



Rock  
County  
All  
Hazard  
Mitigation  
Plan

June

2014

This multi-jurisdictional hazard mitigation plan includes Rock County and the cities of Beaver Creek, Hardwick, Hills, Jasper, Kenneth, Luverne, Magnolia, and Steen. This project was supported by Grant Award awarded by the Federal Emergency Management Agency (FEMA).

Prepared by  
Southwest  
Regional  
Development  
Commission  
and Rock  
County  
Emergency  
Management

# ROCK COUNTY

# ALL HAZARD MITIGATION PLAN

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April 2014

## Executive Summary

The purpose of the Rock County All Hazard Mitigation Plan (AHMP) is to determine how to reduce property damage and loss of life resulting from natural and manmade hazards. The Rock County AHMP includes resources and information to assist county residents, public and private sector organizations, and others interested in participating in planning for both natural and manmade hazards. This mitigation plan identifies hazards that pose a threat to Rock County, as well as what is currently being done to mitigate their impacts. The plan also provides a list of actions and programs that may enable Rock County to further reduce negative impacts caused by disasters. The implementation strategies address multi-hazard issues, as well as activities related to flooding, drought, severe storms, wildfires, and tornados along with a number of other hazards.

The Rock County AHMP Planning Team identified the following natural and man-made hazards as High Rank Hazards for Rock County:

- Blizzards, Winter Storms, and Extreme Cold Events
- Tornado and Straight-line Wind Events

This planning process has been conducted by the Southwest Regional Development Commission (SRDC) and Rock County Emergency Management in accordance with current guidance provided by the State of Minnesota Department of Homeland Security and Emergency Management (HSEM) and the US Federal Emergency Management Agency (FEMA). This hazard mitigation plan documents the multi-jurisdictional, multi-hazard mitigation planning process in Rock County, Minnesota, which is intended to meet the requirements of the Federal Emergency Management Agency (FEMA) Regulation 44 CFR 201.6 Local Mitigation Plans.

All participating jurisdictions in Rock County have agreed to a joint administration and operation of the AHMP to help mitigate the effects of natural and manmade hazards. The project was undertaken so that all local units of government in Rock County, that wished to participate, could participate and remain eligible for FEMA funding.

The first Rock County AHMP was adopted in 2007. The current update reviewed and updated the original plan. The update utilized a great deal of data from many different sources and also relied on input and expertise from the Rock County AHMP Planning Team. The plan resides with the Office of Emergency Management in Rock County, who is responsible for maintenance and updates.

*Rock County Mission:*

“It is the mission of Rock County to deliver efficient and effective services to its citizens that will strengthen our community.”

*Rock County’s All Hazard Mitigation Plan Mission:*

“It is the mission of the Rock County All Hazard Mitigation Plan to plan so Rock County can be prepared and can help mitigate the effects of potential disasters related to natural and manmade hazards.”

*Participation in Plan Development*

The Rock County All Hazard Mitigation Plan is a multiparty effort between Rock County, Rock County Emergency Management, Rock County citizens, local public agencies, people in the private sector, and many people in regional and state organizations. Public participation plays a key element in the planning process. We also rely on the experience of elected and appointed volunteers. The Rock County AHMP Planning Team (here after referred to as planning team) members comprised a broad representation of the county and their feedback was immensely useful in the development of the plan update.

Rock County AHMP Planning Team:

- Rock County Administrator/ Emergency Management Director, Kyle Oldre
- Rock County Highway Engineer, Mark Sehr
- Rock County Board of Commissioners, Ken Hoime
- Land Management Office/Municipalities, Arlyn Gehrke
- Land Management Office, Eric Hartman
- Sheriff’s Department, Evan Verbrugge
- Southwest Health and Human Services, Jason Kloss
- Land Management Office/ Rock County Townships, Douglas Bos
- Rock County Townships/ Beaver Creek Township, Peter Bakken
- City of Luverne, John Call
- Luverne Fire Department, Dan Nath

**For more information regarding hazard mitigation, contact:**



Rock County Emergency Management  
204 East Brown Street  
Luverne, MN 56156  
Phone: 507-283-5065



Southwest Regional Development Commission  
2401 Broadway Ave, Ste 1  
Slayton, MN 56172  
Phone: 507.836.8547  
Fax: 507.836.8866  
[www.swrdc.org](http://www.swrdc.org)



Minnesota Division of Homeland Security and Emergency Management



Federal Emergency Management Agency

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# CHAPTER 1: INTRODUCTION

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## I Mitigation Planning

Natural and man-made hazards present risks throughout Minnesota. Rock County has to be ready at all times to respond to a number of man-made and natural disasters. Local units of government, first responders, and emergency managers have worked together to create the Rock County All Hazard Mitigation Plan (AHMP). This plan helps Rock County protect its population and infrastructure by planning for hazard natural and man-made hazards before the disaster strikes.

What is Hazard Mitigation Planning? According to the U.S. Federal Emergency Management Agency (FEMA) State and Local Mitigation Planning Fact Sheet:

*Hazard mitigation planning is the process State, local, and tribal governments use to identify risks and vulnerabilities associated with natural disasters, and develop long-term strategies for protecting people, resources, and property in future hazard events. This planning process involves Tribal members and other affected stakeholders, and results in a mitigation plan with a strategy for breaking the cycle of disaster damage, reconstruction, and repeated damage. The mitigation plan also identifies mitigation actions and projects to implement the mitigation strategy. Under the Disaster Mitigation Act of 2000 (Public Law 106-390), State, local and tribal governments are required to develop a hazard mitigation plan as a condition for receiving certain types of non-emergency disaster assistance and FEMA grants to implement mitigation projects.*

A simpler description comes from James Schwab:

“Hazard mitigation essentially is the art and science of reducing risks of future losses.”<sup>1</sup>

## II Purpose

- *Save lives, reduce injuries, sustain public health*

Identify properties that are in obvious need of protection and establish policies and practical actions that fortify these properties from the effects of natural and human caused hazards.

Reduce both economic and physical losses from repetitive damages caused from constant hazard events. Encourage county communities to participate in the National Flood Insurance Program (NFIP).

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<sup>1</sup>Planning Magazine. James Schwab. Accessed: 5/29/13. Available: <http://allhazards.wordpress.com/2010/03/02/mitigation-planning/>

Improve hazard assessment information to make recommendations for discouraging new development and encouraging preventative measures for existing development in areas vulnerable to natural hazards.

➤ *Minimize social dislocation and stress*

Where appropriate, develop and implement education and outreach programs to increase public awareness of the risks associated with natural hazards and the potential danger for human caused hazards.

Provide assistance in locating tools, partnership opportunities, and funding resources to assist in implementing mitigation activities.

➤ *Minimize agricultural losses*

Balance land use planning and natural resource management with hazard mitigation in order to protect life, property, and natural environment.

Preserve, rehabilitate, and enhance the county's natural infrastructure systems to serve hazard mitigation functions.

➤ *Protect critical infrastructure from damage*

Establish policy through the planning process to ensure mitigation projects for critical facilities and services.

Strengthen emergency operations by increasing collaboration and coordination among public agencies, non-profit organizations, businesses, and industries.

Coordinate and integrate hazard mitigation activities, where appropriate, with emergency operations plans and procedures.

### **III Justification and Legal Authority**

The rising costs of natural and human-caused disasters at the end of the 20<sup>th</sup> century led many leaders to consider how to better protect people and their communities. Congress passed the Disaster Mitigation Act of 2000 (DMA2K) (PL 106-390) to establish a unified national hazard mitigation program. DMA2K amended the Robert T. Stafford Disaster Relief and Emergency Assistance Act of 1988 (Stafford Act), which in turn had amended the Disaster Relief Act of 1974. DMA2K placed new emphasis on hazard mitigation planning in state and local units of government, requiring adoption of mitigation plans as a prerequisite for certain assistance programs.

A multi-hazard or "All-Hazards" approach to mitigation planning encompasses both natural and man-made hazards. Following the 2001 attacks on New York City and Washington, DC, and the subsequent reorganization of FEMA and the nation's homeland security structure, many mitigation planning efforts explicitly incorporated technological hazards arising from human activities in the hazard mitigation

plans. While local hazard mitigation plans are only required to address natural hazards, the All-Hazards approach considers a comprehensive array of both risks and potential mitigation actions.

FEMA has implemented hazard mitigation planning requirements through federal regulations (44 CFR 201.6). In Minnesota, the Homeland Security and Emergency Management (HSEM) division of the Department of Public Safety (DPS) works with FEMA to implement disaster mitigation efforts. The Minnesota Department of Natural Resources (DNR) is also involved with mitigation as the agency responsible for implementation of FEMA's National Flood Insurance Program (NFIP) and floodplain management in the state.

Minnesota Governor's Executive Order 07 – 14 assigns responsibility for the creation and maintenance of the Minnesota Emergency Operation Plan, the State All Hazard Mitigation Plan and such other duties as may be requested by the HSEM.<sup>2</sup> The order also directs other state agencies to assist with the planning process.

Under 44 CFR 201.6, local governments must have a FEMA-approved Local All Hazard Mitigation Plan to be eligible for and receive project grants under the following hazard mitigation assistance programs: Hazard Mitigation Grant program (HMGP), Pre-Disaster Mitigation (PDM), Flood Mitigation Assistance (FMA), and Severe Repetitive Loss (SRL).

#### **IV Federal Mitigation Funding Programs**

FEMA administers several different programs that provide hazard mitigation funding. Typically grants allow a cost-share of 75 to 90 percent federal funding for eligible projects. FEMA offers five hazard mitigation assistance programs which are described in detail at [www.fema.gov/hazard-mitigation-assistance](http://www.fema.gov/hazard-mitigation-assistance). Any projects funded by these programs must demonstrate a positive benefit-cost ratio. The five hazard mitigation assistance programs include: the Hazard Mitigation Grant Program (HMGP), Pre-Disaster Mitigation (PDM), Flood Mitigation Assistance (FMA), Repetitive Flood Claims (RFC), and Severe Repetitive Loss (SRL).

##### **Hazard Mitigation Grant Program (HMGP)**

HMGP provides funds in accordance with priorities identified in hazard mitigation plans to implement mitigation measures during disaster recovery. State and local governments, certain private non-profit organizations, and tribes are eligible sub-applicants through HSEM. Examples of eligible projects include:

- Acquiring and relocating structures from hazard-prone areas
- Retrofitting structures to protect them from floods, high winds, earthquakes, or other natural hazards
- Constructing certain types of minor and localized flood control projects
- Constructing safe rooms inside schools or other buildings in tornado-prone areas

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<sup>2</sup> State of Minnesota Executive Order 07-14. Accessed 5/29/13. Available: <http://www.leg.mn/archive/execorders/07-14.pdf>

- Hazard mitigation planning

### **Pre-Disaster Mitigation (PDM)**

PDM provides funds for hazard mitigation planning and implementation prior to a disaster event. State-level agencies, tribes, local government, and public colleges are eligible sub-applicants through HSEM. Examples of eligible projects include:

- Voluntary acquisition of real property for open space
- Elevation of existing public or private structures
- Retrofitting existing structures to meet building codes
- Construction of safe rooms for public or private structures that meet certain FEMA requirements
- Hydrologic and hydraulic studies/analyses, engineering and drainage studies for project design and feasibility
- Vegetation management
- Protective measures for utilities, water, sewer, roads and bridges
- Storm water management to reduce/eliminate long-term flood risk

### **Flood Mitigation Assistance (FMA)**

FMA implements cost-effective measures to reduce or eliminate long-term risk of flood damage to NFIP structures. State-level agencies, tribes, and local government are eligible sub-applicants through HSEM. Eligible projects include:

- Acquisition, structure demolition, or structure relocation with the property deed restricted for open space uses in perpetuity
- Elevation of structures
- Dry flood proofing of non-residential structures
- Minor structural flood control activities

### **Repetitive Flood Claims (RFC)**

RFC intends to reduce/eliminate long-term risk to structures with one or more NFIP claim. State-level agencies, tribes, and local government that cannot meet FMA requirements for cost-share or management capacity are eligible sub-applicants through HSEM. Project grants are available for acquisition, structure demolition, or structure relocation of insured structures, with the property deed restricted for open space uses in perpetuity. There are currently no RFC properties in Rock County.<sup>3</sup>

### **Other Federal Disaster-related Funding Programs**

FEMA is probably more well-known for providing response and recovery assistance. Other programs such as FEMA's Public Assistance (PA) Grant Program provide assistance to State, Tribal and local governments, and certain Private-Nonprofit organizations, so that communities can quickly respond to and recover from major disasters or emergencies. Through the PA Program, FEMA provides supplemental Federal disaster grant assistance for debris removal, emergency protective measures, and the repair, replacement, or restoration of disaster-damaged, publicly owned facilities and the facilities of

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<sup>3</sup> FEMA, Date Request. Received 6/4/13.

certain Private Non-Profit (PNP) organizations. The PA Program also encourages protection of these damaged facilities from future events by providing assistance for hazard mitigation measures during the recovery process.

## V FEMA Guidance

FEMA has created the *Local Multi-Hazard Mitigation Planning Guidance* (the “Blue Book”) to provide guidance to local governments to meet the requirements of 44 CFR §201.6 *Local Mitigation Plans*. There are three main objectives of the Blue Book. First, the Blue Book is intended to help local jurisdictions develop new mitigation plans or update existing plans in accordance with the requirements of the regulations. Second, the Blue Book is designed to help Federal and State Reviewers evaluate mitigation plans from local jurisdictions in a fair and consistent manner. Third, the Blue Book is designed to help jurisdictions conduct comprehensive reviews and prepare updates to their plans to meet the requirements of 44 CFR Part 201.6.

The Rock County All Hazard Mitigation Plan is going to follow the planning process outlined in the Blue Book. The Rock County plan will also use the Local Mitigation Plan Review Tool to specify where in the plan and how the specific regulation requirements were met.

FEMA requires that ALL participating jurisdictions meet the requirements for mitigation planning in 44CFR§201.6. The Blue Book specifically requires that each participating jurisdiction address:

- Risks, where they differ from the county
- Mitigation actions (actions must be identified for each jurisdiction)
- Participation in the planning process (attending meetings, contributing research, data, or other information, commenting on drafts of the plan); and
- Adoption (each jurisdiction must formally adopt the plan).

## VI County Capabilities

The Capabilities Worksheet identifies planning capabilities, policies and ordinances, programs, studies and reports, staff, and community partners that are relevant to hazard mitigation. The Worksheet is attached as Addendum I. Several documents were referenced extensively in the planning process, including the county comprehensive (land use) plan and development ordinance, transportation plans, and water management plans. Other policies and ordinances were referenced more generally in the planning process. Specific items, such as wellhead protection plans, watershed plans, and other local resources, helped the planning team develop mitigation goals, objectives, and strategies. County and city staff and representatives were consulted by the planning team throughout the planning process.

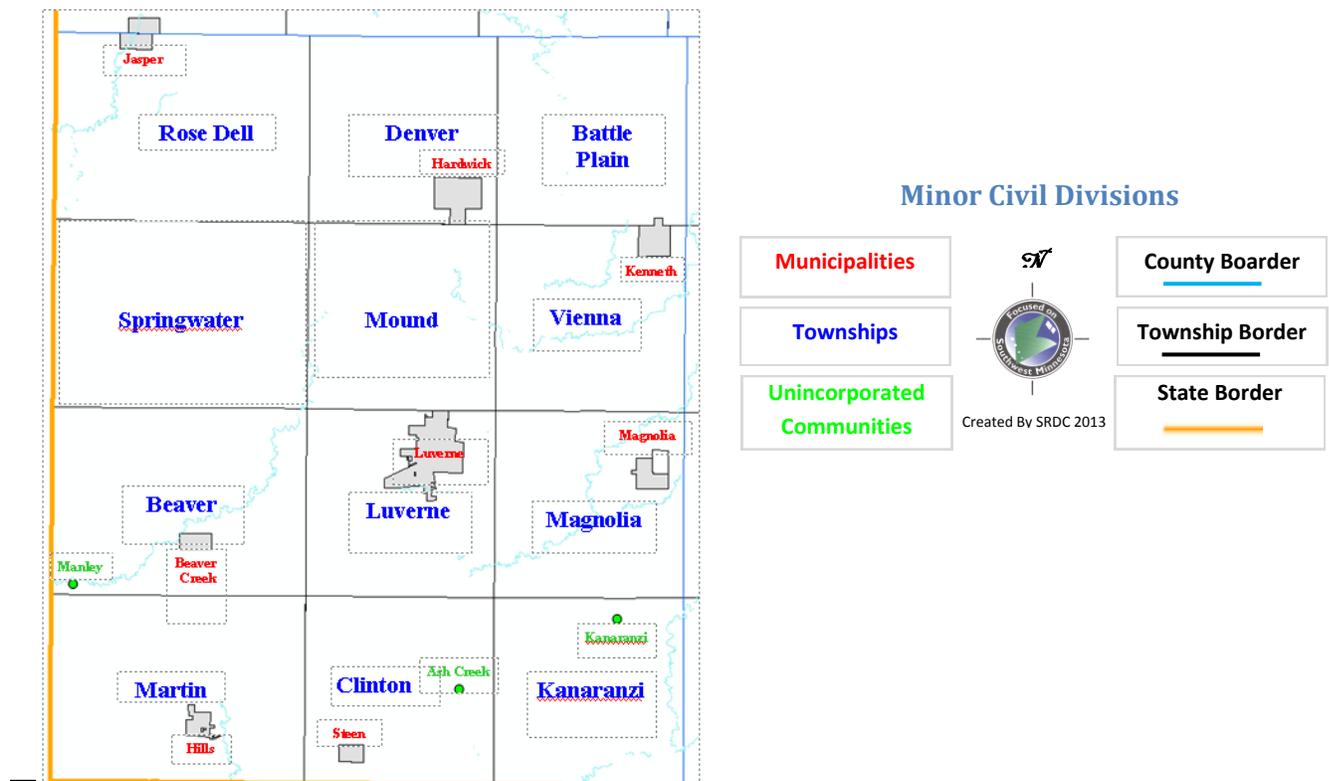
# CHAPTER 2: Rock County Profile

## I Location and Area

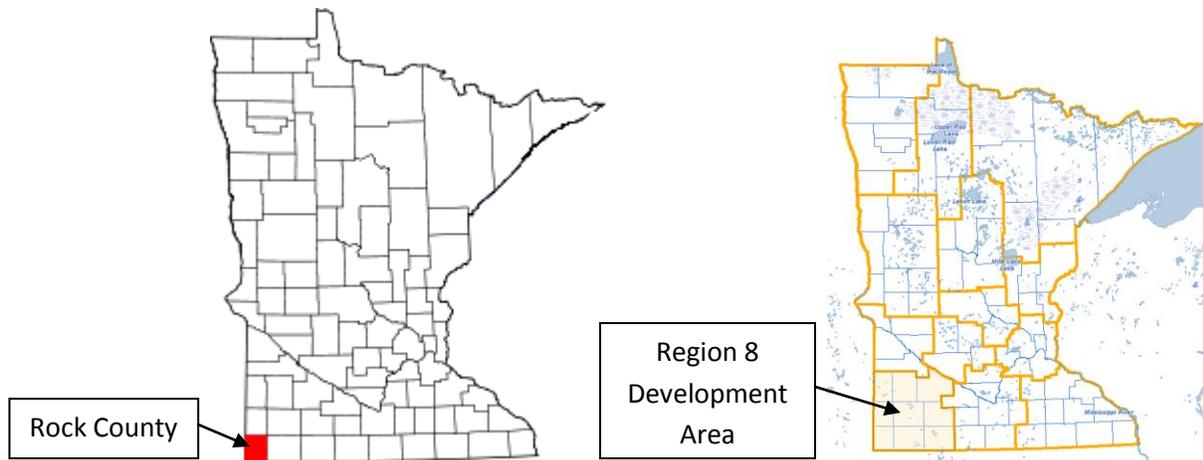
Rock County is located in southwest Minnesota and has a land area of 845 square miles.<sup>4</sup> The county is bordered on the north by Pipestone County, on the south by the State of Iowa, on the east by Nobles County, and on the west by the state of South Dakota. Cities within Rock County include Beaver Creek, Hardwick, Hills, Kenneth, Luverne, Magnolia, and Steen. The City of Jasper is located in both Rock County and Pipestone County. In addition, the county has three unincorporated communities—Manley, Kanaranzi, and Ash Creek. The City of Luverne is the largest city in Rock County and serves as the Rock County seat. The city is located in Luverne Township, which is in the south central section of the county, along Highway 75 and is also easily accessed from Interstate 90. U.S Highway 75 and Interstate 90 provide thoroughfares into and out of the county from the north and south and east and west respectively.

Rock County has 12 townships. They include Rose Dell, Denver, Battle Plain, Springwater, Mound, Vienna, Beaver Creek, Luverne, Magnolia, Martin, Clinton, and Kanaranzi. Rock County is a rural county, so there are a number of shared services throughout the county.

**Table #1**      **Rock County**



<sup>4</sup> <http://www.positivelyminnesota.com/apps/lmi/rws/Results.aspx>



## II History

In 1867, the first mail route was mapped from Blue Earth, Minnesota, to Yankton, South Dakota. Philo Hawes stopped at his regular campgrounds on the Blue Mounds, but discovered that better timber lay to the south. He then traveled to the present site of the Rock Island depot in Luverne and built a stable large enough to hold six horses. This stable, created from poles and clay, was the beginning of the present day city of Luverne, named after Philo Hawes' daughter

The first passenger train entered Luverne on October 2nd, 1876. The train consisted of an engine and coach along with a party of railroad officials on board.

In 1880, the population of Rock County was 3,669 and during the next few years the population would continue to grow. In 1900, Rock County had a population of 9,668, and in 1920, there were 10,962 residents in Rock County. This growth trend would continue until 1960 when the Census reported 11,864 residents. By 1970, that number had fallen to 11,346, and continued to drop until the year 1990 when the population of Rock County was 9,806. Population levels have continued to decrease. In 2000, the population was 9,721, and in 2010, the population was 9,687.<sup>5</sup>

Rock County has changed from a native prairie region to a thriving community with groves of trees. Rock County derived its name from the rock ledge that begins at Blue Mound and continues to the northeast to the stone quarries at Jasper. A great deal of Sioux Quartzite is found in the region. Sioux Quartzite is used in many buildings in Rock County, in addition to many state and regional buildings.

## III Physical Features

Land within Rock County is typical of prairie environment as it has a mature landscape dissected by numerous small waterways, which eventually drain into the Big Sioux River in South Dakota. Areas northwest of Beaver Creek are hilly in comparison with the gently rolling topography over the rest of the

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<sup>5</sup> FactFinder. Accessed 5/29/13. Available: <http://factfinder2.census.gov>

county. The highest elevation in Rock County is a gravelly ridge in the north central part of the county. It is about 1,790 feet above sea level. The lowest elevation is about 1,340 feet above sea level.

Land use within Rock County remains primarily agricultural with urbanization typically occurring in and around established communities. Rock County has a great deal of prime agricultural land located in the county. Recent tillable land sales in Rock County have gone for over \$12,000 an acre.<sup>6</sup>

### Open Water Sources

There are approximately 2,154 acres of open water in Rock County consisting of 17 rivers and streams, three man-made lakes, nine gravel pits. The open water is characterized in three categories: lakes, marshes, and rivers and streams.

The major waterways in the county are the Rock River and its tributaries plus the Champepedan, Kanaranzi, and Elk Creeks. The Rock River drains the eastern third of the county. The northwest part of the county is drained by Split Rock Creek. The central and southwest parts of the county are drained by Beaver Creek. Rock County is the only county in Minnesota that totally lies within the Missouri River Basin and Big Sioux River Basin. The Rock River enters the county at an elevation of 1,520 feet and leaves the county at 1,320 feet. This river is the largest watershed in the county. The Rock River will eventually enter the Big Sioux River.

There are two main watersheds in Rock County that help drain surface water. The two main watersheds are the Big Sioux River (Missouri River Watershed) and the Rock River (Missouri River Watershed). In addition, there are twenty-one minor watersheds in Rock County. The creeks included in these watersheds are: Beaver Creek, Split Rock, Devils Run, Mound, 2-Poplar Creeks, Ash Creek, Mud, Elk, Kanaranzi, Norwegian, Champepadan, Leota, and other unnamed tributaries.

In and around these watersheds are wetlands. Wetlands refer to the low depressions in the landscape that is saturated with water either permanently or seasonally. The wetlands in Rock County are classified under the Riverine and Palustrine systems. The wetlands are soils that are occasionally or frequently flooded and have a high water table. The wetlands are mostly stream segments, old oxbows, and low lying areas that make up the drainage system in Rock County.

Wetlands in Rock County not only serve as a water drainage system, they also provide immediate benefits to ecosystems that surround them. Wetlands act like a sponge and is described as “nature's hazard insurance.”<sup>7</sup> Wetlands store runoff and allow for a natural filtration of the water before it enters the ground water. The benefits of a healthy wetland vary from improved water quality to economic development generated from increased hunting, fishing, and recreation spending.

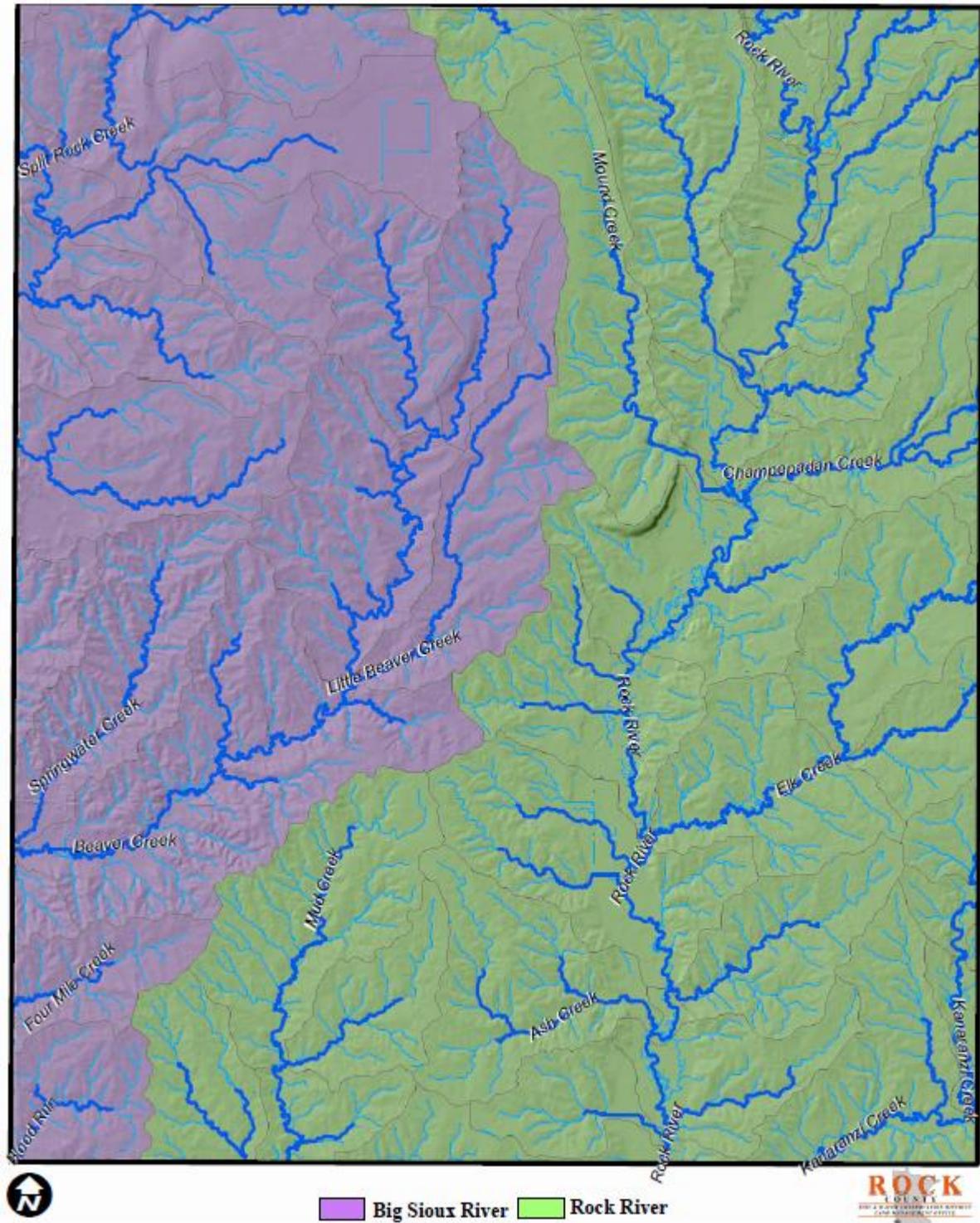
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<sup>6</sup>Kanabec County Times. Accessed 5/29/13. Available:  
[http://www.presspubs.com/kanabec/news/article\\_4e900be8-319b-11e1-8a8a-001871e3ce6c.html](http://www.presspubs.com/kanabec/news/article_4e900be8-319b-11e1-8a8a-001871e3ce6c.html)

<sup>7</sup> Wisconsin Wetland Association. Accessed: 5/29/13. Available:  
<http://www.wisconsinwetlands.org/HowWetlandsBenefitYourCommunity.pdf>

Table #2

# Rock County Watersheds



In addition, the wetlands in Rock County provide the following benefits:

- Floodwater Storage and Detention
- Nutrient Assimilation
- Sediment Entrapment
- Groundwater Recharge and Discharge
- Low-Flow Augmentation
- Aesthetics and Recreation
- Shore land Anchoring and Erosion Control
- Wildlife Habitat
- Fisheries Habitat

As the landscape in Rock County has changed over the years due to increased agricultural activities, the wetlands have also changed. Changes in the wetlands are due in part to tiling, changes in vegetation, and impervious surfaces. The exact amount of wetlands drained throughout Rock County since increased agricultural activities is unknown. The majority of the remaining wetlands in Rock County have been identified in the National Wetlands Inventory. The inventory classifies all wetlands into eight different wetland types based on the depth of water and type of vegetation. Identifying and classifying wetlands along with regulations protecting wetlands help to preserve our wetlands into the future.

Within Rock County there are no natural lakes. In Blue Mounds State Park there are two man-made lakes; there is the Hill Reservoir near the City of Hills, and the Luverne pit near the City of Luverne. The deepest is the Hills Reservoir. In all of the man-made lakes in Rock County, there is the possibility of winterkill due to the shallow depths. The man-made lakes are stocked with black and white crappies along with blue gills.

Land use and management practices that have occurred in Rock County have caused water quality degradation in the man-made lakes. Due to the increase of nutrients, the county's man-made lakes have seen an increase in algae blooms and other suspended sediments. With this decrease in water clarity, sunlight is not able to reach all areas of the man-made lakes and this restricts many different kinds of plant growth. This not only eliminates a food supply for many game fish, but it also favors the growth of less desirable species like carp and black bullhead. Those fish then cause greater destruction to the lakes by uprooting other vegetation types and sending more debris into the water column.

### **Surficial Geology**

According to the Rock County Comprehensive Water Plan, red Sioux Quartzite of Precambrian Age underlies Rock County at varying depths. Also, in eastern and southern Rock County younger cretaceous formation overlies Sioux Quartzite.

Two distinct surficial deposits exist in Rock County. The first deposit is the Cretaceous Aquifer. The Cretaceous Aquifer is made up of sandstone, quartzose, and is fine-to-course grained. The aquifer is found generally near the base of a dominantly shale-siltstone sequence. The aquifer commonly overlies a deeply weathered soproplitic zone in crystalline rocks. The second deposit is the Sioux Quartzite

Aquifer from the Preterozoic Age. The Sioux Quartzite is made up of quartzite, fractured, and weathered near the present upper surface.

### **Bedrock Geology**

Red Sioux Quartzite underlies Rock County at various depths. In eastern and southern Rock County, younger cretaceous bedrock overlies the Red Sioux Quartzite. Glacial till covers the bedrock in most places except where the rock is exposed at the surface. The glacial till is covered by windblown loess. The loess covers the county at various depths from less than one foot to over ten feet.

### **Soils**

There are eleven soil associations within Rock County according to the Soil Survey of Rock County. Four of these soil associations make up about 70 percent of the county. The first, Millington-Fairhaven-Talcot Association, makes up about seven percent of the county's soil. The second, Sac-Trent Association, which is nearly level to sloping, makes up 30 percent of the county's soil. The third, Moody-Trent Association accounts for 24 percent of the soil in Rock County, and is nearly level to sloping. The last soil association, Nora-Crofton-Alcester Association, makes up 9 percent of the county's soil. The remaining 30 percent of the soil associations are a split between Spillco-Millington Association, Calco-Spillco Association, Graceville-Dempster Association, Flandreau- Dickman Association, Everly-Flandreau Association, and Marcus-Variant Association, and Ihlen-Rock Outcrop Association.

The soils formed were from several types of parent materials: loess; loess over glacial till; loess over Sioux quartzite bedrock, some of which is exposed at the surface; sand (and gravel) glacial outwash; alluvium; lacustrine and lacustrine-modified glacial till; and glacial till.

### **Hydrology**

Water quality has become one of the most important environmental issues facing the county. Groundwater is Rock County's most abundant water resource with most well water coming for aquifers. Aquifers in order of importance are unconsolidated glacial-drift deposits, the Sioux Quartzite, and the Cretaceous bedrock aquifer. The water from these aquifers is used for supplying water for public water supply, irrigation, and farm wells.

Unconsolidated glacial drift aquifers are surficial-drift aquifers made up of sand and/or gravel deposits located at or near the land surface and are generally unconfined. The well depths range from 30 to 240 feet and yield 25 to 500 gallons per minute. The unconsolidated glacial drift aquifers possess a large concentration of iron, sulfate, and chloride at certain locations along with nitrate contamination.

The Sioux Quartzite aquifer is a well-cemented aquifer. The aquifer is also unconfined in a number of locations. The well depths range from 120 to 1,300 feet and yield five to 100 gallons per minute.

The Cretaceous aquifer is the third groundwater source in Rock County. The Cretaceous aquifer is commonly between 300 and 400 feet deep and yields five to 25 gallons per minute. The Cretaceous aquifer is a layer of sand or sandstone in a thicker deposit of Cretaceous clay and shale. The aquifer is used when both surface and buried sand aquifers are missing within the glacial drift.

Luverne and Rock County Rural Water District rely on a surface aquifer as a primary water source. The aquifer is found in the Rock River Valley. A large number of Rock County residents obtain their water from this groundwater resource. Communities and residents that are not part of the Rock County Rural Water District are typically served by individual wells as a water source.

The primary uses of groundwater are public water supplies and private domestic use. The City of Luverne generates the greatest demand for Rock County’s groundwater resources. The City of Luverne grew by 2.8 percent from 2000 to 2010. Luverne’s population is relatively stable, and the water demand will remain high compared to the rest of Rock County.

## IV Climate

The continental climate of Rock County is characterized by cold winters and warm (often hot) summers. The weather is extremely variable during the year. During the winter months, precipitation is in the form of snowstorms, some which maybe serve. During the summer months, precipitation is in the form of showers (occasionally heavy) when warm moist air leaves the Gulf region and meets cooler air over Rock County. Weather patterns circulate counter-clockwise and generally enter Rock County from the west to southwest and sometimes from the south.

### Precipitation

According to the State Climatologist, the average precipitation in Rock County is 29.5 inches. Annual precipitation has ranged from a low of 12.01 inches in 1976 to a high of 44.14 inches in 1993. The average seasonal snowfall in Rock County is 44.9 inches.

**Table #3** **Average Precipitation in Luverne, Rock County**  
**1981 - 2010 Average**

Month	Precipitation in Inches	Snowfall in Inches
January	0.48	10.2
February	0.78	6.2
March	2.05	7.2
April	2.95	3.6
May	3.32	0
June	4.57	0
July	3.62	0
August	3.44	0
September	2.87	0
October	2.39	1
November	1.93	8.7
December	1.1	8
<b>Annual Average</b>	<b>29.5</b>	<b>44.9</b>

Source: National Climatic Data Center (<http://ggweather.com/normals/>)

### Temperature

In Rock County, the average annual temperature is 44.2° F, the average annual maximum temp is 55.7° F, and the average annual minimum temp is 32.6° F. On average the hottest month of the year in Rock County is July with an annual average temperature of 84°F. The coolest month of the year on average is

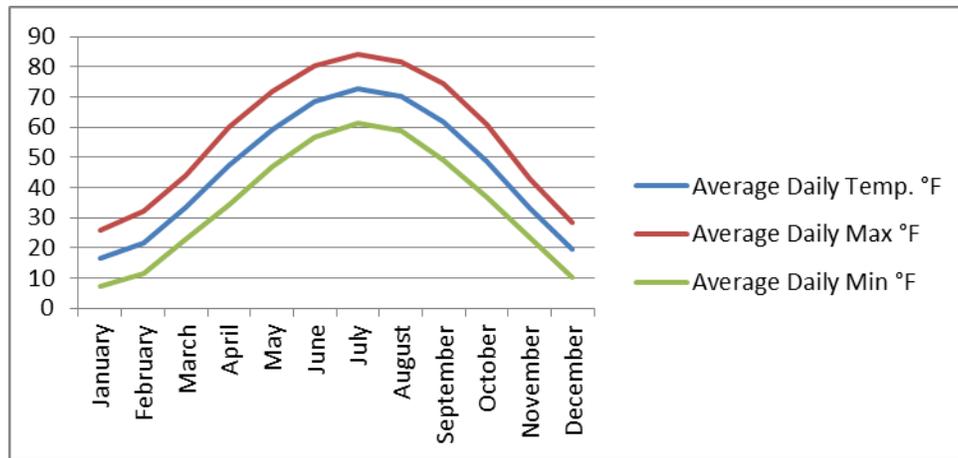
January with an annual average temperature of 7.2°F. The lowest temperature (-37 °F) on record was recorded in Rock County on January 19, 1970. The highest temperature (106oF) on record was recorded in Rock County on July 9, 1976.

**Table #4** **Average Temperature, City of Luverne**  
1981 - 2010 Average

Month	Average Daily Temp. °F	Average Daily Max °F	Average Daily Min °F
January	16.4	25.6	7.2
February	21.7	32.1	11.4
March	33.3	43.8	22.7
April	47.2	60.2	34.2
May	59.4	71.8	47
June	68.6	80.4	56.8
July	72.6	84.0	61.2
August	70.3	81.8	58.8
September	61.8	74.4	49.2
October	48.8	61	36.6
November	32.9	42.5	23.3
December	19.3	28.5	10.1
<b>Annual Average</b>	<b>46.1</b>	<b>57.3</b>	<b>35</b>

Source: National Climatic Data Center (<http://ggweather.com/normals/>)

**Average Temperature in Luverne, Rock County**  
1981 - 2010 Average



## V Population

Rock County is the 72<sup>nd</sup> most populous county in the State of Minnesota.<sup>8</sup> Population growth trends have an effect on the needs and demands of services such as transportation, law enforcement, and

<sup>8</sup> Department of Employment and Economic Development. Accessed: 5/29/13. Available: <http://www.positivelyminnesota.com/apps/lmi/rws/default.aspx>

emergency response personnel. It is important to analyze past population trends to attempt to make valid projections. However, it should be recognized that population projections are dependent upon a number of factors, a number of which are beyond county control.

The 2010 Census shows that Rock County has a population of 9,687. The two largest communities are Luverne with a population of 4,745 in 2010 and Hills with a population of 686 in 2010. From 2000 to 2010, Luverne grew by 2.8 percent and Hills grew 21.4 percent. Rock County experienced a decline in population of .4 percent from 2000 to 2010. As with other rural counties, the population of Rock County has been moving steadily off the farm and out of the rural areas into nearby communities, or out of the county altogether.

**Table #5** **Distribution of Population, Rock County**  
1940 - 2010

	1940	1950	1960	1970	1980	1990	2000	2010
Cities	4615	5436	6033	6370	6259	5959	6193	6456
Townships	6378	5842	5831	4976	4444	3847	3528	3231
Rock County	10993	11278	11864	11346	10703	9806	9721	9687

Source: U.S. Census 2000, 2010

While 57.8 percent of the county's population lived in the rural areas (townships) in 1940, only 33.4 percent did so in 2010. The loss in population numbers from the rural areas is seen in the decline of farm operator numbers. Populations in rural farming communities, like Rock County, are interconnected to the agricultural economy. Agriculture is a competitive industry and is often used in economics as an example of a perfectly competitive market. Competition in the agriculture industry has lead agricultural businesses to specialize and exploit economies of scale to stay competitive in the market place. Innovation, specialization, and economies of scale have resulted in an agriculture industry that has been able to supply our agriculture needs with less workers.

There was less than a one percent decline in population in Rock County from 2000 to 2010. The largest gain in population by a county subdivision was the City of Hills with 21.4 percent. The largest loss is population by a county subdivision was Denver Township with 18.4 percent. The population trends in Rock County by county subdivision generally see a trend of populations decreasing in townships and increasing in cities.

**Table #6** **Distribution of Population by County Subdivision, Rock County**  
2000 - 2010

County Subdivision	2000	2010	Percent Change
Battle Plain Twp	233	199	-14.6%
Beaver Creek City	250	297	18.8%
Beaver Creek Twp	391	386	-1.3%
Clinton Twp	292	277	-5.1%
Denver Twp	212	173	-18.4%
Hardwick City	222	198	-10.8%

Hills City	565	686	21.4%
Jasper City	75	60	-20%
Kanaranzi Twp	286	247	-13.6%
Kenneth City	61	68	11.5%
Luverne City	4617	4745	2.8%
Luverne Twp	493	479	-2.8%
Magnolia City	221	222	0.5%
Magnolia Twp	250	212	-15.2%
Martin Twp	451	382	-15.3%
Mound Twp.	257	252	-1.9%
Rose Dell Twp	214	216	0.9%
Springwater Twp	266	252	-5.3%
Steen City	182	180	-1.1%
Vienna Twp	183	156	-14.8%
<b>Total</b>	<b>9721</b>	<b>9687</b>	<b>-0.3%</b>

Source: U.S. Census 2000, 2010

Population by age cohort can help planners identify trends and make predictions based on these trends. Changes in age cohorts can also help government plan for changes in demand for services. If the childbearing cohorts decline, government can make predictions that student enrollments may decline in the near future. The largest gain in population by age cohort was the age group 55 to 64 with 45.0 percent. The largest loss in population by age cohort was 35 to 44 with 22.4 percent.

**Table #7**

**Population by Age Cohort, Rock County  
2000 - 2010**

Age Group	2000	Percent of Total	2010	Percent of Total	Percent Change 2000 - 2010
0-9	1263	0.1299	1396	0.145	10.5%
10-19	1555	0.16	1314	0.135	-15.5%
20-24	438	0.0451	389	0.04	-11.2%
25-34	968	0.0996	1053	0.109	8.8%
35-44	1370	0.1409	1063	0.11	-22.4%
45-54	1280	0.1317	1386	0.143	8.3%
55-64	863	0.0888	1251	0.129	45.0%
65-74	855	0.088	797	0.082	-6.8%
75-84	817	0.084	656	0.068	-19.7%
85+	312	0.0321	382	0.039	22.4%

Source: U.S. Census 2000, 2010

In cities in Rock County the median age decreased by 2.8 percent from 1990 to 2010. The largest increase in the median age was in the City of Kenneth, and the increase was 13.4 percent. The largest decrease in the median age was in the City of Hardwick, and the decrease was 20.6 percent. Kenneth and Luverne were the only cities that had an increase in the median age.

**Table #8****Median Age by City, Rock County  
1990 - 2010**

City	1990	2000	2010	Percent Change 1990 - 2010
Beaver Creek	37.3	41.8	36.9	-1.1%
Hardwick	36.5	40	44	-20.6%
Hills	44.4	45.6	41.5	-6.5%
Jasper	39.7	33.6	32.5	-18.1%
Kenneth	38.8	43.5	44	13.4%
Luverne	40.6	42.6	42.1	3.7%
Magnolia	43.3	33.8	33	-23.8%
Steen	35.7	30	33	-7.6%
<b>Cities</b>	<b>39.5</b>	<b>38.8</b>	<b>38.4</b>	<b>-2.8</b>

Source: U.S. Census 1990, 2000, 2010

In townships in Rock County the median age increased by 27.4 percent from 1990 to 2010. The largest increase in the median age was in Battle Plain Township, and the increase was 44.8 percent. There were no townships that had a decrease in the median age.

**Table #9****Median Age by Township, Rock County  
1990 - 2010**

Township	1990	2000	2010	Percent Change 1990 - 2010
Battle Plain	30.6	36.2	44.3	44.8%
Beaver Creek	30.9	38.6	40	29.5%
Clinton	30	37	39.7	32.3%
Denver	35.5	38	43.8	23.4%
Kanaranzi	30	33	42.8	42.7%
Luverne	34.5	38.4	43.6	26.4%
Magnolia	33	34.4	44.8	35.8%
Martin	31.7	35.6	39.8	25.6%
Mound	35.7	40.2	40	12.0%
Rose Dell	34.3	38.7	39.7	15.7%
Springwater	35.7	36.5	41	14.9%
Vienna	32.3	39.8	42.7	32.2%
<b>Townships</b>	<b>32.9</b>	<b>37.2</b>	<b>41.9</b>	<b>27.4%</b>

Source: U.S. Census 1990, 2000, 2010

In Rock County the median age increased from 36.9 to 41.4 from 1990 to 2010. The median age and the change in the median age from 1990 to 2010 are very similar for Rock County and Region 8. The State of Minnesota has a 4 year younger median age than both Rock County and Region 8.

**Table #10****Median Age by County/Region/State  
1990 - 2010**

	1990	2000	2010	Percent Change 1990 - 2010
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<i>Rock County</i>	36.9	40.8	41.4	12.2%
<i>Region 8</i>	36.9	39.9	41.5	12.5%
<i>Minnesota</i>	32.5	35.4	37.4	15.1%

Source: U.S. Census 1990, 2000, 2010

Rock County is predominately white with 96.7 percent of the population in 2010. There has been a shift towards a more diverse population. From 2000 to 2010 the percent of the population that is Black or African American grew by 13.5 percent. The population cohort two or more races grew by 108.8 percent from 2000 to 2010.

**Table #11** **Population by One Race, Rock County**  
2000 - 2010

	2000 Number	Percent	2010 Number	Percent	Percent Change 2000 - 2010
White	9,456	97.3	9,365	96.7	-1.0%
Black or African American	52	0.5	59	0.6	13.5%
American Indian and Alaska Native	42	0.4	34	0.4	-19.0%
Asian	60	0.6	53	0.5	-11.7%
Native Hawaiian and other Pacific Islander	2	0	1	0	-50.0%
Some Other Race	52	0.5	56	0.6	7.7%
Two or More Races	57	0.6	119	1.2	108.8%
<b>Total Population</b>	<b>9,721</b>	<b>100</b>	<b>9,687</b>	<b>100</b>	<b>-0.3%</b>

Source: U.S. Census 2000, 2010

Population projections from the MN Department of Administration show that the population in Rock County is projected to increasing 3.2 percent from 2015 to 2030. The projections show an increase in the number of elderly residents and a loss of youth in Rock County. Rock County communities will undoubtedly be impacted by the changing age structure of their communities. They must insure that services and needs are met as the population gradually becomes older and the demands for public services change. In the next 15 years, local governments throughout the State will find themselves dealing with an aging population and attempting to improve the safety and welfare of an older and a more diverse community.

**Table #12** **Population Projections, Rock County**  
2015 -2030

Age	2015		2020		2025		2030	
	Male	Female	Male	Female	Male	Female	Male	Female
0-4	280	260	270	260	270	260	260	250
5-9	350	330	350	340	350	330	340	330
10-14	380	360	380	360	320	310	330	310
15-19	330	330	330	310	320	310	330	310
20-24	170	200	160	200	160	190	160	190
25-29	240	240	230	240	220	230	220	230

30-34	250	250	240	240	240	230	220	220
35-39	280	270	290	290	280	280	270	270
40-44	290	260	270	270	270	290	280	280
45-49	270	270	260	250	270	250	280	270
50-54	320	320	270	280	280	260	270	260
55-59	400	380	360	360	310	310	330	290
60-64	390	370	400	390	370	370	320	32
65-69	330	330	370	360	390	390	360	370
70-74	220	220	290	300	340	340	350	370
75-79	120	170	180	190	250	270	290	310
80-84	100	140	90	140	140	160	190	230
85+	110	240	110	220	100	210	140	240
Totals								
Gender	4,800	4950	4,850	5000	4930	5040	4,960	5100
<b>Totals Population</b>	<b>9,750</b>		<b>9,850</b>		<b>9,970</b>		<b>10,060</b>	

Source: Minnesota Department of Administration

## VI Housing

Household characteristics have a direct impact on land use, demand for housing, government services, and public education. Changes in demographics are part of the driving forces that contribute to changes in housing characteristics and demand for housing. Planning and consideration needs to take place at the local levels to ensure the supply of housing is adequate to meet the demand.

The 85 plus age cohort increased by 22.4 percent from 2000 to 2010. This population change requires different housing needs than younger cohorts. Assisted living facilities and nursing homes are two types of facilities that will help to accommodate this population change. The 85 plus age cohort also have to be considered in emergency planning, since a number of persons in this cohort may have trouble evacuating buildings and performing other safety protocols. This cohort and youth cohorts have to have special considerations when it comes to emergency planning.

There are a number of other considerations that have to be made when it comes to emergency planning. The age of a structure is one variable that impacts how well a structure will withstand a disaster. The age of a structure is also one variable that impacts the ability to repair a structure after a disaster. The building materials used to construct the structure and the maintenance of the structure are two other variables in whether a structure can withstand a disaster. There are a number of other variables that impact the ability of a structure to withstand the stresses of a disaster.

