
<td></td>
</tr>
<tr>
<td>Rockford Park District Police</td>
<td>1300 N 2nd St</td>
<td>Rockford</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rockford Police</td>
<td>420 W State St</td>
<td>Rockford</td>
<td>$1,554</td>
<td></td>
</tr>
<tr>
<td>Rockford Police</td>
<td>365 7th St</td>
<td>Rockford</td>
<td></td>
<td>Police Substation</td>
</tr>
<tr>
<td>Rockford Police</td>
<td>1801 W State St</td>
<td>Rockford</td>
<td></td>
<td>Police Substation</td>
</tr>
<tr>
<td>Rockford Police</td>
<td>1005 S Main St</td>
<td>Rockford</td>
<td></td>
<td>Police Substation - SWIFFT</td>
</tr>
<tr>
<td>Rockford Police</td>
<td>1280 S Alpine Rd</td>
<td>Rockford</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rockton Police</td>
<td>110 E Main St</td>
<td>Rockton</td>
<td>$1,554</td>
<td></td>
</tr>
<tr>
<td>Roscoe Police</td>
<td>10595 Main St</td>
<td>Roscoe</td>
<td>$956</td>
<td></td>
</tr>
<tr>
<td>South Beloit Police</td>
<td>519 Blackhawk Blvd</td>
<td>South Beloit</td>
<td>$3,500</td>
<td></td>
</tr>
<tr>
<td>Winnebago County Sheriff</td>
<td>420 W State St</td>
<td>Rockford</td>
<td>$1,554</td>
<td></td>
</tr>
<tr>
<td>Winnebago Police</td>
<td>108 W Main St</td>
<td>Winnebago</td>
<td>$285</td>
<td></td>
</tr>
<tr>
<td>Winnebago Police</td>
<td>104 W Main St</td>
<td>Winnebago</td>
<td>$40</td>
<td>Police Garage</td>
</tr>
</tbody>
</table>

### School Facilities

<table>
<thead>
<tr>
<th>Facility Name</th>
<th>Address</th>
<th>City</th>
<th>Replacement Cost (in $1000)</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alpine Academy</td>
<td>5001 Forest View Ave</td>
<td>Rockford</td>
<td></td>
<td>Elementary/ Preschool</td>
</tr>
<tr>
<td>Alpine Christian</td>
<td>325 N Alpine Rd</td>
<td>Rockford</td>
<td></td>
<td>Elementary School</td>
</tr>
<tr>
<td>Auburn High School</td>
<td>5110 Auburn St</td>
<td>Rockford</td>
<td></td>
<td>High School</td>
</tr>
<tr>
<td>Barbour Language Academy</td>
<td>1500 Clover Ave</td>
<td>Rockford</td>
<td>$38,400.24</td>
<td>Elementary School</td>
</tr>
<tr>
<td>Beyer School</td>
<td>333 15th Ave</td>
<td>Rockford</td>
<td>$16,748.01</td>
<td>Elementary School</td>
</tr>
<tr>
<td>Blackhawk Elementary School</td>
<td>840 Blackhawk Blvd</td>
<td>South Beloit</td>
<td>$9,824.43</td>
<td>Elementary School</td>
</tr>
<tr>
<td>Bloom School</td>
<td>2912 Brennanwood Rd</td>
<td>Rockford</td>
<td>$11,119.27</td>
<td>Elementary School</td>
</tr>
<tr>
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## Medical Care Facilities

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Appendix F. Critical Facilities Map

See Attached Large Format Map of Critical Facilities.