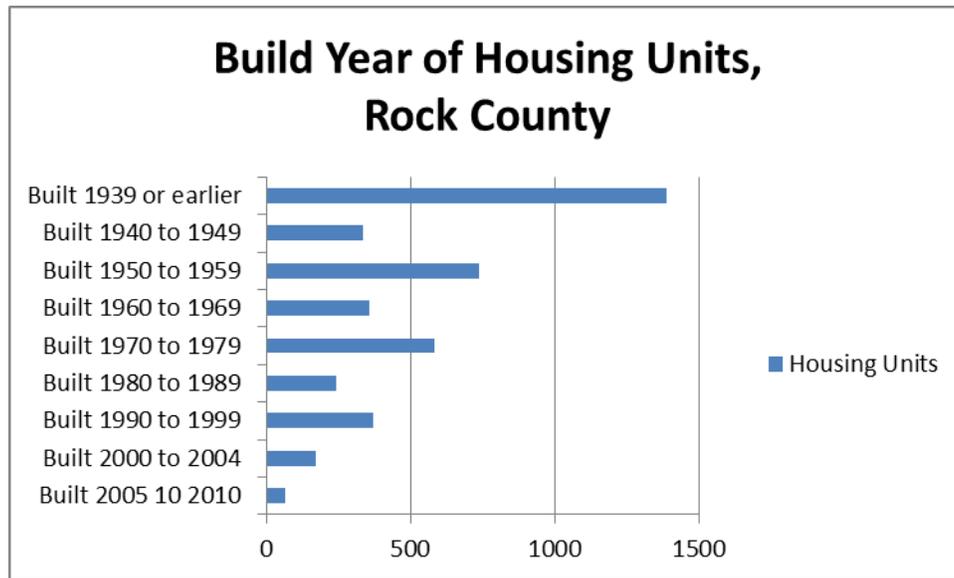
In Rock County 32.6 percent of housing units were built in 1939 or earlier. Only one-third of the housing units in Rock County were built in 1970 to 2010. Rock County has an older housing stock which impacts the county's ability to withstand a disaster.

**Table #13** **Build Year of Housing Units, Rock County**

Year Built	Housing Units	Percent
<i>Built 2005 to 2010</i>	67	1.6%

<i>Built 2000 to 2004</i>	172	4.0%
<i>Built 1990 to 1999</i>	372	8.7%
<i>Built 1980 to 1989</i>	241	5.7%
<i>Built 1970 to 1979</i>	585	13.8%
<i>Built 1960 to 1969</i>	356	8.4%
<i>Built 1950 to 1959</i>	739	17.4%
<i>Built 1940 to 1949</i>	336	7.9%
<i>Built 1939 or earlier</i>	1386	32.6%
<i>Total Housing Units</i>	4,254	1.6%

Source: U.S. Census 2010



In Rock County the population in households decreased 2.4 percent from 1990 to 2010. The U.S. Census defines households as the total number of occupied housing units, and household units as the total number of livable dwellings that are available. This population decrease in households was not the result of a decrease in the number of households. The number of households increased 4.4 percent from 1990 to 2010. Since the population in households decreased and the number of households increased, the persons per household decreased. The persons per household decreased 6.2 percent from 1990 to 2010.

**Table #14** **Population by Household, Rock County**  
1990 - 2010

	1990	2000	2010	Percent Change 1990 - 2010
<i>Population in Households</i>	9,660	9,489	9,427	-2.40%
<i>Households</i>	3,754	3,843	3,918	4.40%
<i>Persons Per Household</i>	2.57	2.47	2.41	-6.20%

Source: U.S. Census 1990, 2000, 2010

There were a total of 46,762 housing units in Region 8 in 1970. Region 8 experienced a 12.98 percent increase in housing units from 1970 to 1980. From 1970 to 2000, there was a 12.13 percent increase in housing units for Region 8. From 2000 to 2010, there was a 1.73 percent increasing in housing units for Region 8. In total, there was a 14.9 percent increase in housing units from 1970 through 2010.

For Rock County, the total number of housing units increased by 11.3 percent from 1970 to 1980, but declined 3.2 percent from 1980 to 1990 (-132 actual units). Data from 1990 to 2000 shows the addition of 174 units, an increase of 4.4 percent. From 2000 to 2010, there was an increase of 125 units, an increase of 3.0 percent. Rock County saw an overall increase in housing units of 15.8 percent from 1970 to 2010.

**Table #15** **Housing Unit Trends, Region 8**  
1970 -2010

County	1970	1980	1990	2000	2010	Percent Change 1970 - 2010
Cottonwood	5,130	5,804	5,495	5,376	5,419	5.6%
Jackson	4,918	5,525	5,121	5,092	4,990	1.5%
Lincoln	2,882	3,298	3,050	3,043	3,108	7.8%
Lyon	7,526	9,196	9,675	10,298	11,098	47.5%
Murray	4,236	4,679	4,611	4,357	4,556	7.6%
Nobles	7,386	8,212	8,094	8,465	8,535	15.6%
Pipestone	4,286	4,636	4,387	4,434	4,483	4.6%
Redwood	6,718	7,388	7,144	7,230	7,272	8.2%
Rock	3,680	4,095	3,963	4,137	4,262	15.8%
<b>Region 8</b>	<b>46,762</b>	<b>52,833</b>	<b>51,540</b>	<b>52,432</b>	<b>53,723</b>	<b>14.9%</b>

Source: U.S. Census 1970, 1980, 1990, 2000, 2010

In Rock County 77.4 percent of occupied housing units are owner-occupied. In Region 8, 76.7 percent of occupied housing units are owner-occupied. Rock County has seen a steady increase in the number of owner-occupied housing units. From 1970 to 2010, Rock County has seen a 20.3 percent increase in owner-occupied housing units. During that same time period Region 8 saw a 4.6 percent decrease.

**Table #16** **Housing Occupancy, Region 8**  
2010

	Total Occupied	Owner - Occupied
County	2010	2010(%)
Cottonwood	4,912	79.6%
Jackson	4,429	78.3%
Lincoln	2,574	80.2%
Lyon	10,227	66.5%
Murray	3,717	82.6%
Nobles	7,946	72.8%
Pipestone	4,054	74.9%

Redwood	6,580	78.0%
Rock	3,918	77.4%
<b>Region 8</b>	<b>48,357</b>	<b>76.7%</b>

Source: U.S. Census 2010

**Table #17** **Owner- Occupied Housing Occupancy, Region 8**  
**1970 -2010**

County	1970	1980	1990	2000	2010	Percent Change 1970 – 2010
Cottonwood	3,760	4,243	3,925	3,955	3,757	-0.1%
Jackson	3,356	3,781	3,477	3,601	3,466	3.3%
Lincoln	2,131	2,323	2,161	2,130	2,063	-3.2%
Lyon	5,107	6,203	6,207	6,643	6,799	33.1%
Murray	2,821	3,181	2,982	3,135	3,070	8.8%
Nobles	5,161	5,928	5,791	5,955	5,783	12.1%
Pipestone	3,066	3,358	3,129	3,173	3,035	-1.0%
Redwood	4,587	5,252	5,055	5,328	5	11.9%
Rock	2,519	2,868	2,826	2,994	3,031	20.3%
<b>Region 8</b>	<b>32,508</b>	<b>37,137</b>	<b>35,553</b>	<b>36,914</b>	<b>31,009</b>	<b>-4.6%</b>

Source: U.S. Census 2010

The number of renter-occupied units in Rock County has steadily decreased since 1970 from a total of 975 units to 887 units in 2010. There was an increase of 38 renter occupied housing units from 2000 to 2010. Region 8 saw a 2.9 percent decrease in renter-occupied housing units from 1970 to 2010. The demand for rent-occupied housing units may increase as the population ages and moves from owner-occupied housing units to assistant living facilities and other rental facilities.

**Table #18** **Renter – Occupied Housing Occupancy, Region 8**  
**1970 -2010**

County	1970	1980	1990	2000	2010	Percent Change 1970 - 2010
Cottonwood	1,053	1,233	1,134	962	1,003	-4.7%
Jackson	1,193	1,207	1,083	955	963	-19.3%
Lincoln	448	605	543	523	511	14.1%
Lyon	1,930	2,476	2,866	3,072	3,428	77.6%
Murray	897	855	776	587	647	-27.9%
Nobles	1,864	1,886	1,892	1,984	2,163	16.0%
Pipestone	996	999	949	896	1,019	2.3%
Redwood	1,579	1,600	1,499	1,346	1,445	-8.5%
Rock	975	987	928	849	887	-9.0%
<b>Region 8</b>	<b>10,935</b>	<b>11,848</b>	<b>11,670</b>	<b>11,174</b>	<b>10,622</b>	<b>-2.9%</b>

Source: U.S. Census 1970, 1980, 1990, 2000, 2010

The 1970 U.S. Census reported that Rock County had 182 vacant housing units. This number increased to 294 units in 2000, and increased again to 344 in 2010. In 1990, the Census Bureau began to separate owner and renter vacant housing units. The combined percentages of the new data are higher than the actual vacant units year round. The numbers include unoccupied units for sale and housing used for seasonal, recreational, or occasional use.

**Table #19** **Vacant Housing, Region 8**  
**1970 -2010**

County	1970	1980	1990	2000	2010	Percent Change 1970 - 2010
Cottonwood	317	318	435	459	507	59.9%
Jackson	322	379	561	536	561	74.2%
Lincoln	280	324	346	390	534	90.7%
Lyon	484	512	602	583	871	80.0%
Murray	463	445	853	635	839	81.2%
Nobles	350	383	411	526	589	68.3%
Pipestone	224	278	309	365	429	91.5%
Redwood	520	523	590	556	692	33.1%
Rock	182	239	209	294	344	89.0%
<b>Region 8</b>	<b>3,142</b>	<b>3,401</b>	<b>4,316</b>	<b>4,344</b>	<b>5,366</b>	<b>70.8%</b>

Source: U.S. Census 1970, 1980, 1990, 2000, 2010

In 2010, only 8.1 percent of the housing units in Rock County were vacant. In Region 8, 10.9 percent of the housing units were vacant in 2010. For every ten year census update, Rock County had a lower percent vacancy than Region 8. Having a higher percentage of a county's housing units being vacant adversely affects preparing for and cleaning up after a disaster.

**Table #20** **Percent Vacant, Region 8**  
**1970 -2010**

County	1970	1980	1990	2000	2010
Cottonwood	6.6%	5.8%	8.6%	8.5%	9.4%
Jackson	7.1%	7.6%	12.3%	10.5%	11.2%
Lincoln	10.9%	11.1%	12.8%	12.8%	17.2%
Lyon	6.9%	5.9%	6.6%	5.7%	7.8%
Murray	12.5%	11.0%	22.7%	14.6%	18.4%
Nobles	5.0%	4.9%	5.3%	6.2%	6.9%
Pipestone	5.5%	6.4%	7.6%	8.2%	9.6%
Redwood	8.4%	7.6%	9.0%	7.7%	9.5%
Rock	5.2%	6.2%	5.6%	7.1%	8.1%
<b>Region 8</b>	<b>7.2%</b>	<b>6.9%</b>	<b>9.2%</b>	<b>8.3%</b>	<b>10.9%</b>

Source: U.S. Census 1970, 1980, 1990, 2000, 2010

Damage to housing units can be a large portion of the monetary cost of a disaster. The median value for a housing unit in Rock County was \$81,800 in 2010. Sixty-two percent of the housing units in Rock County have a value under \$100,000.

**Table #21****Housing Unit Value, Rock County  
1980 -2010**

Value	1980	1990	2000	2010
<\$50,000	1,416	1,306	603	1,005
\$50,000 - \$99,999	387	510	1,170	1,409
\$100,000 - \$149,999	14	35	298	676
\$150,000 - \$199,999	1	2	70	446
\$200,000 +	0	0	45	373
<b>Median Dollars</b>	<b>\$34,500</b>	<b>\$36,600</b>	<b>\$68,500</b>	<b>\$81,800</b>

Source: U.S. Census 2010

Rock County has a higher median housing unit value and median rent than the Region 8 average. Rock County has the second highest median rent behind Pipestone County. The cost of a disaster is potentially higher in Rock County when compared to Region 8 averages.

**Table #22****Median Housing Unit Value, Region 8  
2010**

County	Median Housing Unit Value	Median Rent
Cottonwood	\$81,800	\$454
Jackson	\$100,300	\$543
Lincoln	\$76,300	\$477
Lyon	\$136,300	\$543
Murray	\$90,000	\$521
Nobles	\$97,200	\$554
Pipestone	\$85,100	\$576
Redwood	\$88,300	\$557
Rock	\$99,200	\$567
<b>Region 8</b>	<b>\$94,944</b>	<b>\$532</b>

Source: U.S. Census 2010

**Table #23****Housing Summary, Rock County  
2010**

Subject	Number	Percent
<b>Total Population</b>		
In Households	9,427	97.3%
In Group Quarters	260	2.7%
<b>Total Households</b>		
Family Households	2,666	68.0%
Non Family Households	1,252	32.0%
Householder Living Alone	1,140	29.1%
Households 65 years and over living Alone	570	14.6%
Households with Individuals under 18	1,200	30.6%

Households with Individuals 65 and over	1,203	30.7%
Average Household Size	2	(X)
<b>Units in Structure</b>		
1 unit, detached	3,436	80.8%
1 unit, attached	88	2.1%
2 units	103	2.4%
3 or 4 units	80	1.9%
5 to 9 units	238	5.6%
10 to 19 units	69	1.6%
20 or more units	167	3.9%
Mobile Home	73	1.7%
<b>Vehicles Available</b>		
None	190	4.9%
1 Vehicle	1,040	26.8%
2 Vehicles	1,583	40.7%
3 or more	1,072	27.6%
<b>House Heating Fuel</b>		
Utility Gas	1,768	45.5%
Bottled, tank, or LP gas	1,101	28.3%
Electricity	728	18.7%
Fuel oil, kerosene, etc.	168	4.3%
Coal or coke	0	0.0%
Wood	42	1.1%
Solar Energy	2	0.1%
Other fuel	37	1.0%
No fuel used	39	1.0%
<b>Selected Characteristics</b>		
Lacking complete plumbing facilities	7	0.2%
Lacking complete kitchen facilities	33	0.8%
No telephone service	98	2.5%

Source: U.S. Census 2010

## VII Employment

Rock County had an estimated labor force of 5,132 persons in 2010. The largest employer by industry was the Education and Health Services Industry, followed by the Transportation, Communication, and public Utilities Industry. The industry cohort Ag Services is estimated to be higher, but self-employed farms workers are not reported in Department of Employment and Economic Development figures.

**Table #24****Employment by Industry, Rock County  
2000 - 2010**

Industry New	2000	2010
Ag Services*	104	64
Construction	92	81
Manufacturing	428	276
TTU**	683	640
Financial Activities	313	314
Education and Health Services	992	881
Leisure and Hospitality	261	230
Professional and Business Services	146	73
Public Administration	228	241
Information	50	49
Other Services	83	59
<b>All Industries</b>	<b>3,379</b>	<b>5,137</b>

Source: Department of Employment and Economic Development

\*Ag Services includes Forestry, Fishing, and Mining

\*\*TCPU includes Transportation, Communication, and Public Utilities

The unemployment rate in Rock County was 3.9 percent in 2012, while the State of Minnesota had an unemployment rate of 5.7. From 2000 through 2012, the average unemployment rate was 3.6 for Rock County, 4.9 for Region 8, 5.2 for Minnesota, and 6.3 for the United States.

During the economic downturn of Obama's first term as President (2009-2012), the average unemployment rate was 4.7 for Rock County, 6.2 for Region 8, 6.9 for the State of Minnesota, and 9.0 for the United States. Rock County fared significantly better during Obama's first term than Region 8, the State of Minnesota, and the United States. One explanation for Rock County not seeing significantly higher unemployment rates was the agriculture industry. The agriculture industry partially insulated Rock County during the downturn.

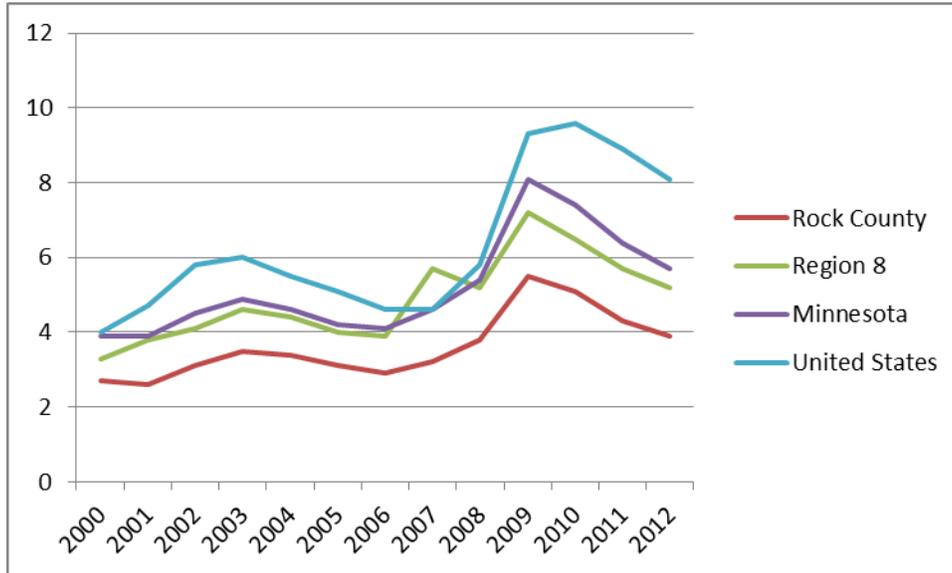
**Table #25****Unemployment Trends  
2000 - 2012**

Year	Rock County	Region 8	Minnesota	United States
2012	3.9	5.2	5.7	8.1
2011	4.3	5.7	6.4	8.9
2010	5.1	6.5	7.4	9.6
2009	5.5	7.2	8.1	9.3
2008	3.8	5.2	5.4	5.8
2007	3.2	5.7	4.6	4.6
2006	2.9	3.9	4.1	4.6
2005	3.1	4.0	4.2	5.1
2004	3.4	4.4	4.6	5.5

2003	3.5	4.6	4.9	6.0
2002	3.1	4.1	4.5	5.8
2001	2.6	3.8	3.9	4.7
2000	2.7	3.3	3.9	4.0

Department of Employment and Economic Development & Bureau of Labor Statistics

### Unemployment Trends 2000 - 2012



Department of Employment and Economic Development & Bureau of Labor Statistics

Agriculture is a significant driving force in Rock County. In the fall of 2011 there were two land sales that saw a sale price above \$12,000 per acre.<sup>9</sup> The USDA 2007 Census of Agriculture showed that there were 279,088 acres of farm land in production in Rock County.<sup>10</sup> In 2007, the market value of agricultural products sold in Rock County was \$282,902,000. Since 2007, the prices for agricultural products have been favorable, the upcoming USDA Census of Agriculture is suspected to top the figures, the market value of agricultural products sold in Rock County, from 2007.

A large proportion of the labor force in Rock County does not work in Rock County. The average travel time or commute to work in Rock County was 22.1 minutes in 2010.<sup>11</sup> A number of Rock County Residents commute to Sioux Falls and surrounding communities to work. Time on the road can increase the risk of curtain hazards like winter storms and transportation crashes.

<sup>9</sup> <http://magissues.farmprogress.com/TFM/TF02Feb12/tfm006.pdf>

<sup>10</sup> USDA Census 2007. Accessed: 5/29/13. Available:

[http://www.agcensus.usda.gov/Publications/2007/Online\\_Highlights/County\\_Profiles/Minnesota/cp27133.pdf](http://www.agcensus.usda.gov/Publications/2007/Online_Highlights/County_Profiles/Minnesota/cp27133.pdf)

<sup>11</sup> 2006 – 2010 American Community Survey: <http://factfinder2.census.gov>

Changes in income are an indicator of the county's economic condition. Per Capita income is the mean income computed for every person in a specified geographic area. For household income, the median is based on the distribution of the total number of housing units, including those occupants with no income. According to the 2010 Census information, the median household income for Rock County was \$45,411, while the Region 8 average was \$44,176. Per capita income in Rock County was \$23,079, while Region 8 was \$23,433. The median family income was \$58,147, while Region 8 was \$56,697. In two out of the three data comparisons, Rock County ranked higher than the Region 8 average.

**Table #26** **Comparative County Income Levels, Region 8**  
**2000 - 2010**

County	2000 Median Household Income	2010 Median Household Income	2000 Per Capita Income	2010 Per Capita Income	2000 Median Family Income	2010 Median Family Income
Cottonwood	31,943	40,292	16,647	23,162	40,237	51,705
Jackson	36,746	46,869	17,499	25,144	43,426	59,238
Lincoln	31,607	44,672	16,009	24,922	38,605	58,953
Lyon	38,996	46,872	18,013	23,755	48,512	63,793
Murray	34,966	45,657	17,936	24,045	40,893	54,647
Nobles	35,684	43,040	16,987	20,953	43,076	52,356
Pipestone	31,909	40,589	16,450	22,289	40,133	55,609
Redwood	37,352	44,181	18,903	23,548	46,250	55,829
Rock	38,102	45,411	17,411	23,079	44,296	58,147
<b>Region 8</b>	<b>35,256</b>	<b>44,176</b>	<b>17,317</b>	<b>23,433</b>	<b>42,825</b>	<b>56,697</b>

Source: U.S. Census 2000, 2010

# CHAPTER 3: PREREQUISITES

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This Chapter covers prerequisites for eligibility to adopt this multi-hazard mitigation plan in multiple jurisdictions. Section II describes the plan adoption process. Section III describes Participation Provisions Post-Approval of the All Hazard Mitigation Plan by HSEM and FEMA.

## I Jurisdictions Represented in this Plan

For the purpose of hazard mitigation, FEMA considers a Local Government having jurisdiction as “any county, municipality, city, town, township, public authority, school district, special district, intrastate district, council of governments..., regional or interstate government entity, or agency or instrumentality of a local government.” (44CFR§201.2) Special considerations are given by FEMA for school districts, private nonprofit organizations, and multi-jurisdictional private nonprofit utilities (such as Rural Electric Cooperatives).

Rock County has the land use authority over the townships, so Rock County will represent the townships in the All Hazard Mitigation Plan (AHMP). The Rock County AHMP will cover all the townships in the county. Representatives from the townships were asked to participate in the planning process. Rock County and the following cities passed resolutions of intention to participate in the process. Land use authority within city limits is controlled by the local jurisdiction.

Rock County is a rural county. A number of resources and responsibilities are shared throughout the county. The Rock County Sheriff’s Office provides law enforcement throughout the county. Additional resources and responsibilities are shared regional. Rock County is part of the Southwest Health and Human Services service area, which includes the following counties: Lincoln, Lyon, Murray, Pipestone, Redwood, and Rock. A representative from the Rock County Sheriff’s office and SWHHS were members of the planning team. This ensured a regional prospective was taken when analyzing natural and manmade hazards.

Resolutions of Participation from each participating jurisdiction can be found in Addendum II. Resolutions of Adoption from each participating jurisdiction that chooses to adopt this plan will be appended in Addendum III. The Resolutions of Adoption will be added after FEMA approval.

**Table #27 A** **Multi-Jurisdictional Participation**  
**Rock County All Hazard Mitigation Plan**

Local Unit of Government	Statement of Interest	Formal Adoption
City of Beaver Creek	Yes	
City of Hardwick	Yes	
City of Hills	Yes	
City of Jasper	Yes	
City of Kenneth	Yes	
City of Luverne	Yes	
City of Magnolia	Yes	
City of Steen	Yes	

**Table #27 B**                      **Summary of Jurisdiction Participation**

Name	Worksheet	Goals	Attended Meeting
Rock County; Administrator/ Emergency Management Director *	Y	Y	Y
Rock County Highway Department; County Engineer*	Y	Y	Y
Rock County Board of Commissioners; Commissioner*	Y	Y	Y
Rock County Land Management Office; Director, Assistant Director, Engineering Technician*	Y	Y	Y
Rock County Sheriff's Department; Sheriff *	Y	Y	Y
Southwest Health and Human Services; Environmental Health Manager*	Y	Y	Y
Municipalities Representative*	Y	Y	Y
City of Beaver Creek; City Clerk	Y	Y	N
City of Hardwick; City Clerk	Y	Y	N
City of Hills; City Clerk	Y	Y	N
City of Jasper; City Clerk	Y	Y	N
City of Kenneth; City Clerk	Y	Y	N
City of Luverne; City Administrator*	Y	Y	Y
City of Magnolia; City Clerk	Y	Y	N
City of Steen; City Clerk & Mayor	Y	Y	N
Township Representative*	Y	Y	Y

*Worksheet:* A representative complete the Hazard Identification Worksheet

*Goals:* A representative reviewed the Goals and provided feedback

Planning Team Member: \*

**Table #27 C**    **Emergency Response, Schools, and Organization Participation**

Name	Goals	Attended Meeting
Beaver Creek Fire Department; Fire Dept. Representative	Y	N
Hardwick Fire Department; Clerk	Y	N
Hills Fire Department; Fire Chief	Y	N
Jasper Fire Department; City Clerk	Y	N
Kenneth Fire Department; Clerk	Y	N
Luverne Fire Department; Fire Chief	Y	Y
Magnolia Fire Department; City Clerk	Y	N
Steen Fire Department; City Clerk & Mayor	Y	N

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Ellsworth Fire Department (Nobles Co); Fire Dept. Representative	Y	N
Garretson Fire Department (South Dakota)	N	N
Sanford Luverne Medical Center; Infection Prevention and Control/ Safety Representative	Y	N
Rock County Ambulance District; Sanford Health Ambulance Representative	Y	N
Edgerton Ambulance District; City Clerk	Y	N
Jasper Ambulance District; City Clerk		N
Hills Beaver Creek Public Schools; Superintendent	Y	N
Luverne Public Schools; Superintendent	Y	N
Southwest Health and Human Services; Environmental Health Manager*	Y	Y
Minnesota Department of Health, SW District; Public Health Preparedness Consultant	Y	N
Minnesota Veterans Home, Luverne; Administrator	Y	N
Minnesota Board of Animal Health; Animal Health Tech.	Y	N
Minnesota Department of Transportation; Assistant District 7 Engineer	Y	N
Minnesota Board of Water and Soil Resources; Southwest Region Representative	Y	N
Blue Mound State Park; Park Representative	Y	Y
Rock County Rural Water; System Manager	Y	N
Lincoln Pipestone Rural Water; CEO	Y	N
Sioux Valley Energy; General Manager/ CEO	Y	N
Nobles Cooperative Electric; Office Manager	Y	N
University of Minnesota Extension; Rock County Office Manager	Y	N

*Goals:* A representative reviewed the Goals and provided feedback

## II Adoption Procedure

Each jurisdiction participating in the plan must formally adopt the plan after FEMA provisionally approves the document (Section 1.B.1). This plan must be adopted within one year of provisional FEMA approval, or else be updated and re-submitted to FEMA again. Minnesota Statutes §375.51 Subd.1 requires that a “public hearing shall be held before the enactment of any ordinance adopting or amending a comprehensive plan or official control...”

Once the planning team finalized the draft All Hazard Mitigation Plan (AHMP), copies were made available to the public, local governments, and county departments for comment. The feedback period

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for the plan was 31 days. The planning team reviewed comments, modifications were made, and the draft was sent to the County Planning Commission for their review.

As part of the planning team’s review, a public hearing was held to obtain any additional comments that the public or others wished to make. When satisfied with the plan, the planning team recommends that the County Board of Commissioners forward the plan for final review by the State of Minnesota Division of Homeland Security & Emergency Management (HSEM). Federal rules require that this plan be submitted to HSEM for initial review and coordination, with the State then forwarding the plan to FEMA’s Regional Office in Chicago for formal review and approval. Upon approval by FEMA, the County Board will consider a Resolution of Adoption. After County approval, staff will work with each participating local unit of government to facilitate the local adoption of the plan.

Local jurisdictions with Comprehensive Plans and Land Use Plans are encouraged to incorporate applicable strategies, goals, and policies from the Rock County AHMP into their local plans upon next adoption. Since the first version of the Rock County AHMP was finalized no local jurisdiction updated their Comprehensive Plan or Land Use Plan. Local jurisdictions should utilize applicable zoning, subdivision control, and other ordinances to enforce the policies described in this plan. The Rock County Emergency Management Department will work with local jurisdiction to help incorporate the applicable strategies, goals, and policies from the Rock County AHMP into their local plans. The SRDC sent all entities the goals, objectives, and strategies that their entity was named in. These entities had the opportunity to provide feedback and acknowledged the goals, objectives, and strategies that they were named in.

### **III Participation Provisions Post-Approval**

FEMA guidance explains a process that jurisdictions can follow to become part of the planning process, or “join” the mitigation plan, after FEMA approval. Any jurisdiction wishing to join the plan at a later date should contact Rock County Emergency Management.

# CHAPTER 4: PLANNING PROCESS

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The planning process for the All Hazard Mitigation Plan (AHMP) is as important as the plan itself. The planning process forces the community to analyze the strengths and weaknesses of the county's preparedness for a natural or manmade disaster. This Chapter describes the planning process, the AHMP Team, public involvement, and existing plans, studies, reports and technical information used in the planning process.

## I Description of the Planning Process

### Preplanning

Since the original Rock County AHMP was approved and adopted in 2008, Rock County Emergency Manager and the SRDC collected information on hazards that occurred in Rock County. This information gathering helped in updating the risk assessment section of the plan. It also helped to initiate conversations during the planning process regarding strategies to mitigate the effects caused from hazards over the five year update cycle.

In the spring of 2013 the planning process began for the update of the Rock County AHMP. Every five years the Rock County AHMP has planned update. Rock County Administrator/ Emergency Manager, Kyle Oldre, initiated the planning process by contacting the Southwest Minnesota Regional Development Commission (SRDC) to contract with the commission to update the plan.

The Rock County AHMP Planning Team was reformed to assist with the update. The planning team consists of a number of elected officials, county staff, city staff, and emergency personnel.

Rock County AHMP Planning Team:

- Rock County Administrator/ Emergency Management Director, Kyle Oldre
- Rock County Highway Engineer, Mark Sehr
- Rock County Board of Commissioners, Ken Hoime
- Land Management Office/Municipalities, Arlyn Gehrke
- Land Management Office, Eric Hartman
- Sheriff's Department, Evan Verbrugge
- Southwest Health and Human Services, Jason Kloss
- Land Management Office/ Rock County Townships, Douglas Bos
- Rock County Townships/ Beaver Creek Township, Peter Bakken
- City of Luverne, John Call
- Luverne Fire Department, Dan Nath

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The SRDC contacted all of the cities within Rock County that the update to the Rock County AHMP was taking place. This original outreach also asked the cities to participate in the planning process to update the Plan. All of the seven incorporated cities in Rock County signed Statement of Interest Letters for the Rock County AHMP update. These seven cities include: Beaver Creek, Hardwick, Hills, Kenneth, Luverne, Magnolia, and Steen. Outreach was also done to the townships in Rock County and two township representatives are members of the planning team.

### Planning Meeting

The first All Hazard Mitigation Meeting was held on July 18<sup>th</sup>, 2013. This meeting was an introduction to the Rock County AHMP Planning Team. The SRDC presented on the AHMP planning process, the purpose of the plan, the benefits of having a plan, and the participation in the development of the plan. Public participation is a critical component in the development of the Rock County AHMP. The planning team is critical in helping to engage the public and to garner feedback in regards to the plan.

The planning process started with a review of the timeline and the information that needed to be gathered as part of the update and included in the plan. The Local Mitigation Plan Review Tool was presented to the planning team as master guide to the materials that are required to be included in the Rock County AHMP. In total there will be four planning meetings, including this meeting, to gather information, analyze the natural and manmade hazards that pose a risk in Rock County, and outline mitigation strategies to alleviate the potential risk of the hazards that were identified. A public review meeting of the plan will follow and all suggestions and comments will be reviewed by the planning team.

There were also resources allocated to have up to three sub-committee meetings for a total of 4 hours. These sub-committee meetings are used to help gather additional information, analyze potential hazards, and identify mitigation measures. These meetings help SRDC staff to prepare and present information to the larger planning team at planning meetings.

The Hazard Identification Worksheet was also discussed during the presentation regarding the planning process. The Hazard Identification Worksheet is an important part of the planning process. The Hazard Identification Worksheets help the planning team rank and quantify the natural and manmade hazards in Rock County. Public involvement is needed to help identify hazards and provide feedback in regards to potential frequency, spatial extent, potential severity, warning time, risk level, and hazard rank.

The Hazard Identification Worksheet outlined the natural and manmade hazards that were included in the original Rock County AHMP. SRDC staff presented other hazards that are typical to Minnesota and were included in the Minnesota AHMP and other county AHMPs. After thoroughly discussing each state-wide hazard, the Team combined some hazards for ease of assessment and development of mitigation actions. By comparing and discussing the hazards identified in the different plans, the planning team identified the following hazards (not in a specific order):

Natural Hazards affecting the jurisdiction include:

- Agricultural Disease (animal or crop)
- Blizzards, Winter Storms, and Extreme Cold Events

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- Drought
- Fire—Wildfire
- Flooding
- Severe Summer Storms, Lightning and Hail, and Extreme Warm Events
- Tornadoes and Straight-line Winds
- Earthquakes

Manmade Hazards affecting the jurisdiction include:

- Fire—Structure (combined with wildfire for analysis)
- Civil Disturbance and Terrorism
- Hazardous Materials and Methamphetamine Labs
- Public Health Emergencies
- Transportation Infrastructure and Transportation Crashes
- Water Supply Contamination
- Utility Failure
- Dam Failure

Certain state-wide hazards were eliminated from the discussion since the planning team thought the risk of the hazard was minimal or non-existent in Rock County. These included:

- Coastal Erosion—all lakes in Rock County are manmade
- Sinkholes and Land Subsidence—maps provided by the State of Minnesota show these as an issue in eastern Minnesota
- Nuclear Generating Plants—none are located in or near Rock County

The planning team recognizes the importance of public involvement during the planning process. Participation in the development of the AHMP needs to come from county staff, township and city representatives, and the general public. Efforts were discussed to actively include these groups in the update of the Rock County AHMP.

### **Planning Meeting / Risk Assessment Meeting**

A press release was issued by the SRDC on July 25<sup>th</sup>, 2013, informing the public of the upcoming Rock County AHMP meeting being held on Thursday August 15<sup>th</sup>, 2013, at 9am at the Law Enforcement Center, 1000 North Blue Mound Ave, Luverne. In the press release the Rock County AHMP Planning Team requested the public to assist in prioritizing the hazards and helping to identify any hazards that were over looked.

The press release also informed the public of the current work being done to update the Rock County AHMP. The purpose of the Plan is to identify risks and vulnerabilities associated with disasters, and develop long-term strategies for protecting people, resources, and property in future hazard events. Through the planning process the planning team and the public will identify hazards and with help from the public the planning team will prioritize these hazards and identify actions to mitigate the effects of

## Chapter 5

the hazards. The press release finished with a summary of the multi-party effort to update the Plan and how the update is being funded.

Emails were also sent out by the Rock County Emergency Manager /County Administrator to inform townships and cities within Rock County of the upcoming meeting.

The meeting covered hazard identification, the hazard identification worksheet and planning process timeline. The hazard identification portion of the meeting reviewed the hazards identified by the planning team and asked for input regarding hazards that may have been overlooked. These identified hazards were individually profiled. The profile included: locations affected by the hazard, extent of the hazard, previous occurrences of the hazard, probability of future events of this hazard, and vulnerability which covers plans and programs, gaps and deficiencies, and existing mitigation measures.

This meeting helped to educate the planning team, local government representatives, and public, but it also helped to facilitate conversation regarding the hazards. The conversations helped to fill in gaps in the research related to hazard profiles. There was also a chance for meeting attendees to suggest additional hazards to be included in the Plan.

No additional hazards were suggested, so the hazard identification worksheets were distributed to attendees at the end of the meeting. The attendees were asked to fill out the worksheet and bring the completed worksheet to the next hazard mitigation meeting. Attendees could also drop off the worksheet at the Rock County Emergency Manager /County Administrator office.

### **Mitigation Strategies Meeting**

A press release was issued by the SRDC on September 18<sup>th</sup>, 2013, informing the public of the upcoming Rock County AHMP meeting being held on Thursday October 10<sup>th</sup>, 2013, at 9am at the Law Enforcement Center, 1000 North Blue Mound Ave, Luverne. In the press release, the Rock County AHMP Planning Team requested the public to assist in updating the Goals Sections of the Rock County AHMP, and the specific objectives and strategies to accomplish those goals. The press release also informed the public of the current work being done to update the Rock County AHMP, the purpose of the plan, the planning process for the plan, who is involved with developing the plan, and how the plan was funded.

The Mitigation Strategies meeting started with a summary of the existing Vision and Mitigation Goals outline in the previous Rock County AHMP. These goals were discussed and objectives and strategies that were already accomplished were added to the list of existing mitigation actions. This list of existing mitigation measures will be added to the appropriate sections of the Risk Assessment Section of the Rock County AHMP.

During the discussion, goals were modified and additional objectives and strategies were discussed and added to help accomplish the outlined goals. SRDC staff outlined the importance of Goals to be specific, measurable, attainable, relevant, and time bound (SMART Goals). The planning team analyzed and updated the Goal Section in a manor to reflect SMART Goals.

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A subcommittee meeting will be held to farther discuss the Goals Section of the plan. The Goals Subcommittee will finalize and prioritize the goals, objectives, and strategies. A number of new goals, objectives, and strategies were added, so additional planning is needed. The Goals Subcommittee will refer to the Risk Assessment Section to confirm that the goals, objectives, and strategies address the needs outlined in the Risk Assessment Section. By reviewing the Risk Assessment Section, the Goals Subcommittee will better be able to identifying new mitigation goals, objectives, and strategies to address the specific natural and manmade hazards outline in the plan update.

### Mitigation Strategies Subcommittee:

- Kyle Oldre – Rock County Administrator/ Emergency Management Director
- Arlyn Gehrke – Land Management Office/Municipalities
- Eric Hartman – Land Management Office
- Drew Hage – Southwest Regional Development Commission

### **Mitigation Strategies Subcommittee Meeting**

A qualitative approach was used by the planning team to judge and prioritize the mitigation strategies based on perceived costs and benefits. The process used to judge and prioritize the mitigation strategies was the STAPLEE Process. STAPLEE stands for Social, Technical, Administrative, Political, Legal, Economic, and Environmental. The STAPLEE Process takes all seven criteria into consideration when finalizing and prioritizing the mitigation strategy.

The mitigation strategies subcommittee meeting was held on December 5th, 2013. The goals, objectives, and strategies were discussed used the STAPLEE Process. Through this process the strategies were prioritized on a scale of one through five, one being the least important and five being most important.

### **Plan Review Subcommittee Meeting**

An informal Plan Review Subcommittee was held via email and phone calls during the months of February and March. During this time the Rock County AHMP Planning Team reviewed and modified the Risk Assessment Section and the Goals Section of the Plan. Modifications were made via email and phone to the SRDC.

A formal Plan Review Subcommittee meeting was held on March 21<sup>st</sup>, 2014. This subcommittee meeting was held to review of comments and suggestions that were collected over the past few months by the SRDC and Kyle Oldre. Modifications were agreed upon and the Rick Assessment Section and the Goals Section of the Plan are now ready for review from HSEM. SRDC staff will be sending the Risk Assessment Section to James McClosky for review before the entire plan is submitted.

### **Public Review Meeting**

A public review meeting was held on Monday June 2nd, 2014, from 3pm to 6pm. The event was intended as an opportunity for local residents as well as neighboring communities, agencies, businesses, academia, nonprofits, and other interested parties to be involved in the process. The Rock County AHMP was available online on the SRDC website and on Rock County's website four weeks prior to the public review meeting. Interested entities could prepare feedback and recommendations before the open house. Attendees were able to come and go at their convenience, review the material sections of the plan, provide feedback, and make recommendations.

The public review meeting was advertised in the *Rock County Star Herald* newspaper, a flyer was provided to local units of government and regional agencies, and a press release was distributed to media in the region. The open comment period provided a great opportunity for garnering input and feedback in regards to the Rock County AHMP.

## **II Public Involvement**

Intergovernmental coordination was essential in the development of this. The SRDC and Rock County Emergency Management provided information to all local units of government in the county about the all hazards mitigation planning process and opportunities for participation. Meeting participation was solicited, but smaller local units of government opted for participating via phone, email, and mail. All incorporated municipalities approved statements of intent to participate (Addendum II). Public Notice of all planning team meetings was posted at the Courthouse with the County Coordinator/ Emergency Management Director. A press release was distributed to the *Rock County Star Herald Newspaper* and email notices were sent to local units of government. Subcommittee Meetings were not publicized.

All local units of government in Rock County were invited to review and comment on mitigation goals, objectives and strategies. Public and private entities were sent the mitigation strategies that their representing entity was listed in. Feedback and recommendations were requested regarding the mitigation goals, objectives, and strategies. Refer to the table #27 for more information regarding jurisdictions, emergency response departments, schools, and organizations that reviewed and approved the goals section of the Rock County AHMP.

## **III Other Opportunity for Involvement**

Hazard mitigation has been a regional effort in Southwest Minnesota, with many opportunities for involvement provided for neighboring communities, agencies involved in hazard mitigation, and businesses, academia, and other relevant private and non-profit interests. SRDC has worked (or was working during plan development) with the following regional Minnesota counties on their hazard mitigation plans:

- Cottonwood County (2011)
- Jackson County (2008, update in progress)
- Lincoln County (2010)
- Lyon County (2010)
- Nobles County (2005; update 2011)

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- Pipestone County (2010)
- Redwood County (2005; update 2012)
- Rock County (2007; update 2014)

### **IV Existing Plans, Studies, Reports, and Technical information**

Many sources of local, state, federal, and private information were used during the AHMP update. Various plans, programs, and policies were reviewed by SRDC staff. The literature review was a critical step in updating the Rock County AHMP. The coordinated use and consideration of these diverse data sources provided a sound basis for this plan and implementation activities. The following references were specifically consulted during the planning process.

- Rock County Emergency Operations Plan
- Rock County Comprehensive Plan
- The Rock County Water Management Plan
- Rock County Land Use Map
- Rock County Zoning Ordinance Map
- Local Water Plans
- Minnesota Department of Health (MDH) regulations regarding water systems and routine inspection of public water systems
- Minnesota Department of Health (MDH) regulations regarding water systems and routine inspection of public water systems
- The Minnesota Pollution Control Agency (MPCA) regulations regarding wastewater systems
- Clean Water, Land and Legacy Amendment of 2008
- Minnesota Well Code
- NOAA Weather Radio All Hazards (NWR) weather broadcasts system
- The National Flood Insurance Program
- FIRM maps identifying flood hazard areas
- Fire District and Ambulance District Maps
- Mutual Aid Agreements between police forces, fire districts and ambulance districts
- Response Plans: Community Emergency Response Team (CERT) from the Twin Cities, Chemical Assessment Team (CAT) from Marshall, bomb squad from the Twin Cities, and the National Guard.
- MNDOT's Towards Zero Deaths (TZD) Program
- Traffic safety publications: the National Cooperative Highway Research Program (NCHRP), MnDOT Road Design Manual, ADA Tool Kit, MnDOT Bikeways Facility Design Manual, Minnesota Manual on Uniform Traffic Control Devices, and multiple Safe Routes to School Resources.
- The Minnesota DNR dam safety program
- The Minnesota DNR drafts Emergency Action Plan
- City of Luverne Land Use Map
- FEMA Planning Aids and Tools
- Goodhue County All Hazard Mitigation Plan

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The Capabilities Worksheet identifies planning capabilities, policies and ordinances, programs, studies and reports, staff, and community partners that are relevant to hazard mitigation. The Worksheet is attached as Addendum A.

All of the above documents are incorporated into this planning document by reference. The maps selected and included in this plan have been created by Rock County and the SRDC utilizing data from Rock County GIS and the State of Minnesota's Land Management Information Center (LMIC).

### **V Planning Team Review and Revision of Previous Plan**

SRDC staff and the Rock County Emergency Manager reviewed each section of the plan with the planning team, and analyzed how the existing document should be changed to meet current FEMA requirements. Each section was revised and re-formatted as part of the update process.

# CHAPTER 5: RISK ASSESSMENT

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## I Introduction

This Chapter profiles hazards facing the county. Section I lists the natural and manmade hazards identified by the Rock County All Hazard Mitigation Plan (AHMP) Planning Team that have been included in this plan and the methodology used in assessing the risk of each hazard. Section II provides a profile of identified hazards including locations affected by the hazard, extent of the hazard and relationship to other hazards, previous occurrences of the hazard, probability of future events of this hazard, and vulnerability which includes plans and program, gaps and deficiencies, and existing mitigation measures. Section III provides an analysis of the Hazard Identification Worksheet including methodology and findings. Section IV addresses Repetitive Flood Claim properties and Severe Repetitive Loss properties. Section V provides an analysis of development trends for jurisdictions within Rock County.

Natural Hazards affecting the jurisdiction include:

- Agricultural Disease (animal or crop)
- Blizzards, Winter Storms, and Extreme Cold Events
- Drought
- Earthquakes
- Fire—Wildfire
- Flooding
- Severe Summer Storms, Lightning and Hail, and Extreme Warm Events
- Tornadoes and Straight-line Winds

Manmade Hazards affecting the jurisdiction include:

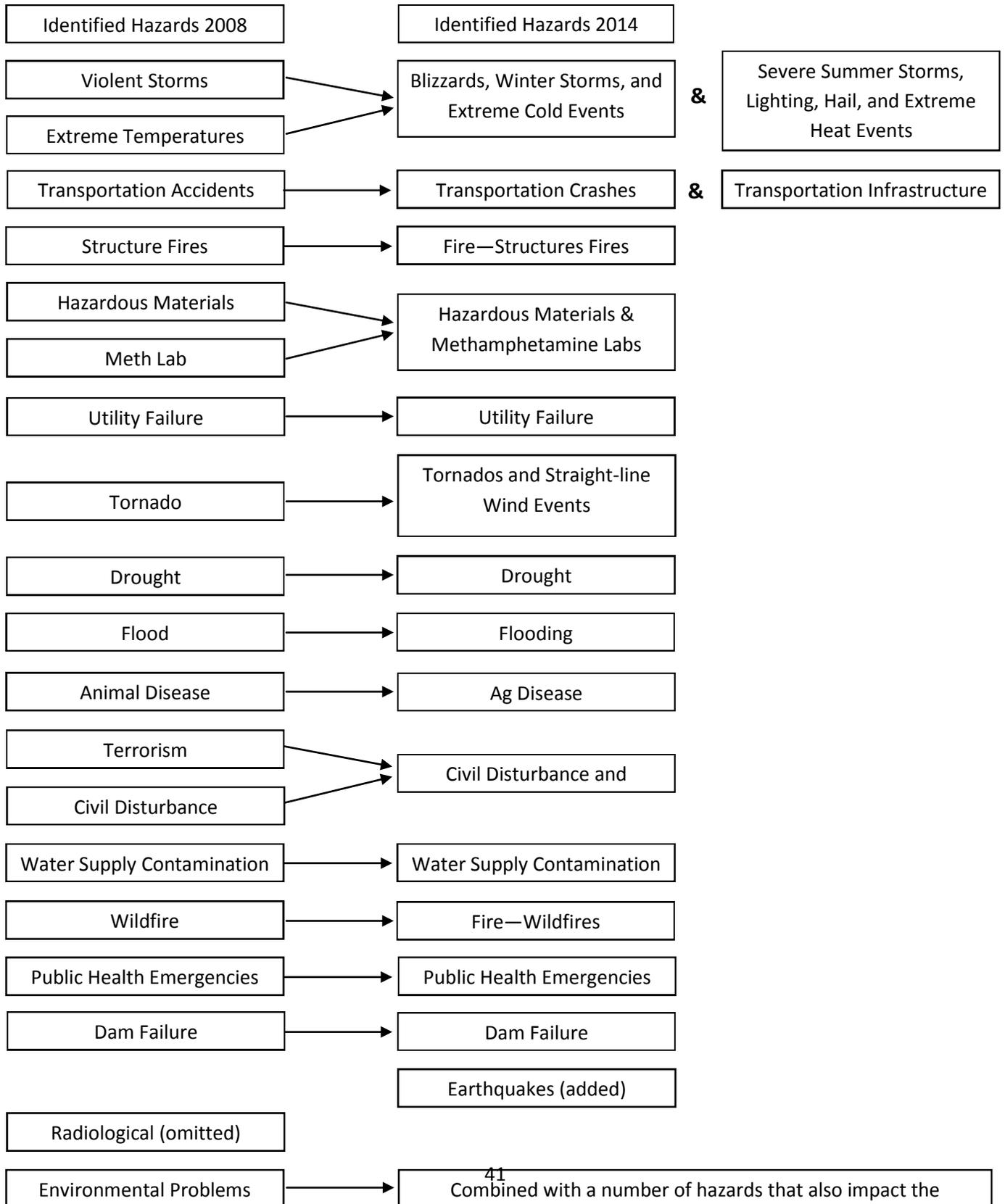
- Civil Disturbance and Terrorism
- Dam Failure
- Fire—Structure (combined with wildfire for analysis)
- Hazardous Materials and Methamphetamine Labs
- Public Health Emergencies
- Transportation Infrastructure and Transportation Crashes
- Utility Failure
- Water Supply Contamination

There have been some additions and omissions in the 2014 update in regards to the hazards identified by the planning team. Some hazards were combined for analysis due to their similarity. Earthquakes were added as an identified hazard and Radiological was omitted. A Radiological emergency can be defined as the unintentional exposure to material that emits ionizing radiation. This threat is very minimal, so the planning team omitted from this hazard from the Rock County All Hazard Mitigation

Plan. Environmental Problems were combined with a number of hazards that also impact the environment.

Table RA #1

Identified Hazards



## Methodology

Much of the data in the Risk Assessment Chapter of this plan comes from the National Climatic Data Center (NCDC) Storm Events database. This data is gathered by the National Oceanic and Atmospheric Administration (NOAA) Satellite and Information Service. NCDC also receives Storm Data from the National Weather Service. Rock County is covered by the Sioux Falls office of the National Weather Service. The National Weather service receives their information from a variety of sources, which include but are not limited to: county, state and federal emergency management officials, local law enforcement officials, severe weather spotters, NWS damage surveys, newspaper clipping services, the insurance industry and the general public. Rock County is also in the Sioux Falls major media market, so the county does benefit from receiving news of impending weather events from the West.

All of the identified natural and manmade hazards are profiled individually. The hazard profiles include: locations affected by the hazard, extent of the hazard, previous occurrences of the hazard, probability of future events of this hazard, and vulnerability which covers plans and programs, gaps and deficiencies, and existing mitigation measures.

The hazard profiles also reference the Planning Team’s Hazard Identification Worksheet. The Planning Team’s Hazard Identification Worksheet is an accumulative summary of the individual planning team members Hazard identification Worksheet. The Hazard Identification Worksheet is a tool to help profile the natural and manmade hazard individually and rank them in regards to potential frequency, spatial extent, potential severity, warning time, risk level, and hazard rank. The sorting criteria for categories in the Hazard Identification Worksheet are as follows:

- Potential Frequency: Unlikely if <1% chance in the next 100 years, Occasional = 1% and 10% in next year, Likely =between 10% and 100% in next year, Highly Likely =greater than 10% in next year.
- Spatial Extent: Countywide or Local
- Potential Severity: Limited =<10% area affected destroyed, Minor =10% to 25% area affected, Major =25% to 50% area affected, Substantial =>50% area affected.
- Warning Time: Minimal, 6 – 12 hours, 12- 24 hours, 24+ hours
- Risk Level: Subjective ranking by planning team based on previous categories
- Hazard Rank: Subjective ranking by planning team based on previous categories

**Table RA #2**

### Hazard Rankings

High Hazard Ranking	Hazard
Blizzards, Winter Storms, and Extreme Cold Events	Natural
Tornados and Straight-line Wind Events	Natural
Moderate Hazard Ranking	

Agricultural Disease (animal or crop)	Natural
Drought	Natural
Flooding	Natural
Severe Summer Storms, Lightning, Hail, and Extreme Heat Events	Natural
Civil Disturbance and Terrorism	Manmade
Fire – Structure Fires (combined with Wildfires for analysis)	Manmade
Hazardous Materials and Methamphetamine Labs	Manmade
Public Health Emergencies	Manmade
Transportation Infrastructure	Manmade
Utility Failure	Manmade
Water Supply Contamination	Manmade
Low Hazard Ranking	
Fire – Wildfires	Natural
Earthquakes	Manmade
Dam Failure	Manmade

The Planning Team’s Hazard identification Worksheet can be found on page 118 in Table RA#49. There was also an accumulative summary of the individual cities Hazard Identification Worksheet. The City’s Hazard Identification Worksheet can be found on page 119 in Table RA#50.

## II Profiling Hazards and Assessing Vulnerability

### Natural Hazards

This section provides information on the nature of natural hazards which are a risk in Rock County. These natural hazards include those caused by climatological, geological, hydrological or other events of the physical rather than man-made world. FEMA defines a natural hazard as a “natural event that threatens lives, property, and other assets. Natural hazards are both predictable and unpredictable in nature.

Natural hazards tend to be predictable in nature as they occur repeatedly in the same geographical locations due to weather patterns and physical characteristics of an area. Natural hazards tend to be unpredictable in nature in regards to exact times and locations when they occur. Natural hazards can change rapidly and can be unpredictable at times. We need to study and understand the risks associated with various natural hazards, so mitigation efforts can help limit damages to property and loss of life.

## **A1 Blizzards, Winter Storms, and Extreme Cold Events**

Minnesota experiences winter weather from mid-Autumn through the winter season into spring. Heavy snowfall and extreme cold can immobilize large regions at the same time. All types of winter storms can be accompanied by extreme cold—both absolute temperatures and wind chill. Blizzards, winter storms, and extreme cold events were assigned a hazard rank of high by the planning team.

### *Locations Affected by the Hazard*

All locations in Rock County are equally likely to be exposed to this hazard. Rural areas are more likely to be severely impacted by the hazard. Rural homes and farms face the threat of isolation and utility failure during winter storms. Roads throughout the county are at risk from ice or blowing and drifting snow. Roads closed due to hazardous winter weather also make it difficult for emergency responders to access individuals located in remote rural areas.

Given the rural nature of Rock County, residents of smaller communities may face similar isolation issues as rural residents. City residents are also at risk. Attempting to travel between communities would expose city dwellers to higher levels of risk corresponding with their rural counterparts. The planning team identified the spatial extent of blizzards, winter storms, and extreme cold events as countywide.

### *Extent of the Hazard*

There are several types of winter storm events typical for this area that includes heavy snow events, ice storms, and blizzards. The potential severity of blizzards, winter storms, and extreme cold events is major according to the planning team.

Heavy snow events in Minnesota are considered to be 6 or more inches of snow in a 12-hour period, or 8 or more inches in a 24-hour period. Snow is considered heavy when visibilities drop below one-quarter mile regardless of wind speed. Heavy snows can lead to building collapse as well as creating a hazard to residents and travelers.

Ice storms include freezing rain, freezing drizzle and sleet (see Section A.6 Severe Summer Storms below for information on hail storms, which more typically occur in the spring and summer seasons). Freezing rain, probably the most serious of the ice storms, occurs during a precipitation event when warm air aloft exceeds 32° F while the surface remains below the freezing point. When precipitation originating as rain or drizzle contacts physical structures on the surface, ice forms on all surfaces creating problems for traffic, utility lines, and tree limbs.

Sleet forms when precipitation originating as rain falls through a rather large layer of the atmosphere with below freezing temperatures allowing the raindrops to freeze before reaching the ground. Sleet is also referred to as ice pellets. Freezing rain freezes when it hits the ground, creating a coating of ice on roads, trees and power lines. Sleet storms are usually of shorter duration than freezing rain and generally create fewer problems.

Ice storms combined with high winds often threaten the electrical power grid. Typical power outages are due to localized storm events and utility crews can respond and restore power within hours. A complete power outage, however, has the potential to be a catastrophic event, due to the extensive

systems that rely on remote power generation. Water and sewer service rely on electrical pumping stations. Individual home furnaces may be able to run on natural gas or propane, but usually need electricity to circulate warm air or hot water throughout a building.

Blizzards are the most violent type of winter storm. A blizzard occurs with sustained or frequent gusts to 35 miles per hour or greater and considerable amounts of falling and/or blowing snow (reducing visibility to less than a quarter mile) for three hours or longer. While blizzards in Rock County can occur from October through April, they are most likely from November through the end of March. Temperature is not taken into consideration when the National Weather Service issues a Blizzard Warning; however, the nature of these storms typically leads to extreme cold.

Extreme cold events are when temperatures lead to direct dangers to people and animals. Infants and the elderly are most susceptible to prolonged exposure to the cold. Wind and cold weather can combine to cause wind chill temperatures as low as 70 degrees below zero.<sup>12</sup> Prolonged exposure can cause frostbite or hypothermia and can be life-threatening.

Below freezing temperatures can also damage vegetation and cause pipes to freeze and burst inside homes. More deaths are attributed to winter storms than to extreme cold weather events, but some populations are at more risk than others. The best advice is to stay inside. Over half of winter-weather deaths occurred in a vehicle, and 30 percent occurred outdoors.

**Table RA#3**



## Wind Chill Chart



		Temperature (°F)																		
		Calm	40	35	30	25	20	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45
Wind (mph)	5	36	31	25	19	13	7	1	-5	-11	-16	-22	-28	-34	-40	-46	-52	-57	-63	-63
	10	34	27	21	15	9	3	-4	-10	-16	-22	-28	-35	-41	-47	-53	-59	-66	-72	-72
	15	32	25	19	13	6	0	-7	-13	-19	-26	-32	-39	-45	-51	-58	-64	-71	-77	-77
	20	30	24	17	11	4	-2	-9	-15	-22	-29	-35	-42	-48	-55	-61	-68	-74	-81	-81
	25	29	23	16	9	3	-4	-11	-17	-24	-31	-37	-44	-51	-58	-64	-71	-78	-84	-84
	30	28	22	15	8	1	-5	-12	-19	-26	-33	-39	-46	-53	-60	-67	-73	-80	-87	-87
	35	28	21	14	7	0	-7	-14	-21	-27	-34	-41	-48	-55	-62	-69	-76	-82	-89	-89
	40	27	20	13	6	-1	-8	-15	-22	-29	-36	-43	-50	-57	-64	-71	-78	-84	-91	-91
	45	26	19	12	5	-2	-9	-16	-23	-30	-37	-44	-51	-58	-65	-72	-79	-86	-93	-93
	50	26	19	12	4	-3	-10	-17	-24	-31	-38	-45	-52	-60	-67	-74	-81	-88	-95	-95
	55	25	18	11	4	-3	-11	-18	-25	-32	-39	-46	-54	-61	-68	-75	-82	-89	-97	-97
60	25	17	10	3	-4	-11	-19	-26	-33	-40	-48	-55	-62	-69	-76	-84	-91	-98	-98	

Frostbite Times      30 minutes      10 minutes      5 minutes

**Wind Chill (°F) = 35.74 + 0.6215T - 35.75(V<sup>0.16</sup>) + 0.4275T(V<sup>0.16</sup>)**  
 Where, T= Air Temperature (°F) V= Wind Speed (mph) Effective 11/01/01

<sup>12</sup> National Oceanic and Atmospheric Administration. Accessed 5-17-13. Available: <http://www.nws.noaa.gov/om/brochures/wntstm.htm>

### Relationship to Other Hazards—Cascading Effects

Heavy snows and rapid snow melt are primary contributors to seasonal spring flooding. Areas along rivers and stream in Rock County can be impacted by spring flooding. Refer to the section on Flooding for more information.

Winter storms often lead to hazardous conditions for transportation infrastructure. Icy roads can make travel difficult and poorly designed roads can result in large drifts that make travel impossible. Poor conditions and poorly designed transportation infrastructure can contribute to motor vehicle crashes.

Winter storms can also impact the power grid. Utility interruption can be severe in Rock County due to the rural nature of the County. A winter storm can isolate rural residents and can leave them without power for extended periods of time. These residents are at risk of hypothermia or even death.

### *Previous Occurrences of the Hazard*

From January 2000 through February 2013, there have been 17 documented winter storms in Rock County. These winter storms are often not confined to Rock County but affect all of southwest Minnesota. In the table below are winter storms occurrences that occurred from January 2007 through February 2013.

**Table RA #4**

### **Winter Storms, Rock County January 2007 through February 2013**

Date	Event Narrative	Number of Counties Affected
2/24/2007	Widespread freezing rain produced ice accumulations near or above a quarter inch on February 24th. The icing made travel extremely difficult. The precipitation changed to snow late on the 24th, with snow accumulating 5 to 8 inches before ending by early afternoon on February 25th. The snow accumulations on top of the ice made travel impossible in places. The combination also caused tree branches and a few power lines to break, producing scattered power outages. Some weekend school activities were cancelled, as were several Sunday church services.	Lyon, Lincoln, Jackson, Cottonwood, Pipestone, Nobles, Murray, Rock
12/1/2007	Widespread snow developed quickly over southwest Minnesota on the early morning of December 1st, and continued into the afternoon and early evening of the same day. The snow was heavy north of Interstate 90 with up to 7 inches of accumulation. Freezing rain accompanied the snow for part of the storm near Interstate 90.	Lyon, Lincoln, Jackson, Cottonwood, Pipestone, Nobles, Murray, Rock
12/23/2009	Prolonged snowfall produced heavy accumulations of 1 to 2 feet in southwest Minnesota. The snowfall took place from two days before to the day after Christmas. The snowfall was accompanied by increasing north to northwest winds ranging from 25 to 30 mph with gusts around 35 mph, which caused areas of very low visibilities in blowing snow from Christmas Day through the night of December 27th. The heavy snow and drifting in the winter storm, along the areas of very low visibilities, made travel impossible for much of the time.	Lyon, Lincoln, Jackson, Cottonwood, Pipestone, Nobles, Murray, Rock

1/6/2010	New snowfall varying from four to 10 inches, previous snow cover, and northwest winds gusting to around 40 mph combined to produce widespread blowing and drifting snow over all of southwest Minnesota. Blizzard conditions were observed, ranging from spotty to widespread visibilities a quarter mile or less. Travel was brought to a standstill during the worst conditions. Even where visibilities were higher, travel was extremely difficult and dangerous because of the snowfall, drifting snow, and dangerous wind chills that accompanied the storm. The storm forced the closing of schools and businesses, and postponement of athletic events and other activities. The snow and blowing snow took place on January 6th and 7th, while dangerous wind chills continued well into January 8th.	Lyon, Lincoln, Jackson, Cottonwood, Pipestone, Nobles, Murray, Rock
2/20/2011	Widespread moderate to heavy precipitation fell as heavy snow over the northern part of the area, with a mixture of freezing rain, sleet, and snow near the southern border of the state. Up to 12 inches of snow fell in the heavy snow area. Winds averaging 20 to 30 mph caused drifting and some areas of blowing snow.	Lyon, Lincoln, Jackson, Cottonwood, Pipestone, Nobles, Murray, Rock

National Climatic Data Center (NCDC) Storm Events database

From January 2000 through February 2013, there have been nine documented Blizzards in Rock County.

**Table RA #5**

**Blizzards, Rock County  
December 2009 through February 2013**

Date	Event Narrative	Number of Counties Affected
12/8/2009	Snowfall of 4 to 10 inches over most of southwest Minnesota was accompanied by north to northwest winds sustained at 30 to 40 mph, with some gusts over 50 mph. The combination of snow and strong winds created widespread blizzard conditions with visibilities near zero. The blizzard closed schools and businesses and halted travel. The snowfall began on the morning of December 8th. The winds increased during the evening of the 8th, and became strong enough to cause the blizzard after midnight on December 9th.	Lyon, Lincoln, Jackson, Cottonwood, Pipestone, Nobles, Murray, Rock
1/25/2010	Northwest winds gusting to around 50 mph combined with existing heavy and loose snow cover to produce widespread visibilities of a quarter mile or less in blowing snow. Travel was impossible for most of the afternoon and early evening. Schools, businesses, and roads were closed, including Interstate 90.	Lyon, Lincoln, Jackson, Cottonwood, Pipestone, Nobles, Murray, Rock

12/11/2010	Snowfall ranging from 5 to 10 inches was accompanied by sustained northwest winds which reached 40 mph at times, with gusts as high as 55 mph. The snowfall, strong winds, and existing snow cover resulted in widespread blizzard conditions. Travel was made impossible in much of the area. There were several accidents and vehicles going into ditches, attributed to slick roads and low visibilities. Several motorists were stranded. Businesses were forced to close, and several school and other weekend activities were canceled or postponed.	Lyon, Lincoln, Jackson, Cottonwood, Pipestone, Nobles, Murray, Rock
2/10/2013	Variable snowfall of 2 to 5 inches, northwest winds gusting to 45 mph, and snow cover existing before the storm in part of the area, produced blizzard conditions with visibilities below a quarter mile in blowing snow in many areas. The low visibilities and drifting snow forced some businesses to close, and also forced several school closings on Monday February 11th. The blizzard closed many roads.	Lyon, Lincoln, Jackson, Cottonwood, Pipestone, Nobles, Murray, Rock

National Climatic Data Center (NCDC) Storm Events database

From January 2000 through February 2013, there have been three documented extreme cold events in Rock County.

**Table RA #6**

**Extreme Cold Events, Rock County  
January 2000 through February 2013**

Date	Event Narrative	Location
1/14/2009	Very cold temperatures and moderate northwest winds combined to lower wind chill readings to 35 to 45 below zero at times from the morning of January 14th to early morning on January 15th. The strongest winds were at the start of the event. While winds decreased slowly on the night of January 14th, actual temperatures also dropped, reaching 20 below to 30 below zero near daybreak on January 15th, about which time winds became light and no longer a major factor.	Rock

1/7/2010	Persistent north to northwest winds combined with very cold air to produce wind chill values the frequently dropped to 35 below zero or a little colder. These extremely dangerous wind chills added to the hazards produced by the preceding winter storm. As winds slowly subsided during the night of January 7th, temperatures continued to drop to well below zero, keeping the wind chills at the very dangerous level through the morning of January 8th.	Rock
2/1/2011	North to northwest winds averaging 15 to 30 mph combined with temperatures dropping below zero to produce wind chills of 20 to 35 below zero on February 1st. On the night of February 1st and the early morning of February 2nd, wind chills reached the 35 to 40 below zero range at times despite slowly decreasing winds, as temperatures fell further below zero.	Rock

National Climatic Data Center (NCDC) Storm Events database

The Winter Storm Table above only covers through February 2013. Since the table was drafted a widespread winter storm occurred in April 2013 (not yet in the NCDC database). On April 9<sup>th</sup> and 10<sup>th</sup> an ice and snowstorm hit southwest Minnesota causing widespread damage to trees and power lines in five counties. The five counties that were affected by the hazard include: Rock Nobles, Murray, Cottonwood, and Jackson. Public damages were estimated at more than \$26 million. A national disaster declaration was signed by the President to help with disaster relief. Rock County’s estimated damages were roughly \$1.5 million.

***Probability of Future Events of this Hazard***

Winter storms are highly likely in the area; they occur annually. The potential frequency of a large scale occurrence is likely according to the planning team.

***Vulnerability***

Winter storms have major impacts on local communities. The risk level assigned to blizzards, winter storms, and extreme cold events by the planning team is high. The effects of a winter storm can including: closures, need to clear snow and ice from public streets, recover from utility failure, possibly provide emergency shelters for travelers and dislocated residents, and potential injuries and death. Winter storms can also cause lost productivity and disruptions in the local workforce, with public and private employees unable to work regular hours.

A number of facilities in Rock County do have emergency generators. However, there are gaps in the backup generator energy supply system that were observed during the winter ice events of spring 2013. The Sanford Luverne Medical Center (Hospital in Luverne) had a generator during the ice events, but the kitchen and freezer where not hooked up to the generator. This resulted in blood reserves and other medical supplies that need to be kept cold having to be shipped to a different facility. Power loss

scenarios need to occur on a more regular basis, so gaps in the system can be identified and addressed. Refer to the section on Utility Failure for more information.

The accumulated effects of winter storms and blizzard conditions also pose a risk to structures from snow load on roofs. There are currently no building code requirements in regards to snow load in Rock County. Vulnerable structures can easily collapse under the weight of heavy snow and/or high winds.

Analysis of specific infrastructure and structure dollar-cost vulnerability is not possible since winter storms can (and do) impact large portions of the study area. Based on current available data, modeling future losses would only be possible for total losses with excessive margins of error. Future storm events could be tracked specifically as they occur and used to model local vulnerability to winter storms in future updates.

### *Plans and Programs*

- The County has in the past promoted natural snow fences to protect highways against drifting snow.
- Real-time weather monitoring stations can provide current temperatures, dew point, wind speed, wind direction, and barometric pressure.
- Wind chill warnings and advisories are issued by the National Weather Service according to local criteria. Some schools will not run bus service when wind chills fall below -40°F.
- The County Engineer and local cities are working closely with MnDOT to improve transportation safety in all weather conditions. Road closures are enacted when conditions become too hazardous.
- MnDOT uses the 511MN.org, or 511 for mobile phones. This system does not send out alerts, but posts weather related road information online for public access.
- Electric utility providers identify and clean up areas of the county and communities that are most likely to experience damage to power lines from falling tree limbs.

### *Gaps and Deficiencies*

- The effective range of warning systems is limited. Travelers may be unaware of an upcoming storm. Weather radios should be more widely used, so residents and travelers can plan accordingly.
- Local radio stations issue severe weather warnings, but satellite radio is becoming more widely used. Severe weather warnings issued on the radio may not be as effective as in the past.
- Many local residents are resistant to zoning and building codes that could help assure higher standards for new construction. The City of Luverne is the only place in Rock County that has a building code. The accumulated effects of winter storms and blizzard conditions also pose a risk to structures from snow load on roofs. Vulnerable structures can easily collapse under the weight of heavy snow and/or high winds.
- In Rock County a number of residents commute long distances to work, which increases their exposure to winter weather hazards.
- It is expensive to install back-up generators. Due to limited funding sources, redundant electrical supply back-up may not be available in all essential locations in Rock County.

### *Existing Mitigation Efforts*

- Much work has already been completed to harden electric utilities against winter storms. Redundancies in utility systems can further reduce outages resulting from storms. Major public facilities such as the courthouse and hospital (Sanford Luverne Medical Center) have back-up electrical generation on-site. A number of private residents also have backup generators.
- Transportation engineers use road design to substantially reduce hazards from blowing and drifting snow. Living snow fences have been used to mitigate the effects of blowing and drifting snow, which affect road conditions. Living snow fences are designed plantings of trees and/or shrubs and native grasses located along roads or around buildings, which create a vegetative trap to control blowing and drifting snow.

## **A2 Tornado and Straight-line Wind Events**

Tornados are the most violent of all storm types experienced in Minnesota.<sup>13</sup> A tornado is a rapidly rotating column of air that is spawned from a cumulonimbus cloud. When it drops to the ground, it can create significant property damage and loss of life.

Straight-line winds are also damaging but not to the extent of more powerful tornados. Straight-line winds can and do produce substantial damage over wider areas at one time. NOAA documents straight-line wind events as thunderstorm wind events and defines them as winds equal to or greater than 40 mph (35 knots). Tornados and straight-line wind events were assigned a hazard rank of high by the planning team.

### *Locations Affected by the Hazard*

All of Rock County is at risk of a tornado. FEMA places Southern Minnesota in Wind Zone IV, subject to winds of up to 250 mph.<sup>14</sup> The planning team identified the spatial extent as countywide for tornados and straight-line wind events.

### *Extent of the Hazard*

Minnesota lies along the north edge of the region of maximum tornado occurrence in the United States, known as tornado alley. Tornado Alley encompasses part of the central United States that extends across parts of Texas, Oklahoma, Kansas, Missouri, East Nebraska, and West Iowa. Tornados have been reported in Minnesota in every month from March through November.<sup>15</sup> The potential severity of tornados and straight-line wind events is minor according to the planning team.

The severity of tornado damage is measured by the Fujita Tornado Scale, with a sliding scale from F0 to F5 depending on wind speed. A tornado's path typically ranges from 250 feet to a quarter of a mile in width. The speed a tornado travels varies but commonly is between 20 mph and 30 mph. Most

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<sup>13</sup> MN All Hazard Mitigation Plan. Accessed: 5/29/13. Available: [https://dps.mn.gov/divisions/hsem/hazard-mitigation/Documents/2011\\_MinnesotaAllHazardMitigationPlanDraft.pdf](https://dps.mn.gov/divisions/hsem/hazard-mitigation/Documents/2011_MinnesotaAllHazardMitigationPlanDraft.pdf)

<sup>14</sup> FEMA. Accessed: 5/29/13. Available: <http://www.fema.gov/safe-rooms/wind-zones-united-states>

<sup>15</sup> MN All Hazard Mitigation Plan. Accessed: 5/29/13. Available: [https://dps.mn.gov/divisions/hsem/hazard-mitigation/Documents/2011\\_MinnesotaAllHazardMitigationPlanDraft.pdf](https://dps.mn.gov/divisions/hsem/hazard-mitigation/Documents/2011_MinnesotaAllHazardMitigationPlanDraft.pdf)

tornados stay on the ground for less than five minutes. Tornados frequently move from the southwest to the northeast but this also varies and cannot be counted on in all instances.<sup>16</sup>

Tornado damage can vary from limited damage to trees and building to complete destruction of a community. Along with monetary damages, loss of life is a real concern. However, due to the rural nature of Rock County, many funnel clouds have only caused damages to crops and unpopulated area.

**Table RA #7** **Enhanced F-Scale for Tornado Damage**

Scale	Wind Estimate	Typical Damage
F0	65-85 mph	Light damage. Some damage to chimneys; branches broken off trees; shallow-rooted trees pushed over; sign boards damaged.
F1	86-110 mph	Moderate damage. Peels surface off roofs; mobile homes pushed off foundations or overturned; moving autos blown off roads.
F2	111-135 mph	Considerable damage. Roofs torn off frame houses; mobile homes demolished; boxcars overturned; large trees snapped or uprooted; light-object missiles generated; cars lifted off ground.
F3	136-165 mph	Severe damage. Roofs and some walls torn off well-constructed houses; trains overturned; most trees in forest uprooted; heavy cars lifted off the ground and thrown.
F4	166-200 mph	Devastating damage. Well-constructed houses leveled; structures with weak foundations blown away some distance; cars thrown and large missiles generated.
F5	>200 mph	Incredible damage. Strong frame houses leveled off foundations and swept away; automobile-sized missiles fly through the air in excess of 100 meters (109 yds); trees debarked; incredible phenomena will occur.

National Climatic Data Center (NCDC) Storm Events database

**Table RA #8** **Straight-line Wind Damage Estimates**

Wind Speed	Effects
25 – 31 mph	Large branches in motion, whistling in telephone wires
32 – 38 mph	Whole trees in motion
39 – 54 mph	Twigs break off of trees, wind impedes walking
55 – 72 mph	Damage to chimneys and TV antennas, pushes over shallow rooted trees
73 – 112 mph	Peels surface off roofs, windows broken, trailer houses overturned
113+ mph	Roofs torn off houses, weak buildings and trailer houses destroyed, large trees uprooted

The National Weather Service

The most severe windstorms usually occur (and do the most damage) during severe thunderstorms in the spring and summer months. These include tornados, downbursts, or straight line winds. Straight-line winds have similar effects to tornados without the rotational damage pattern.

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<sup>16</sup> MN All Hazard Mitigation Plan. Accessed: 5/29/13. Available: [https://dps.mn.gov/divisions/hsem/hazard-mitigation/Documents/2011\\_MinnesotaAllHazardMitigationPlanDraft.pdf](https://dps.mn.gov/divisions/hsem/hazard-mitigation/Documents/2011_MinnesotaAllHazardMitigationPlanDraft.pdf)

Downbursts are created by a column of sinking air, capable of producing straight-line winds in excess of 150 mph. Winds of greater than 60 mph are also associated with intense spring and fall low-pressure systems. These winds can inflict damage to buildings and overturn high profile vehicles.

The Minnesota AHMP calculated an annual probability of 0.84 of a windstorm event causing \$54,167 worth of damages per event.<sup>17</sup> This average damages per event are based on wind damages from 1950 through 2007. During that timeframe there were 48 reported incidences of damages from windstorms.

#### Relationship to Other Hazards—Cascading Effects

Severe winds, as noted, typically accompany thunderstorms and hail events. A tornado event, and many straight-line wind storms, can lead to total destruction of buildings and wide-scale casualties. There are often fires, disruptions to transportation infrastructure and other infrastructure, and potential public health emergencies. Catastrophic events such as these may also create the potential for civil unrest.

Emergency response times can also be affected by infrastructure being damaged. Cell phone towers and telephone lines can be downed delaying calls for help.

#### Previous Occurrences of the Hazard

There were 3 documented tornados in Rock County from January 2000 through February 2013. There were 38 thunderstorm wind events documented during this same time period. Straight-line winds are classified by NOAA as thunderstorm wind events.

**Table RA #9**

#### **Tornados, Rock County January 2000 through February 2013**

Date	Location	Event Narrative
5/9/2004	Luverne	A tornado destroyed a storage shed, silo, and outbuildings on a farm. The tornado also caused shingle and gutter damage to a house on the farm. On another farm, two corn bins were destroyed and a pole barn was damaged. Two large trees were blown down at the second farm, one of the trees damaging the corner of a house when it fell. The tornado was visible from long distances and photographed from several locations.
6/20/2005	Jasper	A tornado caused no reported damage before crossing north into Pipestone County.
6/22/2007	Beaver Creek	Thunderstorms which moved into southwestern Minnesota from the west produced a weak tornado just west of Beaver Creek a little after midnight on June 22nd. A weak tornado knocked the chimney off a roof. Debris from the chimney damaged a truck and lawn chairs.

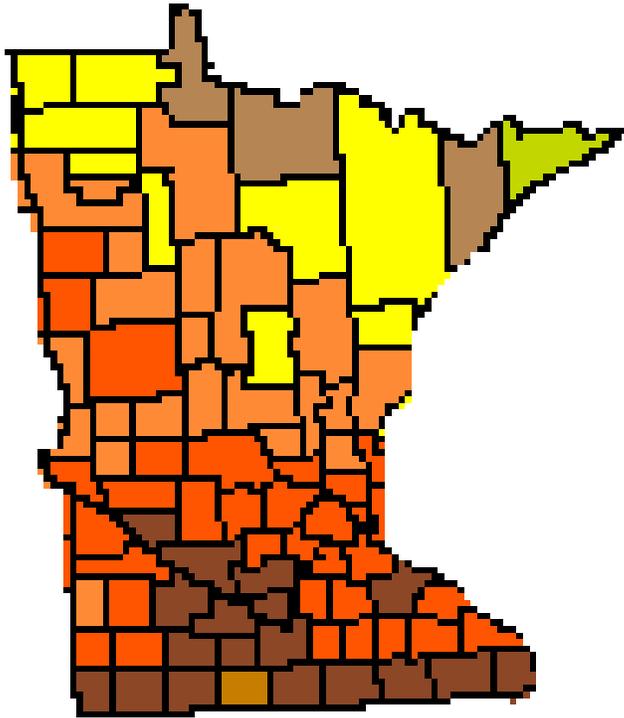
National Climatic Data Center (NCDC) Storm Events database

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<sup>17</sup> MN All Hazard Mitigation Plan. Accessed 9/11/13. Available: [http://www.rrbdin.org/wp-content/uploads/2011/08/MN\\_state\\_mitigation\\_plan.pdf](http://www.rrbdin.org/wp-content/uploads/2011/08/MN_state_mitigation_plan.pdf)

**Table RA #10**

**Tornado Watches per Year  
1999 - 2008 Average**



NOAA/NWS Storm Prediction Center  
Norman, Okla.

**Tornado Watches per Year**



There was on average six tornado watches per year in Rock County from 1999 to 2008. Often the right conditions exist to produce a tornado, but a tornado will not be produced. Also, an unknown number of tornados are not reported because they do not touch down and or cause any damages.

**Table RA #11 Potential Structure Vulnerability to F4/F5 Tornado Events  
Estimated Market Value 2013, Rock County**

Jurisdiction	No. Improved Parcels	Value of Parcels	At-Risk	
			Parcels	Value
<b>City of Beaver Creek</b>				
Agricultural	0		0	\$ -
Commercial	13	\$545,500	12	\$490,950
Exempt/Non-Profit	16	\$5,434,500	14	\$4,891,050
Industrial	3	\$928,400	3	\$835,560
Residential	139	\$8,923,400	125	\$8,031,060
<b>Vulnerable Structures</b>			<b>154</b>	<b>\$14,248,620</b>
<b>City of Hardwick</b>				
Agricultural	4	\$125,300	4	\$112,770
Commercial	11	\$208,300	10	\$187,470

Exempt/Non-Profit	14	\$550,100	13	\$495,090
Industrial	2	\$600,800	2	\$540,720
Residential	97	\$3,049,000	87	\$2,744,100
<b>Vulnerable Structures</b>			<b>115</b>	<b>\$4,080,150</b>
<b>City of Hills</b>				
Agricultural	1	\$52,800	1	\$47,520
Commercial	39	\$126,900	35	\$114,210
Exempt/Non-Profit	31	\$4,698,000	28	\$4,228,200
Industrial	3	\$295,200	3	\$265,680
Residential	255	\$20,115,300	230	\$18,103,770
<b>Vulnerable Structures</b>			<b>296</b>	<b>\$22,759,380</b>
<b>City of Kenneth</b>				
Agricultural	11	\$246,300	10	\$221,670
Commercial	5	\$41,000	5	\$36,900
Exempt/Non-Profit	6	\$126,500	5	\$113,850
Industrial	0		0	\$-
Residential	34	\$869,000	31	\$782,100
<b>Vulnerable Structures</b>			<b>50</b>	<b>\$1,154,520</b>
<b>City of Luverne</b>				
Agricultural	5	\$807,200	5	\$726,480
Commercial	227	\$27,716,800	204	\$24,945,120
Exempt/Non-Profit	200	\$75,719,900	180	\$68,147,910
Industrial	13	\$11,510,500	12	\$10,359,450
Residential	1763	\$172,496,400	1587	\$155,246,760
<b>Vulnerable Structures</b>			<b>1987</b>	<b>\$259,425,720</b>
<b>City of Magnolia</b>				
Agricultural	5	\$77,400	5	\$69,660
Commercial	8	\$322,500	7	\$290,250
Exempt/Non-Profit	15	\$346,300	14	\$311,670
Industrial	5	\$778,900	5	\$701,010
Residential	85	\$3,226,000	77	\$2,903,400
<b>Vulnerable Structures</b>			<b>106</b>	<b>\$4,275,990</b>
<b>City of Steen</b>				
Agricultural	2	\$194,800	2	\$175,320
Commercial	6	\$115,900	5	\$104,310
Exempt/Non-Profit	15	\$2,899,000	14	\$2,609,100
Industrial	0		0	\$-
Residential	87	\$3,484,900	78	\$3,136,410

Vulnerable Structures		99	\$6,025,140
Vulnerable Structures		2807	\$311,969,520

Source: Rock County Assessor September, 2013

Straight-line winds can also cause property damage, but there is less risk of loss of life associated with straight-line winds. Tornadoes and straight-line winds can be most devastating to those living in mobile homes, boats, or RV's. The 2010 Census identified 73 mobile home units in Rock County.<sup>18</sup>

### *Probability of Future Events of this Hazard*

Tornado and Straight-line Wind events are likely to take place in any year. Tornadoes are less common than straight-line wind events, but communities need to be prepared since loss of life is a risk associated with these two hazards. The potential frequency of tornadoes and straight-line wind events in Rock County is likely according to the planning team.

### *Vulnerability*

Severe wind events can cause minor damage to structural failure and full-scale devastation. The risk level assigned to tornadoes and straight-line wind events by the planning team is high. Residents and travelers must be warned of impending danger immediately before and during a Tornado or severe Straight-line Wind event. With I-90 traversing through the County there are a number of travelers who may be caught out on the road with little protection. Blue Mound State Park is also an area that poses a serious risk since there are no safe rooms in the park.

### *Plans and Programs*

- The severe storm spotter networks, sponsored by the National Weather Services (NWS), enlist the help of trained volunteers to spot severe storm conditions and report this information to the NWS. No tornado warnings are given unless the storm has been spotted by someone or is confirmed by NWS radar reports. The County has several trained severe weather spotters who report directly to the NWS when severe weather is observed.
- NOAA Weather Radio All Hazards (NWR) broadcasts official warnings, watches, forecasts, and other hazard information 24 hours a day, seven days a week. The nationwide network of radio stations broadcast continuous weather information from the nearest National Weather Service office. The NWR is your primary source of comprehensive weather and emergency information regarding all hazards.
- Outdoor warning sirens offer last minute warnings to take shelter. The primary purpose of the outdoor warning siren is to alert people who are outside to severe weather, chemical hazard, or other emergency. If you hear an outdoor warning siren you should seek shelter immediately. Most of the cities in Rock County have good coverage by emergency sirens that can be activated to warn residents in the event of a severe weather event or other emergency.

There are improvements that can be made since a number of the sirens are old. Federal Warning Systems, Inc. evaluated the emergency sirens in Rock County in 2013. The recommended

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<sup>18</sup> FactFinder. Accessed 5/29/13. Available: <http://factfinder2.census.gov>

improvements were presented to Rock County in October of 2013. All of the cities listed below in the two quotes have some issues that need to be addressed to provide adequate warning siren coverage. The two quotes vary in the size and performance of the sirens. Both quotes will bring siren coverage in Rock County to an adequate level.

**Table RA #12**

**Quotes for Outdoor Warning Sirens**

Cities	Quote #1	Quote #2
Beaver Creek	\$9,549.28	\$10,618.03
Hardwick	\$6,946.88	\$6,946.88
Hills	\$9,549.28	\$10,618.03
Jasper	Adequate	
Kenneth	\$6,946.88	\$6,946.88
Luverne	Adequate	
Magnolia	Adequate	
Steen	\$6,946.88	\$6,946.88
Blue Mound State Park	\$11,205.84	\$12,584.53
PV Solar Charging System	\$3,000.00	\$3,000.00
Total	\$54,145.04	\$57,661.23

- The county Emergency Management Plan designates where to go in case of an emergency, who the main contacts are, and who is in charge of response and clean up.
- The Minnesota State zoning ordinance has been adopted by Luverne to require on-site shelter for mobile home park residents in case of severe weather. The county is recommending that other communities require shelters for mobile home park residents or provide information on evacuation routes to safe shelters elsewhere.
- The Minnesota State Parks and Trails Severe Weather policy that Blue Mound State Park uses to guide park campers and visitors during severe weather. The purpose of the policy is to direct state park and state recreation area managers to provide information and communication methods to state park, state recreation area and forest recreation area visitors for managing their safety during adverse weather situations. State parks, state recreation areas and state forest recreation areas will have posted general procedures on how visitors should respond to severe weather events. Division of Parks and Trails staff will make reasonable efforts to advise visitors of impending severe weather information when staff is present. The state park and state recreation area manager is responsible for the implementation of this policy. State park, state recreation area and forest recreation area visitors are ultimately responsible for their own safety during severe weather.

*Gaps and Deficiencies*

- The effective range of warning systems is limited. Weather radios should be more widely used. Local radio stations provide warnings, but satellite radio is becoming increasingly popular.

- A number of the outdoor warning sirens in Rock County are obsolete and or no longer provide complete coverage. Federal Warning Systems, Inc. study evaluated warning siren coverage in Rock County and recommendations were made to address gaps and deficiencies in warning siren coverage. Below is a summary of the quotes to bring siren coverage in Rock County cities to an adequate level. In the City of Beaver Creek the siren coverage on the east side of town is less than adequate. The City of Steen has an old Erick Fire Siren that was manufactured in the 1930's and 1940's. Blue Mound State Park does not have any outdoor warning siren system.
- No safe room at Blue Mound State Park.
- Not all mobile home parks in Rock County have a safe room.
- Funding may be an obstacle for construction projects (such as safe rooms).

#### *Existing Mitigation Measures*

- Local units of government within Rock County provide safe rooms and emergency shelters for travelers and dislocated residents.

### **A3 Agricultural Disease (animal or crop)**

Agriculture is a major economic driver in Rock County and Southwest Minnesota. Animal and crop related diseases have the potential to inflict both large economic losses and logistical hazards on the community. Agricultural disease was assigned a hazard rank of moderate by the planning team.

#### *Locations Affected by the Hazard*

Agricultural disease is often difficult to contain. The majority of incidents related to agricultural disease are likely to occur countywide rather than in localized areas, given the small size and the difficulty to contain a disease. The planning team identified the spatial extent of agricultural disease as countywide.

One of the most current threats is emerald ash borer, which is an exotic beetle from Asia that is devastating ash trees in a number of states. Emerald ash bore is a small green beetle that kills ash trees. It has been difficult to contain this threat, and there are a number of other similar examples of how it is difficult to contain an agricultural disease. The decision to relate agricultural disease to a countywide area instead of a localized area is also based on the planning teams experience within the county, the prevalence of crop agriculture, and the relative ease with which plant diseases spread. It is likely that any outbreak will likely affect all trees, crops, and animal agriculture within the county.

#### *Extent of the Hazard*

The majority of the land in Rock County is used for agriculture. An agricultural disease causing crop failure could cause millions of dollars in lost production. The potential severity of agricultural disease is major according to the planning team. Rock County is ranked 17<sup>th</sup> among counties in Minnesota in total agricultural production with \$282,902,000.<sup>19</sup> Animal transmitted diseases pose the greatest threat to

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<sup>19</sup> Agricultural Census 2007. Accessed 5-17-13. Available: <http://www.mda.state.mn.us/Global/MDADocs/food/business/econrpt-rockcnty.aspx>

animal confinement buildings, feeding lots, and pastures. Insects and pests pose the largest risk to both agriculture crops and tree-cover.

### *Animal Transmitted Diseases*

The threat of bovine tuberculosis (TB) has impacted agriculture in Minnesota recently. In April, 2008, USDA downgraded Minnesota's status, requiring Minnesota cattle producers to do additional testing when shipping animals out of state. According to the Board of Animal Health website, bovine TB can be difficult to diagnose, infected animals can be infected for a long period of time before showing any outward signs of TB.<sup>20</sup>

The United States has been free of Hoof and Mouth Disease Bovine Spongiform Encephalopathy (BSE-Mad Cow Disease) since 1929.<sup>21</sup> This was possible through effective collaborative prevention programs between private producers, veterinarians, researchers, and government organizations. Education and early symptom identification were critical in the success. When an infection of foot and mouth disease or BSE is confirmed, the only effective way to control the disease is isolation and culling of an entire herd.

Early detection can be difficult since symptoms can be the same for multiple diseases. Later detection can result in a large percentage of a herd having the disease. Having to dispose of a large percentage of a herd would result in substantial financial loss to the producer.

Animals are also susceptible to the flu and common colds. "Respiratory diseases are common and costly to livestock producers."<sup>22</sup> The common cold along with other animal diseases like avian Influenza (bird flu), Chronic Wasting Disease, and Lyme Disease, just to name a few, pose risks to producers and cost thousands of dollars to producers to treat annually.

### *Plant Pests and Diseases*

Plant diseases can cause a loss of yield or damage to the infected plants. Certain tree diseases may weaken their structure and create a hazardous situation where property damage or serious bodily injury may result from falling limbs or the entire tree toppling. Root decay and the loss of trees may also lead to erosion.

In many cases, fungi are involved in tree diseases that result in a tree becoming a hazard. A tree with slowed growth, branch dieback, smaller than normal leaves or needles, excessive cone or seed set, premature autumn leaf coloration, or severe winter twig kill may be exhibiting early symptoms of a disease. Nothing can be done for a tree once it is infected nor is it likely that fungus can be completely eliminated from the soil or general area around the tree once the tree is removed.

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<sup>20</sup> Minnesota Board of Animal Health. Accessed 5-17-13. Available: <http://mn.gov/bah/diseases/bovine-tb/tb-testing.html>

<sup>21</sup> University of California Cooperative Extension. Accessed: 9/10/13. Available: [http://cesanbernardino.ucanr.edu/Dairy511/FACT\\_SHEET\\_No-1\\_Foot\\_and\\_Mouth\\_Disease/](http://cesanbernardino.ucanr.edu/Dairy511/FACT_SHEET_No-1_Foot_and_Mouth_Disease/)

<sup>22</sup> The Cattle Site. Accessed: 9/11/13. Available: <http://www.thecattlesite.com/diseaseinfo/#sthash.KWvGHoRq.dpuf>

A tree with fungal fruiting structures on several limbs, trunk, butt, or roots should be removed promptly if it is in a location where property damage might occur or where falling limbs or tree could strike people or animals. If most of the tree appears healthy, any single branch with fungal fruiting structures should be removed promptly, regardless of the identity of the fungus present.

Some of the more notable pests infest corn fields. Corn rootworm and European corn borer are two major pests that pose serious potential loss of income to farmers. Goss's Bacterial Wilt and Leaf Blight are two other damaging diseases that caused problems over the past few growing seasons Minnesota. In 2010, Wilt and Leaf Blight developed in many fields across southern Minnesota. Wilt and Leaf Blight can be a significant disease problem, with yield losses reported as high as 70-80 bu/acre in Minnesota.<sup>23</sup>

In the past few decades technological progress has been made, and seed companies have been able to genetically enhance corn varieties to provide a higher level of protection against pests and diseases. Advances in Soybean seed modifications have also been able to overcome a number of plant pests and diseases that include soybean cyst nematode and soybean aphids. These hybrids have resistance to certain types of cyst nematode, but not all. Soybean aphids can be addressed with commercial spray, but Mother Nature is often one step ahead. Other plant diseases include: Asian Soybean Rust, European Corn Borer, and a number of insects.

#### *Relationship to Other Hazards—Cascading Effects*

Agricultural disease can have a major impact on public health. A shortage of food can cause poor development among youth that will have lifelong consequences. Refer to the section on Public Health Emergencies for more information.

A shortage of food could also result in civil disturbance. When the supply of a necessity becomes drastic low distress can take over and cause civil unrest. Refer to the section on Civil Disturbance and Terrorism for more information.

#### *Previous Occurrences of the Hazard*

There have not been any recent large-scale occurrences of agricultural disease in the Rock County. This may impart be due to farmers trying to stay ahead of new diseases and taking precautionary actions. Large operations have specialized staff to monitor livestock and enforce sterilization of equipment and employees before entering facilities. Ag businesses have an economic incentive to stay ahead of and combat agricultural disease. This is one of the major reasons why large occurrences have not occurred.

Minnesota Department of Agriculture (MDA) and University of Minnesota Extension Service provide information on a variety of insects and pests that help prevent occurrences of agricultural disease. Seed producers and other agricultural businesses use this information to modify crops to be resistant to more pests and diseases. The agricultural sector studies past seed modifications and make adjustments to combat the next year's hazards. It is important to study past plant pests and diseases, so we can

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<sup>23</sup> University of Minnesota Extension. Accessed 5-17-13. Available: <http://blog.lib.umn.edu/efans/cropnews/2011/08/watch-for-gosss-leaf-blight-an.html>

prepare for future hazards. Understanding the past is an important variable in mitigating future hazard events.

***Probability of Future Events of this Hazard***

Some occurrence of crop pests and diseases happens each year. The potential frequency of a large scale occurrence is occasional according to the planning team. Researches try to stay ahead of the hazards by giving livestock vaccinations and supplements and by genetically modifying crops.

Emerald Ash Borer (EAB) is one pest that has the potential for a large amount of damage in Rock County. There are statewide efforts being made to slow the spread, but the outcome is unknown at this time. According to a story in *Planning Magazine* (“Diversifying the Urban Forest, February 2010), Minnesota could lose all of its ash trees within 10 years.

Ash trees became a preferred quick-growing street tree and shade tree across the USA after elm trees succumbed to Dutch Elm Disease. According to the MDA, the EBA is an insect that attacks and kills ash trees. The adults are small, iridescent green beetles that live outside of trees during the summer months. The larvae are grub or worm-like and live underneath the bark of ash trees. Trees are killed by the tunneling of the larvae under the tree's bark.

“On May 14, 2009, emerald ash borer was confirmed as present in the South Saint Anthony Park neighborhood in St. Paul. EAB is a serious invasive tree pest. Quarantine has been placed on Ramsey, Hennepin, Houston, and Winona counties to help slow the spread of Emerald Ash Borer to other areas.”<sup>24</sup>

**Table RA #13** **Farm Summary, Rock County**  
**1987 - 2007**

	1987	1992	1997	2002	2007	Change 2002-2007
Land in Production	260,092	270,332	280715	299,090	279,088	-20,002
Number of Farms	843	791	704	721	696	-25
Average Size (acres)	309	342	399	415	401	-14
Harvested Crops						
Corn	83,838	105,935	117712	119,252	132077	12,825
Soybean	81,428	87,689	115688	118,397	95,834	-22,563

Source: Census of Agriculture 1987, 1992, 1997, 2002, and 2007

**Vulnerability**

Agricultural disease is difficult to contain and can spread quickly. The risk level assigned to agricultural disease by the planning team is high. Emerald Ash Bore is an example of how a plant disease can spread and how it is difficult to contain. The City of Minneapolis has removed 879 unhealthy ash trees in

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<sup>24</sup> Minnesota Department of Agriculture. Accessed 5-17-13. Available: <http://www.mda.state.mn.us/plants/pestmanagement/eab.aspx>

2012.<sup>25</sup> It is recommended by the Minneapolis Tree Advisory Commission to remove and replace another 5,000 ash trees in 2013 to help prevent the widespread infestation of the bug.

### *Plans and Programs*

- MDA, Minnesota Board of Animal Health, Minnesota Department of Health, and Homeland Security and Emergency Management (HSEM) are working with local agencies and farmers to effectively mitigate any and all effects of hazards on animal agriculture and plant agriculture.
- In the event of a catastrophic animal loss the Minnesota State Duty Officer, the BAH, the Department of Agricultural, and your local feedlot officer should be contacted.<sup>26</sup> The primary responsibility for regulating carcass disposal in Minnesota lies with the Board of Animal Health (BAH). The 7020 feedlot rule addresses site selection for composing animal carcasses.<sup>27</sup>

### *Gaps and Deficiencies*

- Disposal of dead livestock was an issue identified by the planning team. This is in regards to catastrophic animal loss. The catastrophic animal loss issue pertains to on the farm animal loss and while the livestock is being transported. Refer to the section of Transportation accidents for more information related to catastrophic animal loss while livestock is being transported. There are mitigation efforts in place, but the planning team was unsure of how effective the plans would be in regards to a catastrophic animal loss.

### *Existing Mitigation Measures*

- The planning team commented that the private sector has done a good job of policing itself is regards to animal outbreaks and the spread of plant diseases. Private agricultural businesses have an economic interest in maintaining a health field and health animal stock. Research and development plays a big role in trying to stay ahead of the animal and plants diseases and pests.
- Rock County has promoted private and public partnership to help foster the development disease resistant hybrids and to help educate the agricultural community regarding potential insects/pests and diseases. These partnerships utilize research provided by public entities like the University of Minnesota Extension, and by private entities like Cargill. Creating private and public partnerships is important in mitigating the effects of agricultural disease. A number of issues impact are geographically areas, so combining resources and taking advantage of economies of scale can help to make the mitigation efforts more effective.

## **A.4 Drought**

Drought is defined as a prolonged period of dry weather with very little or no precipitation. There are four types of drought: meteorological drought (departure from average), hydrological drought (shortfall

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<sup>25</sup> City of Minneapolis. Accessed: 9/17/13. Available:

<http://www.minneapolismn.gov/sustainability/indicators/WCMS1P-081056>

<sup>26</sup> Minnesota Pollution Control. Accessed: 7/19/13. Available: <http://www.pca.state.mn.us/index.php/view-document.html?gid=3579>

<sup>27</sup> Minnesota Pollution Control. Accessed: 7/19/13. Available: <http://www.pca.state.mn.us/index.php/view-document.html?gid=3579>

of stream flows or groundwater), agricultural drought (soil moisture deficiencies), and socioeconomic or water management drought. Droughts can have lasting effects and can cause a serious depletion of surface and ground waters. Drought was assigned a hazard rank of moderate by the planning team.

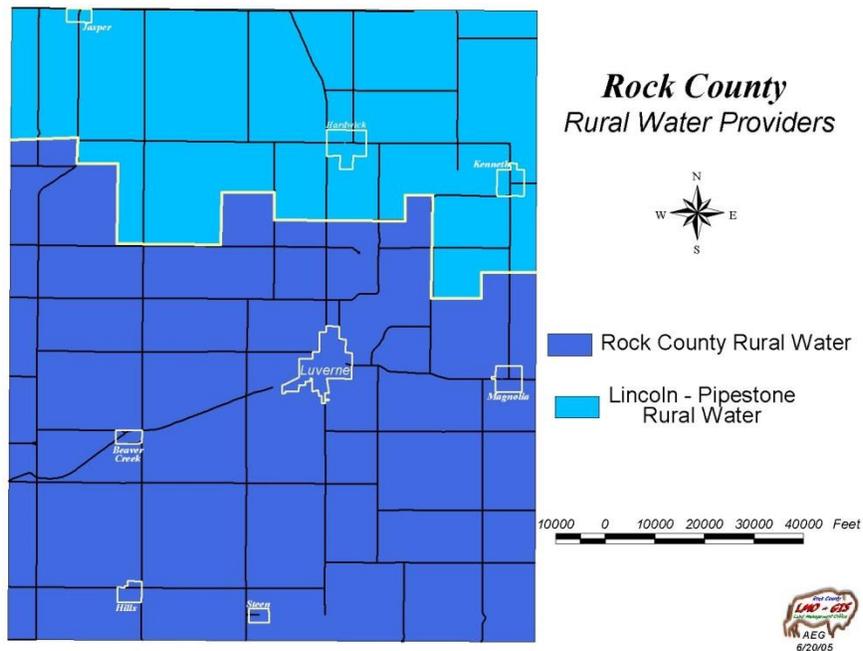
### *Locations Affected by the Hazard*

The entire county is equally at risk for drought; however, areas within the county may react differently to drought conditions. Areas with well-drained soils may be more likely to experience adverse impacts to crops. Areas that rely on individual wells for drinking water supplies are more likely to experience shortages than areas with access to municipal and rural water suppliers.

Different areas in the county may be impacted differently by a drought, but the small size of the county and interdependence of the residents will result in any drought event having a significant impact on the entire county. The planning team identified the spatial extent of a drought as countywide.

The City of Luverne has its own water system that consists of multiple wells. The city of Beaver Creek is served by city wells and is also hooked up to rural water as a backup. The City of Hills is hooked up to rural water, but the City also has wells for backup. All other cities (Hardwick, Jasper, Magnolia, Steen, and Kenneth) in Rock County are served by a rural water system.

**Table RA#14**



### *Extent of the Hazard*

Rock County's economy is base heavily on agriculture. A severe drought could cause economic hardship within the county. The potential severity of a drought is major according to the planning team.

Corn and soybeans yields can be dramatically decreased by drought conditions. Livestock operations are affected by loss of feedstock, pasture and general forage, as well as drinking water. Reduced yields due to a drought event not only have an economic impact on individual farmers, but on secondary

suppliers who buy and sell crops and livestock, agricultural retailers, and local governments that rely on sales taxes. Drought insurance for crops does help compensate for losses, but there can still be economic hardship as the result of a drought.

A drought will not only produce a hardship for the farmers growing the crops, but overall supply can decrease causing food prices to rise. The U.S. Department of Agriculture estimates that the drought during the summer of 2012 will push retail food prices up by between 3% and 4% in 2013.<sup>28</sup>

**Relationship to Other Hazards—Cascading Effects**

Drought will increase the risk of fires. Drought can also make animals and plants more susceptible to agricultural diseases and pests.

**Previous Occurrences of the Hazard**

From January 2000 through February 2013, there have been 12 documented droughts in Rock County. In the table below are documented droughts that occurred from January 2000 through February 2013.

**Table RA #15**

**Droughts, Rock County  
November 2012 through February 2013**

Date	Event Narrative	Number of Counties Affected
11/1/2012	Drought conditions continued over all of southwest Minnesota in November with below to well below normal rainfall keeping soil dry. The poor germination of winter wheat was more strongly confirmed. There were few remaining water restrictions given the much lower water usage compared with the summer and early fall, but the low soil moisture levels presented a bleak outlook for the next spring and summer without a very significant increase in precipitation over the winter. Drought was generally listed as continued severe to extreme for the area.	Lyon, Lincoln, Jackson, Cottonwood, Pipestone, Nobles, Murray, Rock

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<sup>28</sup> Time. The Cost and Consequences of the U.S. Drought. Oct. 26 2012. Access: 5/20/13. Available: <http://business.time.com/2012/10/26/the-cost-and-consequences-of-the-u-s-drought/#ixzz2Tqswe7kB>

12/1/2012	<p>Drought conditions continued over all of southwest Minnesota in December. Although precipitation was generally normal to above normal...the amount of excess over the low winter normals was not enough to relieve the dry conditions. The effects of the drought on farmers and ranchers continued, with the poor condition of winter wheat, and the low stock of winter feed for livestock. Hunting was also affected according to conservation officers, with low pheasant numbers, and disease in the deer population. There were few remaining water restrictions given the much lower water usage compared with the summer and fall, but the low soil moisture levels presented a bleak outlook for the next spring and summer without a very significant increase in precipitation over the winter. Drought was generally listed as continued severe to extreme for the area.</p>	Lyon, Lincoln, Jackson, Cottonwood, Pipestone, Nobles, Murray, Rock
1/1/2013	<p>Drought conditions continued over all of southwest Minnesota in January. Precipitation was below to well below normal, although with the low midwinter normals, even greater precipitation would have been unlikely to change the dry soil conditions. There was little noted in the way of new effects of the drought, with the dry conditions giving a poor outlook for the Spring and Summer, including poor germination of the winter wheat crop during the dry fall. Water restrictions continued to be few during the winter because of the low water usage, but the area was becoming more vulnerable to even marginally weather if it developed in the spring and summer. Drought was generally listed as continued severe to extreme for the area.</p>	Lyon, Lincoln, Jackson, Cottonwood, Pipestone, Nobles, Murray, Rock

2/1/2013

Drought conditions continued over all of southwest Minnesota in February, despite precipitation which was a little above normal. The excess of a few tenths of an inch in the driest month of the year did little to relieve the long term dry soil conditions. There was little noted in the way of new effects of the drought, with the dry conditions giving a poor outlook for the Spring and Summer, including the poor germination of the winter wheat crop during the dry fall. Water restrictions continued to be few during the winter because of the low water usage, but the area was deemed vulnerable to even marginally dry weather if it developed in the spring and summer. Drought was generally listed as continued severe to exceptional for the area, with the northern edge of the area, from Ivanhoe to Marshall, making a slight improvement to severe because of greater snowfall and snow cover during the month.

Lyon, Lincoln, Jackson, Cottonwood, Pipestone, Nobles, Murray, Rock

National Climatic Data Center (NCDC) Storm Events database

Table RA #16

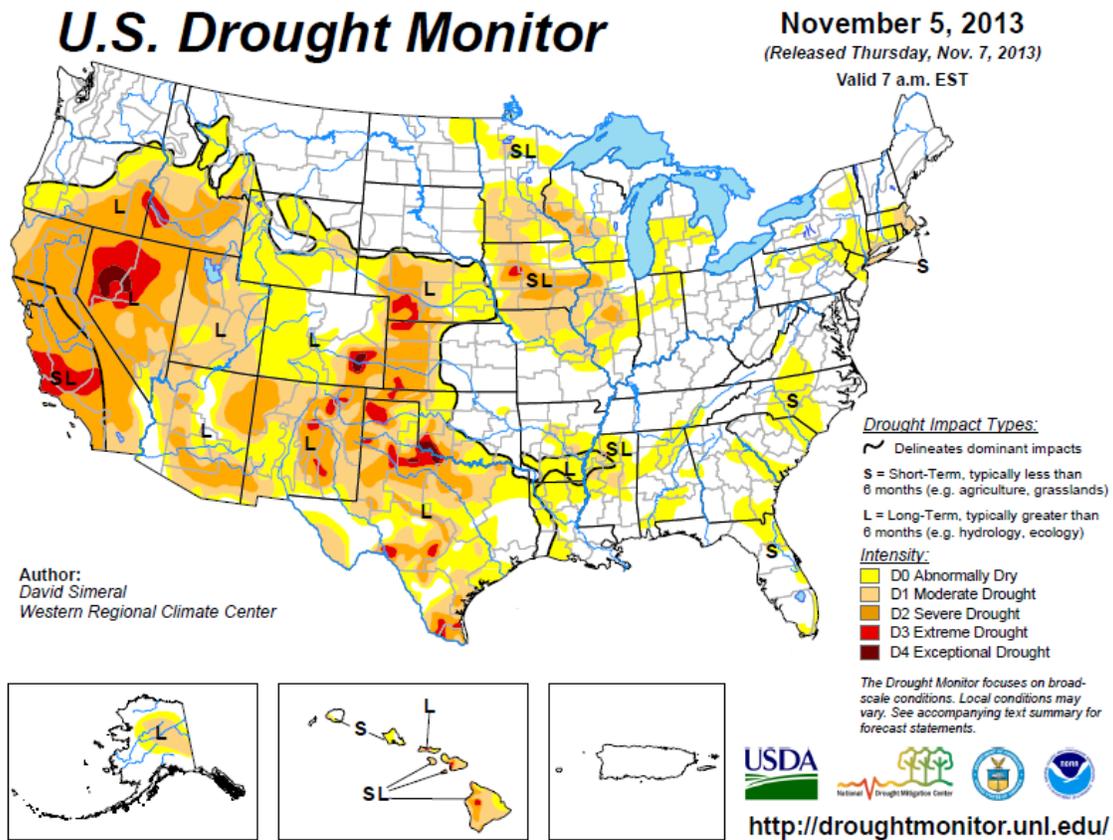
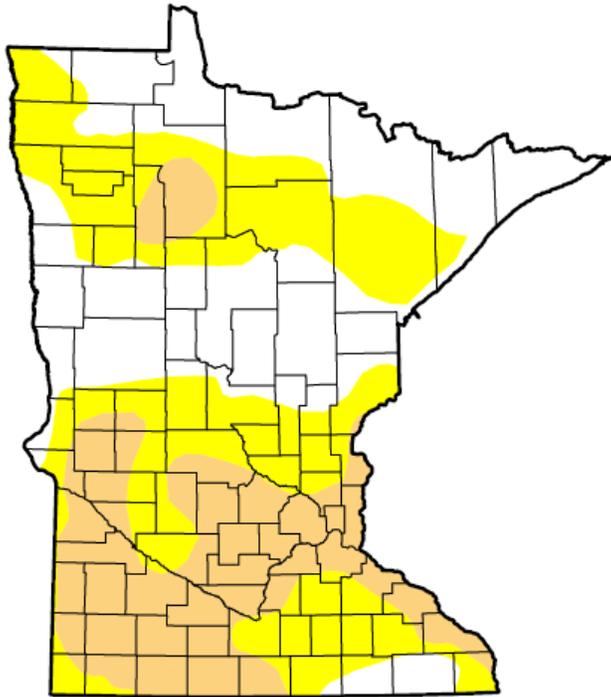


Table RA #17

**U.S. Drought Monitor  
Minnesota**

**November 5, 2013**  
(Released Thursday, Nov. 7, 2013)  
Valid 7 a.m. EST



Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
<b>Current</b>	37.68	62.32	25.79	0.00	0.00	0.00
<b>Last Week</b> 10/29/2013	37.55	62.45	25.79	0.00	0.00	0.00
<b>3 Months Ago</b> 8/6/2013	70.77	29.23	1.71	0.00	0.00	0.00
<b>Start of Calendar Year</b> 1/1/2013	0.00	100.00	97.84	83.44	25.17	0.00
<b>Start of Water Year</b> 10/1/2013	27.29	72.71	46.69	8.94	0.00	0.00
<b>One Year Ago</b> 11/6/2012	0.00	100.00	96.38	43.13	25.29	0.00

**Intensity:**

- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

**Author:**  
David Simeral  
Western Regional Climate Center



<http://droughtmonitor.unl.edu/>

**Probability of Future Events of this Hazard**

Droughts occur in the area. The potential frequency of a drought in Rock County is likely according to the planning team.

**Vulnerability**

The risk level assigned to drought by the planning team is average.

**Plans and Programs**

- The Rock County Water Plan is intended to identify existing and potential water issues in the context of watershed units and groundwater systems, informing specific implementation actions to achieve goals for sound hydrological management of water and related resources. The Rock County Water Management Plan estimates the recharge rates for various aquifers within the county and documents the number of gallons of water used per year by municipalities within the county.
- Rock County has a Local Water Management Plan that was completed in 2006 and undated in 2011. The Rock County Comprehensive Water Management Plan estimates the recharge rates for various aquifers within the county and documents the number of gallons of water used per year by municipalities within the county.

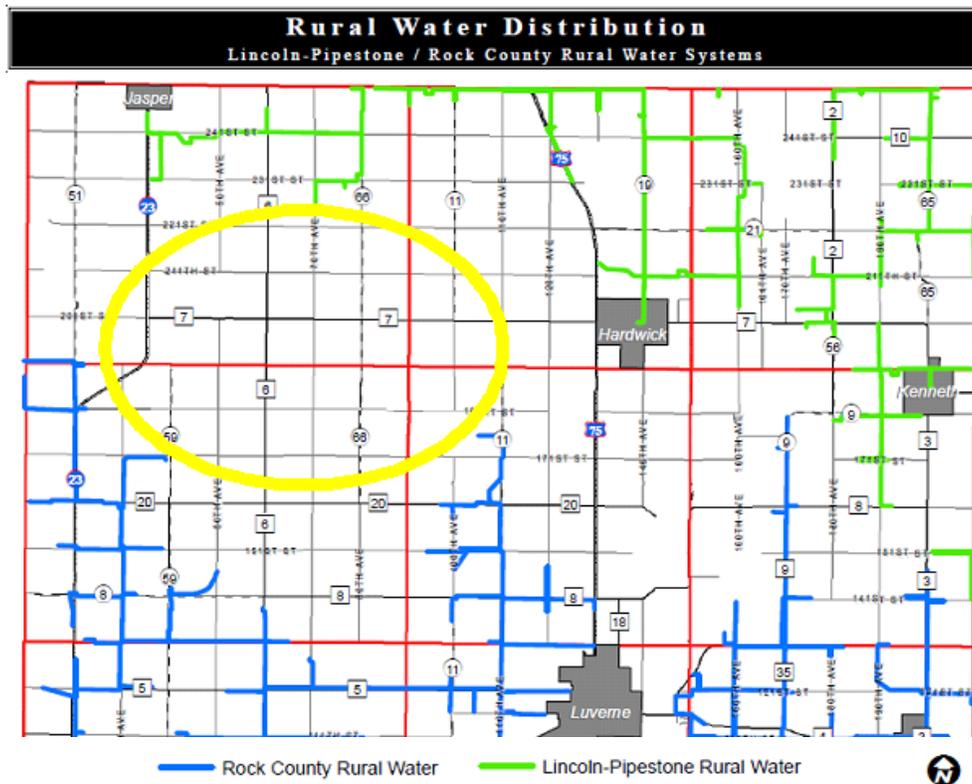
- The Rock County Comprehensive Water Plan identifies and maps the major and minor aquifers serving the county.
- Rock County has adopted the state’s statutory shoreline and riparian zoning classifications and minimum standards via ordinance.
- Lewis and Clark Regional Rural Water System is going supplement the water supply in much of Rock County. Plans are in place to hook up Lewis and Clark Rural Water to Rock County Rural Water, the City of Luverne, and Lincoln Pipestone Rural Water. This will increase the quality and reliability of water in Rock County. After the planned enhancements are made to the water systems, roughly 90 percent of residents in Rock County will have access to safe and reliable city or rural water systems.<sup>29</sup>

*Gaps and Deficiencies*

- Water conservation provisions and use restrictions in times of drought are not included in county or city ordinances.
- Water supply in Rock County is served by a mixture of city well systems and rural water. A number of rural residents also have their own well. There is an area in the northwest section of the county, south of Jasper, which is a water desert. This area is located along Buffalo Ridge and is not served by city or rural water systems. Residents in this area have to rely on cisterns and private wells. Refer to the water distribution map below.

**Table RA #18**

**Water Desert, Rock County**



<sup>29</sup> Rock County Land Management Office.

### *Existing Mitigation Measures*

- Recharge rates and capacities of the county's aquifers are recorded and inventoried by United States Geological Survey (USGS). These studies help to determine the capacities and recharge rates of the county's aquifers in order to better assess use restrictions and provisions during times of drought.
- Public outreach, by the Rock County Land Management Office city and rural water systems, regarding water conservation helps to inform residents of the importance of wellhead protection and water conservation in times of low rainfall. This helps to ensure Rock County's ground water supplies are sufficient to meet demands.
- The Department of Natural Resources (DNR) regulates withdrawal and usage rates. There has to be draw down study for irrigation permits to be issued.

## **A5 Flooding**

Flooding is one of the most common hazards across the United States. Flooding can occur anytime, anywhere. Seemingly benign streams can overflow their banks from a sudden rainstorm, quick snowmelt, or blockage of a channel. Lakes or reservoirs can retain water and quietly creep up the shorelines. City sewers can back up and pour into private basements and onto public streets. Dams can break causing flooding down river. Flooding was assigned a hazard rank of moderate by the planning team.

The National Flood Insurance Program (NFIP) was created by Congress to help property owners to protect themselves financially. NFIP offers flood insurance in communities that agree to adopt and enforce ordinances to reduce the risk of flooding. In Minnesota, the DNR administers floodplain management programs.<sup>30</sup>

The Federal Emergency Management Agency (FEMA) has mapped the probability of flood waters inundating floodplains. FEMA works with local communities to map the Special Flood Hazard Area (SFHA), commonly known as the 100-year floodplain (one percent floodplain), where they calculate a 1 percent chance of a flood event any given year. Within the SFHA lie the floodway, in which water can be expected at any time, and the flood fringe which is vulnerable to flood events.

FEMA has developed Flood Insurance Rate Maps (FIRMs) for many communities across the United States. FEMA now posts these online, along with "FIRMettes" —a "a full-scale portion of a FEMA Flood Insurance Rate Map (FIRM) that you create yourself online by selecting the desired area from an image of a Flood Insurance Rate Map."

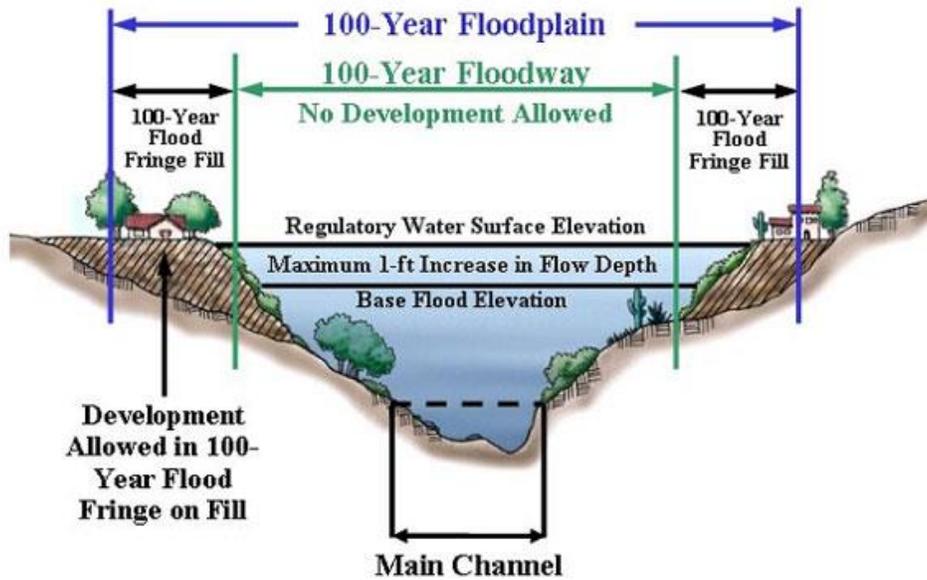
FIRMs may not be up to date since they were initially produced in the 1970s, and a number of these maps have not been updated since the originals were created. Communities in Rock County have made

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<sup>30</sup> Flood Smart. Accessed 5/21/13. Available:  
[http://www.floodsmart.gov/floodsmart/pages/about/nfip\\_overview.jsp](http://www.floodsmart.gov/floodsmart/pages/about/nfip_overview.jsp)

improvements to their infrastructure to mitigate the impact of flooding, but these improvements are not reflected in their FIRMs. Maps and models are critical components in mitigating the impact of flooding. These technologies help planners mitigate the effects of flooding. Decision support systems (DSS) based on models are increasingly being used by engineers and scientists in flood management. DSSs are used for planning and designing infrastructure to prepare for flooding.

**Table RA #19**                      **100-Year Floodplain (1 percent Floodplain)**



**Table RA #20**

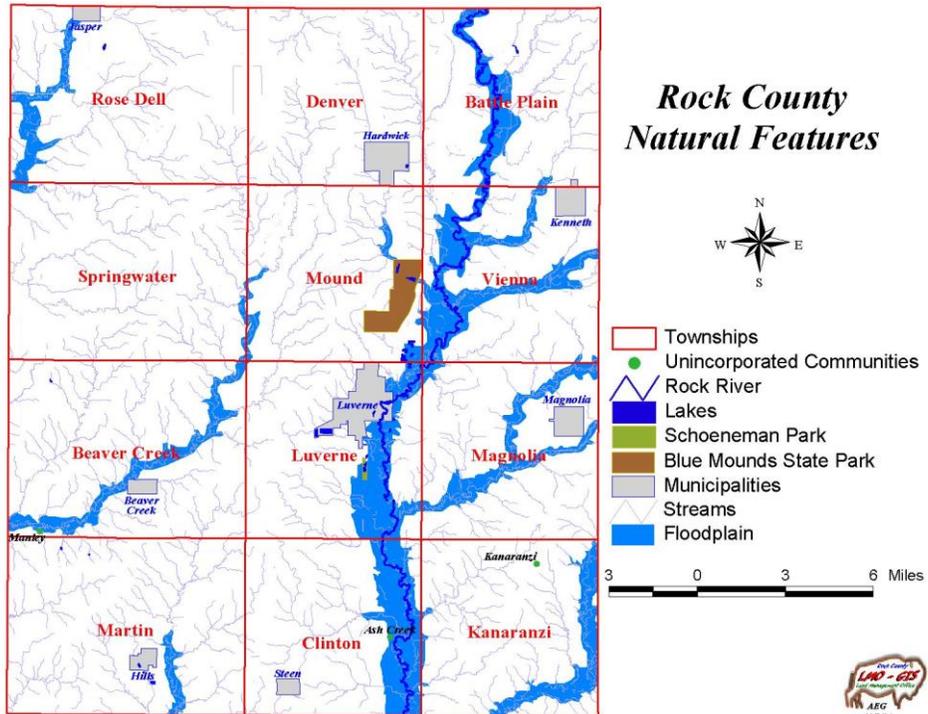


Table RA #21

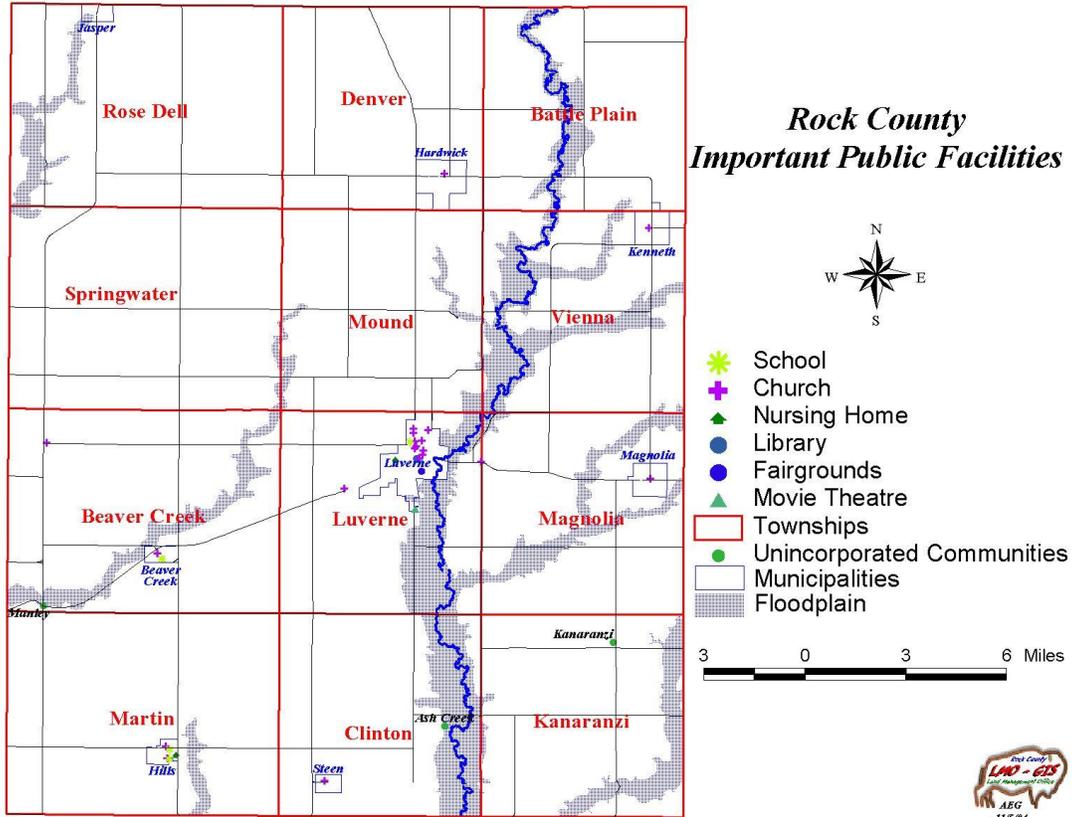
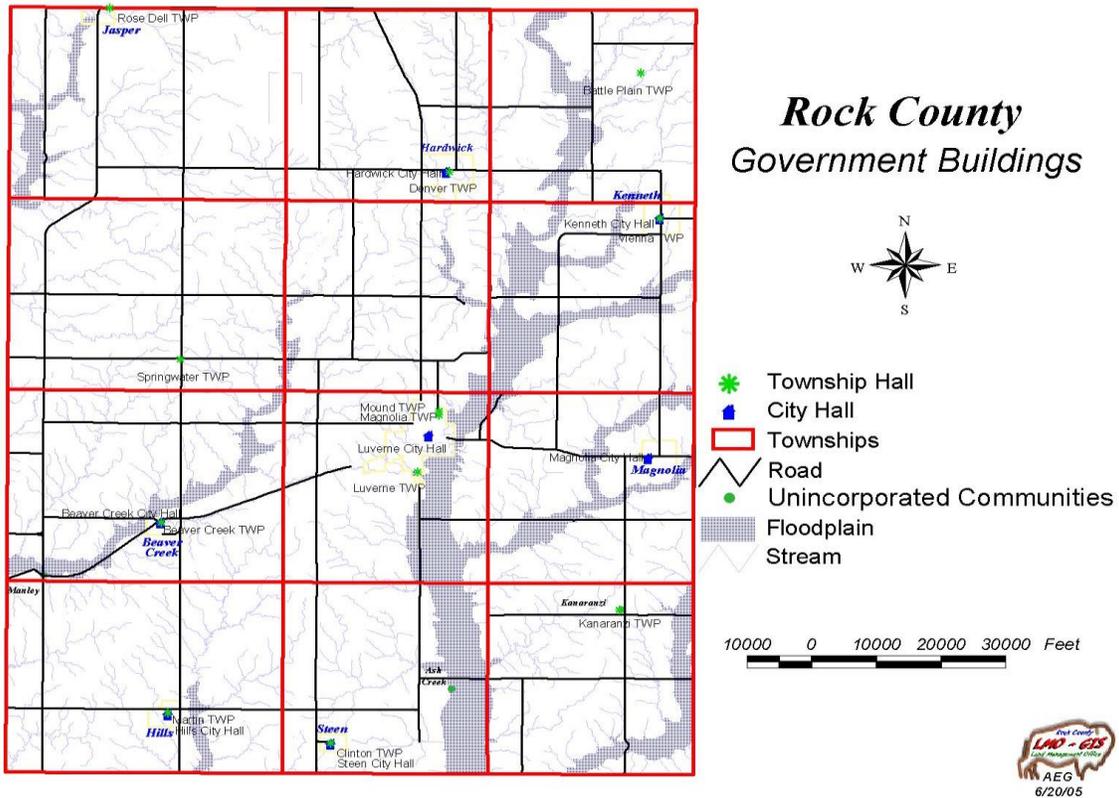


Table RA #22



### *Locations Affected by the Hazard*

Flooding can occur anytime, anywhere. The planning team identified the spatial extent of flooding as countywide. The majority of Rock County is classified as Zone C, which is defined as an area of minimal flooding. The areas of minimal flooding include most of the intermittent streams throughout the county. These streams contain surface water runoff at various times throughout the year and high water levels may extend beyond the established drainage channel and onto adjacent lands.

Flash flooding events tend to be localized, not countywide, but the risk is countywide. Flash flooding can occur rapidly and can cause substantial damage. Flash flooding can cause a rapid rise in the water level of a stream or creek above a predetermined flood level.

One percent floodplain areas do exist in Rock County. These flood plain areas are along Rock River, Beaver Creek, and other permanently flowing streams and creeks. FEMA has not identified any one percent floodplain areas around any of the county's three man-made major lakes.

Within the unincorporated areas of Rock County, subject to the zoning controls of the County, and according to official FEMA flood hazard maps utilized by the County, there are approximately 27,893 acres in the County prone to flooding, with approximately 52 farmsteads with 23 homes at risk in the unincorporated areas.<sup>31</sup> The County has provided some technical assistance to homeowners in obtaining FEMA Letters of Map Amendment (LOMA), which requires a certified engineer who is licensed in floodplain delineation to determine Base Flood Elevations (BFE) in these requests. Twenty two of these LOMA requests have been filed with FEMA. Additionally, the flood of 1993 were considered to be the equivalent of a one percent flood event, and resulting flood related damages to homes and farmstead properties were relatively minimal.

There are three communities within Rock County that have areas identified within the one percent floodplain: Jasper, Luverne, and Beaver Creek. These three communities have a higher risk to actually see some flooding damage. The municipality facing the largest risk is the City of Luverne.

By examining the flood plain maps, it is estimated that Jasper has approximately one home and one business that were built in the identified one percent floodplain. In the community of Beaver Creek, it does not appear that any homes, businesses, or industry were built within the floodplain. Within the community of Luverne, this plan estimates that there are 23 businesses and 73 residential structures within scattered spots of one percent floodplain. It should be noted that some of these areas within the floodplain are not lakeshore areas nor are they on the banks of any rivers. They are mainly low lying poorly drained areas or along streams.

There was no public and semi-public infrastructure developed within the floodplain within these three communities. It is difficult estimating structures within the flood plain, since there are no digitized

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<sup>31</sup> Rock County Soil and Water Conservation District. Data Request Received 6/3/13

floodplain boundaries. While the FEMA maps of 1976 were used, exact boundaries are very hard to estimate.

### *Extent of the Hazard*

“Floods are among the most frequent and costly natural disasters.”<sup>32</sup> The potential severity of flooding in Rock County is likely according to the planning team.

### *Critical Facilities*

There are no critical facilities in Rock County that are within the one percent floodplain.

### *Housing*

The majority of Rock County’s population lives safe from flooding, although some housing units have been identified within the one percent floodplain and flooding can occur anywhere. Rock County does not have any major rivers, but there are large and small streams within the county. These large and streams pose a risk of flooding. Some development has occurred along these streams due to the aesthetics they create.

The median housing unit value in Rock County was \$81,800 in 2010.<sup>33</sup> If we assign this median value for all the residential structures within the floodplain in Rock County, there is a total value of \$6,053,200. This is just the value of the residential structures. Since flooding could occur in any of the communities within Rock County and in the rural areas, the potential damage of a flood could be relatively high.

### *Commercial Structures*

There are some commercial structures currently located within the one percent floodplain in Rock County, but past damages that have occurred were minimal. Future construction of commercial buildings in the floodplain has been prohibited under Rock County’s zoning regulations.

### *Public Infrastructure*

Within Rock County there are some roads that are prone to flooding or washing out during a hazard event. Those most noted are roads in low lying areas. Along with flooding or washing out of roads, the County has had a problem with debris being left on roads as a result of water running over the roadway. Debris removal is often limited, but cleanup is a cost that is incurred.

The Rock River crossings are the most vulnerable to intermittent flooding from spring thaws or large rain falls in Pipestone County. The damage from past events is not extensive since the flow or the water is spread out and typically at a low velocity. The majority of damages occur on township roads. Many other locations can experience damage from flooding depending on the location, amount, and duration of the rainfall event. A one percent flood event would result in a number of roadways sustaining damage and wider spread road closures.

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<sup>32</sup> American Red Cross. Accessed: 10/30/13. Available: <http://www.redcross.org/prepare/disaster/flood>

<sup>33</sup> Census 2010. Accessed: 6/3/13. Available: <http://factfinder2.census.gov>

Rock County has approximately 108 bridges located within the floodplain. Most are made of steel or steel reinforced concrete, which can withstand annual spring flooding. To date, none of the bridges within Rock County have been destroyed as a result of flooding.

There are no communities in Rock County that have wastewater treatment plants close to the one percent floodplain. To date, damage to wastewater treatment ponds within the county due to flooding has not occurred.

#### *Relationship to Other Hazards—Cascading Effects*

Flooding can have a number of secondary effects that can create additional hazards related to fire, public health, utility failure, insect and pest infestation, and infrastructure damage. Flooding can interfere with emergency response to fires, as seen in Grand Forks, North Dakota, during the Red River Flood of 1997. The after effects of a flood can be a contaminated water supply and mold which affect public health. It can take up to a week or two to get the power back on after a flood. Not having reliable power makes day to day life more difficult. Insect and pest infestation can take place after the flood has receded. Damage to infrastructure can take weeks to repair. This can cause increase emergency response times and put residents at risk.

#### *Previous Occurrences of the Hazard*

There were nine documented one percent flood events that have occurred within Rock County during the past 50 years. These events occurred in 1993, 1997, 2001, 2002, and 2004. The first of the flooding events occurred on May 7, 1993. A series of thunderstorms dropped rainfall in the three to seven inch range in about a three-hour time span. Several hundred homes and businesses were flooded. Many county roads were washed out throughout the seven counties. An estimated \$1.6 million dollars in damage resulted from the flooding in Rock County alone.

From January 2000 through February 2013, there have been 10 documented floods and 11 documented flash floods in Rock County. NOAA defines a flood as “an overflow of water onto normally dry land. The inundation of a normally dry area caused by rising water in an existing waterway, such as a river, stream, or drainage ditch. Ponding of water at or near the point where the rain fell. Flooding is a longer term event than flash flooding: it may last days or weeks.”<sup>34</sup>

NOAA defines a flash flood as “a flood caused by heavy or excessive rainfall in a short period of time, generally less than 6 hours. Flash floods are usually characterized by raging torrents after heavy rains that rip through river beds, urban streets, or mountain canyons sweeping everything before them. They can occur within minutes or a few hours of excessive rainfall. They can also occur even if no rain has fallen, for instance after a levee or dam has failed, or after a sudden release of water by a debris or ice jam.”<sup>35</sup>

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<sup>34</sup> NOAA. Accessed: 5/21/13. Available: <http://www.srh.noaa.gov/mrx/hydro/flooddef.php>

<sup>35</sup> NOAA. Accessed: 5/21/13. Available: <http://www.srh.noaa.gov/mrx/hydro/flooddef.php>

**Table RA #23**

**Floods, Rock County  
January 2000 through February 2013**

Date	Location	Event Narrative
4/1/2011	Jasper	Flooding of lake, streams, and lowlands in several counties in southwest Minnesota continued through April. The flooding included farmland and other lowlands, with some roads flooded and damaged. High water and groundwater levels resulting from record precipitation in the previous year contributed to the slowness of any improvement in the flooding situation.
6/14/2011	Rock County	Heavy rain caused Split Rock Creek to flood, with lowlands along the creek and a few county roads affected. The creek crested at 3.7 feet above flood stage near Jasper on June 15th.
7/14/2011	Jasper	Heavy rain caused Split Rock Creek to flood, with lowlands along the creek and a few county roads affected. The creek crested at 4.2 feet above flood stage near Jasper on July 14th.
5/7/2012	Hardwick	Heavy rain caused minor lowland flooding along the Rock River near Hardwick. The river crested at 1.02 feet above flood stage on May 7th.

National Climatic Data Center (NCDC) Storm Events database

**Table RA #24**

**Flash Floods, Rock County  
January 2000 through February 2013**

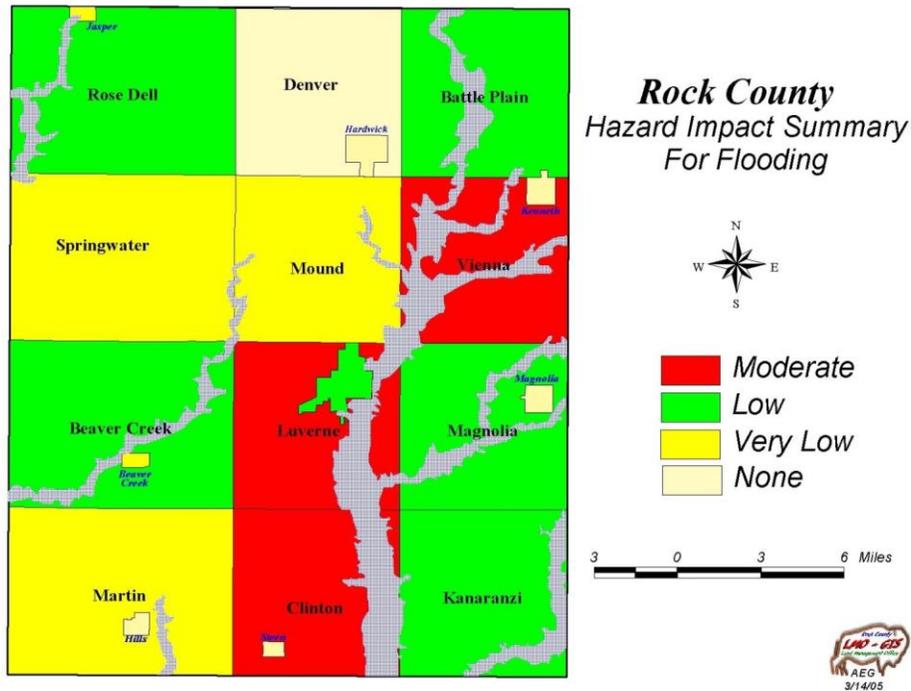
Date	Event Narrative	Number of Counties Affected
4/7/2006	Luverne	Heavy rainfall of 2 to 4 inches flooded roads and basements as storm sewers backed up.
8/10/2010	Rock County	Thunderstorms produced damaging winds, and heavy rain which produced flash flooding, in Rock and Nobles Counties in southwest Minnesota during the early morning of August 10th. Heavy rain caused flash flooding of numerous roads, including parts of U.S. Highway 75. Several low areas including some yards were flooded, as well as small streams in the area. Some of the flooded roads were in Blue Mound State Park.
6/14/2011	Rock County	Thunderstorms produced flash flooding at several locations in southwest Minnesota during the late morning and afternoon of June 14th. There was also a report of large hail and one of lightning damage. Heavy rain on saturated ground caused flash flooding of several streets and yards, with water running through yards like a river.
6/14/2011	Rock County	Thunderstorms produced flash flooding at several locations in southwest Minnesota during the late morning and afternoon of June 14th. There was also a report of large hail and one of lightning damage. Heavy rain on saturated ground caused flash flooding of streets, fields, and basements.

National Climatic Data Center (NCDC) Storm Events database

***Probability of Future Events of this Hazard***

Flooding is highly likely to occur each year and forecasting technology and models can help predict yearly spring flooding. The potential frequency of a flood is likely according to the planning team. Even with weather forecasting technology floods can occur rapidly and poses a risk throughout the county.

**Table RA #25**



### ***Vulnerability***

Rock County Soil and Water Conservation District (SWCD) estimates the number of farmsteads and/or homes prone to damage resulting from major flood events to be significantly less than the number shown to be located within the Flood Hazard Areas on the official FEMA maps. Improvements have been made along the flood plain, and there have been 12 variances by the county to have a property excluded from the flood plain. The official FEMA maps are dated and do not show these improvements that have been made to mitigate flooding in Rock County. The risk level assigned to flooding by the planning team is moderate.

### ***Plans and Programs***

- A number of jurisdictions in Rock County participate in the National Flood Insurance Program (NFIP). These jurisdictions include: City of Beaver Creek, City of Hardwick, City of Jasper, City of Luverne, and Rock County.<sup>36</sup> The NFIP has three basic aspects that include: floodplain identification and mapping, floodplain management, and flood insurance.
- The Rock County Comprehensive Plan functions as the County’s local water management plan, and identifies priority concerns and programs regarding water.
- Rock County’s zoning regulations prohibits any further development within the floodplains. Existing structures may continue to exist as “grandfathered” structures, but the county anticipates the number of these structures will be reduced over time. There is adequate space for development in Rock

<sup>36</sup> Fema. National Flood Insurance Program. Accessed: 11/8/13. Available: <http://www.fema.gov/cis/MN.pdf>

County that is not within the one percent flood plain. The cities of Jasper and Luverne have adopted similar regulation in regards to flood plain development as Rock County.

- The county and identified cities have official FIRM maps identifying flood hazard areas. Local zoning ordinances can control permitted land uses in these areas, what can be built, and how. FEMA's National Flood Insurance Program provides an option for local property owners to protect their structures in communities that participate.
- Water levels in the Rock River are monitored, so the water level downstream is predictable.
- Road closures are taken into account in planning and training. Local fire departments, emergency medical services, and other emergency responders plan for having to use alternative routes in case of flooding.

#### *Gaps and Deficiencies*

- Many local residents are resistant to leaving stream-side property, even if it is located in a designated floodplain.
- Beaver Creek does not have any zoning ordinance or development restriction regarding development within the flood plain.
- Local match for mitigation projects (such as acquisition of property) will likely become even more difficult to fund as local government assistance is further cut back.
- It is difficult estimating structures within the flood plain, since there are no digitized floodplain boundaries. The FEMA floods maps that are being used are from 1976. A number of improvements have been made to mitigate the effects of flooding, but these changes are not reflected in the FEMA flood plain maps. These maps have not been updated due to the costiveness of the project.
- Models are increasingly being used by engineers and scientists in flood management. Models are only as accurate as the data that is used in the analysis. Outdated maps and not including all the impacting variables can cause forecasting errors to occur. Ground saturation is one variable that is not included in the models for estimating yearly flood levels. Ground saturation affects the amount of moisture that can be soaked in during a precipitation event. Forecasters are working on ways to include ground saturation into their flood models.

#### *Existing Mitigation Measures*

- Retention dams were constructed along Poplar Creek. These retention dams were installed to reduce the flood damage within the City of Luverne along Poplar Creek.
- Road retention projects were also pursued to reduce the impact of flooding along roadways. This project entailed the installation of smaller culverts. Downsizing culverts is a reversal in the trend of replacing culverts with larger sized culverts, which only transfer additional water downstream.

### **A6 Severe Summer Storms, Lightning, Hail, and Extreme Heat Events**

During the spring, summer and autumn, severe thunderstorms, lightning, hail, and excessive heat can occur. Severe summer storms, lightning, hail, and extreme heat events were assigned a hazard rank of moderate by the planning team. Excessive heat temperatures and temperature change is one of the variables that impact summer storms. (Windstorms and Tornado events are addressed in the next section.)

### *Locations Affected by the Hazard*

All locations in Rock County are at risk to be affected by this hazard. Severe summer storms and extreme heat events will be more widespread. These weather events can generate lightning and hail that tend to be more isolated. The planning team identified the spatial extent of severe summer storm, lightning, hail, and extreme heat events as countywide.

### *Extent of the Hazard*

The potential severity of severe summer storms, lightning, hail, and extreme heat events is minor according to the planning team.

Thunderstorms, which occur most frequently from mid-May through mid-July, are the most common type of severe summer storm. Thunderstorms are usually localized, produced by cumulonimbus clouds, accompanied by lightning, and have strong wind gusts, heavy rains, and sometimes hail or tornados. Thunderstorms are produced by air masses that become unstable and that overturn violently. Unstable air masses are usually the result of warm humid air at lower elevations and colder air at higher elevations.

Extreme heat helps to contribute to the magnitude of a thunderstorm and often accompany severe summer storms. The combination of high temperatures and exceptionally humid conditions can lead to overheating, heat stress, and a severe strain on the system. Heat stress can lead to heat cramps, heat exhaustion and heatstroke, and even death. According to the Centers for Disease Control and Prevention (CDC), more than 300 Americans die annually from excessive heat exposure from 1979-2003. More people in the United States died from extreme heat than from hurricanes, lightning, tornadoes, flood and earthquakes combined.<sup>37</sup>

Lighting is often associated with thunderstorms and can be deadly. Lightning occurs to balance the difference between positive and negative discharges within a cloud, between two clouds, and between the cloud and ground. For example, a negative charge at the base of the cloud is attracted to a positive charge on the ground. A lightning bolt happens when the difference between the charges is great enough. The charge is usually strongest on tall buildings, trees, and other objects protruding from the surface. Consequently, these objects are more likely to be struck than lower objects.

While cloud-to-ground lightning poses the greatest threat to people and objects on the ground, it accounts for only 20 percent of all lightning strikes. The remaining lightning occurs within the cloud, from cloud to cloud, or from the ground to the cloud. The most common type of lightning is lightning occurring within a cloud.

Hail is an ice product produced in severe thunderstorms. It is formed when strong updrafts within the cumulonimbus cloud carry water droplets above the freezing level or when ice pellets in the cloud collide with water droplets. The water droplets freeze or attach themselves to the ice pellets and begin

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<sup>37</sup> CDC. Emergency Preparedness and Response. Accessed: 9/6/13. Available: [http://www.bt.cdc.gov/disasters/extremeheat/heat\\_guide.asp](http://www.bt.cdc.gov/disasters/extremeheat/heat_guide.asp)

to freeze as strong updraft winds toss the pellets and droplets back up into colder regions of the cloud. Both gravity and downdrafts in the cloud pull the pellets down, where they encounter more droplets that attach and freeze and are tossed once again to higher levels in the cloud. This process continues until the hail becomes too heavy to be supported by the updrafts and falls to the ground.

**Table RA #26**

**Estimating Hail Size**

Description	Diameter (inches)
Pea	0.25
Marble or Mothball	0.5
Penny or Dime	0.75
Nickel	0.88
Quarter	1
Half Dollar	1.25
Walnut or Ping Pong Ball	1.5
Golf ball	1.75
Hen's Egg	2
Tennis Ball	2.5
Baseball	2.75
Tea Cup	3
Grapefruit	4
Softball	4.5

National Weather Service (NWS)

In Minnesota, most hail ranges in size from pea-size (1/4 inch) to golf-ball size (1-¾ inch). Larger hailstones have been reported, but occur less frequently. Strong updrafts are necessary within the cloud to form hail, and are usually associated with severe thunderstorms. Coverage areas for individual hailstorms are highly variable and spotty due to the changing nature of the cumulonimbus cloud.

Given the rural agricultural nature of the county, the likelihood is greatest that crops would experience the most damage from a hail event; however, hail can also do a great amount of damage to vehicles and roofs of individual structures. The chance of significant building damage is likely to be higher within the cities as there are simply more buildings clustered in a small area to be potentially damaged.

**Relationship to Other Hazards—Cascading Effects**

Heavy rain can cause flash flood events, and may threaten transportation infrastructure. Lightning can cause both structure fires and wildfires. Extreme heat can lead to the power grid being overloaded and can in turn cause blackouts. Refer to the next section for more information on tornados and straight line wind events.

**Previous Occurrences of the Hazard**

Thunderstorms are not documented by the NOAA as a separate event. Extreme heat events are documented as a separate event by NOAA. There were four documented extreme heat events in Rock County from January 2000 through February 2013. Excessive heat occurs from a combination of high temperatures and high humidity index.

**NOAA Definitions**

**Excessive Heat Outlook**

A combination of temperature and humidity over a certain number of days, is designed to provide an indication of areas of the country where people and animals may need to take precautions against the heat during May to November.

**Excessive Heat Warning**

Issued within 12 hours of the onset of the following criteria: heat index of at least 105°F for more than 3 hours per day for 2 consecutive days, or heat index more than 115°F for any period of time.

**Excessive Heat Watch**

Issued by the National Weather Service when heat indices in excess of 105°F (41°C) during the day combined with nighttime low temperatures of 80°F (27°C) or higher are forecast to occur for two consecutive days.

**Table RA #27**

**Excessive Heat, Rock County  
January 2000 through February 2013**

Date	Location	Event Narrative
7/15/2011	Rock County	Several consecutive days were experienced with an extremely stressful combination of high heat and humidity. Heat indices frequently rose above 115 degrees during the day, with temperatures reaching the 90s and dew points remaining in the 70s to lower 80s. The high heat and humidity were evident at night, with minimum temperatures usually in the middle to upper 70s, and in some cases 80 degrees or a little higher. There were several reports of livestock deaths.
6/27/2012	Rock County	A combination of high heat and humidity, with temperatures reaching the 90s and dew points in the 70s, pushed the heat index to a little above 100 degrees during the afternoon and early evening hours of June 27th over southwest Minnesota.
7/2/2012	Rock County	A combination of high heat and humidity persisted for several days. Daytime temperatures reached the 90s to just above 100, and dew points were in the 70s. The heat index went as high as 110 degrees. Low temperatures were in the 70s, leading to some uncooled indoor locations remaining excessively warm through the night. The dangerous nature of the heat was added to by its continuing over a period of several days.
7/16/2012	Rock County	A combination of high heat and humidity consisted of daytime temperatures reaching the 90s, and dew points in the 70s. The heat index went as high as 105 degrees.

National Climatic Data Center (NCDC) Storm Events database

There were zero documented lightning storms in Rock County from January 2000 through February 2013.<sup>38</sup> One event that was believed to be caused by lightening was on June 13<sup>th</sup>, 2011. This event caused phones, radios, the security system, and fire alarm panel at the Rock County Sheriff Station to go down. 911 calls had to be transferred to Nobles County. Lightening was the most likely cause of the event, but it was not confirmed.

<sup>38</sup> NOAA. Accessed: 5/21/13. Available: <http://www.ncdc.noaa.gov/stormevents/>

Hail events are separate events recorded by NOAA. Hail is often part of a thunderstorm and is not always reported due to the varying size and the rural nature of Rock County. From January 2000 through February 2013, there have been 75 documented hail events in Rock County. Some of these hail events are only minutes apart, but a hail event is a separate event if the storm stops hailing and starts hailing a few minutes later.

On May 26, 2004, there were three hail events that occurred over a 15 minutes timeframe that had the intensity to stripped leaves. This hail event caused damage to trees, vehicles, and roofs in Luverne. There was also some damage to crops close to Luverne. The total dollar amount of the damage was not reported.

**Table RA #28** **Hail Events, Rock County**  
**January 2012 through February 2013**

Date	Location	Time	Event Narrative
5/1/2012	Beaver Creek	18:50	Thunderstorms produced large hail, up to half dollar size, at several locations in southwest Minnesota, during the late afternoon and early evening of May 1st.
5/5/2012	Beaver Creek	10:18	Thunderstorms produced large hail in Rock and Nobles Counties in southwest Minnesota during the late morning of May 5th.
5/5/2012	Luverne	12:25	Thunderstorms produced large hail in Rock and Nobles Counties in southwest Minnesota during the late morning of May 5th.
8/23/2012	Luverne	17:24	Thunderstorms produced large hail and damaging winds at several locations in Lyon and Rock Counties in southwest Minnesota during the late afternoon and early evening of August 23rd.
8/23/2012	Luverne	17:33	Thunderstorms produced large hail and damaging winds at several locations in Lyon and Rock Counties in southwest Minnesota during the late afternoon and early evening of August 23rd.
8/23/2012	Luverne	17:40	Same Description as above.
8/23/2012	Luverne ARPT	18:25	Same Description as above.
8/23/2012	Hills	19:05	Same Description as above.
8/23/2012	Steen	19:15	Same Description as above.
8/23/2012	Hills	19:18	Same Description as above.

National Climatic Data Center (NCDC) Storm Events database

***Probability of Future Events of this Hazard***

Severe summer storms are highly likely to take place every year, including excessive heat, lightning, and hail. The potential frequency of a severe summer storm is likely according to the planning team.

***Vulnerability***

People do not always recognize their limitations. Summer heat can pose a serious risk to all populations, but especially the young and elderly population. Informing the public about extreme heat

events and other summer storms is important in preventing accidents. The risk level assigned to severe summer storms by the planning team is high.

#### *Plans and Programs*

- Heat advisories are issued by the National Weather Service when the heat index exceeds 95 degrees and the relative humidity is at least 50 percent.
- Rock County is in the process of implementing an emergency alerts system, via text message and email. This system can be used to inform the public about the risk of extreme heat and other summer storms.

#### *Gaps and Deficiencies*

- The outdoor warning system is dated in a number of cities in Rock County. The sirens are operational under the newer narrow band system, but the sirens are from the late 50s and 60s. The physical sirens need to be replaced. There are also gaps in the coverage. Blue Mound State Park has no siren coverage. There are 87 camp sites within the park, so not having an outdoor warning system is a serious deficiency. There are also outdoor warning system gaps within some cities. The southern end of the City of Hills has incomplete coverage. Sirens typically have a half mile coverage area, so there are some locations where coverage could be improved.
- Luverne is the only city in Rock County that has their outdoor warning sirens hookup to a battery backup. Power outages can cause notifications to be delayed or not take place at all.

#### *Existing Mitigation Measures*

- Each spring, Rock County Emergency Management personnel will educate local schools, nursing homes, hospital, etc. on the importance of doing a “Severe Weather Awareness Week” workshop for their staff. This workshop identifies evacuation routes and safety shelters, along with other important information.

## **A7 Earthquakes**

“An earthquake is a sudden motion or trembling caused by an abrupt release of accumulated strain in the tectonic plates that comprise the earth’s crust.”<sup>39</sup> Earthquakes were assigned a hazard rank of low by the planning team.

#### *Locations Affected by the Hazard*

All of Rock County is at equal risk of an earthquake according to the United States Geological Survey (USGS) seismic map of Minnesota. The planning team identified the spatial extent of an earthquake as countywide. It is important to acknowledge that earthquakes are a possibility in Rock County and plan accordingly.

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<sup>39</sup> MN All Hazard Mitigation Plan. Accessed: 5/29/13. Available: [https://dps.mn.gov/divisions/hsem/hazard-mitigation/Documents/2011\\_MinnesotaAllHazardMitigationPlanDraft.pdf](https://dps.mn.gov/divisions/hsem/hazard-mitigation/Documents/2011_MinnesotaAllHazardMitigationPlanDraft.pdf)

### *Extent of the Hazard*

The average magnitude for an earthquake in Minnesota is 3.2. The effects of an earthquake with a magnitude of 3.0 – 3.9 range from a few persons feeling the vibration, especially on upper floors of a building to many people noticing the vibration. Standing motor cars may rock slightly. The potential severity of an earthquake is major according to the planning team.

**Table RA #29**

**Richter Scale, Associated Descriptions**

Less than 2.0	Micro	Micro earthquakes, not felt
2.0–2.9	Minor	Generally not felt, but recorded
3.0–3.9		Often felt, but rarely causes damage
4.0–4.9	Light	Noticeable shaking of indoor items, rattling noises Significant damage unlikely
5.0–5.9	Moderate	Can cause major damage to poorly constructed buildings over small regions. At most slight damage to well-designed buildings
6.0–6.9	Strong	Can be destructive in areas up to about 160 kilometres (99 mi) across in populated areas
7.0–7.9	Major	Can cause serious damage over larger areas
8.0–8.9	Great	Can cause serious damage in areas several hundred kilometres across
9.0–9.9		Devastating in areas several thousand kilometres across
10.0+	Massive	Never recorded, widespread devastation across very large areas.

### *Previous Occurrences of the Hazard*

Rock County has not had any significant earthquake events. “Minnesota has one of the lowest occurrence levels of earthquakes in the United States, but a total of 19 small to moderate earthquakes have been documented since 1860.”<sup>40</sup>

**Table RA #30**

**Earthquakes, Minnesota**

Epicenter (nearest Town)	Date	Magnitude
Rosholt	10/20/1995	3.7
Granite Falls	2/9/1994	3.1
Dumont	6/4/1993	4.1
Walker	9/27/1982	2.0
Cottage Grove	4/24/1981	3.6

<sup>40</sup> MN All Hazard Mitigation Plan. Accessed: 5/29/13. Available: [https://dps.mn.gov/divisions/hsem/hazard-mitigation/Documents/2011\\_MinnesotaAllHazardMitigationPlanDraft.pdf](https://dps.mn.gov/divisions/hsem/hazard-mitigation/Documents/2011_MinnesotaAllHazardMitigationPlanDraft.pdf)

Nisswa	7/26/1979	1.0
Rush City	5/14/1979	0.1
Evergreen	4/16/1979	3.1
Milaca	3/5/1979	1.0
Pipestone	9/28/1964	3.4
Alexandria	2/15/1950	3.6
Detroit Lakes	1/28/1939	3.9
Bowstring	12/23/1928	3.8
Staples	9/3/1917	4.3
Red Lake	2/6/1917	3.8
New Ulm	02/12/1881	3.0-4.0
St Vincent	12/28/1880	3.6
New Prague	12/16/1860	4.7
Long Prairie	Date unknown (1860-61)	5.0

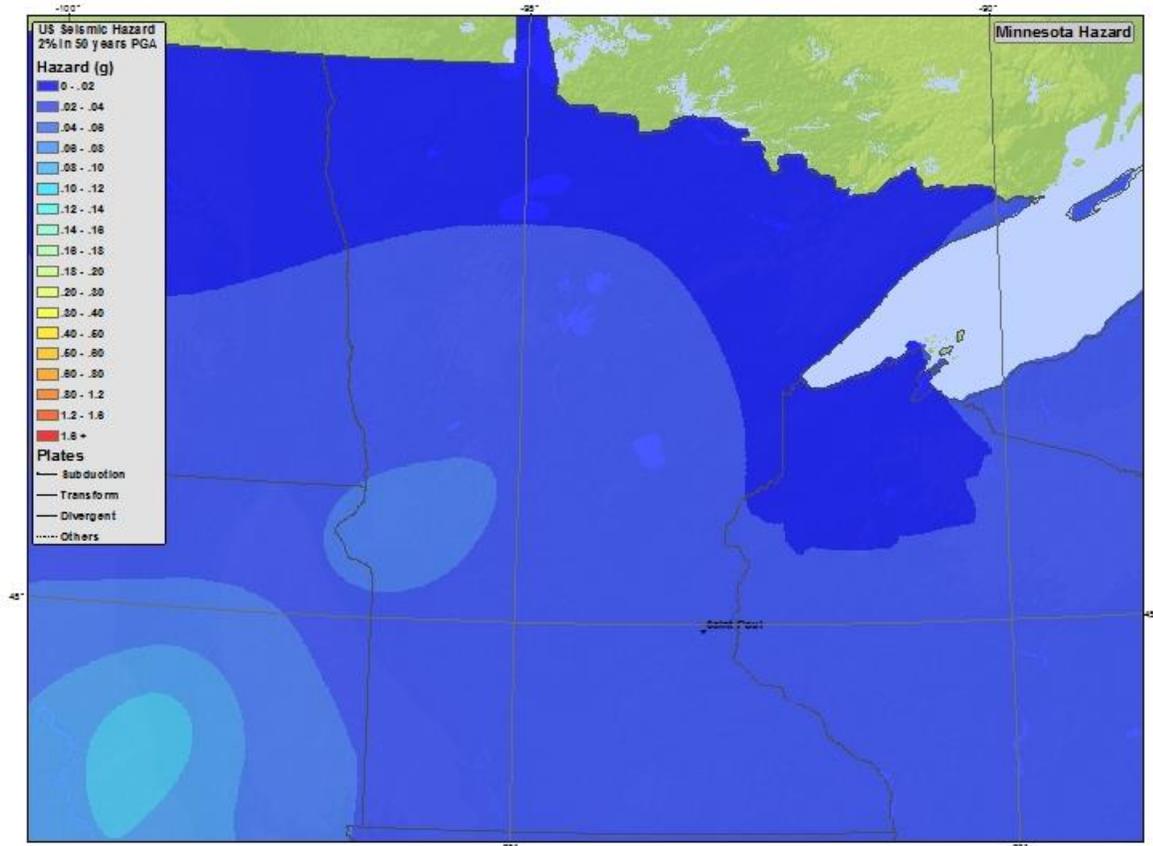
National Climatic Data Center (NCDC) Storm Events database

**Probability of Future Events of this Hazard**

The USGS Seismic Map shows the seismic activity in the United States, the potential for an earthquake of any significant magnitude happening in Rock County is very minimal. The potential frequency of an earthquake in Rock County is unlikely according to the planning team.

**Table RA #31**

**Minnesota Seismic Hazard Map**



Source: USGS Minnesota Seismic Hazard Map

### *Vulnerability*

Since it is unlikely for an earthquake to occur in Rock County, little or no preparation has occurred. There have been multiple earthquakes in Minnesota with a magnitude of 4.0 – 5.0. An earthquake registering a 5.0 on the Richter Scale could occur and cause major damage to poorly constructed buildings. The risk level assigned to earthquakes by the planning team is average.

### *Plans and Programs*

- Rock County does recognize that there is some risk associated with earthquakes, but there are not extensive plans and programs to address the risk.

### *Gaps and Deficiencies*

- The risk associated with an Earthquake in Rock County is perceived as very minimal, so extensive planning does not take place. This lack of preparation could result in an earthquake causing large damages and disorganization in the aftermath of the hazard.

### *Existing Mitigation Measures*

- Past mitigation measure consist of recognizing that an earthquake is possible in Rock County.

## **A8 Fire (Wildfires and Structure Fires)**

According to FEMA, each year in the United States more than 2,500 people die and 12,600 are injured in home fires, many of which could have been prevented.<sup>41</sup> A home fire is reported every 85 seconds in the United States.<sup>42</sup> Fires can occur in any community and pose a year-round threat. Structure fires were assigned a hazard rank of likely by the planning team. Wildfires were assigned a hazard rank of occasional by the planning team.

### *Locations Affected by the Hazard*

All locations in Rock County are at risk to be exposed to this hazard. Incidents of wildfire tend to be localized in southwest Minnesota due to the low burning index in this area. The planning team identified the spatial extent of a wildfire as local. “Burning Index relates the potential amount of effort needed to contain a single fire in a particular fuel type.”<sup>43</sup> Wildfires can start in grasslands or in crops if the conditions are dry.

Incidents of structure fires tend to be contained to one or two buildings, rather than spreading widely. Isolated rural structures can be at risk due to long response times and limited water supplies. The planning team identified the spatial extent of a structure fire as local. However, there are many risks in town, such as one structure fire spreading to adjacent properties.

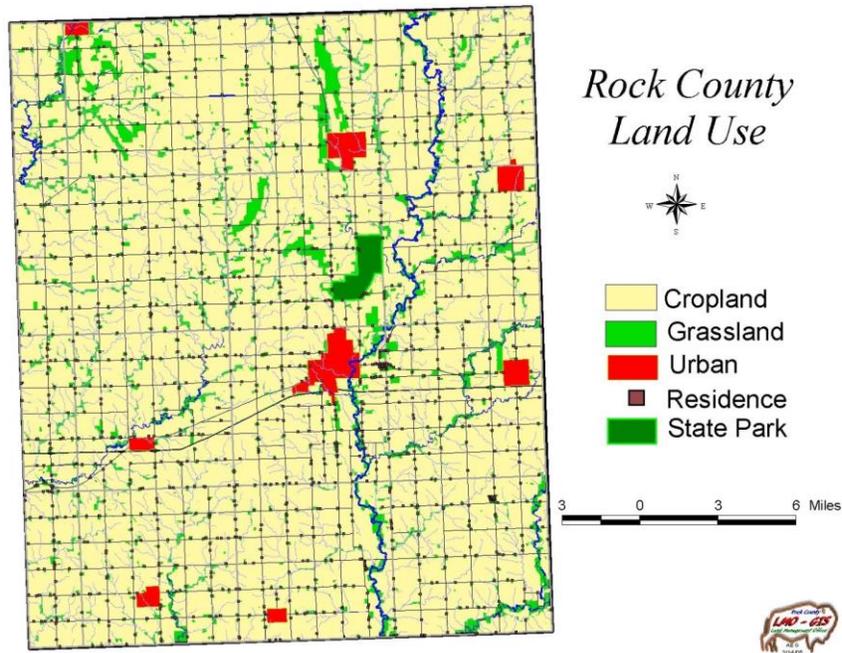
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<sup>41</sup> FEMA. Accessed: 5/2/13. Available: <http://www.ready.gov/fires>

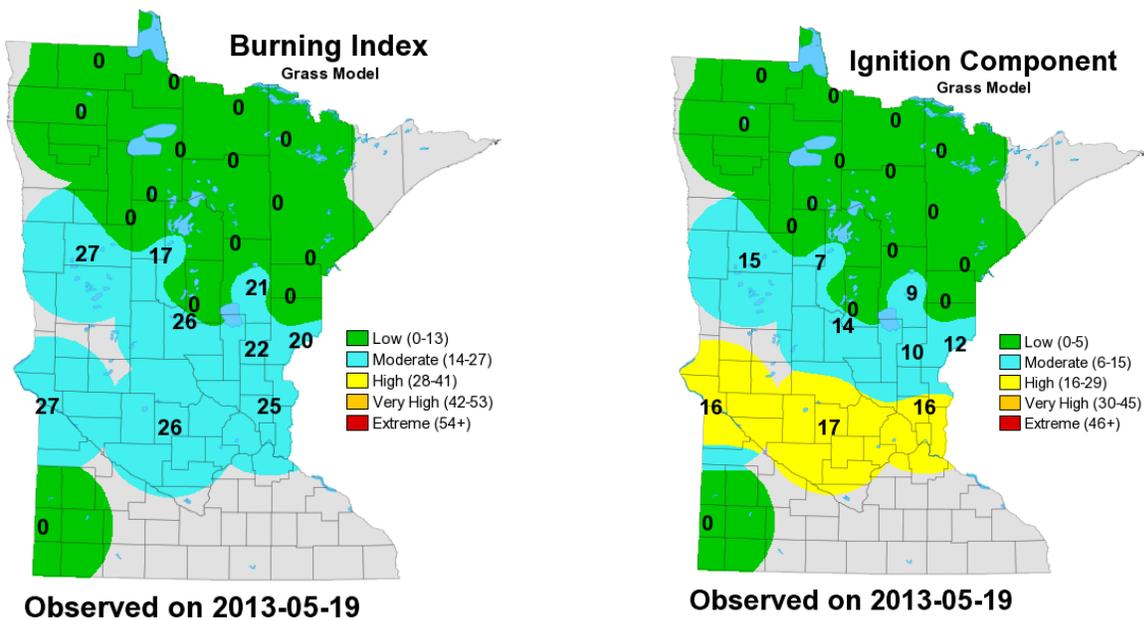
<sup>42</sup> Karter Michael Jr. Fire Loss in the United States During 2011. Accessed: 5/20/13. Available: <http://www.nfpa.org/assets/files/pdf/os.fireloss.pdf>

<sup>43</sup> MN Department of Natural Resources. Accessed: 5/20/13. Available: [http://www.dnr.state.mn.us/forestry/fire/maps/fdi\\_grass.html](http://www.dnr.state.mn.us/forestry/fire/maps/fdi_grass.html)

**Table RA #32**



**Table RA #33**



***Extent of the Hazard***

Structure fires are classified into three categories:

- Residential Structures

- Public and Mercantile Structures
- Industrial Structures

In Minnesota, there were over 152 million dollars in losses due to structure fires in 2010. Almost half of structure fires are caused by cooking accidents (mostly from unattended cooking equipment), with an open flame accounting for 10 percent, heating sources accounting for nine percent, and incendiary accounting for eight percent. Careless smoking was the leading cause of fatalities related structure fires in 2010.<sup>44</sup> The mostly deadly time for a fire is during the night when people are sleeping.

The State Fire Marshall reports that there was \$470,200 in fire-related losses reported in Rock County in 2011. From 2007 through 2010, there was an average of \$266,804 in fire-related losses reported in Rock County per year. The potential severity of a structure fire is minor according to the planning team.

Wildfire occurs when an uncontrolled fire spreads through vegetation, posing danger and destruction of property. Wildfires often begin unnoticed, spread quickly, and can be highly unpredictable. Prairie fires are less common than forest fires in the rugged Northern or Western forested area, but prairie fires can pose a serious threat. The State hazard plan categorizes wildfires into three types:

- Wild land fires in grasslands, brush and forests;
- Interface fires where natural landscapes meet urbanized areas
- Prescribed burns, intentionally set or natural fires that are allowed to burn for beneficial purposes

Factors such as topography, fuel and weather affect wildfire behavior. Fire intensity tends to increase during daytime heating. Large parcels of land left fallow in conservation and natural areas may be susceptible to grass fire even when properly managed. Gusty winds and low relative humidity create conditions for wildfire to spread rapidly in dry grasses and crops. Farm fields with row crops, ditches, and rights-of-way along railroad tracks are also vulnerable, in particular to the errant spark or carelessly discarded cigarette. Prolonged periods of high temperatures and/or high winds increase the risk of wildfires. The potential severity of a wildfire is limited according to the planning team.

#### Relationship to Other Hazards—Cascading Effects

Wildfires can destroy vegetation, which can cause erosion and worsen flooding. There is also the potential for wildfire, structure fires, or vehicle fires to ignite hazardous materials. For example, many farms have anhydrous ammonia and other agricultural chemicals, which can cause serious difficulties for emergency response.

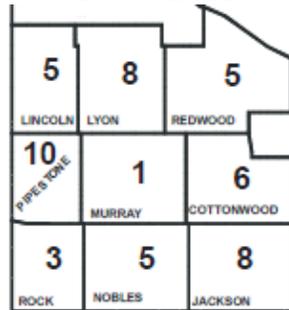
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<sup>44</sup> Minnesota Fire Marshall. June 2011. Accessed 5/20/13. Available: [https://dps.mn.gov/divisions/sfm/public-education/Documents/Monthly%20Newsletter/PubEd%20Newsletter%20\\_June%202011.pdf](https://dps.mn.gov/divisions/sfm/public-education/Documents/Monthly%20Newsletter/PubEd%20Newsletter%20_June%202011.pdf)

### Previous Occurrences of the Hazard

Structure Fires occur periodically throughout Rock County. From 1983 through 2011, there were three civilian deaths related to structure fires in the County.<sup>45</sup> From 2005 through 2011, there were 177 structure fires in the County.<sup>46</sup>

**Table RA #34**                      **Civilian Deaths Related to Structure Fires**  
**1983 - 2011**



Minnesota Department of Public Safety

There were zero wildfires in Rock County from January 2000 through February 2013.<sup>47</sup> The National Weather Service issues Grassland Fire Danger statements from April 1<sup>st</sup> to November 15<sup>th</sup> each year. The DNR is the lead state agency for wildfire response and prevention across the state, and offers training and other resources for local fire departments. DNR conducts controlled burns annually to help manage grass lands.

### Probability of Future Events of this Hazard

There are structure fires every year, so the planning team felt the potential frequency of a structure fire is likely. Wildfires in Rock County are rare, but they can occur under the right conditions. The potential frequency of a wildfire is occasional according to the planning team.

### Vulnerability

Fire is a serious risk that is not always understood. Fires can spread very quickly. It only takes 30 seconds for a small flame to get completely out of control.<sup>48</sup> There is often only time for you to get out of the house safely, before the entire house is engulfed in flames. The risk level assigned to structure fires by the planning team is high, while the risk level assigned to wildfires is limited.

### Plans and Programs

- Rock County is served by local volunteer fire departments that are divided into 10 fire districts.

<sup>45</sup> Fire in Minnesota Annual Report 2011. Accessed: 5/20/13. Available: [https://dps.mn.gov/divisions/sfm/mfirs/Documents/Fire%20in%20Minnesota/Fire\\_In\\_Minnesota\\_2011.pdf](https://dps.mn.gov/divisions/sfm/mfirs/Documents/Fire%20in%20Minnesota/Fire_In_Minnesota_2011.pdf)

<sup>46</sup> MN Department of Safety. Data Request. Received 5/21/13.

<sup>47</sup> NOAA. Storm Events Database. Accessed 5/21/13. Available: <http://www.ncdc.noaa.gov/stormevents/>

<sup>48</sup> FEMA. Learn About Fire: The Nature of Fire. Accessed: 9/6/13. Available: [http://www.usfa.fema.gov/citizens/about\\_fire.shtm](http://www.usfa.fema.gov/citizens/about_fire.shtm)

- Local volunteer firefighters participate in mandatory firefighting training classes offered by the State.
- Plans are in place for fires involving wind towers. Firefighters are instructed to contain the fire from a distance and let the turbine burn.
- Specific fire training is done in regards to ethanol plant fires. The Luverne Fire Department works with the ethanol plant to understand the layout of the plant and what materials are on the grounds.
- Firefighters are offered the opportunity to participate in wildfire training classes offered by the Minnesota Department of Natural Resources-Forestry Department.
- The state electrical inspectors inspect commercial structures for potential fire hazards.
- DNR conducts prescribed (or controlled) burns annually in the county. Controlled burns help to reduce fuel load, while also benefiting native prairie restoration. Controlled burns have to be conducted in the right locations and in the right weather conditions. Coordination between the DNR and local fire departments is done to ensure the controlled burns are contained.
- Local residents are required to acquire burning permits to conduct burns.
- The County and cities can enact burning bans to decrease the potential for structure fires and wildfires.
- Road ditches are maintained to help decrease the chance of a wildfire spreading. MN Stat. 160.232 states: "To provide enhanced roadside habitat for nesting birds and other small wildlife, road authorities may not mow or till the right-of-way of a highway... Exception is from July 31 to August 31, where the entire right of way may be mowed. Statute also states "When feasible, road authorities are encouraged to utilize low maintenance, native vegetation that reduces the need to mow, provides wildlife habitat, and maintains public safety."
- Water storage is also analyzed by fire departments in Rock County to understand water source capacity to fight fires. Water source capacity is going to be improved when a number of the local water systems are going to be hooked up to Lewis and Clark Regional Water System in 2014. The City of Luverne also has a plan in place to increase the water storage capacity of the city by 300,000 gallons.
- Fire departments in Rock County keep up to on road closures so efficient routes can be used to reduce response times.
- New developments in Rock County are required to have streets or alley ways wide enough to sufficiently handle the size of a modern fire truck.
- Mutual Aid Agreements are in place between police forces, fire districts and ambulance districts to ensure adequate emergency services in Rock County. Mutual Aid Agreements create agreement among emergency responders to lend assistance across jurisdictional boundaries.

### *Gaps and Deficiencies*

- An increasing number of properties are used for recreation or conservation. These properties may not be monitored frequently, which can result in overgrowth and an increased fire risk. Managing properties effectively can reduce the risk of structure and wildfires. Effective property maintenance can include cutting tall grass, thinning trees, prescribed burning, and removal of low-hanging branches around structures as needed.

- Keeping local fire departments staffed is becoming an issue. Local fire departments are getting older, and there are less young residents volunteering for the departments. Availability is also a concern for the local fire departments. A number of Rock County residents work outside the county, so availability is an issue.
- Local volunteers' capabilities to address special fire hazards, such as fires in tall wind turbines and ethanol fires. Training is done in regards to wind towers and ethanol plants, but these two structures pose unique risks.
- Compliance with burn barrel regulation.
- Rock County is a rural county with not an extensive amount of ground water sources. Barn fires require between 5 and 15 tankers of water, each 2,000 gallons. This requires firefighters to pull water from multiple locations depending on the location of the fire. Pulling water from multiple sources affects response times and the ability to contain the fire.
- There is only one dry hydrant available in Rock County. This hydrant is located in the City of Hills.

#### *Existing Mitigation Measures*

- Road authorities cut back road ditches and bale where appropriate. This helps to limit the potential of a wildfire spreading.
- Road Authorities maintain the right-of-way of roadways in Rock County. This helps to limit tree growth and farm fields from approaching onto public right-of-way of roadways.
- Rock County participates in the nationally coordinated "Firewise Program" to increase resident education.
- Snow removal ordinances are in place to keep fire hydrants accessible.
- Public buildings are constructed to include fire/smoke alarms and sprinkler systems.
- Coordinate and establish mutual aid agreements with fire districts within and outside of the county to assist in fighting fires in Rock County.
- Rural water systems in Rock County are putting in hydrates where there is adequate flow. This will help to improve firefighting capabilities in rural areas in Rock County.

### **Manmade Hazards**

Manmade hazards are hazards caused by humans rather than nature. These hazards are primarily caused directly by people or in the case of disease spread person to person, rather than by natural events. The nature of this hazard covers acts both intentional and accidental. Man-made hazards considered in this plan include terrorism, hazardous materials and meth labs, public health emergencies, and risks to transportation infrastructure.

### **B1 Civil Disturbance and Terrorism**

Several large-scale man-made disasters have highlighted the need to address terrorism along with civil disturbance. Timothy McVey was in Minnesota conducting surveillance on the Whipple Federal Building before he decided to attack the Murrah Federal Building in Oklahoma City. The 2001 World Trade Center and Pentagon attacks demonstrate the need to protect our citizens, in large cities and small. Civil disturbance and terrorism was assigned a hazard rank of moderate by the planning team.

FEMA's *Integrating Manmade Hazards into Mitigation Planning* guide explains:

*The term “terrorism” refers to intentional, criminal, malicious acts. There is no single, universally accepted definition of terrorism, and it can be interpreted in many ways. Officially, terrorism is defined in the Code of Federal Regulations as “...the unlawful use of force and violence against persons or property to intimidate or coerce a government, the civilian population, or any segment thereof, in furtherance of political or social objectives.” (28 CFR, Section 0.85). The Federal Bureau of Investigation (FBI) further characterizes terrorism as either domestic or international, depending on the origin, base, and objectives of the terrorist organization; however, the origin of the terrorist or person causing the hazard is far less relevant to mitigation planning than the hazard itself and its consequences.*

For the purposes of this plan, civil disturbance and terrorism refers to the use of:

- Weapons of Mass Destruction (WMD), including biological, chemical, nuclear, and radiological
- Arson, incendiary explosive, and armed attacks
- Industrial sabotage and intentional hazardous materials releases
- Cyber Terrorism
- Staging grounds for acts to take place in other areas

Within these general categories, however, there are many variations. Particularly in the area of biological and chemical weapons, there are a wide variety of agents and ways for them to be disseminated.

### ***Locations Affected by the Hazard***

Terrorism can take the form of both the act of taking out a target to the planning that goes into an attack. All locations in Rock County are at risk from this hazard. Cities, public and private buildings, churches, and schools may all be targets for attacks. Due to the rural nature of Rock County, rural farmsteads may be inviting staging grounds for terroristic groups or individuals. Training and planning could take place in these rural settings due to the seclusion. The planning team identified the spatial extent of civil disturbance and terrorism as local.

### ***Extent of the Hazard***

Protests and demonstrations in the United States tend to be scheduled peaceful gatherings. Civil disturbances can erupt if liberties are threatened by the government or if excessive force is used. Public protests and demonstrations can lead to windows being smashed, dumpster fires being lit, cars being overturned, and demonstrators and officials being injured. The potential severity of a civil disturbance or terrorist event is minor according to the planning team.

### ***Domestic Concerns***

The Minnesota All Hazard Mitigation Plan (MAHMP) defines domestic terrorism as involving groups or individual whose unlawful activities are directed at elements of our government or population without foreign direction. Domestic Preparedness focuses on mitigating these activities without foreign direction.

The US Department of Homeland Security (DHS) and the FBI classify domestic threats in four broad categories—special interest, rightwing, leftwing, and lone wolf. While current monitoring is typically classified at the Law Enforcement Sensitive (LES) level, the MAHMP notes that there are specific areas of concern within Minnesota. Two examples specifically cited in the state plan (p.172):

- *Both lone gunmen and small organized cells have planned and carried out attacks in public places, such as the school shootings at Red Lake (2005).*
- *Minnesota’s growing migrant worker populations, including East African, South East Asian, and other ethnic groups, have numerous documented affiliations with criminal/gang-related activity. As well, the American Nazi Party has been active within the state.*

### International Concerns

Threats from abroad are typically addressed at the federal level. The state Mitigation Plan defines international terrorism as involving groups or individuals whose terrorist activities are foreign-based and/or directed by countries or groups outside of the United States or whose activities transcend national boundaries. The state plan notes (p 172):

*The local FBI Joint Terrorism Task Force (JTTF) is among the most active in the nation, addressing the issue of overseas financial transfers and groups such as Al Qaeda, Hizballah, Hamas, Al-Ittihad al-Islami and Islamic Jihad. These cases provide examples that the threat of terrorism warrants attention and consideration.*

### Relationship to Other Hazards—Cascading Effects

The nature of domestic or international terrorism is inherently unpredictable. Cascading effects depend on the specifics of the event. Release of anthrax or other biological agents could lead to animal and crop disaster. Small pox has also been threaten as a biological agent (refer to the section Public Health Emergencies for more information).

Destruction of a bridge would lead to a crisis with transportation infrastructure. Destruction of an industrial or farm chemical site could lead to a hazardous material being carried by water and wind to other areas, having far reaching effects. A bomb or other explosive device could lead to fires.

### *Previous Occurrences of the Hazard*

Rock County has been fortunate to not have experienced any major incidents that could be classified as domestic unrest or terrorism.

There were two bomb threats that occurred in Rock County during 2011. The first bomb threat occurred at the Luverne High School and the second occurred at the Hills Beaver Creek High School. Even though no major incident has taken place, the team did discuss instances in other similar communities in Minnesota and across the rural Midwest. Local law enforcement trains for prevention and response to this risk and participates in regional collaborations to meet the threat.

### *Probability of Future Events of this Hazard*

The potential frequency of a civil disturbance or terrorist event is unlikely according to the planning team. Due to the rural nature of Rock County, it is more likely for the county to be used as a staging ground for a terrorist event.

### *Vulnerability*

The unpredictable nature of terrorism creates a crisis between liberty and safety. A balance has to be struck between letting people live their lives and trying to keep people safe. Terrorism is a serious risk, so mitigation needs to be strategic and focused. The risk level assigned to civil disturbance and terrorism by the planning team is average.

### *Plans and Programs*

- Rock County Emergency Operations Plan (EOP) is the primary plan for responding to both natural and man-made hazards. The County and each city must constantly monitor and update their EOP as needed.
- Sanford Luverne Medical Center has plans in place and has participated in System exercises specifically regarding this type of incident to include Local, Regional, State and System agency planning and mitigation. Sanford Luverne Medical Center has experienced first-hand localized threat to facility and adjusted facility plans and mitigation accordingly.
  - Local, State, and Federal Law Enforcement monitor and analyze possible terrorist threats.
  - Local schools have plans in place and have drills to practice the response actions in the plans.
  - Local law enforcement has plans in place to call upon regional and state assets to help with terrorism and civil disturbances. This consists of a Community Emergency Response Team (CERT) from the Twin Cities, Chemical Assessment Team (CAT) from Marshall, bomb squad from the Twin Cities, and the National Guard.

### *Gaps and Deficiencies*

- The County is currently in the process of updating radio equipment and networks to be compliant with federal regulations. Most municipalities in Rock County have switched over to the new federally mandated narrow-band system warning siren system. Without a Narrow-Band Decoder older warning sirens will not be able to receive the new signal and would have to be switched on manually.
- The CERT team and bomb squad are out of the cities which make their response times long. Rock County is working to be able to have the CERT team and bomb squad out of Sioux Falls cover Rock County, but state lines are causing problems for establishing this system.
- Human-induced events, like terrorism, are not addressed in the emergency plans specifically.

### *Existing Mitigation Measures*

Local, regional, state, and national efforts are working together to combat hazards associated with terrorism and civil disturbances. These efforts include but are not limited to training, sharing of resources, planning, and participating in the statewide domestic preparedness strategy.

## **B2 Hazardous Materials and Meth Labs**

Hazardous materials are found everywhere, from farm to home. A hazardous material is any item which has the potential to cause harm to humans, animals, or the environment, by itself or through interaction with other factors. Spilled material can be costly to clean up and may render the area of the spill unusable for an extended period of time. Water supplies may become contaminated by the introduction of point and non-point source pollutants into public ground water and/or surface water supplies. Hazardous materials and meth labs were assigned a hazard rank of moderate by the planning team.

### *Locations Affected by the Hazard*

All locations in Rock County are affected by this hazard. The planning team identified the spatial extent of hazardous materials and meth labs as countywide. In Rock County there are a number of manufacturers who use and or produce a number of hazardous chemicals. I-90 runs through the county and this major transportation corridor has a high volume of semi-truck traffic. The loads coming to the county and through the county varies, but some of these loads could pose as a serious chemical hazard if a crash would take place. Oil tankers are one example.

Many chemicals are also used daily in agriculture, putting farms and rural communities at risk. Anhydrous ammonia is one dangerous chemical used in agriculture that if not handled properly can be very dangerous. Methamphetamine (commonly referred to as “meth”) manufacturers have targeted isolated rural homes and abandoned farm sites for illegal drug labs. However, these individuals also have been known to set up labs in their car or basement in town, so populations in town are equally at risk of a meth lab explosion and other hazards.

### *Extent of the Hazard*

Federal law defines certain hazardous chemicals, and requirements for emergency planning for facilities at which hazardous substances are present. According to the Minnesota AHMP, approximately 6,000 facilities across the state report their storage of hazardous chemicals to the Minnesota Department of Public Safety’s Emergency Planning and Community Right-To-Know Act (EPCRA) Program, US Environmental Protection Agency (EPA), and their local fire department. Within Rock County there are 26 facilities that report hazardous material storage to state and local authorities. These 26 facilities are known as 302 facilities after EPCRA Section 302(c) that require state and local authorities to develop chemical emergency preparedness and response capabilities through better coordination and planning with local businesses. The potential severity of hazardous materials and meth labs is minimal according to the planning team.

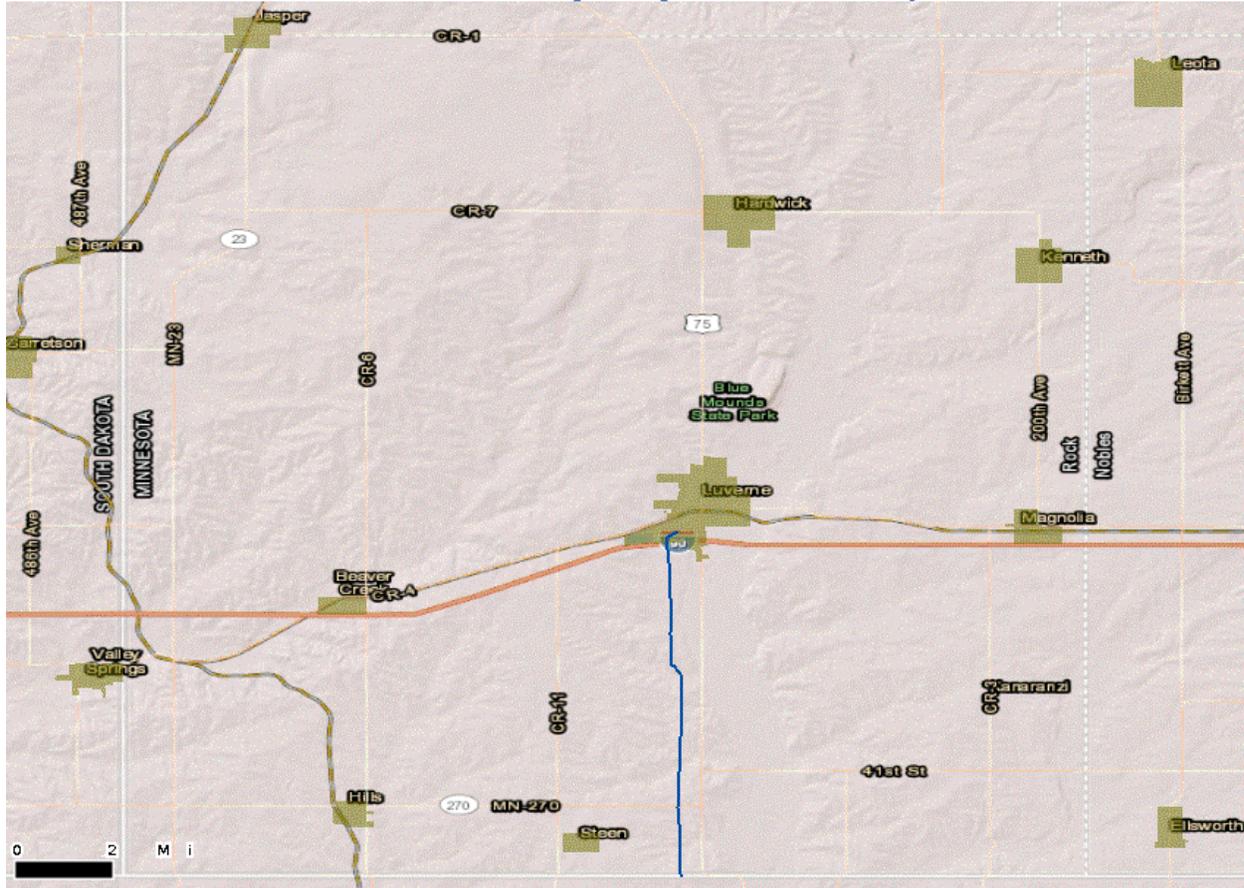
### *Chemicals*

Land use activities and farming practices can have significant impacts on vulnerable aquifers. Aquifers in the region are often shallow and have a high potential of contamination from nitrate leaching. Deeper aquifers may not be suitable for water supplies due to naturally occurring contaminants, such as sulfur, or because of slow well recharge. Nitrates have been identified as a specific problem in the region.

## Pipelines

The State Fire Marshall's Pipeline Safety Team (SFMPST) oversees pipeline operations in Minnesota. The National Pipeline Mapping System identifies one Hazardous Liquid Pipeline traversing Rock County south of Luverne and parallel to U.S. Highway 75. There are also several Gas Transmission Pipelines in Rock County.

**Table RA #35** **Hazardous Liquid Pipeline, Rock County**



Source: National Pipeline Mapping System

## Meth

Meth is a powerful stimulant drug that is similar to a family of drugs called amphetamines. During the production process there are a number of dangerous chemicals that are mixed that can cause dangerous fires and explosions. According to the Rand Drug Policy Research Center, amphetamines are the most widely used illicit drug worldwide, after marijuana.<sup>49</sup> Information in regional data systems and feedback from law-enforcement agencies and county hospital (Sanford Luverne Medical Center) indicate that meth is a significant problem facing the populations they serve.

<sup>49</sup> Rand. Accessed: 5/29/13. Available: [http://www.rand.org/pubs/research\\_briefs/RB9438/index1.html](http://www.rand.org/pubs/research_briefs/RB9438/index1.html)

- With I-90 and a Class I railroad crossing the county, hazardous materials may be traveling through the area at any time. This plan only outlines a couple of scenarios related to the extent of the hazard. This is not an exhaustive inventory since a number of chemicals and substances that are hazardous are numerous.

#### Relationship to Other Hazards—Cascading Effects

Hazardous materials incidents may cause or occur in conjunction with a fire. This could result in the fire spreading at a fast rate and can make containing and fighting the fire more difficult. Specialized equipment may be required to combat the fire caused or in conjunction with a hazard material.

An incident involving hazardous materials on the roads, rail, or in the air can lead to a water contamination issue. Well Head Protection Plans discuss the infiltration of chemicals leaking into ground water aquifers. The issue of infiltration could be multiplied by a load of hazardous materials on I-90 being in a crash and causing contamination to the ground water.

Hazardous materials facilities or hazardous materials in transit may also become a target for vandalism or terrorist activity. Most hazardous materials in transit are marked, but there is an unknown volume of government materials being shipped that are not marked due to security reasons. Since I-90 traverses through Rock County, there is an increased risk of a semi-truck crash occurring that is transporting hazardous materials.

#### *Previous Occurrences of the Hazard*

Hazardous material incidents can occur in different locations:

- Fixed site facilities
- Highway and rail transportation
- Air transportation
- Pipeline transportation

There have not been any major hazardous materials incidents in Rock County. Hazardous material incidents also include the discovery of underground storage tanks and other minor incidents. On September 5th, 2013, the underground gas tanks at the former Korner Gas Stop in Luverne were taken out. This is required procedure now by EPA now but in the past barrels and other materials were buried and discarded. It is unknown how many hazard materials are buried in Rock County.

#### Meth

There have been four Methamphetamine laboratories found in Rock County Since 2001.<sup>50</sup> Meth labs are a concern in the region and an incident at a lab could result in a major hazard material incident. People have sought treatment after using and/ or cooking meth by either self-reporting or simply being left at the Sanford Luverne Medical Center.

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<sup>50</sup> Rock County Sheriff's Office. Data Request. Received 6/25/13.

A number of hazardous chemicals are used in the production process. An explosion and fire could result in a number of chemicals being emitted into the air and the ground water. There is also chemical byproduct from cooking meth that is often discarded. This chemical byproduct could infiltrate the ground water and cause ground water contamination.

#### *Probability of Future Events of this Hazard*

The potential frequency of hazard events involving hazardous materials and meth is likely according to the planning team. With I-90 traversing through the county, there is a high probability that there will be a crash involving hazardous materials.

As traditional illegal drugs become scarcer due to the war on drug, the price for these drugs will increase. It is likely that synthetic drugs like meth will increase in popularity since they can be produced locally and are less expensive. If the number of meth labs increase due to the increase in demand, the probability of a hazardous event involving a meth lab increases.

#### *Vulnerability*

With I-90 and a Class I railroad crossing the Rock County, hazardous materials may be traveling through the area at any time. This volume of hazard materials traversing Rock County poses a serious risk of a hazardous material incident occurring. The risk level assigned to hazardous materials and meth labs by the planning team is high. Precautionary measures are in place to prevent an incident from occurring, but a crash on I-90 involving a tanker of hazardous materials could result in a major hazardous material incident. A major incident could have large cascading effects since almost all water for public consumption in Southwest Minnesota is sourced from underground aquifers, rather than surface waters.

#### *Plans and Programs*

- Emergency responders are trained to handle certain types of hazardous materials, and are trained to contact regional and state response teams for other hazardous materials.
- Wellhead Protection Plans are in place to address threats to public water supplies. Wellhead protection activities prevent well contamination by managing potential contaminant sources in the land area that contributes water to the well.
- For hazardous material cleanup, Rock County contracts with the Chemical Assessment Team (CAT) out of Marshall. From 1992 through 2012, Rock County had a Hazardous Materials (HAZMAT) Response Team. The team was responsible for responding to incidents involving hazardous materials. The county no longer has the certified staff, but hazardous material cleanup equipment is still housed in Rock County.
- In Rock County, Meth lab cleanup is handled by a HAZMAT Team, but the cost of the cleanup is billed to the property owner.
- A number of store owners currently report to the sheriff's office when products are sold that are used in making meth.
- Sanford Luverne Medical Center has a stationary decontamination shower and a portable decontamination shower and enough personal protective equipment to

decontaminate patients for approximately one hour. The facility has access to other decon assets and resources through the System and Regional partners which can be deployed with a phone call. In April, 2013 the facility provided drug education to facility staff which included EMS on drugs, reactions and response.

- MnDOT has several departments to address hazardous materials, freight, emergency management and disaster preparedness. The District State Aid Engineer is a good contact for access to those resources.

#### *Gaps and Deficiencies*

- Emergency responders are in need of specialized equipment to deal with hazardous materials. This equipment is often expensive, single use items. A rural county like Rock County often has to share this type of equipment with neighboring counties.
- The sheriff's office and local fire departments are trained to handle a number of hazardous materials, but for meth labs and other hazard materials a hazmat certified cleanup team is required. The Rock County Sheriff's Office does not have the trained personnel to handle hazardous material cleanup. Nobles County does have personnel trained and equipped to handle meth labs and other hazardous materials.

#### *Existing Mitigation Measures*

- Plans are in place specifying hazardous material cleanup and protocol for who should be contacted for regional and state assistance.

### **B3 Public Health Emergencies**

As technology developed people started to demand sewer systems, running water, and waste disposal. This helped to prevent the spread of disease and helped to maintain a healthier public. As building technology also developed people started to demand safe and well-built buildings. This made it safer for people to live and work. Local government saw these demands and has tried to create uniformity through regulation. Through this government regulation the public health service evolved.

Public health services today face new challenges to counter ever-evolving disease. The Minnesota Department of Health (MDH) works with Department of Public Safety (DPS) and other agencies to prepare for large-scale emergencies of many types. Infectious diseases can present wide threats to many people, or very narrow threats to highly susceptible populations. Public health emergencies were assigned a hazard rank of moderate by the planning team.

- An "epidemic" is a disease that occurs suddenly in numbers clearly in excess of normally expected rates.
- A "pandemic" is an epidemic that spreads across a large region.

#### *Locations Affected by the Hazard*

People throughout Rock County are equally affected by this hazard. The planning team identified the spatial extent of public health emergencies as countywide.

### *Extent of the Hazard*

“Infectious diseases have the potential to affect any form of life.”<sup>51</sup> Some infectious diseases that were thought to have been eradicated have re-emerged and new strains present threats to the populations and require monitoring. Different strains of the influenza virus emerge seasonally and require modifications to antibiotics and vaccinations. The potential severity of public health emergencies is major according to the planning team.

Infection diseases in livestock also pose a significant risk. Food supplies could be affected and the livelihood of the owners of livestock will be impacted. Certain infectious diseases are considered more likely to present a public health emergency hazard in rural Minnesota.

Many infectious diseases are preventable and controllable. Measles, Rubella, Polio, and Pertussis are all vaccine preventable diseases. These diseases are no longer common, but a single case can cause a public health emergency. Doctors are often not looking for these diseases, so they may be overlooked which can cause the disease to spread. Also, more parents are electing not to vaccinate which puts the entire population at greater risk.

Arboviral Encephalitis commonly known as West Nile Virus is a mosquito transmitted disease that can cause encephalitis in people and horses. This virus was usually found in mosquitos and birds in Africa and Europe. However, West Nile encephalitis was reported in New York City in 1999.<sup>52</sup> In 2012, there was one death in Minnesota associated with West Nile Virus. In Rock County there was one donor who was reported as being a carrier of West Nile Virus.<sup>53</sup>

In 2009, the Centers for Disease Control and Prevention (CDC) started taking larger steps to combat H1N1 (sometimes called “swine flu). H1N1 was first detected in people in the United States in April 2009. This virus has the potential to spread fast and can cause severe illness in people. The virus can spread person to person, much in the same way the seasonal influenza is spread.<sup>54</sup>

Smallpox has not been an issue in the United States for more than 50 years. Due to the threat of terrorism, this disease has been thrust to the forefront of public concern and fear. Smallpox is a serious, contagious, and sometimes fatal infectious disease. There is no specific treatment for smallpox.

### *Relationship to Other Hazards—Cascading Effects*

A public health emergency will affect the ability to respond and recover from any other natural or manmade hazard. Plans need to be in place to control the potential for civil disturbance in a severe public health event. If an epidemic event were to occur, deaths could be in the many hundreds of

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<sup>51</sup> MN All Hazard Mitigation Plan. Accessed: 5/29/13. Available: [https://dps.mn.gov/divisions/hsem/hazard-mitigation/Documents/2011\\_MinnesotaAllHazardMitigationPlanDraft.pdf](https://dps.mn.gov/divisions/hsem/hazard-mitigation/Documents/2011_MinnesotaAllHazardMitigationPlanDraft.pdf)

<sup>52</sup> Minnesota Department of health. Accessed: 8/19/13. Available: <http://www.health.state.mn.us/divs/idepc/diseases/westnile/>

<sup>53</sup> Minnesota Department of health. Accessed: 8/19/13. Available: <http://www.health.state.mn.us/divs/idepc/diseases/westnile/wnvmap12.pdf>

<sup>54</sup> Center for Disease Control and Prevention. Accessed: 5/29/13. Available: <http://www.cdc.gov/h1n1flu/qa.htm>

thousands across the nation. If the health of the general public is perceived to be threatened on a large scale, riots or states of lawlessness are a possibility.

### *Previous Occurrences of the Hazard*

Many infectious diseases are preventable and controllable. Standard procedures involve collection of accurate assessment data, outbreak detection and investigation, and development of appropriate control strategies based on specific epidemiological data. These activities require close collaboration between health care providers, clinical laboratories, state and local health departments, and federal agencies.

There has been one major public health emergency in Rock County in recent years. There was an outbreak of Legionnaires' disease in Rock County during the 1990s. Legionnaires' disease is a severe form of pneumonia that is caused by a bacterium known as legionella. Legionnaires' disease causes lung inflammation, and if left untreated can be fatal. Legionella bacterium can also cause Pontiac fever, a milder illness resembling the flu. Following this event, legionella testing has remained a standing order when considering forms of pneumonia within Rock County residents due to this particular outbreak.

Seasonal influenza is a concern that is planned for every year. There have been not major outbreaks in Rock County. Annually, there are a number of people who get the flu, but Rock County has not faced any major outbreaks.

The annual seasonal influenza usually peaks February. Influenza Type A virus has caused three pandemics in the past century worldwide with significant loss of life. Pandemics are caused by the unstable nature of influenza type A, and new subtypes that appear through genetic drifts or shifting.

### *Probability of Future Events of this Hazard*

People contract seasonal influenza every year. Other diseases occur regularly. The potential frequency of a public health emergency is occasional according to the planning team.

### *Vulnerability*

If an outbreak occurs that is contagious it is critical to quarantine the population affected by the disease. This is often difficult since the outbreak may go unnoticed for a period of time. Certain mutations of a disease are also becoming more resistant to antibiotics. This is particularly true regarding influenza type A. Younger and older population cohorts are at a higher risk for acquiring a disease. The risk level assigned to a public health emergency by the planning team is average.

### *Plans and Programs*

- County Emergency Management is working closely with Public Health and local healthcare facilities to mitigate and effectively respond to potential Public Health Emergencies.
- Sanford Laverne Medical Center has written plans for Investigation of Suspected Outbreaks, Significant Epidemiologic Occurrence or Sentinel Events, Pandemic Influenza, Flu Center, and Reporting of Communicable Diseases. Plans also include an All Hazard, Surge Capacity Planning Procedure, Mass Fatality Plan, and a Point of Distribution Plan.

- Nobles and Rock Counties had formed a joint coalition utilizing Incident Command to oversee the H1N1 Pandemic Flu activities at that time which consisted of mitigation planning, formation of a JIC and managing resources for both counties. A similar joint coalition could now be formed with the 6 counties that comprise the Southwest Health and Human Services Agency.
- Sanford Luverne Medical Center did staff education on smallpox and worked with Local Public Health and the System in the early 2000 to vaccinate some essential staff for the counties and within the System to prepare for a potential smallpox incident.
- Sanford Luverne Medical Center has performed multiple points of distribution events to include a mass vaccination clinic for mumps in May, 2006. Exercising and mitigation planning included a vaccine transport and receipt working with Local Public Health and MDH.
- Sanford Luverne Medical Center has performed staff vaccination and tracked percentage vaccinated each year participating in the MDH FluSafe Program with vaccination efforts of greater than 90% for several years. In 2013, the System implemented mandatory employee vaccination with the Sanford Luverne Medical Center reaching 99% for influenza year 2013-2014.

#### *Gaps and Deficiencies*

- An aging population puts the county at greater risk of Public Health Emergencies. The population cohort 85 plus has increased by 22.4 percent from 2000 to 2010.<sup>55</sup> As more of the population is dependent on the younger population cohorts to help them, it puts a greater need on the rest of the population to stay health. The older population is dependent and requires services the rest of the population provides. If healthcare staff becomes sick that will put a strain on the care capacity of assistant living facilities, other elderly care facilities, and general care facilities.

#### *Existing Mitigation Measures*

A health bulletin is going to be distributed using the new notification system via text and email. This notification system will be a great tool to get information out fast regarding public health emergencies and protocol to help stop the spread of infection diseases.

## **B4 Transportation Infrastructure and Transportation Crashes**

Infrastructure is a critical need for the operation and competitiveness of a city, county, or region. Infrastructure is the skeleton and nervous system of a community. Infrastructure includes roads and bridges, rail, air and transit.

Minnesotans move goods and people on a variety of transportation networks. In the wake of the Interstate 35W bridge collapse, the 2008 update of the Minnesota AHMP focused attention on the status of bridges across Minnesota. Transportation infrastructure and transportation crashes were assigned a hazard rank of moderate by the planning team.

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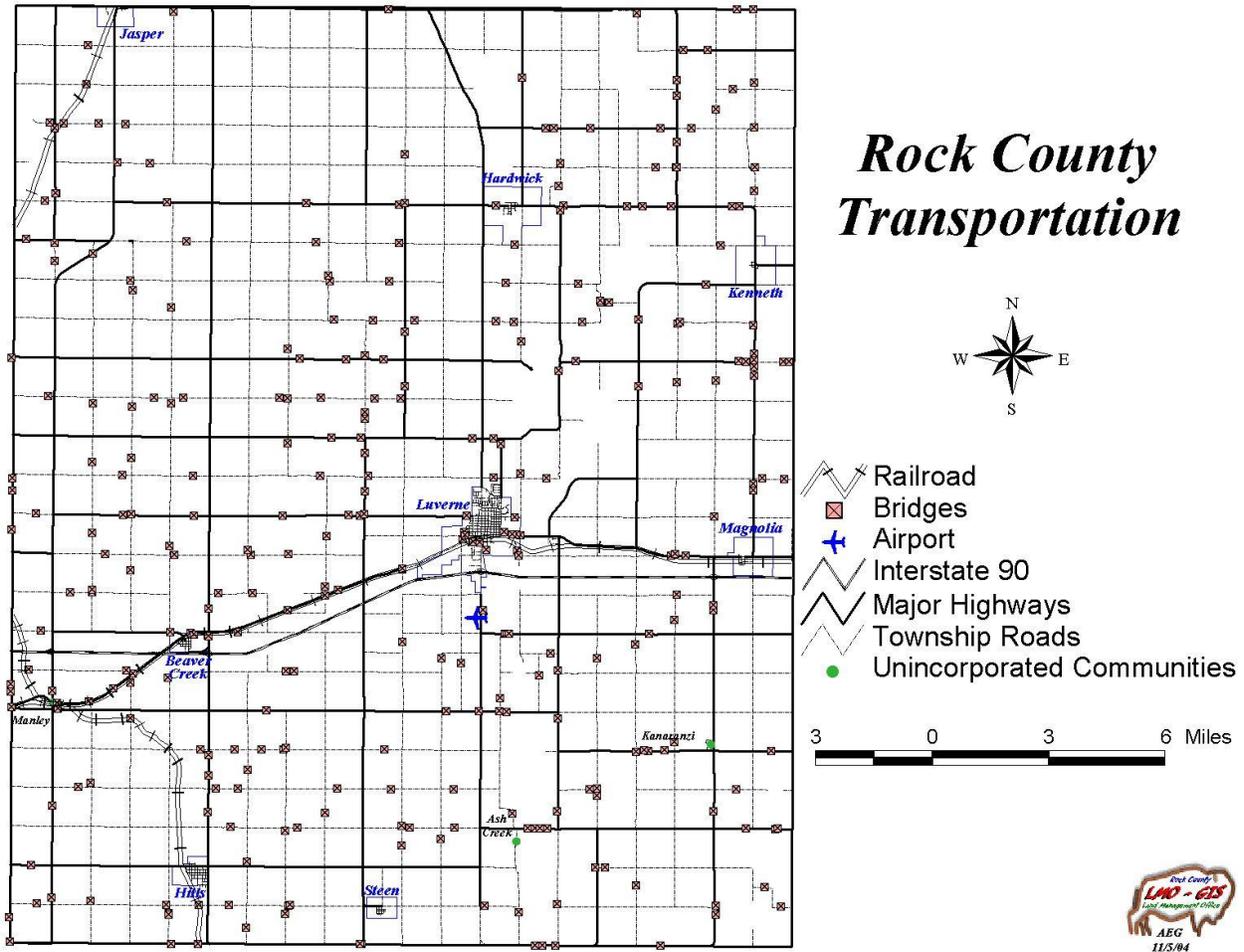
<sup>55</sup> U.S. Census 2000, 2010. Accessed: 6/3/13. Available: <http://factfinder2.census.gov>

### Locations Affected by the Hazard

Roads, bridges, rails, landing strips, and other transportation infrastructure wear out. This requires our public infrastructure to be continually upgraded and inspected. Numerous locations in Rock County have the potential to be affected by Transportation Infrastructure hazards.

There are hundreds of miles of roadway to be monitored and maintained in Rock County. There are gravel roads, highways, and an interstate traversing Rock County that all require different monitoring and upkeep. It is critical keep the system in a good state of repair, so people and goods can travel safely. The planning team identified the spatial extent of transportation infrastructure and transportation crashes as local.

Table RA #36

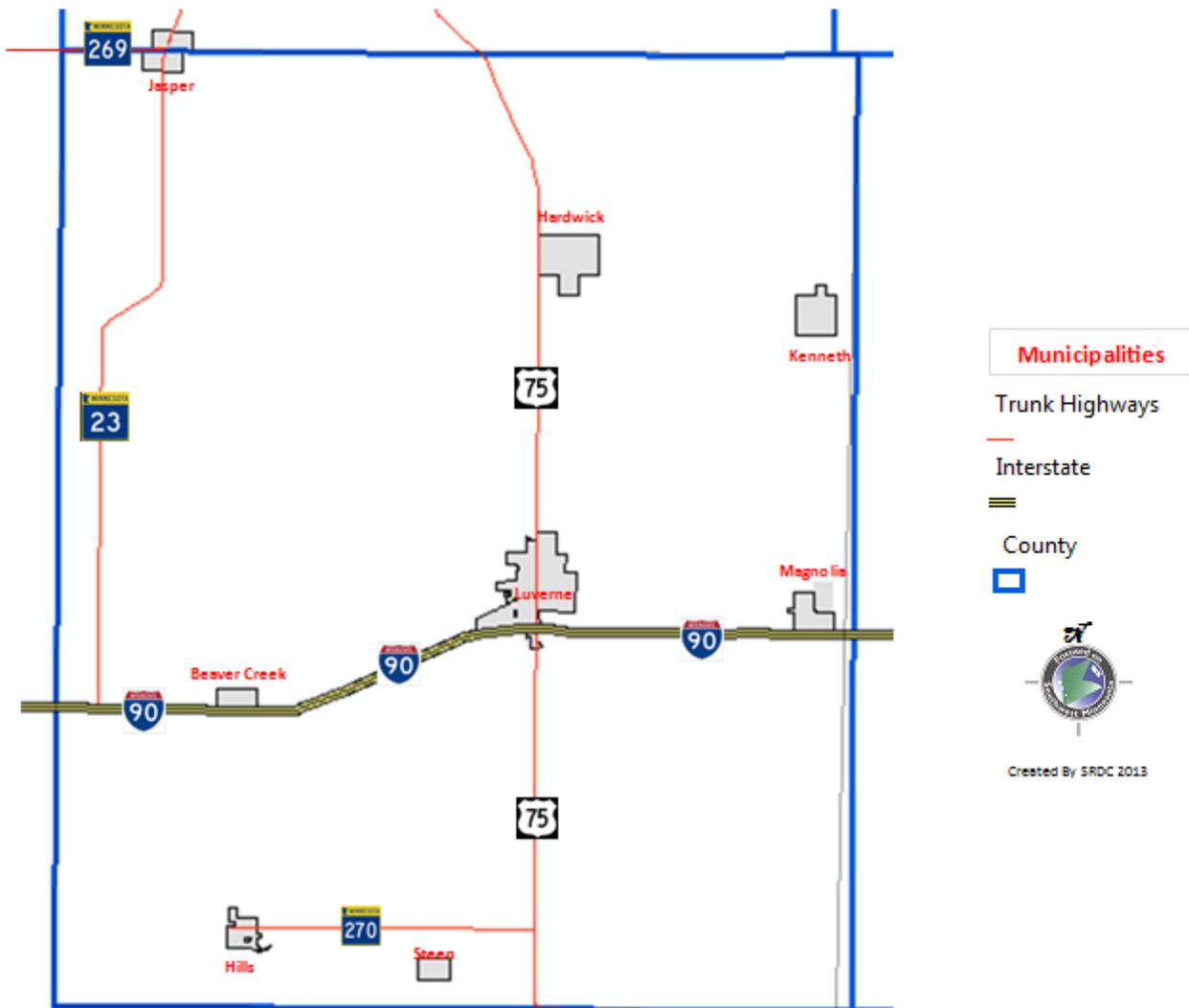


### Roads

Major roadways in Rock County include I-90 and several trunk highways. The trunk highways include U.S. 75, Minnesota 23, and Minnesota 270. These roadways connect the major population areas in the county and serve as vital farm to market routes.

Table RA #38

Trunk Highways, Rock County



*Railroads*

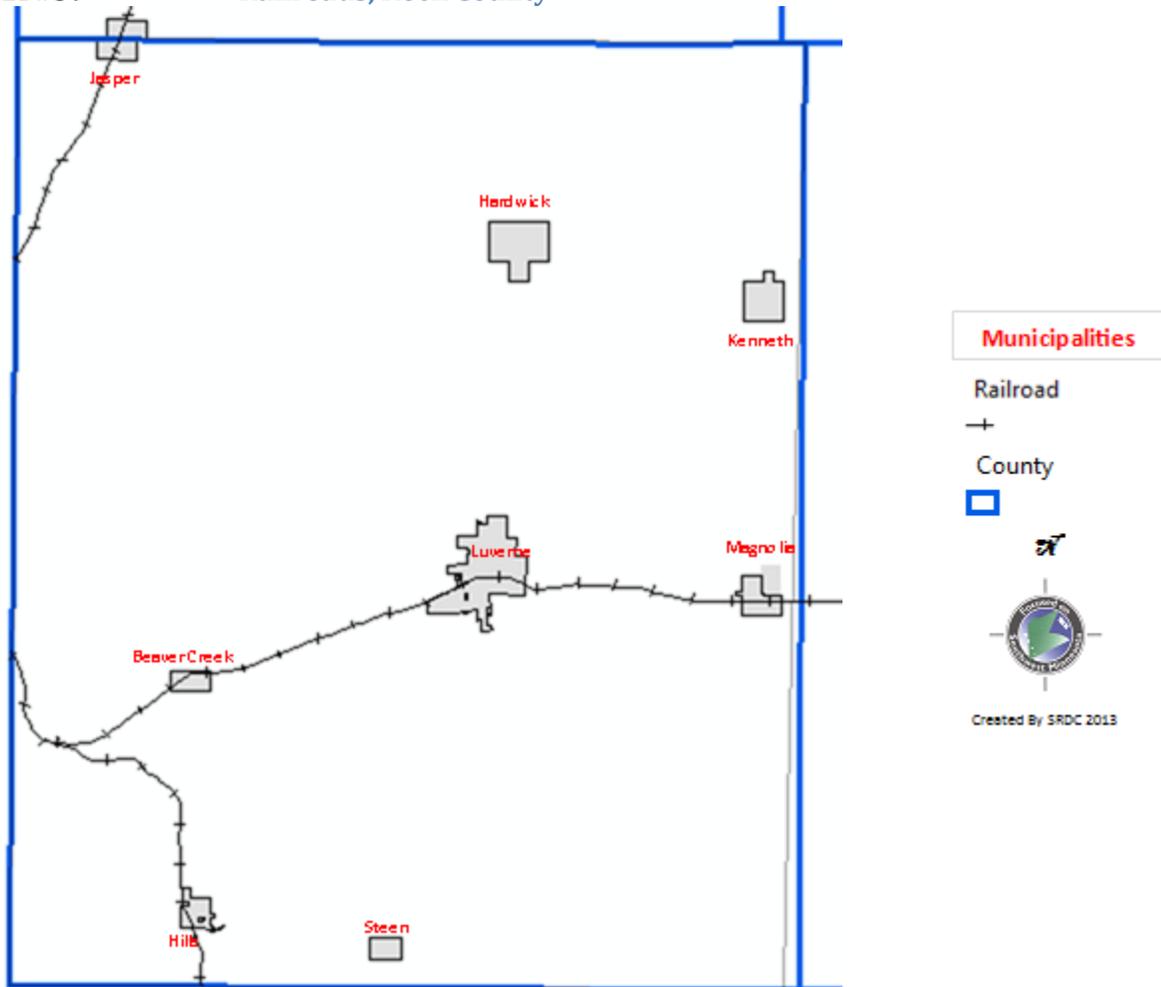
There are two railroads within Rock County, the Nobles/Rock Short Line and the Northern Sante Fe. These two railroads continue to move a significant volume of freight. These railroads are an important element in the county’s transportation system.

The Nobles/Rock Short Line, formerly the Rock Railroad, was established in 1993, and is owned by the Buffalo Ridge Rail Authority. The Nobles/Rock Short Line runs 41.5 miles from Org, MN to Manley, SD. The main office for the railroad is located in Luverne, MN.

The Burlington Northern Sante Fe operates a main line, which enters the county on the northwest edge of Jasper then passes into South Dakota. The railroad then reenters the Rock County in the southwest corner of Rock County near Interstate 90, and passes through Manley. Burlington Northern Sante Fe then travels south through Hills and finally into Iowa. Traffic is expected to increase in the future due to

recent mergers with other railroads, new shipping routes, and addition to Cargill's grain terminal near Jasper.

**Table RA #39**                      **Railroads, Rock County**



### *Air Transportation*

There is one municipal airport in Rock County. The Luverne Municipal Airport, also known as the Quentin Aanenson Field, has one runway designated 18/36 with an asphalt surface measuring 4,200 by 75 feet. The airport is operational 12 months out of the year and averages 23 aircrafts per day.<sup>56</sup>

### *Extent of the Hazard*

Along with the hundreds of miles of roadway in Rock County, there are approximately 320 bridges on county, municipal, and township roadways within Rock County. These bridges are inspected and a

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<sup>56</sup> Federal Aviation Administration. Accessed 11/4/13. Available: <http://www.gcr1.com/5010web/REPORTS/LYV.pdf>

grade of the bridge is given. This helps to ensure the safety of crossing using a bridge. In Minnesota, 9.1 percent of bridges are structurally deficient in 2012.<sup>57</sup>

Rails, landing strips, and other transportation infrastructure are monitored, inspected, and maintained to ensure people and goods are transported safely. The potential severity of transportation infrastructure is minor according to the planning team. There are a number of variables that impact safety that vary from current weather condition and design to age and upkeep. Driving and planning for the conditions are important to ensure safety.

One issue that affects road conditions is winter weather. Ice and snow can build up on the road and can cause hazardous driving conditions. Due to the prevailing wind patterns in the area, east-west roads are more susceptible to ice and snow affecting the road surface. Road crews are responsible for maintaining the roadway, clearing snow, and salting for ice. It is also the responsibility of the driver to take the road conditions into consideration and drive appropriately. Winter weather is just one variable that impacts road conditions. There are a number of other variables that impact road conditions.

Traffic crashes are the primary hazard to people and property related to transportation infrastructure. The potential severity of transportation crashes is minor according to the planning team. The Minnesota Department of Transportation (MnDOT) and Minnesota Department of Public Safety (DPS) developed a *Comprehensive Highway Safety Plan* in 2004. The plan was intended to examine the underlying causes of traffic deaths and serious injuries, determine strategies to mitigate those causes, and implement the most promising strategies in the “Toward Zero Deaths” program. The Toward Zero Death program continues today.

Minnesota Comprehensive Strategic Highway Safety Plan (CHSP) study for Area Transportation Partnership (ATP) 7 found the most frequent crash types and contributing factors included:<sup>58</sup>

- Impaired Driving
- Safety Belt Usage
- Young Drivers
- Aggressive Drivers
- Lane Departures
- Intersections
- Driver Safety Awareness
- Data Information Systems

These variables along with transportation infrastructure conditions and design can impact the severity of crash or incident. The condition can be a variable that is assumed to be safe, as in the 35W bridge

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<sup>57</sup> Governing. Local Bridges in Bad Shape. Accessed: 9/10/13. Available: <http://www.governing.com/topics/transportation-infrastructure/gov-local-state-government-owned-bridge-condition-disparity.html>

<sup>58</sup> MNDOT. Accessed: 5/29/13. Available: <http://www.dot.state.mn.us/trafficeng/safety/shsp/>

collapse. Bridges are classified as “structurally deficient” if they have a general (poor) condition rating for the deck, superstructure, substructure, or culvert or if the road approaches regularly overtop due to flooding. The fact that a bridge is structurally deficient does not imply that it is unsafe. If a bridge has been identified as unsafe during a physical inspection, the structure will be closed.

Of the approximately 320 bridges on county, municipal, and township roadways within Rock County, 26 county bridges have been identified as deficient, 3 municipal bridges, and 18 township bridges, as of January 1, 2013.

Railroad crossings pose a serious risk for motor vehicles passing over the tracks. Railroad crossings are market and a number have crossing arms, but according to MnDOT, the chance of death or serious injury from a vehicle and train crash is 11 times greater than other traffic collisions.<sup>59</sup> Since there is an increased risk of crossing, additional measures should be taken to ensure the safety of the crossing.

### Pedestrian: Higher Risk Areas

Cities and schools in Rock were asked to identify higher risk areas in regards to pedestrian safety. Higher risk areas for pedestrians were identified in three cities: Hills, Luverne, and Magnolia. The areas identified in Hills and Luverne are along trunk highways. The following locations have been identified as higher risk areas for pedestrians by the planning team:

- MN Highway 270 by Hills Public School in the City of Hills
- U.S. Highway 75 by Luverne Public Schools in the City of Luverne
- U.S. Highway 75 by the Sanford Luverne Medical Center in the City of Luverne
- U.S. Highway 75 near the Comfort Inn Hotel
- County Road 4 through the City of Magnolia

### City of Hills

The planning team identified one high risk area for pedestrians within the City of Hills. The higher risk area is located near the middle and high school on Minnesota Highway 270. The two main issues regarding pedestrian safety in this area are related to average daily traffic volumes and the number of students who have to cross the roadway to get to school.

Average daily traffic volumes on Minnesota Highway 270 in Hills were estimated at 1,600 in 2010, 2006, and 2002.<sup>60</sup> There were nine reported crashes within roughly a quarter mile from the school in Hills from 2003 through July 2013.<sup>61</sup> There are posted 30 mile an hour speed limit signs on Minnesota Highway 270 coming into Hills, but there are no crosswalks or traffic calming devices by the school.

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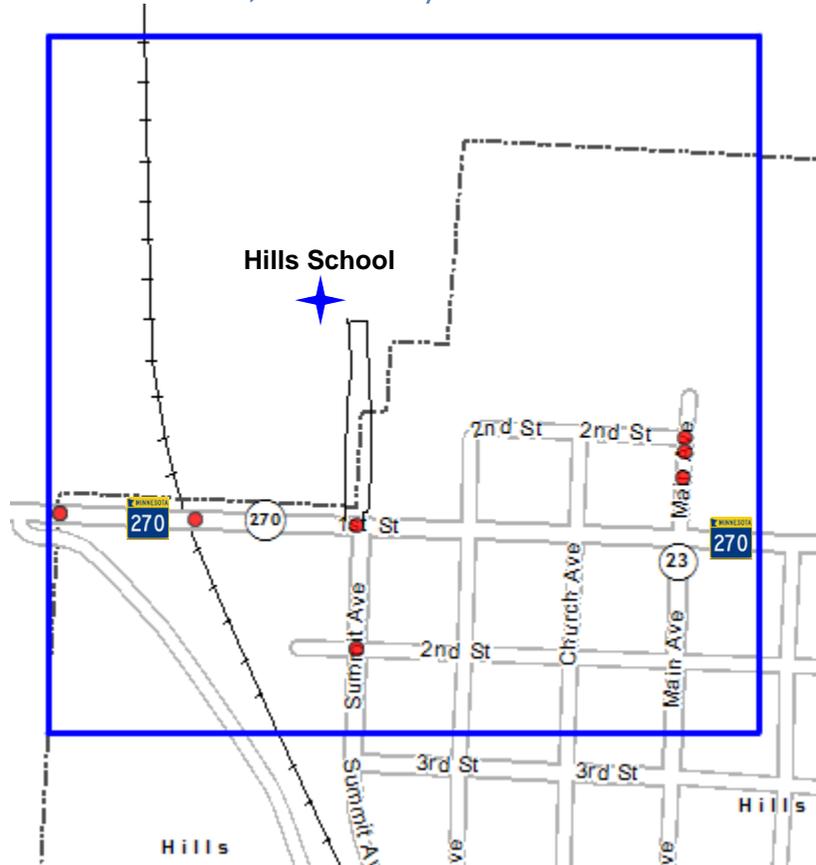
<sup>59</sup> MnDOT. Accessed: 5/29/13. Available: <http://www.dot.state.mn.us/ofrw/safety.html>

<sup>60</sup> Minnesota Department of Transportation. Accessed 11/18/13. Available: <http://www.dot.state.mn.us/traffic/data/hist-maps-muni-bycounty.html>

<sup>61</sup> Minnesota Crash Mapping Analysis Tool. Accessed 11/18/13. Available: [http://www.dot.state.mn.us/stateaid/sa\\_crashmapping.html](http://www.dot.state.mn.us/stateaid/sa_crashmapping.html)

The majority of the housing development in the City of Hills is located on the south side of town. A number of students have to cross Minnesota Highway 270 to get to school. The lack of traffic calming measures, high pedestrian traffic, and relatively high average daily traffic volumes make this area around the middle and high school along Minnesota Highway 270 a higher risk.

**Table RA #40** Crash Data, Hills School / MN 270



Source: MN Department of Transportation

### City of Luverne

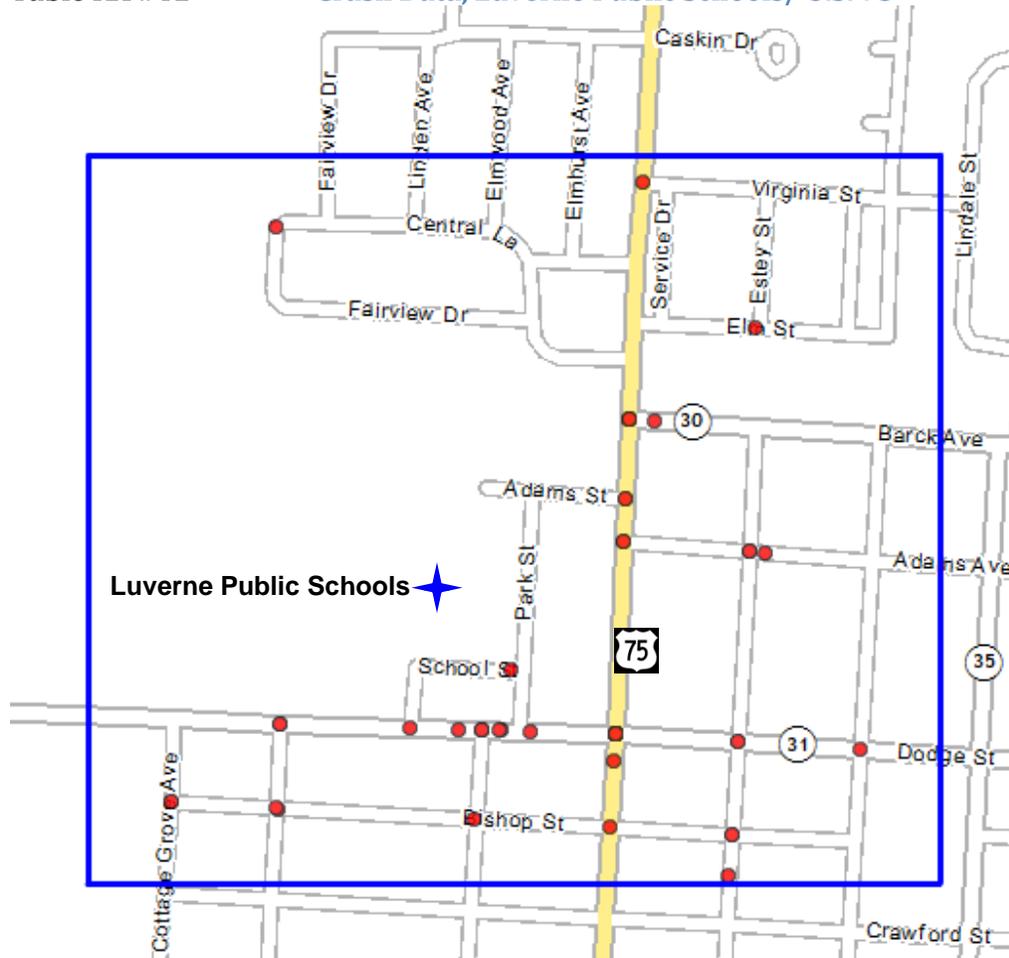
The planning team identified three high risk areas for pedestrians within the City of Luverne. The first area is along roughly three blocks of U.S. Highway 75 in Luverne by the Luverne Public School buildings, which is a kindergarten through 12<sup>th</sup> grade facility. There are three painted crosswalks crossing U.S. 75 along school property along with signage. Average daily traffic volumes along U.S. 75 just south of Luverne Public Schools were estimated at 7,000 in 2010. In 2006, average daily traffic volumes just south of Luverne Public Schools were estimated at 7,200, and were 6,500 in 2002.<sup>62</sup>

<sup>62</sup> Minnesota Department of Transportation. Accessed 11/18/13. Available: <http://www.dot.state.mn.us/traffic/data/hist-maps-muni-bycounty.html>

There were 57 reported crashes within roughly a quarter mile of Luverne public Schools from 2003 through July 2013.<sup>63</sup> There was a vehicle collision with a pedestrian on November 1<sup>st</sup>, 2008 on U.S. 75 by Luverne Public Schools. The collision happened at the intersection of U.S. 75 and Adams Ave. The pedestrian was on a bicycle, the conditions were clear and dry, and it was daylight.

The two main pedestrian safety issues along U.S. 75 by Luverne Public Schools are relatively high average daily traffic volumes and having to cross four lanes of traffic. There are crosswalks and signage, but crossing can be dangerous since pedestrians have to cross four lanes of traffic. The lack of bumpouts or other traffic calming devices make crossing more dangerous. These issues all contribute to this area being identified as a higher risk area for pedestrians by the planning team.

**Table RA #41**      **Crash Data, Luverne Public Schools/ U.S. 75**



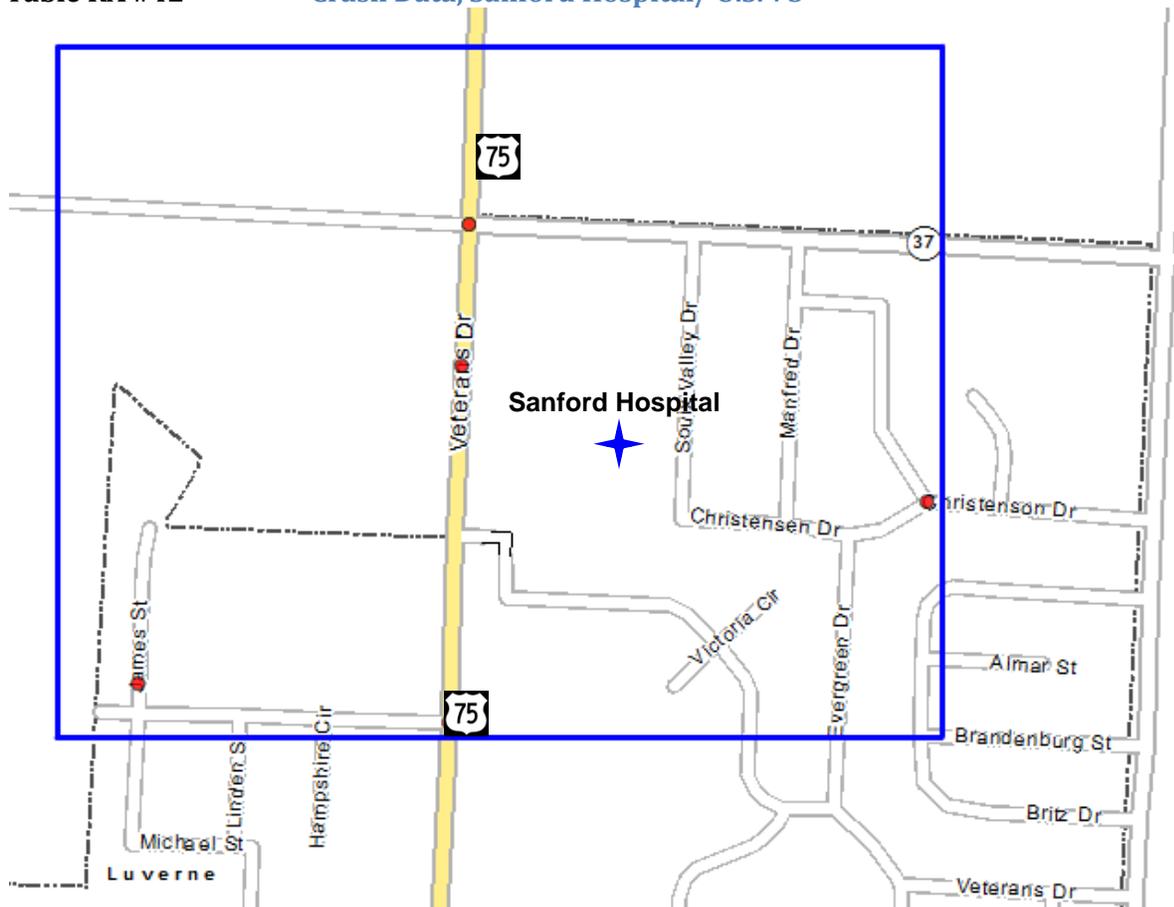
Source: MN Department of Transportation

<sup>63</sup> Minnesota Crash Mapping Analysis Tool. Accessed 11/18/13. Available: [http://www.dot.state.mn.us/stateaid/sa\\_crashmapping.html](http://www.dot.state.mn.us/stateaid/sa_crashmapping.html)

The second higher risk area for pedestrians in Luverne is located by the Sanford Luverne Medical Center in the City of Luverne. There are currently no marked crossings by the Sanford Luverne Medical Center on U.S. Highway 75. There are sidewalks that lead to the hospital, and a pedestrian trail that is scheduled to be built in this in this area that helps connect this area to the rest of town.

Average daily traffic volumes by the hospital were 7,000 in 2010, 3,200 in 2006, and were 3,050 in 2002.<sup>64</sup> This section of U.S. 75 is also close to the edge of town, so cars tend to traveling faster than the marked 40 mile an hour speed limit. High traffic volumes, faster vehicle speeds, and not having marked crossings make this area along U.S. 75 a higher risk for pedestrians according to the planning team.

**Table RA #42**                      **Crash Data, Sanford Hospital/ U.S. 75**



Source: MN Department of Transportation

The third higher risk area for pedestrians in Luverne is located on U.S. 75 near the Comfort Inn Hotel at Gabrielson Road. There are sidewalks in this area helping to connect businesses and make it safer for pedestrians, but there are no marked crossings to help pedestrians cross U.S. 75 safely. A pedestrian trail is also scheduled to cross U.S. 75 in this area, so pedestrian traffic is projected to increase.

<sup>64</sup> Minnesota Department of Transportation. Accessed 11/18/13. Available: <http://www.dot.state.mn.us/traffic/data/hist-maps-muni-bycounty.html>

Average daily traffic volumes on U.S. 75 just south of Gabrielson Road were estimated at 8300 in 2010, 8500 in 2006, and 8600 in 2002.<sup>65</sup> There were 49 reported crashes within roughly a quarter mile of Gabrielson Road and U.S. 59 from 2003 through July 2013.<sup>66</sup> The high average daily traffic volumes coupled with a projected increase in pedestrian traffic and no crossing assistance or traffic calming device make this area a higher risk area for pedestrians according to the planning team.

**Table RA #43** **Crash Data, Gabrielson Road / U.S. 75**



Source: MN Department of Transportation

<sup>65</sup> Minnesota Department of Transportation. Accessed 11/18/13. Available: <http://www.dot.state.mn.us/traffic/data/hist-maps-muni-bycounty.html>

<sup>66</sup> Minnesota Crash Mapping Analysis Tool. Accessed 11/18/13. Available: [http://www.dot.state.mn.us/stateaid/sa\\_crashmapping.html](http://www.dot.state.mn.us/stateaid/sa_crashmapping.html)

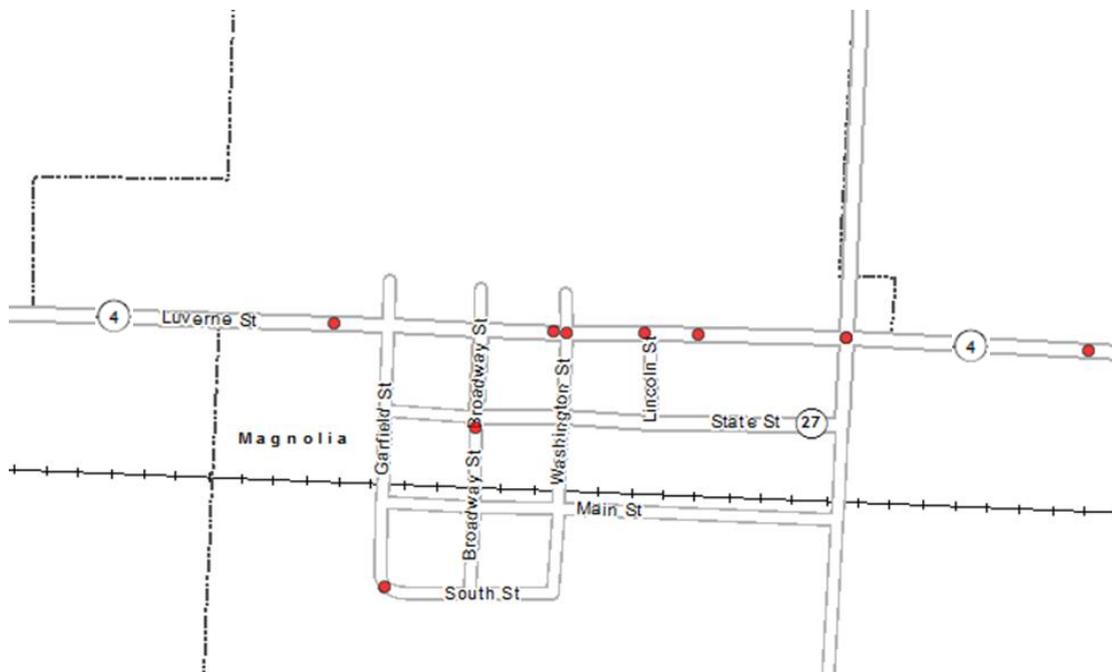
## City of Magnolia

The planning team identified one high risk area for pedestrians within the City of Magnolia. The higher risk area is located along County Road 4 in Magnolia. There are higher volumes of semi-truck traffic on County Road 4 due to agricultural businesses in the area. Average daily traffic volumes on County Road 4 towards the western side of town were estimated at 1,350 in 2010, 1,400 in 2006, and 1,400 in 2002.<sup>67</sup> There have been seven reported crashes along County Road 4 in Magnolia from 2003 through July 2013.<sup>68</sup>

There is also pedestrian traffic along County Road 4 in Magnolia. There are school bus stops, so children are walking along and crossing County Road 4. The post office is located on County Road 4, so pedestrians of all ages are walking along County Road 4.

The safety issues along County Road 4 are related to speeding through Magnolia and only having one marked crossing. The only marked crossing for pedestrians is by the Magnolia Park towards the west side of town. There is also signage identifying the crosswalk by the park, but additional crossings and traffic calming devices are needed.

**Table RA #44**                      **Crash Data, County Road 4 in Magnolia**



<sup>67</sup> Minnesota Department of Transportation. Accessed 11/18/13. Available: <http://www.dot.state.mn.us/traffic/data/hist-maps-muni-bycounty.html>

<sup>68</sup> Minnesota Crash Mapping Analysis Tool. Accessed 11/18/13. Available: [http://www.dot.state.mn.us/stateaid/sa\\_crashmapping.html](http://www.dot.state.mn.us/stateaid/sa_crashmapping.html)

Source: MN Department of Transportation

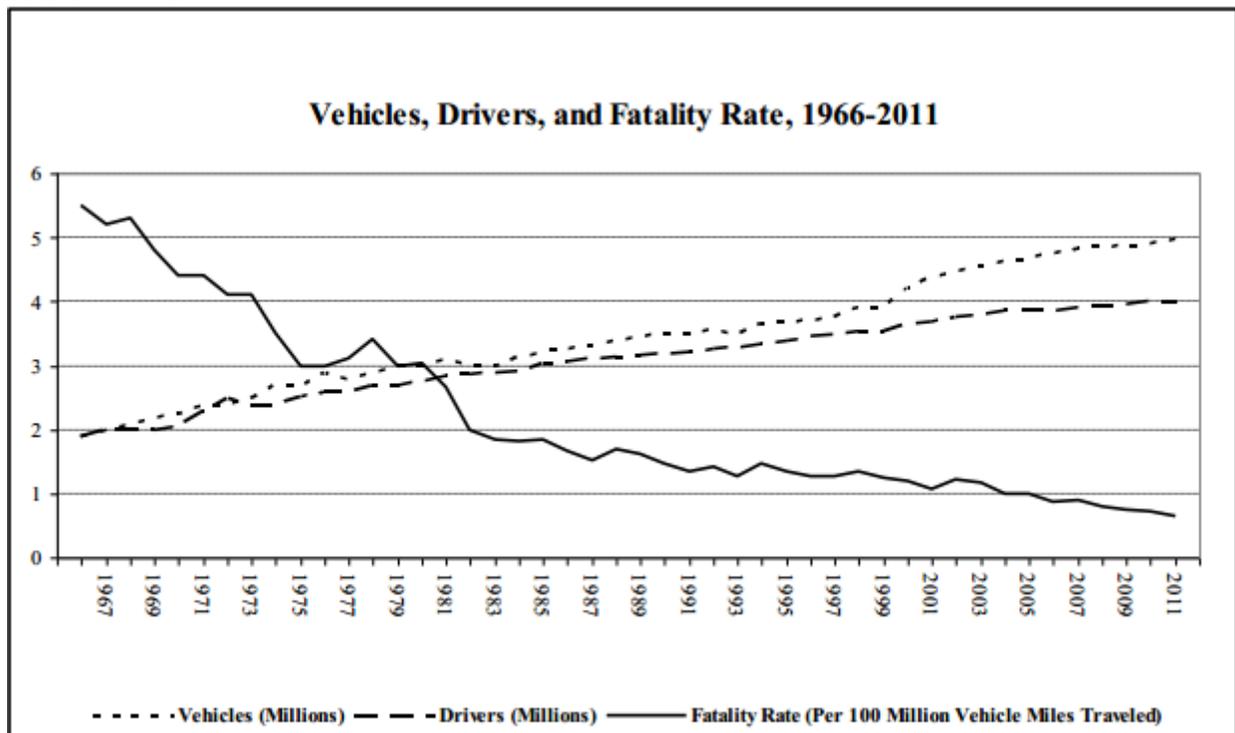
### Relationship to Other Hazards—Cascading Effects

Dangerous roadways can lead to an accident and hazardous materials being spilt. This spill can result in ground water contamination, dangerous chemicals going into the air, and dangerous fire scenarios. If fuel tanker is involved in the crash, the fire would be extremely hot and the fire would burn until the right equipment can be brought in to control the fire.

### Previous Occurrences of the Hazard

Fatal crashes per million vehicles miles traveled have been on a steady decline since the 1966 in Minnesota. According to Minnesota Department of Transportation (MnDOT), there were 23 traffic deaths in Rock County from 2003 through February 2013. “For all crashes, the driver behaviors police cite most often as contributing factors are, in order of frequency, driver inattention or distraction, failure to yield right of way, and illegal or unsafe speed.”<sup>69</sup> “Most crashes occur in good driving conditions. Over half of fatal crashes, and two-thirds of nonfatal crashes occurred during daylight hours”<sup>70</sup>

Table RA #45



Source: Minnesota Department of Public Safety

<sup>69</sup> Minnesota Department of Public Safety. 2011. Accessed: 6/4/13. Available: <https://dps.mn.gov/divisions/ots/educational-materials/Documents/CRASH-FACTS-2011.pdf>

<sup>70</sup> Minnesota Department of Public Safety. 2011. Accessed: 6/4/13. Available: <https://dps.mn.gov/divisions/ots/educational-materials/Documents/CRASH-FACTS-2011.pdf>

**Table RA #46****Motor Vehicle Crashes and Fatalities, Rock County  
2003 - April 2013**

Year	Number of Crashes	Number of Fatal Crashes
April, 2013	33	0
2012	110	4
2011	156	3
2010	173	4
2009	139	1
2008	172	3
2007	151	4
2006	175	1
2005	151	1
2004	199	2
2003	188	0

Source: MnDOT

There are a number of vehicle fires in Rock County since Interstate 90 runs through the County. From 2005 through 2011, there were 8 passenger vehicle fires in the County.<sup>71</sup>

There have been no specific bridge-related incidents, nor fatal rail or air-related incidences recently in Rock County.

#### ***Probability of Future Events of this Hazard***

Fatal crashes are more likely to occur in rural areas, which are defined as having a population of less than 5,000 people. In 2011, 67 percent of all fatal crashes in Minnesota occurred in rural areas.<sup>72</sup> The potential frequency of a transportation crash is highly likely according to the planning team.

There are a number of variables that impact the likelihood of a crash from driver distraction to infrastructure failure. Distracted drivers are a definite threat to safety regarding other drivers, pedestrians, and bicyclists. Infrastructure failure, like a bridge collapsing, can also cause transportation crashes, but are less common. The potential frequency of a hazard involving transportation infrastructure is occasional according to the planning team.

#### ***Vulnerability***

Transportation infrastructure is a basic component of government. Funding for transportation infrastructure should be maintained in every budget cycle, but funding previously allocated for transportation infrastructure has been used for other programs, like subsidizing ethanol. This has resulted in less funding to maintain our transportation infrastructure. This decrease in funding makes

<sup>71</sup> MN Department of Safety. Data Request. Received 5/21/13.

<sup>72</sup> Minnesota Department of Public Safety. 2011. Accessed: 6/4/13. Available: <https://dps.mn.gov/divisions/ots/educational-materials/Documents/CRASH-FACTS-2011.pdf>

maintaining and improving our transportation infrastructure more difficult. The risk assigned to transportation infrastructure by the planning team is average. The risk assigned to transportation crashes by the planning team is high.

### *Plans and Programs*

- The Rock County Engineer and local cities are working closely with MnDOT to improve local transportation infrastructure. MnDOT encourages discussions to identify and improve locations where higher risk areas of conflict may exist and is interested in suggestions to improve safety.
- Projects involving school children as pedestrians may be eligible for Safe Routes to School funding. Other options for traffic calming are available as well. MnDOT can discuss these options on request. Proposals must comply with accepted traffic control policies and guidelines.
- Strategies for promoting safe driving are important facets to MNDOT's Towards Zero Deaths (TZD) program. Many counties are forming local TZD coalitions involving schools, law enforcement, and other agencies. Representatives from Rock County are encouraged to attend monthly TZD meetings with MnDOT. Rock County Representatives can attend either in Mankato, or via video conference in Windom. Besides Education, the TZD program includes Engineering, Enforcement, and Emergency Services as the "4 – E's" the program focuses on.
- Several publications, such as the National Cooperative Highway Research Program (NCHRP), are available to MnDOT to suggest options for traffic calming and improve safety. Other technical guides exist to improve pedestrian safety and include: MnDOT Road Design Manual, ADA Tool Kit, MnDOT Bikeways Facility Design Manual, Minnesota Manual on Uniform Traffic Control Devices, and multiple Safe Routes to School Resources.
- According to MnDOT, "Drift-free roads are achievable through two mitigation strategies, proper road design and/or the use of snow fences. A suitably designed roadway will promote snow deposition in ditches rather than on the roadway and blowing snow that does reach the road will move across without drifting. Snow fences can also help maintain clear roadways by capturing blowing snow upwind of a problem area and storing that snow over the winter season."<sup>73</sup>
- Road authorities maintain road surfaces to ensure safety. This includes but is not limited to: clearing of snow, salting, packet work, and other road surface improvements.
- Roadways, bridges, and other public infrastructure are inspected and monitored, and maintained to ensure safety.

### *Gaps and Deficiencies*

- As funding has decline the condition of the transportation infrastructure has also declined
- Many people in Rock County commute to work, which increases exposure to transportation hazards.
- Disposal of dead livestock, in the event of a traffic crash involving a semi-truck hauling a load of livestock, is an issue the planning team outlined as a call for concern. There have been crashes on I-90

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<sup>73</sup> MNDOT. Accessed: 5/29/13. Available: <http://www.dot.state.mn.us/environment/livingsnowfence/design.html>

involving semi-trucks hauling livestock. A major crash in Rock County has not occurred, but a large crash could result in a situation that poses multiple challenges.

#### *Existing Mitigation Measures*

- Towards Zero Deaths: A national strategy on highway safety that is focused on identifying and creating opportunities for changing American culture as it relates to highway safety.<sup>74</sup>
- Safe and Sober: a Minnesota campaign under the umbrella of the Minnesota Department of Public Safety and the Office of Traffic Safety. The program is dedicated to reducing traffic related deaths and injuries.<sup>75</sup>
- In the fall of 2013, Rock County is bonding for 5 million dollars. This money will be used to improve the road conditions in Rock County.
- Two livestock trailers have been purchased regional. One trailer will be located in Nobles County and the other trailer will be located in Yellow Medicine County. These livestock trailers will be available for law enforcement in southwest Minnesota to use in the event there is an accident involving a semi-truck hauling livestock.

## **B5 Utility Failure**

Utility failure consists of power outages, water treatment system failure, and waste water treatment system failure. Citizens have come to expect these services on a 24/7 basis. When these service failure there can be a social, economic, and public health impact. Utility failure was assigned a hazard rank of moderate by the planning team.

#### *Locations Affected by the Hazard*

The majority of Rock County residents are connected to and rely on one or more of these systems: power grid, water treatment system, and waste water treatment system. A small percentage of residents have personal backup generator, personal wells, and septic tanks. In the event of a major utility failure, the majority of Rock County Residents will be affected by the event. The planning team identified the spatial extent of utility failure as local.

#### *Extent of the Hazard*

Utility failure can cause hardship and economic loss. The loss of power can have a cascading effect. A loss of power can result in water supply pumps not being able to replenish the water supply for a city or rural water system and water treatment facilities not being able to process waste water. Power interruption can also result in food soiling, adequate drinking water supplies being diminished, and extreme cold and warm temperatures causing hardship and can be potential life threatening for both people and livestock. The majority all feedlots operating within the county rely on electricity for their livestock's water. In terms of animal production, a loss of power could result in large livestock losses. Routine daily activities can also become difficult and overwhelming at times. The potential severity of utility failure is major according to the planning team.

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<sup>74</sup> U.S. Department of Transportation. Accessed 10/15/13. Available: <http://safety.fhwa.dot.gov/tzd/>

<sup>75</sup> DMV. Accessed 10/15/13. Available:

### Relationship to Other Hazards—Cascading Effects

Utility failure can have a number of cascading effects ranging from food soiling and adequate drinking water supplies being diminished to public health emergencies. Food and water are basic necessities and if power is out for multiple days, supplies could be diminished to critical levels.

There can also be public health issues that arise. The failure of septic treatment facilities and systems can have immediate adverse impacts on human health due to communicable diseases and epidemics. A water treatment failure could also result in contamination of the water supply.

Besides from public health, utility failures caused by downed power lines can cause wild and structure fires. Fighting a fire would be more challenging since electric pumps are not able to replenish the water supply and refueling may have to take place a number of miles from the fire. These variables will affect the response time, and will make it more difficult to stay ahead of the fire.

All of these potential cascading effects could climax and result in public unrest. Scarce resources could cause the public to loot and cause civil disorder.

### *Previous Occurrences of the Hazard*

Rock County has seldom experienced a countywide power loss. Typically, when the power is down it is confined to certain localities and crews can respond immediately and have power restored within hours. However, a severe daylong blizzard can keep crews from getting to the problem. The initial storm and piled up snow left behind can cause the power outage to last for multiple days.

Ice storm can also cause power outages that last for multiple days. In the spring of 2013, an ice storm hit Rock County that caused hundreds of electric poles to snap in half. The ice storm caused miles of downed power lines that took weeks to fully repair. For close to a week some Rock County residents were without power.



Associated Press

### *Probability of Future Events of this Hazard*

Natural hazards will continue to cause power outages. Hardening of the utility grid will help to prevent large outages, but the costs of redundancy and hardening of the utility grid will limit the extent of the project. The potential frequency of a large scale utility failure is occasional according to the planning team.

### *Vulnerability*

There are miles of power lines in Rock County that are above ground on poles. This makes them vulnerable to winter storms, ice buildup, tornados and straight line winds, and other natural disasters. The risk level assigned to utility failure by the planning team is high.

### *Plans and Programs*

- The utility grid is constantly being upgraded with new poles and technology to make the system more reliable.
- There are planning recommendations to help mitigate the impact of utility failure. To help ensure adequate water storage capacity, cities consider two basic recommendations when analyzing water storage needs. First, Minimum storage should be at least 40 gallons/capita. Second, municipal water supply should have a minimum water storage capacity equal to the average daily water usage. During a power outage the water stored in water holding facilities can act as a reserve water supply until power can be regained.
- The Luverne High School is designated as an emergency primary care facility.
- Sanford Luverne Medical Center does have a generator however; additional needs within the facility have been identified. Sanford Luverne Medical Center would be capable of maintaining healthcare services to the community for a certain amount of time, but depending on the circumstance, local Emergency Management may potentially have to assist with transportation needs if evacuation was necessary. Sanford Luverne Medical Center would work through emergency management to assist with utility needs that were identified in regards to water and/ or diesel fuel.

### *Gaps and Deficiencies*

- Not all communities have backup electrical generators to guarantee the operation of essential services in the event of county wide utility failure. Water supplies could be diminished quickly, medical supplies that need to be cold may spoil, large amount of food may spoil, and waste water could become an issue.
- The Luverne High School does not have a generator to handle supporting the entire facility as an emergency primary care facility.
- Facilities that have backup generators learned, in the Spring ice storm of 2013, that all essential operating systems were not hooked up to the generator. Coolers and freezers at the Sanford Luverne Medical Center in the City of Luverne were not hooked up to the backup generators and cold storage medical supplies had to be moved to another location.

### Existing Mitigation Measures

- A number of public and private facilities have emergency generators. Steps have been made by these facilities to reevaluate what essential operating system should be hooked up to the backup generator system.
- Water storage capacity has been increased by the City of Luverne. Water being stored in an elevated storage tank can be used as a reserve in the event the pumping system does not work. This will help to ensure adequate water reserves are available for a short period of time.
- Some power lines are being buried to make the utility grid less vulnerable to natural hazards.

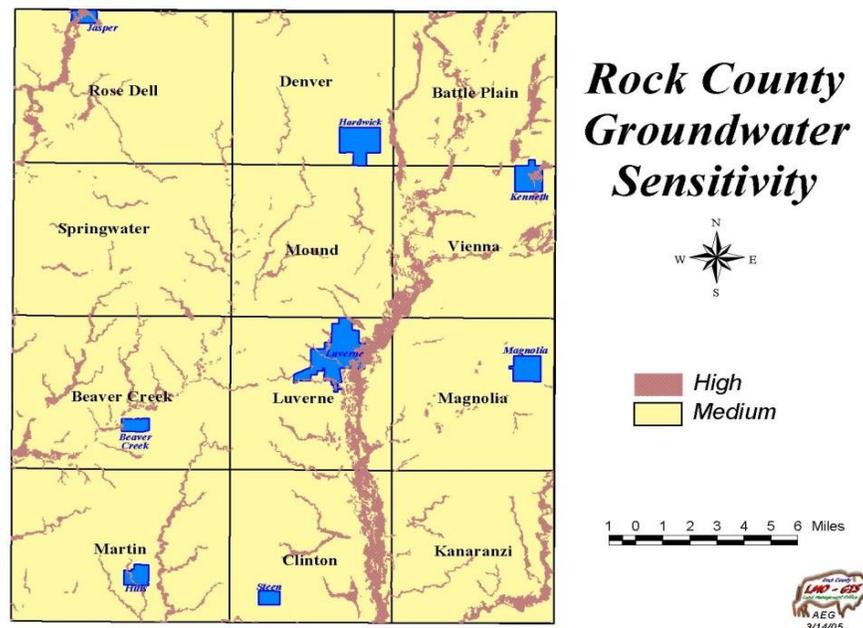
## B6 Water Supply Contamination

Water supply contamination is the introduction of point and non-point source pollutants into public ground water and/or surface water supplies.<sup>76</sup> Water supply contamination can be the result of mismanaged landfills and dumps, negative externalities of industrial activity, and agricultural run-off. Water supply contamination was assigned a hazard rank of moderate by the planning team.

### Locations Affected by the Hazard

All of Rock County is equally at risk of water supply contamination. The planning team identified the spatial extent of water supply contamination as countywide. Rock County does not have an overabundance of high quality groundwater. Groundwater is generally drawn from three aquifers in Rock County that include: the unconsolidated glacial-drift deposits, the Sioux Quartzite, and the Cretaceous bedrock aquifer. The highest quality water comes from these shallow aquifers. The deeper the aquifers the more iron and manganese there is in the water. The shallower aquifers are preferred since they have better quality water, but the shallower aquifers are more susceptible to contamination.

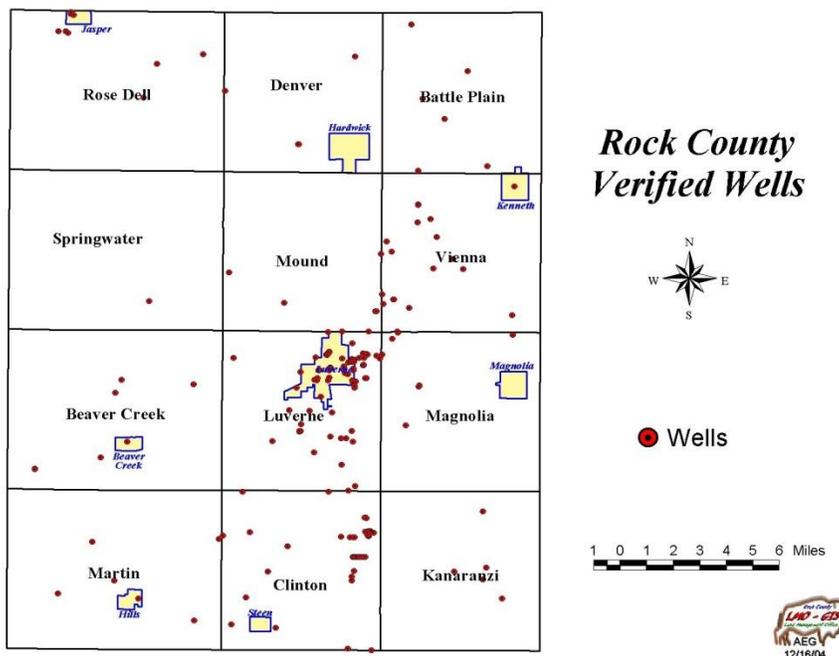
**Table RS #47**



<sup>76</sup> EPA. Accessed 6/3/13. Available: <http://www.epa.gov/agriculture/tsur.html>

Microbiological and chemical contaminants can enter the ground water through leaking underground storage tanks, feedlots, and waste disposal sites. Human wastes and pesticides can also be carried to lakes and streams during heavy rains or snow melt. Areas in Rock County have different risk factors in regards to certain contaminates, but there is equal risk throughout the county for water contamination.

**Table RS #48**



**Extent of the Hazard**

A major contamination could cause massive disruption to Rock County’s economy and surrounding communities. Removing contaminants from a water supply or relocating a well is an expensive process. Treating water for both human and animal consumption may result in people and farming operations relocating to new locations. This would leave areas of Rock County unused until contaminates are removed from the water supply. The potential severity of water supply contamination is major according to the planning team.

**Relationship to Other Hazards—Cascading Effects**

Since Rock County has a shallower well system, the county is more susceptible to water supply contamination. Polluted water sources can cause illness and epidemics in both humans and animals. A water supply shortage could also lead to public unrest and civil disturbances.

**Previous Occurrences of the Hazard**

Rock County has not had a major groundwater contamination problem.

**Probability of Future Events of this Hazard**

Rock County is at a greater risk of water supply contamination since the county is tapped into shallower aquifers, but no major groundwater contamination has occurred. The potential frequency of a water supply contamination is occasional according to the planning team. A number of regulations and

monitoring procedures are in place to help maintain a quality water supply. Refer to the Plans and Programs section under Vulnerability for more measures to keep ground water supplies safe.

### *Vulnerability*

Rock County relies on shallower aquifers since the water quality is better than deeper aquifers. Water recharge in shallow wells can occur in a matter of hours, so wells that are drilled into the shallow aquifer are more vulnerable to pollutants infiltrating the water supply. There are also an unknown number of wells that continue to provide pathways for potential pollutants to reach the county's aquifers. The risk level assigned to water supply contamination by the planning team is average.

### *Plans and Programs*

- Wellhead Protection Plans: A number of wellhead protection plans do exist in Rock County. Wellhead protection plans have been completed by the City of Luverne, Rock County Rural Water, and Lincoln Pipestone Rural Water.
- Plans are in place to connect Lewis and Clark Regional Water System to Rock County Rural Water, the City of Luverne, and Lincoln Pipestone Rural Water. The Lewis and Clark Regional Water System will supplement the current system, and this cross connection will lead to a more reliable system and better quality water.
- The Minnesota Department of Health (MDH) regulates water systems and requires routine inspection of all public water systems. State staff issue permits and monitors compliance through data review and inspections, and enforces permit conditions. Employees at the Rock County water facilities are certified operators under state requirements. These operators are required to take state training to maintain their certified operator status.
- The Minnesota Pollution Control Agency (MPCA) regulates wastewater systems. The MPCA requires routine inspection of all public wastewater systems. State staff, in the Water-Quality Point-Source Program, issue permits and monitors compliance through data review and inspections, and enforces permit conditions.
- Clean Water, Land and Legacy Amendment of 2008 increases the sales and use tax rate by three-eighths of one percent on taxable sales, starting July 1, 2009, continuing through 2034. Approximately 33 percent of this revenue is dedicated to the Clean Water Fund to protect, enhance, and restore water quality in lakes, rivers, streams, and groundwater.
- The Rock County Water Management Plan, which was adopted in September 2006, address management of water, effective environmental protection, and efficient resource management.
- Wellhead Protection Plans: Wellhead Protection Plans help to prevent drinking water from becoming polluted by managing potential sources of contamination in the area which supplies water to a public well. Wellhead protection plans have been completed by the City of Luverne, Rock County Rural Water, and Lincoln Pipestone Rural Water.
- Local officials work together with the MDH and the EPA to ensure that all public water supplies are safe. Public water supplies require ongoing water quality monitoring to ensure public water systems are working properly and meet minimum standards for drinking.
- Since 1974, all water wells constructed in Minnesota must meet the location and construction requirements of the Minnesota Well Code.

- Wastewater treatment plants are required to test discharges after major rains events to determine whether or not discharges meet PCA guidelines for acceptable levels of waste.
- Plans are in place to work with Hills Stainless Steel and Equipment to use large stainless potable water containers during a contamination to transport safe drinking water.

#### *Gaps and Deficiencies*

- All cities do not have Well Head Protection Plans. The City of Beaver Creek did not complete a wellhead protection plan.
- Rock County currently does not have a wellhead protection program. Existing rural wells can provide a pathway for potential pollutants to reach the county's aquifers.
- The emergency response plan does not identify alternate sources of drinking water, including locations for acquiring adequate amounts of bottled water, in the event of contamination.
- Water supply issues may impact water treatment facilities in Rock County in the future. The shallower wells in Rock County make residents more vulnerable to pollutants, since water recharge in shallow wells can occur in a matter of hours. Rock County has high level nitrates in the water, so treatment is expensive. Water in some wells has to be treated for nitrates before the water can be treated a second time for city of rural water use.
- The effects of severe flooding on wastewater plants have been reviewed and the potential impact shows severe environmental consequences. Additional plans should be in place to mitigate this potential negative impact from flooding.
- Emergency plans do address the necessary steps to take in the event of a facility failure. These plans include bypassing the wastewater treatment plant, and the use of bottled drinking water. However, these options are short term fixes only.
- Rock County does not have an ordinance requiring periodic inspection of individual septic tank systems, just the initial installation (licensed installers are required to meet MPCA requirements).

#### *Existing Mitigation Measures*

- There are a number of plans and policies in place to help ensure safe drinking water.
- Several steps are being taken to protect ground water sources from feedlot runoff. County ordinances require that all feedlots within the county participate in the State's feedlot programs. Also, county extension services promote best management practices to minimize runoff from feedlots into streams and rivers. County zoning ordinances also limit feedlot locations.

### **B7 Dam Failure**

Dams maintain lake levels and help control flooding and the destructive power of water. Dams and impoundments are a critical part in minimizing erosion. "There are more than 1,250 dams in Minnesota; 800 are public dams, and the state owns over 430 of the public dams. Most of the public dams are more

than 50 years old and require ongoing emergency repairs and reconstruction to maintain their structural integrity.”<sup>77</sup>

Dam failure is defined as a collapse or failure of an impoundment resulting in downstream flooding. Dam failure was assigned a hazard rank of moderate by the planning team. The Department of Natural Resources (DNR) has a dam safety program that inspects the structural integrity of dams and impoundments. The DNR classifies dam structures in three categories:

- Class 1; High Hazard: any loss of life or serious hazard to public;
- Class 2; Significant Hazard: possible health hazard or probable loss of high-value property;
- Class 3; Low Hazard: property loss restricted to rural outbuildings and local roads.

### *Locations Affected by the Hazard*

There are three dams in Rock County. There are the upper and lower dams at Blue Mound State Park on Mound Creek and a dam by the City of Hills on Mud Creek. Downstream of these three locations are susceptible to flooding caused by dam failure.

Select areas along other streams and water ways in Rock County where impoundments were constructed to hold back water are also susceptible to flooding from impoundments washing out or dam failure. On Poplar Creek there were retention dams that were constructed. Dam failure in Rock County does not have the potential to affect a large portion of the general public. The planning team identified the spatial extent of dam failure as local.

### *Extent of the Hazard*

Dam failure, although the risk is minimal, has the potential to be devastating to the areas within the floodplain and around the streams directly below impoundments and dams. Dam failure may result in flash flooding, extensive property damage, erosion, destruction of infrastructure including road and culvert, and loss of life. The potential severity of dam failure is major according to the planning team.

The DNR classified the upper and lower dams at Blue Mound State Park and the retention dams on Poplar Creek as Low Hazard. The DNR does not have the dam by the City of Hills on Mud Creek on its register of dams.

### *Previous Occurrences of the Hazard*

Rock County has not experienced a major dam failure.

### *Probability of Future Events of this Hazard*

Free flowing water has tremendous power. It can move boulders, carve out rock, and erode an impoundment or dam. It is important to slow the runoff of water, so groundwater supplies can be replenished and the volume of free flowing water in streams and rivers is reduced. Reducing the free flowing water in streams and rivers will help to preserve impoundments and dams, but over time

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<sup>77</sup> Minnesota Department of Natural Resources. Accessed: 11/14/13. Available: [http://www.dnr.state.mn.us/waters/surfacewater\\_section/damsafety/index.html](http://www.dnr.state.mn.us/waters/surfacewater_section/damsafety/index.html)

impoundments and dams will require maintenance and replacement. The potential frequency of dam failure in Rock County is occasional according to the planning team.

### *Vulnerability*

There are a limited number of dams in Rock County. Two of the three dams are in Blue Mound State Park, so dam failure in this area would result in erosion and limited structure damage. Ground water quality is the biggest vulnerability if a dam was to fail in Rock County. Erosion would result in topsoil being stripped from land and taken downstream. The risk level assigned to dam failure by the planning team is high.

### *Plans and Programs*

- The Minnesota DNR dam safety program inspects the structural integrity of dams and impoundments in Rock County. The classification of the dam depends on how often the dam is inspected. A dam classified as High Hazard is inspected annually. A dam classified as Significant Hazard is inspected every three to four years. A dam classified as Low Hazard is inspected every eight years.
- The Minnesota DNR drafts Emergency Action Plan (EAP) for all High Hazard dams and strongly recommends for Significant Hazard dams. An EAP is a formal document that identifies potential emergency conditions at a dam and specifies preplanned actions to be followed in order to minimize property damage and loss of life in the event of a dam failure.

### *Gaps and Deficiencies*

- The dam by the City of Hills on Mud Creek is not on the Minnesota DNR's register of dams. Since this dam is not on the registry, the dam does not get inspected by the DNR. This dam could be at risk of failing, since there is not record of the dam being inspected.
- The other dams in Rock County are all classified by the Minnesota DNR as Low Hazard dams and therefore only get inspected every eight years. The infrequency of inspection may result in maintenance being deferred for a number of years or structural deficiencies not being identified. Inadequate maintenance could result in dam failure.

### *Existing Mitigation Measures*

- The upper and lower dams at Blue Mound State Park and the retention dams on Poplar Creek are inspected by the Minnesota DNR every eight years.

### III Hazard Identification Worksheet

#### Methodology

The Hazard Identification Worksheet is a tool to help profile the identified hazards. In Section II above the results of Planning Team’s Hazard Identification Worksheet were included in the profile of the identified natural and manmade hazards. The profile and the hazard identification worksheet helped the planning team assign priority to hazard mitigation strategies.

The Hazard Identification Worksheet was developed by the former Minnesota Planning Agency and expanding by the Southwest Regional Development Commission.

The sorting criteria for categories in the Hazard Identification Worksheet are as follows:

- Potential Frequency: Unlikely if <1% chance in the next 100 years, Occasional = 1% and 10% in next year, Likely =between 10% and 100% in next year, Highly Likely =greater than 10% in next year.
- Spatial Extent: Countywide or Local
- Potential Severity: Limited =<10% area affected destroyed, Minor =10% to 25% area affected, Major =25% to 50% area affected, Substantial =>50% area affected.
- Warning Time: Minimal, 6 – 12 hours, 12- 24 hours, 24+ hours
- Risk Level: Subjective ranking by Planning Team based on previous categories
- Hazard Rank: Subjective ranking by Planning Team based on previous categories

**Table RA #49**

**Planning Team  
Hazard Identification Worksheet**

<b>Hazard</b>	<b>Potential Frequency</b>	<b>Spatial Extent</b>	<b>Potential Severity</b>	<b>Warning Time</b>	<b>Risk Level</b>	<b>Hazard Rank</b>
Ag Disease (animal or crop)	Occasional	Countywide	Major	6 - 12 hours	High	Moderate
Blizzards, Winter Storms, and Extreme Cold Events	Likely	Countywide	Major	12 - 24 hours	High	High
Drought	Likely	Countywide	Major	24+ hours	Average	Moderate
Fire—Wildfires	Occasional	Local	Limited	Minimal	Limited	Low
Fire—Structure Fires	Likely	Local	Minor	Minimal	High	Moderate
Flooding	Likely	Countywide	Minor	12 - 24 hours	Average	Moderate
Severe Summer Storms, Lightning, Hail, and Extreme Heat Events	Likely	Countywide	Minor	6 -12 hours	High	Moderate
Tornados and Straight-line Wind Events	Likely	Countywide	Major	Minimal	High	High
Earthquakes	Unlikely	Countywide	Major	Minimal	Average	Low
Dam Failure	Unlikely	Local	Limited	Minimal	Limited	Low
Civil Disturbance and Terrorism	Unlikely	Local	Minor	Minimal	Average	Moderate
Hazardous Materials & Methamphetamine Labs	Likely	Countywide	Minor	Minimal	High	Moderate
Public Health Emergencies	Occasional	Countywide	Major	6 - 12 hours	Average	Moderate
Transportation Infrastructure	Occasional	Local	Minor	Minimal	Average	Moderate
Transportation Crashes	Highly Likely	Local	Minor	Minimal	High	Moderate
Water Supply Contamination	Occasional	Countywide	Major	Minimal	Average	Moderate
Utility Failure	Occasional	Local	Major	Minimal	High	Moderate
<b>Hazard</b>	<b>Potential Frequency</b>	<b>Spatial Extent</b>	<b>Potential Severity</b>	<b>Warning Time</b>	<b>Risk Level</b>	<b>Hazard Rank</b>

<i>Highly Likely</i>			<i>Substantial</i>	<i>Minimal</i>	<i>Very High</i>	
<i>Likely</i>	<i>Countywide</i>		<i>Major</i>	<i>6 - 12 hours</i>	<i>High</i>	<i>High</i>
<i>Occasional</i>	<i>Local</i>		<i>Minor</i>	<i>12 - 24 hours</i>	<i>Average</i>	<i>Moderate</i>
<i>Unlikely</i>			<i>Limited</i>	<i>24+ hours</i>	<i>Limited</i>	<i>Low</i>

For Potential Frequency, *Unlikely* if <1% chance in the next 100 years, *Occasional*= 1% and 10% in next year, *Likely*=between 10% and 100% in next year, *Highly Likely*=greater than 10% in next year.

For Potential Severity, *Limited*=<10% area affected destroyed, *Minor*=10% to 25% area affected, *Major*=25% to 50% area affected, *Substantial*=>50% area affected.

Risk Level is subjective ranking by planning team members based on previous categories.

*SRDC, adapted from Minnesota Planning*

**Table RA #50**

**Cities, Rock County  
Hazard Identification Worksheet**

<b>Hazard</b>	<b>Potential Frequency</b>	<b>Spatial Extent</b>	<b>Potential Severity</b>	<b>Warning Time</b>	<b>Risk Level</b>	<b>Hazard Rank</b>
Ag Disease (animal or crop)	Occasional	Countywide	Minor	12 - 24 hours	Average	Low
Blizzards, Winter Storms, and Extreme Cold Events	Likely	Countywide	Major	12 - 24 hours	High	High
Drought	Occasional	Countywide	Major	24+ hours	Average	Moderate
Fire—Wildfires	Unlikely	Local	Limited	6 - 12 hours	Limited	Low
Fire—Structure Fires	Likely	Local	Minor	Minimal	Average	Moderate
Flooding	Occasional	Countywide	Minor	6 - 12 hours	High	Moderate
Severe Summer Storms, Lightning, Hail, and Extreme Heat Events	Likely	Countywide	Major	6 - 12 hours	High	Moderate
Tornados and Straight-line Wind Events	Occasional	Countywide	Major	6 - 12 hours	High	High
Earthquakes	Unlikely	Countywide	Minor	Minimal	Limited	Low
Dam Failure	Unlikely	Local	Limited	Minimal	Limited	Low
Civil Disturbance and Terrorism	Unlikely	Local	Minor	Minimal	Limited	Low
Hazardous Materials & Methamphetamine Labs	Occasional	Countywide	Minor	Minimal	Average	Moderate
Public Health Emergencies	Occasional	Countywide	Minor	6 -12 hours	Limited	Low
Transportation Infrastructure	Occasional	Local	Minor	Minimal	Average	Moderate
Transportation Crashes	Likely	Local	Minor	Minimal	Average	Low
Water Supply Contamination	Occasional	Countywide	Major	Minimal	Average	Low
Utility Failure	Occasional	Local	Major	Minimal	Average	Low
<b>Hazard</b>	<b>Potential Frequency</b>	<b>Spatial Extent</b>	<b>Potential Severity</b>	<b>Warning Time</b>	<b>Risk Level</b>	<b>Hazard Rank</b>

<i>Highly Likely</i>			<i>Substantial</i>	<i>Minimal</i>	<i>Very High</i>	
<i>Likely</i>	<i>Countywide</i>		<i>Major</i>	<i>6 - 12 hours</i>	<i>High</i>	<i>High</i>
<i>Occasional</i>	<i>Local</i>		<i>Minor</i>	<i>12 - 24 hours</i>	<i>Average</i>	<i>Moderate</i>
<i>Unlikely</i>			<i>Limited</i>	<i>24+ hours</i>	<i>Limited</i>	<i>Low</i>

For Potential Frequency, *Unlikely* if <1% chance in the next 100 years, *Occasional*= 1% and 10% in next year, *Likely*=between 10% and 100% in next year, *Highly Likely*=greater than 10% in next year.

For Potential Severity, *Limited*=<10% area affected destroyed, *Minor*=10% to 25% area affected, *Major*=25% to 50% area affected, *Substantial*=>50% area affected.

Risk Level is subjective ranking by planning team members based on previous categories.

SRDC, adapted from Minnesota Planning

#### IV Repetitive Flood Claim Properties and Severe Repetitive Loss Properties

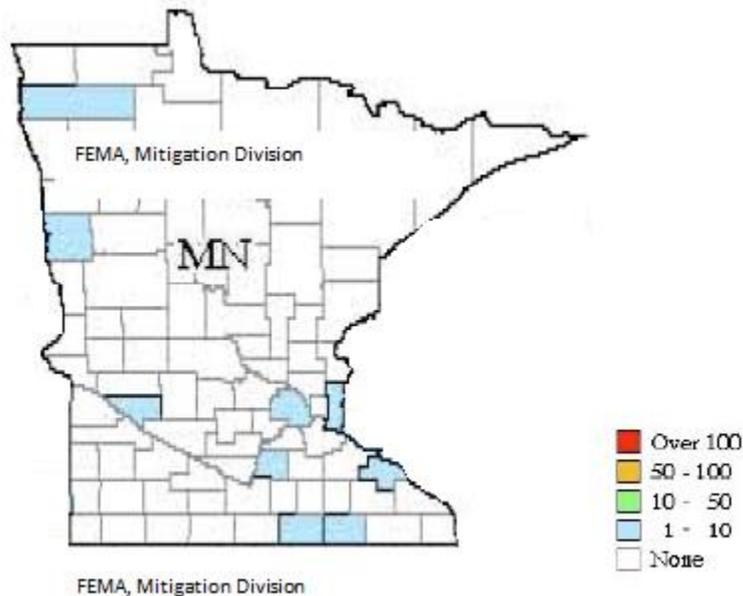
Repetitive loss properties are defined by FEMA as having two or more losses of at least \$1,000 each paid under the National Flood Insurance Program (NFIP) within any 10-year period since 1978. A Severe Repetitive Loss (SRL) property is defined by FEMA as a residential property covered under NFIP that has at least four NFIP claim payments over \$5,000 each and the cumulative amount of such claims exceeds \$20,000. An SRL property may also be one for which at least two separate NFIP payments have been made with the cumulative amount of the building portion of these claims exceeding the market value of the building.

##### Repetitive Loss Properties

FEMA has a nonpublic database of all of the repetitive loss structures within the State. These structures are those which have sustained damages on two separate occasions within a ten-year time span for which the cost of repairs at the time of the flood meets or exceeds 25 percent of the market value of the structure before the damage occurred.

Based on this database, Rock County does not have any repetitive loss structures identified. Since 1978, only 17 Flood insurance claims have been paid in Rock County, 13 of those in Luverne and 4 in unincorporated Rock County. Currently there are 22 flood insurance policies in the Rock County.<sup>78</sup>

**Table RA #51** Counties with Repetitive Loss Properties



<sup>78</sup> FEMA, Date Request. Received 6/4/13.

## Severe Repetitive Loss Properties

As of June 2013, there were no Severe Repetitive Loss properties in Rock County.<sup>79</sup>

## V Analyzing Development Trends

### Land Use and Development Trends

Rock County is a rural county with 279,088 acres of farm land in production.<sup>80</sup> From 2002 through 2007 the number of acres in farm production decreased by 7%. Not having all of the tillable ground in production helps to maintain ground water quality, wetlands, and plants and wildlife.

Prohibiting development in floodplains helps to mitigate the negative effects of flooding and runoff. Grasslands, shrubs, and other vegetation help to negate the negative effects that flooding and runoff can have. It is important to incorporate land conservation practices into local and county land use policy and development plans.

There are three communities within Rock County that have areas identified within the one percent floodplain: Jasper, Luverne, and Beaver Creek. Rock County's zoning regulations does prohibit future development within the floodplain. Luverne, Jasper, and Beaver Creek also have similar restrictions to development within the flood plain.

Population projections from the MN Department of Administration show that the population in Rock County is projected to increasing 3.2 percent from 2015 to 2030. The projections show an increase in the number of elderly residents and a loss of youth in Rock County. This demographic shift will impact development.

An older population will require more assistant living services and healthcare services than a younger population. Development trends may shift towards more group living facilities and townhomes. Higher density housing may develop and increase emergency response demand in a specific area.

In southwest Minnesota there have also been a growing number of wind farms, ethanol plants, and other biofuel plants. This development trend poses some unique challenges. In regards to infrastructure, there is an increase of oversized loads, which can wear out the roads faster and pose safety concerns to other motorists trying to see around the oversized loads.

Firefighting also may be challenging. Specialized equipment is required to reach the top of the turbines, so firefighters have been instructed to sit back and let the wind turbine burn. Firefighters will monitor the fire to make sure the fire does not spread.

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<sup>79</sup> FEMA, Date Request. Received 6/4/13.

<sup>80</sup> USDA Census 2007. Accessed: 5/29/13. Available:

[http://www.agcensus.usda.gov/Publications/2007/Online\\_Highlights/County\\_Profiles/Minnesota/cp27133.pdf](http://www.agcensus.usda.gov/Publications/2007/Online_Highlights/County_Profiles/Minnesota/cp27133.pdf)

Ethanol plants and other biofuel plants have the potential to generate large and very hot fires. Plans are in place to address these new developments, but there is not extensive experience in mitigating hazards related to these development trends. Refer to A4 the section on fires for more information related to wind turbines and ethanol plants.

A combination of conservation and planning has helped Rock County maintain safe and efficient development. Rock County is a rural county, so emergency response is impacted by distance and time and the availability of equipment and resources. Regional efforts help to mitigate the effects of natural and manmade hazards in Rock County.

# CHAPTER 6: Emergency Response Profile

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## I Introduction

A county's ability to respond to an emergency situation is based on service areas, facilities, equipment, and staff. An understanding of response times and abilities is critical for providing protection to Rock County residents. The existing facilities, equipment, and staff in the county are here to respond to local hazard events and provide regional support. These investments are critical in mitigating the effects of natural and manmade hazards and protecting lives, property, and other assets. Rock County is considered a mutual aid county because they provide and receive support from neighboring counties. The following summary and description serves as an inventory of the response facilities for Rock County.

This Chapter profiles the emergency response capabilities of Rock County. Facilities included in the profile include:

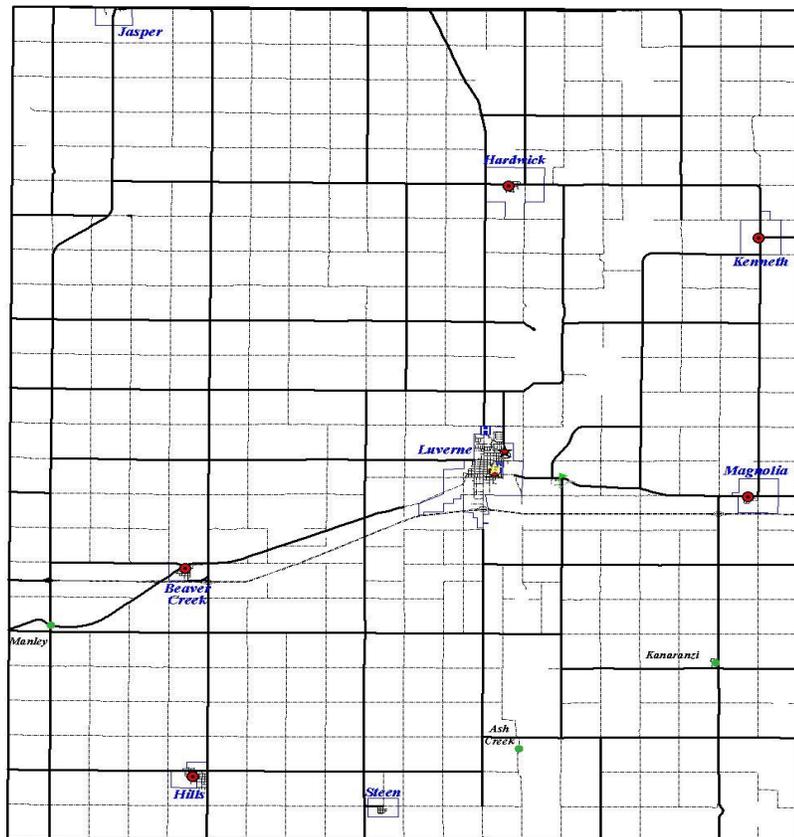
- Law Enforcement
- Ambulance Service
- Fire Department
- Medical Facilities
- Red Cross Shelter
- Sirens and other Emergency Notification Devices

### Rock County Emergency Management

The Rock County Emergency Management Director administers the county-wide emergency management program in Rock County. The Director coordinates the emergency management functions of county and city governmental units assigned to various emergency management responsibilities. The Director's duties also include the following:

- Coordinates response to actual disasters/emergencies, the logistics of federal field and survey teams, mitigation request and disaster assistance centers
- Coordinates meetings of the Rock County Emergency Management Planning Advisory Commission (EMPAC)
- Works with the EMPAC to develop and maintain the Rock County Emergency Operation Plan (EOP) and test this plan through exercises
- Maintains an inventory and utilization record of county equipment secured through emergency management sources
- Maintains liaison with county and state regional offices
- Prepares informational materials for dissemination to the public
- Meets with interested groups to explain the emergency management program and to enlist their support and cooperation

**Table RA #28**



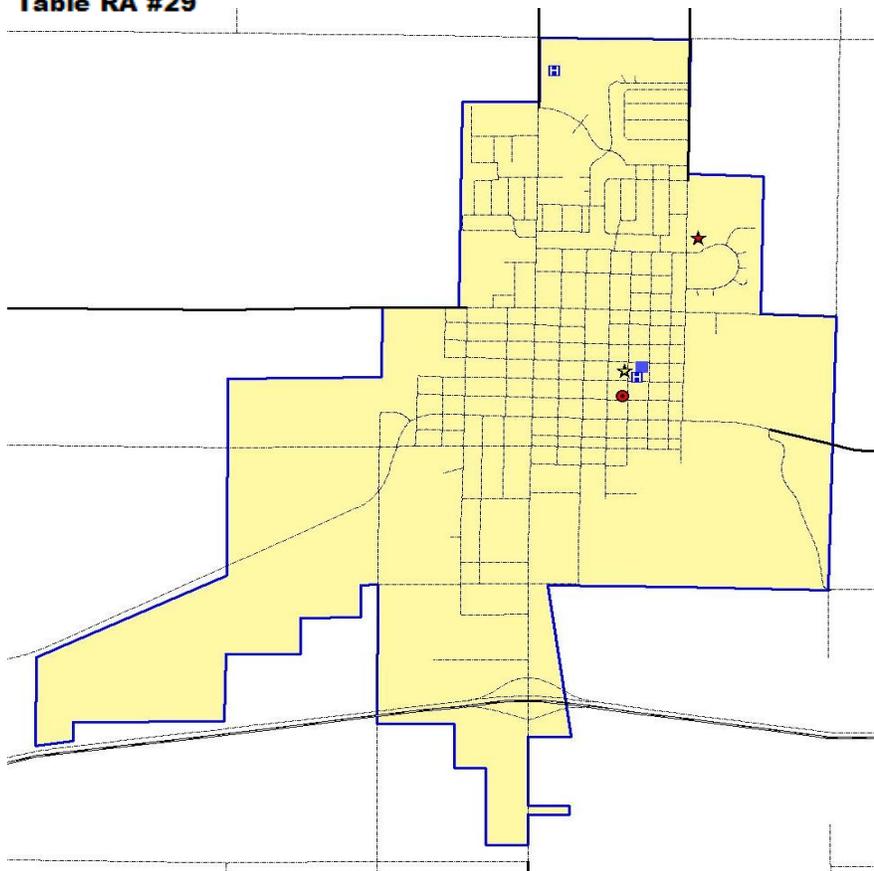
## Rock County Emergency Facilities



- ★ Emergency Operations Center
- 🏥 Hospital
- ★ Sheriff's Department
- Fire Department
- 🏠 Clinic
- 📻 Radio Station
- Unincorporated Communities



**Table RA #29**



## Luverne Emergency Facilities



- ★ Emergency Operations Center
- 🏥 Hospital
- ★ Sheriff's Department
- Fire Department
- 🏠 Clinic



## II Profiling Emergency Response Capabilities

### Emergency Operations Center

The U.S. West Building currently serves as the County Emergency Operations Center (EOC) as it provides a point of strategic command for all events in Rock County. The head of the EOC is named at the time of the disaster based on disaster type and staff availability.

### A1 Law Enforcement

In Rock County, no communities have police stations. The Rock County Sheriff's Office handles all law enforcement for the county. The mission of the Rock County Sheriff's Office is "To promote the quality of life in Rock County by providing law enforcement services with integrity and a spirit of excellence, in partnership with our communities.

The Sheriff's Office provides law enforcement services and dispatch for the fire departments in the City of Luverne, Steen, Hills, Beaver Creek, Hardwick, Kenneth and Magnolia. The Sheriff's Office also provides dispatch for the Rock County Ambulance. Rock County contracts with the Nobles County Sheriff's Office for jail services.

The Rock County Sheriff's Office consists of one station with seven cars and 11 full time staff and two part time staff.

The Rock County Sheriff's Office consists of one station with (10) cars and (10) full time staff and (4) part time staff. The City of Luverne is patrol 24/7. The Rock County Sheriff's Office dispatch center consists of (4) FTE, with (2) PTE. The office is manned 24/7

Two livestock trailers have been purchased regional for law enforcement in southwest Minnesota to use in the event there is an accident involving a semi-truck hauling livestock. One trailer will be located in Nobles County and the other trailer will be located in Yellow Medicine County. Other regional assets include: The Rock County Sheriff's Office has access to one of two radio communication trucks for the region; The Rock County Sheriff's Office has access to a Portable ARMER Tower for the region; and the Rock County Sheriff's Office can contact the MN Bureau of Criminal Apprehension (BCA) for Felony crimes that have occurred in the County or for Internal investigations.

The Rock County Sheriff's Office belongs to a Regional Emergency Rescue Team (ERU) with other agencies from MN and IA. This allows Rock County to draw on other force, departments, and agencies to assist with investigation and other law enforcement activities. Information is also

Two livestock trailers have been purchased regional for law enforcement in southwest Minnesota to use in the event there is an accident involving a semi-truck hauling livestock. One trailer will be located in Nobles County and the other trailer will be located in Yellow Medicine County.

### A2 Public Health

Rock County shares their Public Health Services with Southwest Health and Human Services (SWHHS). "SWHHA is a multi-county agency committed to strengthening individuals, families, and communities by

providing quality services in respectful, caring, and cost-effective manner.”<sup>81</sup> SWHHS provides services in regards to adoption, child support services, day care, foster care, elderly services, income maintenance, protection for children and vulnerable adults, person with chemical dependency, persons with developmental disabilities, persons with mental illness, maternal and child health programs, WIC (Women, Infants, and Children), health education, and home health services to eligible residents of the County.

“Public Health is the science of protecting and improving the health of communities through education, promotion of healthy lifestyles, and research for disease and injury prevention.” ... “Public Health professionals try to prevent problems from happening or re-occurring through implementing educational programs, developing policies, administering services, and conducting research, in contrast to clinical professionals, such as doctors and nurses, who focus primarily on treating individuals after they become sick or injured.”<sup>82</sup> The Director of Rock County Public Health is Randy Ehlers.<sup>83</sup>

#### *Medical Facilities*

Medical facilities inventoried in Rock County consist of a hospital, nursing homes, chiropractic clinics, and a specialty clinic. The hospital in Rock County is the Sanford Luverne Medical Center and is located in the City of Luverne. The medical center offers a vast amount of medical, diagnostic, and therapeutic services.

There are three nursing homes in Rock County. The Rock County nursing homes include the Mary Jane Brown Good Samaritan Center in Luverne, Minnesota Veterans Home in Luverne, and the Tuff Memorial Home in Hills.

There are four clinics within Rock County consisting of three chiropractic clinics (all in Luverne), and one specialty clinic (Luverne).

### **A3 Ambulance Service**

There are three Ambulance Districts in Rock County. The Ambulance Districts include: the Rock County Ambulance District, The Jasper Area Ambulance District, and the Edgerton Area Ambulance District. Additional ambulances can be called from neighboring counties, South Dakota, and Iowa. The Rock County Ambulance Service has a mutual aid agreement with Murray County Ambulance Service, the Pipestone County Ambulance Service, and Jasper Community Ambulance Service.

The Rock County Ambulance District includes the cities of Beaver Creek, Hardwick, Hills, Kenneth, Luverne, Magnolia, and Steen and surrounding rural areas. The Rock County Ambulance District has two

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<sup>81</sup> Southwest health and Human Services. Accessed: 11/20/13. Available: <http://www.swmhhs.com/>

<sup>82</sup> Nobles-Rock Public Health. Accessed: 8/22/13. Available: <http://www.co.nobles.mn.us/Departments/CommunityServices/CommunityHealthServices/WhatisPublicHealth.aspx>

<sup>83</sup> Rock County Public Health. Accessed: 11/20/13. Available: [http://www.co.rock.mn.us/family\\_services.html](http://www.co.rock.mn.us/family_services.html)

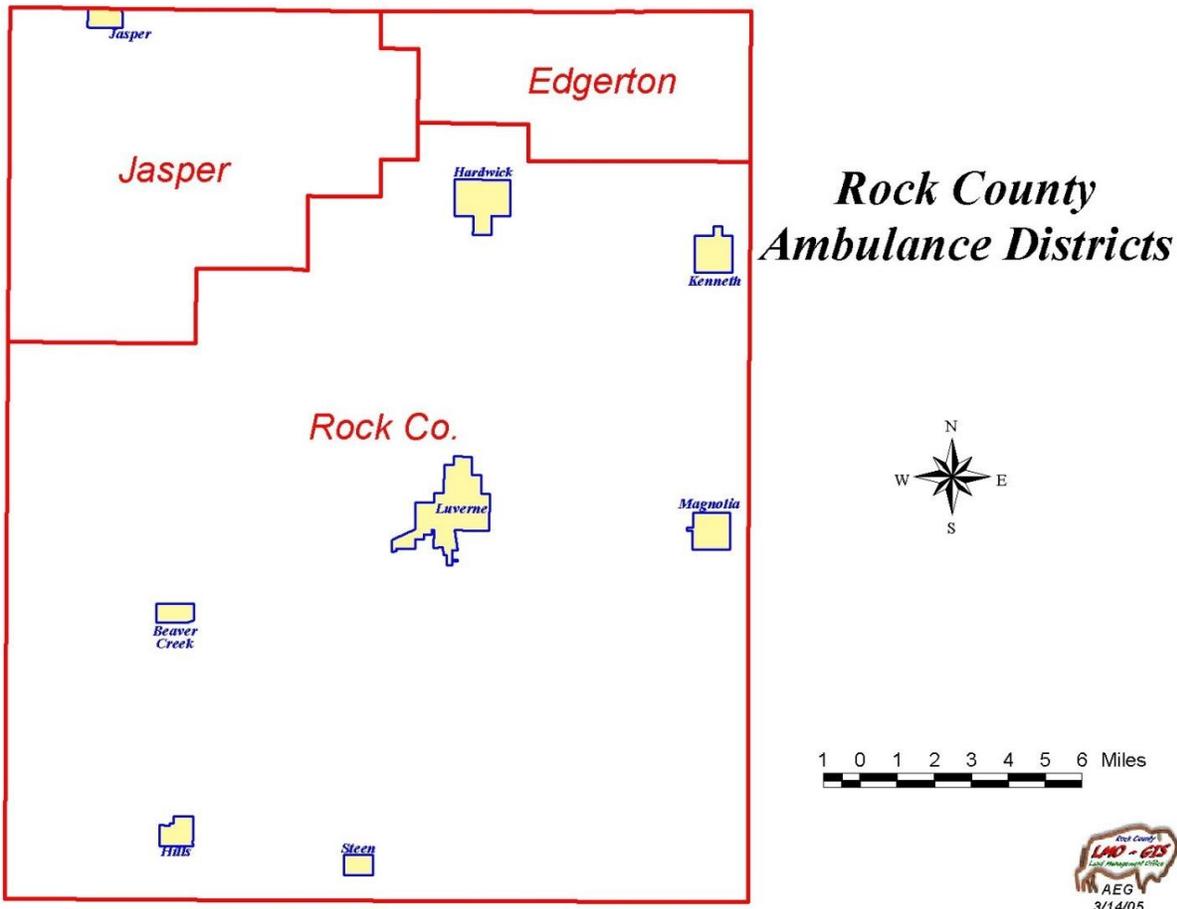
ambulances and 14 staff. The staff includes six paramedics, two Emergency Medical Technicians-Intermediate, and six Emergency Medical Technician-Basic.

The Rock County Ambulance District went on 724 calls in 2012. The majority of the calls were to transfer patients to Sanford Luverne Medical Center. The ambulance service also transfers a number of patients from Sanford Luverne Medical Center to Sanford Medical Center in Sioux Falls along with Avera McKennan and VA hospital. For assistance the Rock County Ambulance Service most frequently calls Adrian, Edgerton, Jasper, or Lyon County Iowa.

The Jasper Area Ambulance Service serves Jasper and the surrounding rural areas in Northwest Rock County. The Jasper Area Ambulance Service also provides support for the neighboring ambulance districts. The Jasper Area Ambulance District has one ambulance and 18 staff. The staff includes 17 Emergency Medical Technicians and one driver.

The Edgerton Area Ambulance District covers part of Battle Plain Township and Denver Township in Northeast Rock County. The Edgerton Area Ambulance Service also provides support for the neighboring ambulance districts. The Edgerton Volunteer Ambulance Association has one ambulance, 25 EMT-Bs, and seven volunteer drivers. The patients are primarily transported to Sanford Luverne, Avera Pipestone, and Murray County Medical Center.

**Table #31**



**Table #31**

**Rock County Ambulance District Call Volumes  
2010 - 2012**

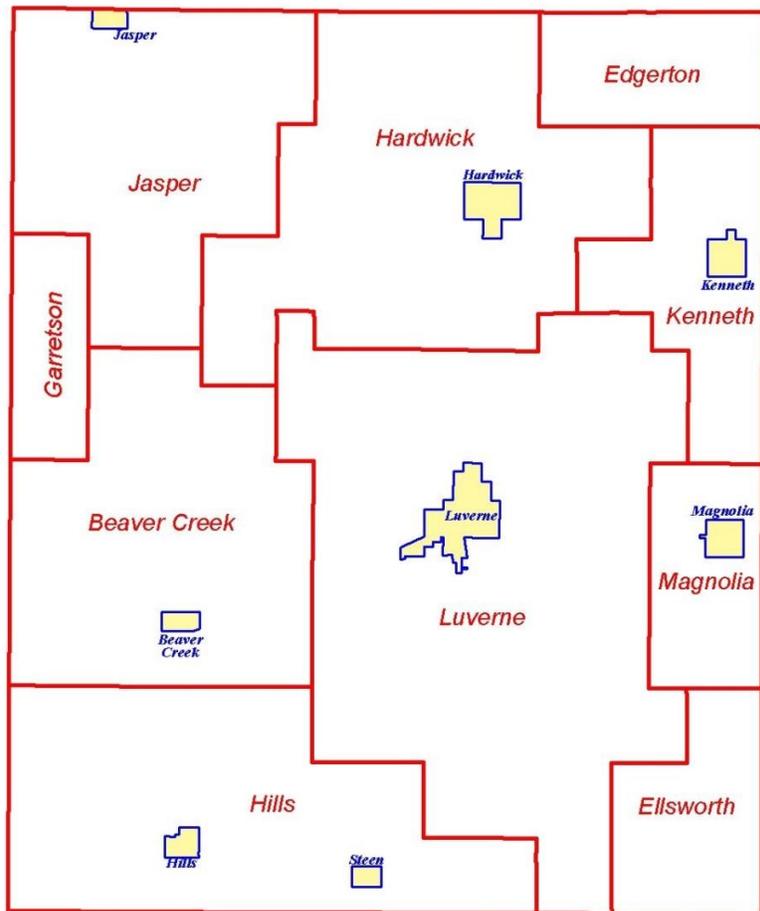
	Rock County Ambulance District	Jasper Ambulance District	Edgerton Area Ambulance District
2010	803	NA	5
2011	769	NA	1
2012	724	NA	4

Data Request: Ambulance Districts

**A4 Fire/ Emergency Services**

There are no full time fire departments within Rock County. All fire departments are volunteer based with responsibilities being divided into 10 districts. The ten fire districts include: Jasper Fire District, Hardwick Fire District, Edgerton Fire District, Garretson South Dakota Fire District, Kenneth Fire District, Beaver Creek Fire District, Luverne Fire District, Magnolia Fire District, Hills Fire District, and Ellsworth Fire District. A Rock County Fire District Map can be found below. The ten districts allow for response times to be reduced, but since Rock County is a rural county so some areas are better served than other.

**Table #32**



**Rock County  
Fire Districts**



## A5 Red Cross Shelters

There are two Red Cross Chapters that cover nine counties in Southwest Minnesota. The Prairie Winds Chapter covers Yellow Medicine, Pipestone, Lincoln and Lyon. The Southwest Minnesota Chapter covers Rock, Nobles Murray, Martin and Jackson. Between the two chapters there are two shelter trailers; one is in Marshall and one is in Worthington. In the Prairie Winds Chapter there are also a series of small storage centers with disaster supplies in each of the northern most counties. We also have shelter teams throughout the region with community partners and those partner sites have some disaster supplies. The American Red Cross Southwest Minnesota Chapter is an Emergency Support Function (ESF) #6 and #15.

ESF #6 is responsible for Mass Care, Emergency Assistance, Housing, and Human Services. ESF #6 coordinates the delivery of Federal mass care, emergency assistance, housing, and human services when local, tribal, and State response and recovery needs exceed their capabilities.<sup>84</sup>

- *Mass Care* - Includes sheltering, feeding operations, emergency first aid, bulk distribution of emergency items, and collecting and providing information on victims to family members.
- *Emergency Assistance*: Assistance required by individuals, families, and their communities to ensure that immediate needs beyond the scope of the traditional “mass care” services provided at the local level are addressed. These services include: support to evacuations (including registration and tracking of evacuees); reunification of families; provision of aid and services to special needs populations; evacuation, sheltering, and other emergency services for household pets and services animals; support to specialized shelters; support to medical shelters; nonconventional shelter management; coordination of donated goods and services; and coordination of voluntary agency assistance.
- *Housing* - Includes housing options such as rental assistance, repair, loan assistance, replacement, factory-built housing, semipermanent and permanent construction, referrals, identification and provision of accessible housing, and access to other sources of housing assistance. This assistance is guided by the National Disaster Housing Strategy.
- *Human Services* - Includes the implementation of disaster assistance programs to help disaster victims recover their nonhousing losses, including programs to replace destroyed personal property, and help to obtain disaster loans, food stamps, crisis counseling, disaster unemployment, disaster legal services, support and services for special needs populations, and other Federal and State benefits.

Emergency Support Function (ESF) #15 ensures that sufficient Federal assets are deployed to the field during incidents requiring a coordinated Federal response to provide accurate, coordinated, timely, and accessible information to affected audiences, including governments, media, the private sector, and the local populace, including the special needs population. ESF #15 provides the resource support and

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<sup>84</sup> FEMA. Accessed: 4/16/14. Available: <http://www.fema.gov/pdf/emergency/nrf/nrf-esf-06.pdf>

mechanisms to implement the National Response Framework (NRF) Incident Communications Emergency Policy and Procedures (ICEPP) described in the Public Affairs Support Annex.<sup>85</sup>

#### **A6 Sirens and other Emergency Notification Devices**

Outdoor warning sirens provide coverage in most populous areas within the county. The emergency sirens can be activated by the Rock County Dispatchers or city officials to warn residents in the event of severe weather. Large portions of the county are outside the range of severe weather warning sirens.

Since Rock County is a rural county, additional measures are in place to expand the notification system. Emergency warnings over the radio are still an effective medium to reach wide audiences. NOAA Weather Radio is used for broadcasting severe weather warnings. NOAA Weather Transmitter is the Rowena Tower.

In 2013, Rock County began using the Nixle Alert System to send out messages to residents via phone, email, and internet. The Nixle Alert System allows local government to send out information to residents regarding current weather conditions and other precautionary measures. Rock County residents are encouraged to sign up for emergency alerts through the Nixle Alert System.

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<sup>85</sup> FEMA. Accessed: 4/16/14. Available: <https://www.hSDL.org/?view&did=483049>

# CHAPTER 7: MITIGATION STRATEGY

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This Chapter documents goals, objectives and mitigation strategies that the Rock County All Hazard Mitigation Plan (AHMP) Planning Team developed through the all-hazard mitigation planning process. Section I describes mitigation goals, objectives, and strategies. Section II addresses NFIP compliance. Section III describes implementation of mitigation actions. Section IV addresses the multi-jurisdictional nature of mitigation actions.

## **I Hazard Mitigation Goals**

Hazard mitigation is intended to protect our communities by reducing or eliminating long-term risk to people and property before a disaster strikes. Emergency management involves a cycle through which communities prepare, respond, and recover from emergencies and disasters. The planning team formulated goals, objectives, and strategies to mitigate the effects of natural and manmade hazards.

Goals are general guidelines that explain what Rock County wants to achieve. Objectives narrow the general guidelines and define in more detail what Rock County wants to achieve. Strategies are the actual steps to be taken to achieve the goals.

A qualitative approach was used by the planning team to judge and prioritize the mitigation strategies based on perceived costs and benefits. The process used to judge and prioritize the mitigation strategies was the STAPLEE Process. Refer to the Planning Process Chapter for more information relating to the STAPLEE Process and the planning process.

It should be noted that not every hazard identified within the risk assessment has a goal outlined below. Goals were combined for certain hazards with similar mitigation measures. For example, severe summer storms and tornados both require similar awareness, prevention and structural measures. The main benefit of the actions listed is the improved health, safety and welfare of the community and residents. The highest ranking hazards are listed first, followed by moderate rank hazards and finally low rank hazards.

An acronym list of entities listed in the strategies below can be found in Appendix A: Mitigation Strategy's Acronym List.

### ***Priority Rank:***

The priority rank is scored on a scale of one through five, one being the least important and five being most important.

#### **A1 Hazard: Crop Disease**

Goal: Reduce the risk of plant loss from insects/pests and diseases.

<u>Objective:</u>	Keep informed of current pests and insects that could threaten Rock County.
<u>Strategy:</u>	Utilize information provided by the University of Minnesota Extension, private industry, and the Department of Agriculture on how to handle certain pests and insects. Who: LMO, Ext, All Townships Timeframe: Ongoing Cost: In-kind Priority Rank: 4

<b>Strategy</b>	<b>Utilize information provided by the University of Minnesota Extension, private industry, and the Department of Agriculture on how to handle certain pests and insects.</b>		
<i>Criteria</i>	Cost	Benefit	Comments
<i>Social</i>		+	Groups working together
<i>Technical</i>		+	Making use of best available info
<i>Administrative</i>	-		Administrative cost of bring everyone together
<i>Political</i>		+	There is a visible problem so it is easier to gain support
<i>Legal</i>	NA	NA	
<i>Economic</i>	-		Cost factor
<i>Environmental</i>	-	+	Controlling a pest but killing off a number of insects
<i>Priority</i>			4

<u>Objective:</u>	Keep residents informed on the types of fungi, insects, and pests that could potentially cause a problem for plants and trees.
<u>Strategy:</u>	Use current informational services that provide useful and factual information regarding fungi, insects, and pests. Who: LMO, SWHHS, Ext Timeframe: Ongoing Cost: In-kind Priority Rank: 3

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Strategy	Use current informational services that provide useful and factual information regarding fungi, insects, and pests.		
Criteria	Cost	Benefit	Comments
<i>Social</i>		+	Bring groups together to address the problem
<i>Technical</i>		+	Learning about best practices
<i>Administrative</i>	-		Cost of the process
<i>Political</i>	NA	NA	
<i>Legal</i>	NA	NA	
<i>Economic</i>	-		Loss is production if not treated
<i>Environmental</i>	-	+	Whether you treat it or not there is an environmental cost and benefit
<i>Priority</i>			3

<u>Objective:</u>	Mitigate the effects of emerald ash borer in Rock County.
<u>Strategy:</u>	Inventory the number of ash trees in Rock County and outline locations for disposal. Who: LMO, All Cities Timeframe: 2014-2018 Cost: In-kind Priority Rank: 3
<u>Strategy:</u>	Identify additional disposal locations for disposing of large number of ash trees. Who: LMO, All Cities, FIRE Timeframe: 2014 Cost: In-kind Priority Rank: 5

Strategy	Inventory the number of ash trees in Rock County and outline locations for disposal.		
Criteria	Cost	Benefit	Comments
<i>Social</i>		+	Bring the community together
<i>Technical</i>		+	Solving a problem
<i>Administrative</i>	-		Cost of overseeing the project
<i>Political</i>		+	Highly visible problem
<i>Legal</i>	-		Some people may not want you to cut their tree down
<i>Economic</i>	-		Cost of project
<i>Environmental</i>	-		Losing a number of trees
<i>Priority</i>			3

Strategy	Identify additional disposal locations for disposing of large number of ash trees.		
Criteria	Cost	Benefit	Comments
<i>Social</i>		+	Communities will be able to dispose of infected ash trees
<i>Technical</i>		+	Identifying disposal locations that are close but not too close that smoke from the fire cause unintended consequences
<i>Administrative</i>	-		Insure compliance and that only trees are being dumped at the site
<i>Political</i>	-		Local jurisdiction or neighborhood may not want a disposal site
<i>Legal</i>	-		Dumping at the site

<i>Economic</i>	NA	NA	
<i>Environmental</i>	-		Emissions from burning a large number of trees
<i>Priority</i>			5

## A2 Hazard: Animal Disease

Goal: Reduce the risk of disease to livestock in Rock County.

<u>Objective:</u>	Ensure compliance of Rock County farmers to guidelines set forth by governing bodies at the federal, state, and local levels.
<u>Strategy:</u>	Educate local farmers on new guidelines set forth by governing bodies at the federal, state, and local levels. Who: Ext, All Townships, BAH Timeframe: Ongoing Cost: In-kind Priority Rank: 4
<u>Strategy:</u>	Encourage agricultural officials to give presentations about the warning signs of various diseases that are likely to affect livestock in Rock County. Who: Ext, All Township, BAH Timeframe: Ongoing Cost: In-kind Priority Rank: 4

<b>Strategy</b>	<b>Educate local farmers on new guidelines set forth by governing bodies at the federal, state, and local levels.</b>		
<i>Criteria</i>	Cost	Benefit	Comments
<i>Social</i>		+	Improved livestock health
<i>Technical</i>	-		Garnering support for the guidelines and ensuring compliance
<i>Administrative</i>	-		May be difficult to administer countywide
<i>Political</i>	-		Top down government regulation

<i>Legal</i>	-		Enforcement issues
<i>Economic</i>	-		Cost of enforcement
<i>Environmental</i>		+	Proactive approach
<i>Priority</i>			4

<b>Strategy</b>	<b>Encourage agricultural officials to give presentation about the warning signs of various diseases that are likely to affect the county.</b>		
<i>Criteria</i>	Cost	Benefit	Comments
<i>Social</i>		+	Will help increase agricultural yields
<i>Technical</i>	-		May be difficult to garner a large audience
<i>Administrative</i>	-		Getting the information out
<i>Political</i>	NA	NA	
<i>Legal</i>	NA	NA	
<i>Economic</i>		+	Agricultural producers do have an economic incentive to learn more about various diseases that are likely to affect their fields
<i>Environmental</i>		+	Proactive approach
<i>Priority</i>			4

<b><u>Objective:</u></b>	Help contain an outbreak of animal disease.
<b><u>Strategy:</u></b>	Facilitate planning between farmers to work together to develop ways of containing a disease. Who: LMO, Ext, All Township, BAH Timeframe: Ongoing Cost: In-kind Priority Rank: 4
<b><u>Strategy:</u></b>	Maintain the section in the Emergency Operations Plan that deals with response and care of animals in an outbreak of disease or a major disaster

	<p>along with disposal.          Who: RC, LMO, Ext          Timeframe: Ongoing          Cost: In-kind          Priority Rank: 5</p>
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Facilitate planning between farmers to work together to develop ways of containing a disease.			
Criteria	Cost	Benefit	Comments
<i>Social</i>		+	Increased cooperation for the common good
<i>Technical</i>	-		May be difficult to get cooperation
<i>Administrative</i>		+	Number of farmers to reach
<i>Political</i>	NA	NA	
<i>Legal</i>	NA	NA	
<i>Economic</i>		+	Potential economies of scale in regards to working together to contain a disease
<i>Environmental</i>	-		Unintended consequences associated with trying to contain the disease by spraying and using chemical
<i>Priority</i>			4

Maintain the section in the Emergency Operations Plan that deals with response and care of animals in an outbreak of disease or a major disaster along with disposal.			
Criteria	Cost	Benefit	Comments
<i>Social</i>		+	Will help to contain the outbreak

<i>Technical</i>	-		Disease may spread quickly which makes containing the outbreak more difficult
<i>Administrative</i>	-		Specialized planning for specific diseases may be difficult (unpredictable nature of disease)
<i>Political</i>	NA	NA	
<i>Legal</i>	NA	NA	
<i>Economic</i>	-		Large economic cost to producers if large herds are lost
<i>Environmental</i>	-	+	Issues associated with disposal/ Positive: containing the disease
<i>Priority</i>			5

**A3 Hazard: Violent Storms/Extreme Temperatures – this hazard includes summer and winter storms, lightning, tornados/ straight-line winds, and hail**

Goal: Minimize the negative impacts caused by severe weather and extreme temperatures.

<u>Objective:</u>	Educate county residents on the importance and need of adequate safety shelters.
<u>Strategy:</u>	Distribute educational materials regarding the risks associated with violent storms that occur in Rock County when building licenses are applied for and issued. This will help emphasize the importance of have an adequate safety shelter. Who: RC, All Cities, All Townships Timeframe: Ongoing Cost: In-Kind Priority Rank: 3
<u>Strategy:</u>	Increase signage at public campgrounds warning campers of weather risks (i.e. those sites not covered by sirens) Who: RC, All Cities, All Townships, Blue Mound State Park Timeframe: ASAP Cost: \$5,000 Priority Rank: 5

Strategy	Distribute educational materials regarding the risks associated with violent storms that occur in Rock County when building licenses are applied for and issued. This will help emphasize the importance of have an adequate safety shelter.		
Criteria	Cost	Benefit	Comments
<i>Social</i>		+	Highly visible public program
<i>Technical</i>	-		Getting residents to use the educational materials
<i>Administrative</i>	-		Cost of running the program
<i>Political</i>	NA	NA	
<i>Legal</i>	NA	NA	
<i>Economic</i>	-	+	Costs associated with the project/ potential lives saved
<i>Environmental</i>	NA	NA	
<i>Priority</i>			3

Strategy	Increase signage at public campgrounds warning campers of weather risks (i.e. those sites not covered by sirens).		
Criteria	Cost	Benefit	Comments
<i>Social</i>		+	Public campaign that increases community safety on public grounds
<i>Technical</i>	-		Effectively informing the public of the risks may require more than just signage
<i>Administrative</i>		+	Administering a signage project is relatively straightforward
<i>Political</i>	NA	NA	
<i>Legal</i>	-		Legal issues of identifying the risks and not providing a safety shelter
<i>Economic</i>	-	+	Costs associated with the project/ potential lives saved

<i>Environmental</i>	NA	NA	
<i>Priority</i>			5

<u>Objective:</u>	Increase the shelter capacity for at risk areas within the county.
<u>Strategy:</u>	Distribute educational materials regarding the risks associated with violent storms that occur in Rock County when building licenses are applied for and issued. This will help emphasize the importance of have an adequate safety shelter. Who: RC, All Cities, All Townships, LMO Timeframe: Ongoing Cost: In-Kind Priority Rank: 3
<u>Strategy:</u>	Build a safety shelter at Blue Mound State Park. Identify other municipal and county parks where safety shelters are need. Who: RC, Blue Mound State Park Timeframe: ASAP Cost: \$100,000 -\$150,000 Priority Rank: 5
<u>Strategy:</u>	Conduct a study to determine where additional safety shelters are needed within cities (mobile home parks and other areas where basements are uncommon). Who: RC, RCSO, All Cities Timeframe: 2014-2018 Cost: In-Kind Priority Rank: 3

<b>Strategy</b>	<b>Distribute educational materials regarding the risks associated with violent storms that occur in Rock County when building licenses are applied for and issued. This will help emphasize the importance of have an adequate safety shelter.</b>		
<i>Criteria</i>	Cost	Benefit	Comments
<i>Social</i>		+	Increases the communities knowledge regarding risk associated with violent storms

<i>Technical</i>	-		Getting residents to put the information into use
<i>Administrative</i>	-	+	Efficient way to get information out to residents who are remodeling or building new/ negative: small target audience
<i>Political</i>	NA	NA	
<i>Legal</i>	NA	NA	
<i>Economic</i>		+	Low cost but only reaching a small audience
<i>Environmental</i>	NA	NA	
<i>Priority</i>			3

<b>Strategy</b>	<b>Build a safety shelter at Blue Mound State Park. Identify other municipal and county parks where safety shelters are need.</b>		
<i>Criteria</i>	Cost	Benefit	Comments
<i>Social</i>		+	Increases safety at public parks
<i>Technical</i>	-		What type of structure would be cost effective and provide adequate shelter
<i>Administrative</i>		+	Prioritizing locations for shelters
<i>Political</i>	-		Blue Mound State Park is under state jurisdiction
<i>Legal</i>	-		Legal issues regarding not having a shelter
<i>Economic</i>	-	+	Project costs/ Save lives
<i>Environmental</i>	NA	NA	
<i>Priority</i>			5

<b>Strategy</b>	<b>Conduct a study to determine where additional safety shelters are needed within cities (mobile home parks and other areas where basements are uncommon).</b>		
<i>Criteria</i>	Cost	Benefit	Comments
<i>Social</i>		+	Countywide program so discussing opportunities and threats
<i>Technical</i>	-		Design issues
<i>Administrative</i>		+	Identifying locations without basements should be straightforward
<i>Political</i>	-		Prioritizing
<i>Legal</i>	-		Ownership issues
<i>Economic</i>	-		High costs
<i>Environmental</i>	NA	NA	
<i>Priority</i>			3

<b>Objective:</b>	To have staff at the schools, hospitals, and nursing homes in Rock County trained for severe weather emergency response (evacuation routes).
<b>Strategy:</b>	<p>Each spring, Rock County Emergency Management personnel will educate local schools, nursing homes, hospitals, etc. on the importance of doing a “Severe Weather Awareness Week” workshop for their staff. This workshop identifies evacuation routes and safety shelters, along with other important information.</p> <p>Who: RC, Sch, Hosp  Timeframe: Ongoing  Cost: In-kind  Priority Rank: 4</p>

<b>Strategy</b>	<b>Each spring, Rock County Emergency Management personnel will educate local schools, nursing homes, hospitals, etc. on the importance of doing a “Severe Weather Awareness Week” workshop for their staff. This workshop identifies evacuation routes and safety shelters, along with other important information.</b>
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<i>Criteria</i>	Cost	Benefit	Comments
<i>Social</i>		+	Bring organizations together
<i>Technical</i>		+	Educating critical facilities and vulnerable populations (youth and seniors)
<i>Administrative</i>		+	Workshop is established and is annually so administrative work is minimal
<i>Political</i>		+	Highly visible program so politically beneficial to support
<i>Legal</i>	NA	NA	
<i>Economic</i>		+	Low cost high impact
<i>Environmental</i>	NA	NA	
<i>Priority</i>			4

<u>Objective:</u>	Ensure County residents are better notified of current weather conditions.
<u>Strategy:</u>	Encourage Rock County residents to sign up for emergency alerts through the Nixle Alert System. The Nixle Alert System allows verified government agencies to send out messages to residents via phone, email, and internet. The Nixle Alert System allows local government to send out information to residents regarding current weather conditions and other precautionary measures. Who: RC, All Cities Timeframe: Ongoing Cost: In-kind Priority Rank: 4
<u>Strategy:</u>	Encourage residents to purchase NWS weather radios, especially those in rural areas away from community sirens. Who: RC Timeframe: 2014-2018 Cost: In-kind Priority Rank: 4
<u>Strategy:</u>	Evaluate the recommendations made by Federal Warning Systems, Inc. regarding emergency sirens in Rock County and implement said recommendations.

	Who: RC, All Cities Timeframe: 2014-2015 Cost: \$54,145.04 - \$57,661.23 Priority Rank: 5
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<b>Strategy</b>	Encourage Rock County residents to sign up for emergency alerts through the Nixle Alert System. The Nixle Alert System allows verified government agencies to send out messages to residents via phone, email, and web. The Nixle Alert System allows local government to send out information to residents regarding current weather conditions and other precautionary measures.		
<i>Criteria</i>	Cost	Benefit	Comments
<i>Social</i>		+	Increased communication between government and public
<i>Technical</i>		+	Nixle Alert System is already setup so just have to encourage residents to sign up
<i>Administrative</i>		+	Straight forward program that has been implemented in other counties
<i>Political</i>		+	Highly visible program so politically beneficial to support
<i>Legal</i>	NA	NA	
<i>Economic</i>		+	Low cost big impact
<i>Environmental</i>	NA	NA	
<i>Priority</i>			4

<b>Strategy</b>	Encourage residents to purchase NWS weather radios, especially those in rural areas away from community sirens.		
<i>Criteria</i>	Cost	Benefit	Comments
<i>Social</i>		+	Benefits rural residents
<i>Technical</i>		+	NWS weather radios are reliable and tested

<i>Administrative</i>	NA	NA	
<i>Political</i>	NA	NA	
<i>Legal</i>	NA	NA	
<i>Economic</i>	-		Cost associated with purchasing the radios
<i>Environmental</i>	NA	NA	
<i>Priority</i>			4

<b>Strategy</b>	<b>Evaluate the recommendations made by Federal Warning Systems, Inc. regarding emergency sirens in Rock County and implement said recommendations.</b>		
<i>Criteria</i>	Cost	Benefit	Comments
<i>Social</i>		+	Benefits residents who live near emergency sirens
<i>Technical</i>		+	Federal Warning Systems, Inc. will be able to install sirens
<i>Administrative</i>	-		Deciding how many recommendations to implement
<i>Political</i>	-	+	Recommendations that get implemented may have political implications
<i>Legal</i>	NA	NA	
<i>Economic</i>	-		Cost associated with implementing the recommendations
<i>Environmental</i>	NA	NA	
<i>Priority</i>			5

<b><u>Objective:</u></b>	Ensure emergency personnel and residents are prepared for violent storms and extreme temperatures.
<b><u>Strategy:</u></b>	Ensure critical facilities such as hospitals and rural water suppliers have access to back up power generators. Who: RC, CL, Hosp, RWS, VH Timeframe: Ongoing

	Cost: \$100,000-150,000 Priority Rank: 5
<u>Strategy:</u>	Identify old Fallout Shelters as locations to be used during severe weather events. Who: RC, All Cities Timeframe: 2014-2018 Cost: In-kind Priority Rank: 3
<u>Strategy:</u>	Work with fire and ambulance volunteers to develop a safe shelter plan for the county including shelters, shelter capacity, and transportation routes. Who: RC, All Cities, LMO, RCSO, Fire, Amb, Hosp, Sch, VH Timeframe: 2009-2010 Cost: In-kind Priority Rank: 4

Strategy	Ensure critical facilities such as hospitals and rural water suppliers have access to back up power generators.		
Criteria	Cost	Benefit	Comments
<i>Social</i>		+	Place for residents to come
<i>Technical</i>	-		Finding funding to purchase additional generators / technical assistance for evaluating how much equipment can be powered with the current generators
<i>Administrative</i>		+	limited number of critical facilities
<i>Political</i>		+	Ensuring power to critical facilities should garner widespread support
<i>Legal</i>	-	+	Legal issues regarding who pays for the generators and who maintains them
<i>Economic</i>	-	+	High cost but critically important
<i>Environmental</i>	NA	NA	

<i>Priority</i>			5
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<b>Strategy</b>			
<b>Identify old Fallout Shelters as locations to be used during severe weather events.</b>			
<i>Criteria</i>	Cost	Benefit	Comments
<i>Social</i>		+	Old fallout shelters can be valuable again if identified and repurposed as severe weather shelters
<i>Technical</i>	-		Have to evaluate the shelters
<i>Administrative</i>		+	Should be old records so it should be easy to identify fallout shelters
<i>Political</i>	NA	NA	
<i>Legal</i>	-		Some fallout shelters are on private property
<i>Economic</i>		+	Low cost
<i>Environmental</i>	NA	NA	
<i>Priority</i>			3

<b>Strategy</b>			
<b>Work with fire and ambulance volunteers to develop a safe shelter plan for the county including shelters, shelter capacity, and transportation routes.</b>			
<i>Criteria</i>	Cost	Benefit	Comments
<i>Social</i>		+	Community benefit
<i>Technical</i>		+	A number of volunteers have lived in Rock County for decades and have this information in their head. The information just has to be documented so it can be reviewed and shared with volunteers with less experience.
<i>Administrative</i>		+	Getting the information written down and verified

<i>Political</i>	NA	NA	
<i>Legal</i>	NA	NA	
<i>Economic</i>	-	+	Cost of identifying / potential lives saved
<i>Environmental</i>	NA	NA	
<i>Priority</i>			4

#### A4 Hazard: Drought

Goal: Minimize the negative impacts of drought conditions in Rock County.

<u>Objective:</u>	Record accurate inventories of the recharge rates and capacities of the county's aquifers.
<u>Strategy:</u>	<p>Perform necessary studies to determine the capacities and recharge rates of the county's aquifers in order to better assess use restrictions and provisions during times of drought.</p> <p>Who: LMO, CL, RWS, USGS  Timeframe: Ongoing  Cost: In-kind  Priority Rank: 4</p>

<b>Strategy</b>	<b>Perform necessary studies to determine the capacities and recharge rates of the county's aquifers in order to better assess use restrictions and provisions during times of drought.</b>		
<i>Criteria</i>	Cost	Benefit	Comments
<i>Social</i>		+	Increase awareness regarding water usage
<i>Technical</i>	-		Determining recharge rates and restrictions
<i>Administrative</i>	-		Monitoring and enforcement regarding restrictions
<i>Political</i>	-		Agreement between opposing views regarding restrictions
<i>Legal</i>	-		Legal issues regarding restrictions (water restrictions are first put

			in place on livestock so there is a potential for livestock loss)
<i>Economic</i>	-		Cost of the study
<i>Environmental</i>		+	Monitoring increases
<i>Priority</i>			4

<u>Objective:</u>	Mandate that all public water supplies have an up to date wellhead protection plan.
<u>Strategy:</u>	Work with public water supplies to develop or update their wellhead protection plans. Who: SRDC, LMO, RWS, All Cities, All Townships Timeframe: 2014-2018 Cost: \$6,000-\$10,000 per plan Priority Rank: 4
<u>Strategy:</u>	Educate the public and private leaders of the importance of wellhead protection and water conservation in times of low rainfall. Who: LMO, CL, RWS Timeframe: 2014-2018 Cost: In-kind Priority Rank: 4

<b>Strategy</b>	<b>Work with public water supplies to develop or update their wellhead protection plans.</b>		
<i>Criteria</i>	Cost	Benefit	Comments
<i>Social</i>		+	Community benefit, improved water quality
<i>Technical</i>	-		Wellhead protection plans are time consuming and highly technical
<i>Administrative</i>			
<i>Political</i>	-		Gaining compliance with all public water supplies in Rock

			County
<i>Legal</i>	-		Legal recourse
<i>Economic</i>	-		Cost to develop the plan/ update the plan
<i>Environmental</i>		+	Improved water quality through well sealing and other projects outlined through the development of a wellhead protection plan
<i>Priority</i>			4

<b>Strategy</b>	<b>Educate the public and private leaders of the importance of wellhead protection and water conservation in times of low rainfall.</b>		
<i>Criteria</i>	Cost	Benefit	Comments
<i>Social</i>		+	Countywide education program
<i>Technical</i>	-		Critical to identify all wells and getting agreement that this is an issue
<i>Administrative</i>	-		Some residents will discard information
<i>Political</i>	-	+	Issues related to limiting usage and restrictions regarding water conservation
<i>Legal</i>	-		Issues regarding responsibility and conservation
<i>Economic</i>	-		Cost of reaching the majority of the population and reinforcing the importance of wellhead protection plans and water conservation
<i>Environmental</i>		+	Better managing resources
<i>Priority</i>			4

<u>Objective:</u>	Ensure Rock County's water supplies are sufficient to meet demands.
<u>Strategies:</u>	Expand rural water systems to help ensure safe and reliable drinking water throughout Rock County.

	Who: LMO, CL, RWS, RC Timeframe: 2014-2018 Cost: \$3.5 million County / 20 million City of Luverne Priority Rank: 4
<u>Strategies:</u>	Hookup to Lewis and Clark Rural Water where appropriate to ensure water supplies are sufficient to meet demands. Who: LMO, CL, RWS, RC Timeframe: 2014-2018 Cost: \$3.5 million County / 20 Million City of Luverne Priority Rank: 4
<u>Strategies:</u>	Expand rural water systems to the water desert in Rock County. This area is in the northwest section of the county, south of Jasper along Buffalo Ridge. Residents in this area have to rely on cisterns and private wells. Who: LMO, RWS Timeframe: 2014-2018 Cost: \$3.5 million County / 20 million City of Luverne Priority Rank: 4

Strategy	Expand rural water systems to help ensure safe and reliable drinking water throughout Rock County.		
Criteria	Cost	Benefit	Comments
<i>Social</i>		+	Ensure high quality safe water for consumption
<i>Technical</i>	-		Getting the stakeholders to work together to finish the project
<i>Administrative</i>	-		The logistics of bring everyone together
<i>Political</i>	-		Multiple players: Iowa, Minnesota, South Dakota, and cities and counties within the region
<i>Legal</i>	-		Not providing water to livestock users in times of drought
<i>Economic</i>	-	+	Large cost / Supplying water needs for current and new residents and businesses (Economic Development)
<i>Environmental</i>		+	Improved water monitoring

<i>Priority</i>			4
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<b>Strategy</b>	<b>Hookup to Lewis and Clark Rural Water where appropriate to ensure water supplies are sufficient to meet demands.</b>		
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<i>Criteria</i>	Cost	Benefit	Comments
<i>Social</i>		+	Ensure high quality safe water for consumption
<i>Technical</i>	-		Getting the stakeholders to work together to finish the project
<i>Administrative</i>	-		The logistics of cost sharing the project and getting larger stakeholders, like Sioux Falls, to continue to help fund the Lewis and Clark Rural Water plan, even after they are hooked up to the water supply system.
<i>Political</i>	-		Multiple players: Iowa, Minnesota, South Dakota, and cities and counties within the region
<i>Legal</i>	-		Cost sharing issues and pricing issues
<i>Economic</i>	-	+	Large cost / Supplying water needs for current and new residents and businesses (Economic Development)
<i>Environmental</i>		+	Improved water monitoring
<i>Priority</i>			4

<b>Strategy</b>	<b>Expand rural water systems to the water desert in Rock County. This area is in the northwest section of the county, south of Jasper along Buffalo Ridge. Residents in this area have to rely on cisterns and private wells.</b>		
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<i>Criteria</i>	Cost	Benefit	Comments
<i>Social</i>		+	Increase the number of residents who have access to reliable quality water
<i>Technical</i>	-		Expanding the rural water system in this area

<i>Administrative</i>	-		Gaining support for the project
<i>Political</i>	-		Small number of people affected by the expansion, while rural water costs will go up for everyone in the area
<i>Legal</i>	-		Not providing water to livestock users in times of drought
<i>Economic</i>	-		Funding for expanding rural water to this area
<i>Environmental</i>			Improved water monitoring
<i>Priority</i>			4

<b>Objectives:</b>	Ensure compliance in regards to draw down rates.
<b>Strategies:</b>	Work with Department of Natural Resources (DNR) to ensure adequate draw down studies are completed prior to irrigation permits being issued. Who: LMO, RWS Timeframe: Ongoing Cost: In-kind Priority Rank: 4

<b>Strategy</b>	<b>Work with Department of Natural Resources (DNR) to ensure adequate draw down studies are completed prior to irrigation permits being issued.</b>		
<i>Criteria</i>	Cost	Benefit	Comments
<i>Social</i>		+	Will help ensure adequate water supplies
<i>Technical</i>	-		Completing a draw down studies and defining irrigation (size of operation: garden compared to farm)
<i>Administrative</i>	-		Deciding how big of an irrigation operation needs a draw down study
<i>Political</i>	-		Making draw down studies a requirement for an irrigation permit being issued
<i>Legal</i>	-		Issues associated with permits

<i>Economic</i>	-		Increased cost of the irrigation permit from the additional cost of the draw down study
<i>Environmental</i>		+	Increased monitoring
<i>Priority</i>			4

**A5 Hazard: Fire —Structure Fires and Wildfires**

Goal: Eliminate or lessen the negative impacts from fire.

<u>Objectives:</u>	Limit the potential for wildfires to spread.
<u>Strategies:</u>	Encourage road authorities to cut back road ditches and bale where appropriate, which will limit potential for spreading of wildfires. Who: RC, LMO, All Townships, Fire, MnDOT Timeframe: Ongoing Cost: In-kind Priority Rank: 1
<u>Strategies:</u>	Encourage fire breaks on private roads to help prevent wildfires from spreading. Who: RC, LMO, All Townships, Fire Timeframe: Ongoing Cost: In-kind Priority Rank: 1

<b>Strategy</b>	<b>Encourage road authorities to cut back road ditches and bale where appropriate, which will limit potential for spreading of wildfires.</b>		
<i>Criteria</i>	Cost	Benefit	Comments
<i>Social</i>		+	Farther reduces the risk wildfires spreading
<i>Technical</i>		+	Already a low risk of wildfires in Rock County
<i>Administrative</i>		+	Ownership of the roadway is easy to identify
<i>Political</i>	-	+	Loss of habitat verse economic activity generated from baling

			and feed
<i>Legal</i>	-		Issues regarding ownership and permits to bale: county, state, or federal roadway
<i>Economic</i>		+	Baling and selling the grass for feed
<i>Environmental</i>	-		Reducing habitat for pheasants and other small game
<i>Priority</i>			1

Strategy	Encourage fire breaks on private roads to help prevent wildfires from spreading.		
<i>Criteria</i>	Cost	Benefit	Comments
<i>Social</i>		+	Farther reduces the risk wildfires spreading
<i>Technical</i>		+	Already a low risk of wildfires in Rock County
<i>Administrative</i>		+	Small number of private roads in Rock County
<i>Political</i>	NA	NA	
<i>Legal</i>	-		Issues regarding ownership
<i>Economic</i>	NA	NA	
<i>Environmental</i>	-		Reducing habitat for pheasants and other small game if the ditches are baled
<i>Priority</i>			1

<b><u>Objectives:</u></b>	Encourage fire safety and prevention education for residents throughout the county including school districts.
<b><u>Strategies:</u></b>	Participate in the nationally coordinated “Firewise” program to increase resident education. Who: All Cities, Fire, Sch, Hosp Timeframe: Ongoing Cost: In-kind

	Priority Rank: 3
<b>Strategies:</b>	Participate in Fire Prevention Month with the Minnesota State Fire Marshall. Who: LMO, All Cities, Fire, MNFIRE, RCSO, Sch Timeframe: Ongoing Cost: In-kind Priority Rank: 4

Strategy	Participate in the nationally coordinated "Firewise" program to increase resident education.		
Criteria	Cost	Benefit	Comments
<i>Social</i>		+	Productive outreach program
<i>Technical</i>		+	Educational materials are already developed
<i>Administrative</i>		+	Program already is establish so administration is minimal
<i>Political</i>		+	Supporting national program
<i>Legal</i>	NA	NA	
<i>Economic</i>		+	Low cost high impact
<i>Environmental</i>	NA	NA	
<i>Priority</i>			3

Strategy	Participate in Fire Prevention Month with the Minnesota State Fire Marshall.		
Criteria	Cost	Benefit	Comments
<i>Social</i>		+	Productive outreach program
<i>Technical</i>		+	Educational materials are already developed

<i>Administrative</i>		+	Program already is establish so administration is minimal
<i>Political</i>		+	Supporting state program
<i>Legal</i>	NA	NA	
<i>Economic</i>		+	Low cost high impact
<i>Environmental</i>	NA	NA	
<i>Priority</i>			4

<u>Objectives:</u>	Safer structures by having building codes include alarms and sprinkler systems.
<u>Strategies:</u>	Encourage public building construction to include sprinkler systems. Who: LMO, All Cities, Fire Timeframe: Ongoing Cost: In-kind Priority Rank: 4

Strategy	Encourage public building construction to include sprinkler systems.		
Criteria	Cost	Benefit	Comments
<i>Social</i>		+	Improved safety in public buildings
<i>Technical</i>		+	Technology already exists
<i>Administrative</i>		+	Straightforward: include or exclude in building design
<i>Political</i>	NA	NA	
<i>Legal</i>	NA	NA	
<i>Economic</i>	-		Additional construction costs
<i>Environmental</i>	NA	NA	

Priority			4
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<u>Objectives:</u>	Easy accessibility for the county's fire trucks and firefighting personnel.
<u>Strategies:</u>	<p>Ensure roads and alleys within the county are sufficient size to handle modern firefighting vehicles. This may require limiting parking on the street and having setback requirements along alleys.</p> <p>Who: LMO, All Cities, Fire  Timeframe: Ongoing  Cost: In-kind  Priority Rank: 4</p>

<b>Strategy</b>	<b>Ensure roads and alleys within the county are sufficient size to handle modern firefighting vehicles. This may require limiting parking on the street and having setback requirements along alleys.</b>		
<i>Criteria</i>	Cost	Benefit	Comments
<i>Social</i>		+	Improved access will make controlling fires more effective
<i>Technical</i>	-		Older developments may have to be redesigned
<i>Administrative</i>		+	Evaluating current conditions is relatively straightforward (can the modern firefighting vehicles access the roadway)
<i>Political</i>	-		If eminent domain is used there will be political ramifications
<i>Legal</i>	-		Older neighborhoods may have to have alleys widened so there may be eminent domain issues
<i>Economic</i>	-	+	Increased safety since firefighting will be more effective, but development costs will be higher
<i>Environmental</i>	NA	NA	
<i>Priority</i>			4

<u>Objectives:</u>	Keep emergency responders mutual aid agreements up to date.
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<u>Strategies:</u>	<p>Coordinate and identify regional fire departments outside of the county who could directly assist in fighting fires in Rock County.</p> <p>Who: RC, RCSO, Fire  Timeframe: Ongoing  Cost: In-kind  Priority Rank: 4</p>
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Strategy	Coordinate and identify regional fire departments outside of the county who could directly assist in fighting fires in Rock County.		
Criteria	Cost	Benefit	Comments
<i>Social</i>		+	Increased cooperation between fire departments in the region
<i>Technical</i>		+	Rural fire departments are having difficulty finding volunteers so increased coordination can help fire service shortcomings in some areas
<i>Administrative</i>	-		Getting all the stakeholders together to keep mutual aid agreements up to date
<i>Political</i>	-	+	Fire district maps may have to be modified so fire service levels may also change
<i>Legal</i>	-		Issues regarding fire service levels (response capabilities)
<i>Economic</i>		+	Consolidating services will decrease operating costs
<i>Environmental</i>	NA	NA	
<i>Priority</i>			4

<u>Objectives:</u>	Ensure the availability of various fire retardant supplies throughout the county.
<u>Strategies:</u>	<p>Install and maintain dry hydrants were needed in Rock County.</p> <p>Who: RC, LMO, All Townships, Fire  Timeframe: Ongoing  Cost: \$25,000 per hydrant  Priority Rank: 4</p>

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Strategy	Install and maintain dry hydrants were needed in Rock County.		
Criteria	Cost	Benefit	Comments
<i>Social</i>		+	Will improve firefighting capabilities in Rock County
<i>Technical</i>	-		Addressing needs
<i>Administrative</i>	-		Garnering countywide input
<i>Political</i>	-	+	Selecting locations may be political
<i>Legal</i>	NA	NA	
<i>Economic</i>	-		The cost of installing and maintaining dry hydrants is expensive
<i>Environmental</i>	NA	NA	
<i>Priority</i>			4

## A6 Transportation Infrastructure and Transportation Crashes

Goal: Improve the quality of transportation infrastructure in Rock County to help promote safety while traveling throughout the county.

<u>Objectives:</u>	Employ best practices in regards to road design.
<u>Strategies:</u>	<p>When constructing or repaving a roadway consider design improvements to enhance safety and reduce maintenance. (MnDOT State Aid is a good resource for information regarding best practices).</p> <p>Who: RC, All Townships, All Cities, MnDOT, RCSO</p> <p>Timeframe: Ongoing</p> <p>Cost: In-kind</p> <p>Priority Rank: 3</p>

Strategy	When constructing or repaving a roadway consider design improvements to enhance safety and reduce maintenance. (MnDOT State Aid is a good resource for information regarding best practices).		
Criteria	Cost	Benefit	Comments
<i>Social</i>		+	Increased safety on public roadways
<i>Technical</i>		+	Implementing best practices
<i>Administrative</i>	-		Identifying best practices and safety measures
<i>Political</i>	-	+	There may be support and opposition to some safety measures
<i>Legal</i>	-		Modifying a roadway may require acquiring new land
<i>Economic</i>		+	May be more costly to build but overall lifetime costs may be lower due to maintenance and reduced injuries on the roadway
<i>Environmental</i>	NA	NA	
<i>Priority</i>			3

<u>Objective:</u>	Employ proper road maintenance and preventative safety measures
<u>Strategies</u>	<p>Encourage road authorities to keep right-of-way of roadways clear of hazardous shrubs, trees, and encroaching farm fields. (There are incidences where there are shrubs and trees are planted in the right-of-way for snow control and ambiance. This strategy is referring to hazardous shrubs and trees).</p> <p>Who: RC, LMO, All Townships, MnDOT  Timeframe: Ongoing  Cost: In-kind  Priority Rank: 3</p>
<u>Strategies</u>	<p>Ensure emergency personnel have the equipment they need to respond to a variety of transportation accidents.</p> <p>Who: RC, RCSO,  Timeframe: Ongoing  Cost: In-kind  Priority Rank: 4</p>

Strategy	Encourage road authorities to keep right-of-way of roadways clear of hazardous shrubs, trees, and encroaching farm fields. (There are incidences where there are shrubs and trees planted in the right-of-way for snow control and ambiance. This strategy is referring to hazardous shrubs and trees).		
Criteria	Cost	Benefit	Comments
<i>Social</i>		+	Increased safety on public roadways
<i>Technical</i>		+	Easy to identify
<i>Administrative</i>	-		Conflict with landowners regarding encroaching farm fields
<i>Political</i>	-		Farmers have pushed the limits of their fields in the past, so there is some opposition to increased monitoring
<i>Legal</i>	-	+	Legal issues regarding keeping the ditches clear
<i>Economic</i>	-	+	Costs will add up but crashes may be avoided
<i>Environmental</i>	NA	NA	
<i>Priority</i>			3

Strategy	Ensure emergency personnel have the equipment they need to respond to a variety of transportation accidents.		
Criteria	Cost	Benefit	Comments
<i>Social</i>		+	Better able to serve the community
<i>Technical</i>	-		Equipment is always changing and being improved
<i>Administrative</i>	-		Identifying equipment needs and balancing needs with a budget
<i>Political</i>	-		May be political ramifications associated with not having a certain piece of emergency equipment
<i>Legal</i>	-		May be legal issues regarding not having certain emergency equipment
<i>Economic</i>	-		Cost of the equipment

<i>Environmental</i>	NA	NA	
<i>Priority</i>			4

**Goal:** Improve the quality of transportation education and information sharing in Rock County to help promote safety while traveling throughout the county.

<b>Objectives:</b>	Keep residents and travelers up to date on road conditions and road closures.
<b>Strategies:</b>	Encourage and educate residents regarding the Nixle Alert System and 511MN.or or 511 for mobile phones. The Nixle Alert System allows verified government agencies to send out messages to residents via phone, email, and web. The Nixle Alert System allows local government to send out information to residents regarding road closures and other traffic related information. "511" service provides information to travelers on weather related road conditions, construction, and congestion. Who: RCSO, RC, All Townships, All Cities, MnDOT Timeframe: Ongoing Cost: In-kind Priority Rank: 4
<b>Strategies:</b>	Increase the speed and accuracy of information related to road conditions and road closures to media outlets. Work with local media outlets to enhance the existing system. Who: RCSO, RC, All Townships, All Cities, MnDOT Timeframe: Ongoing Cost: In-kind Priority Rank: 4

<b>Strategy</b>	Encourage and educate residents regarding the Nixle Alert System and 511MN.or or 511 for mobile phones. The Nixle Alert System allows verified government agencies to send out messages to residents via phone, email, and web. The Nixle Alert System allows local government to send out information to residents regarding road closures and other traffic related information. "511" service provides information to travelers on weather related road conditions, construction, and congestion.		
<i>Criteria</i>	Cost	Benefit	Comments
<i>Social</i>		+	Increased communication between government and public

<i>Technical</i>		+	Nixle Alert System is already setup so just have to encourage residents to sign up
<i>Administrative</i>		+	Straight forward program that has been implemented in other counties
<i>Political</i>		+	Highly visible program so politically beneficial to support
<i>Legal</i>	NA	NA	
<i>Economic</i>		+	Low cost big impact
<i>Environmental</i>	NA	NA	
<i>Priority</i>			4

<b>Strategy</b>	<b>Increase the speed and accuracy of information related to road closures and road conditions to media outlets. Work with local media outlets to enhance the existing system.</b>		
<i>Criteria</i>	Cost	Benefit	Comments
<i>Social</i>		+	Community benefit
<i>Technical</i>		+	Multiple media outlets (radio, local tv, internet) will cover majority of residents
<i>Administrative</i>		+	Easy to administer/ easy to get information out with mass media/ MnDOT Public Affairs Coordinator utilizes both the 511 system and mass email distribution to local media outlets to alert public
<i>Political</i>	NA	NA	
<i>Legal</i>	NA	NA	
<i>Economic</i>		+	Low cost high impact
<i>Environmental</i>	NA	NA	
<i>Priority</i>			4

<u>Objectives:</u>	<p>Increase safety in the higher risk areas in Rock County that have been identified by the planning team. The following locations have been identified as higher risk areas for pedestrians by the planning team:</p> <ul style="list-style-type: none"> <li>• U.S. Highway 75 by Luverne Public Schools in the City of Luverne</li> <li>• U.S. Highway 75 by the Sanford Hospital in the City of Luverne</li> <li>• U.S. Highway 75 near the Comfort Inn Hotel</li> <li>• MN Highway 270 by Hills Public School in the City of Hills</li> <li>• County Road 4 through the City of Magnolia</li> </ul>
<u>Strategies:</u>	<p>Implement traffic calming devices along U.S. Highway 75 in Luverne. Traffic calming devices will help to make crossing safer for pedestrians.</p> <p>Who: RCSO, RC, CL, MnDOT  Timeframe: Ongoing  Cost: In-kind  Priority Rank: 3</p>
<u>Strategies:</u>	<p>Implement traffic calming devices along MN Highway 270 by the Hills Public School in the City of Hills. Traffic calming devices will help to make crossing safer for pedestrians.</p> <p>Who: RCSO, RC, Hills, MnDOT  Timeframe: Ongoing  Cost: In-kind  Priority Rank: 3</p>
<u>Strategies:</u>	<p>Implement traffic calming devices along County Road 4 through the City of Magnolia. Traffic calming devices will help to make crossing safer for pedestrians.</p> <p>Who: RCSO, RC, CM, MnDOT  Timeframe: Ongoing  Cost: In-kind  Priority Rank: 3</p>
<u>Strategies:</u>	<p>Work with MnDOT and local road authorities to identify and improve other hazardous intersections and higher risk areas of conflict between pedestrians and vehicle traffic.</p> <p>Who: RCSO, RC, MnDOT, all cities  Timeframe: Ongoing  Cost: In-kind  Priority Rank: 3</p>

<b>Strategy</b>	<b>Implement traffic calming devices along U.S. Highway 75 in Luverne. Traffic calming devices will help to make crossing safer for pedestrians.</b>		
<i>Criteria</i>	Cost	Benefit	Comments
<i>Social</i>		+	Improves safety for all users
<i>Technical</i>		+	A variety of traffic calming devices are tried and tested and improve safety for all users
<i>Administrative</i>	-		Selecting the appropriate traffic calming device(s)
<i>Political</i>	-	+	Will improve safety but there may be push back to reducing traffic speeds
<i>Legal</i>	NA	NA	
<i>Economic</i>	-	+	Can potentially save lives and reduce injuries but increases project costs
<i>Environmental</i>		+	Promoting walking and bicycling
<i>Priority</i>			3

<b>Strategy</b>	<b>Work with MnDOT and local road authorities to identify and improve hazardous intersections and other areas of conflict.</b>		
<i>Criteria</i>	Cost	Benefit	Comments
<i>Social</i>		+	Countywide effort to improve safety
<i>Technical</i>	-		Identifying locations and improvements
<i>Administrative</i>	-	+	Garnering community input
<i>Political</i>	-		Prioritizing projects may cause conflict between municipalities
<i>Legal</i>	NA	NA	
<i>Economic</i>	-	+	Can potentially save lives and reduce injuries but increases

			project costs
<i>Environmental</i>	NA	NA	
<i>Priority</i>			3

<u>Objective:</u>	Promote safe driving.
<u>Strategies</u>	Educate residents on the importance of slowing down and moving over for emergency personnel on the side of roadways. Who: RC, RCSO, MnDOT Timeframe: Ongoing Cost: 1,500 per year Priority Rank: 4
<u>Strategies</u>	Educate motor vehicle drivers on laws pertaining to sharing the road. Who: RC, RCSO, MnDOT, Sch Timeframe: Ongoing Cost: 1,500 per year Priority Rank: 3
<u>Strategies</u>	Educate bicyclists on their responsibility to bike responsibly and abide by the law, which includes but is not limited to: stopping at stop signs and yielding to pedestrians. Who: RC, RCSO, MnDOT, Sch Timeframe: Ongoing Cost: 1,500 per year Priority Rank: 3
<u>Strategies</u>	Educate residents on the importance of driving to the conditions. Who: RC, RCSO, MnDOT, Sch Timeframe: Ongoing Cost: 1,500 per year Priority Rank: 3

<b>Strategy</b>	<b>Educate residents on the importance of slowing down and moving over for vehicles and emergency personnel on the side of roadways.</b>
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<i>Criteria</i>	Cost	Benefit	Comments
<i>Social</i>		+	Improved public safety
<i>Technical</i>		+	Straight forward message, move over and slow down for emergency personnel/ easy to get information out with mass media
<i>Administrative</i>	-		Process regarding reaching all drivers, garnering support, and gaining compliance
<i>Political</i>		+	Politically favorable to support programs to increase safety for emergency personnel
<i>Legal</i>	-		Legal issues regarding hitting emergency personnel
<i>Economic</i>		+	Low cost and can potentially save lives
<i>Environmental</i>	NA	NA	
<i>Priority</i>			4

<b>Strategy</b>	<b>Educate motor vehicle drivers on laws pertaining to sharing the road.</b>		
<i>Criteria</i>	Cost	Benefit	Comments
<i>Social</i>		+	Increases safety for bicyclists
<i>Technical</i>	-		Changing attitudes
<i>Administrative</i>		+	Similar campaigns already exist
<i>Political</i>	-	+	Divisive political issue, some drivers think bicyclist below on shoulders, paths, and sidewalks while bicyclist have a right to use the road
<i>Legal</i>	-		Issues regarding motor vehicle and pedestrian crashes
<i>Economic</i>		+	Low cost and can potentially save lives
<i>Environmental</i>		+	If safety increases then bicycle usage may also increase

<i>Priority</i>			3
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<b>Strategy</b>	<b>Educate bicyclists on their responsibility to bike responsibly and abide by the law, which includes but is not limited to: stopping at stop signs and yielding to pedestrians.</b>		
<i>Criteria</i>	Cost	Benefit	Comments
<i>Social</i>		+	Increases safety for all users
<i>Technical</i>	-	+	Easy to get information out with mass media but message may be ignored
<i>Administrative</i>		+	similar campaigns already exist
<i>Political</i>	-	+	Pushback from bicyclists/ support from motor vehicles and pedestrians
<i>Legal</i>	NA	NA	
<i>Economic</i>		+	Low cost and can potentially save lives
<i>Environmental</i>	NA	NA	
<i>Priority</i>			3

<b>Strategy</b>	<b>Educate residents on the importance of driving to the conditions.</b>		
<i>Criteria</i>	Cost	Benefit	Comments
<i>Social</i>		+	Positive community externalities
<i>Technical</i>		+	Easy to get information out with mass media
<i>Administrative</i>		+	Straightforward message
<i>Political</i>	NA	NA	

<i>Legal</i>	NA	NA	
<i>Economic</i>		+	Low cost high impact
<i>Environmental</i>	NA	NA	
<i>Priority</i>			3

<b><u>Objective:</u></b>	Increase safety at railroad crossings.
<b><u>Strategies</u></b>	<p>Coordinate with MnDOT Rail Office to ensure safety. Make sure all railroad crossings are clearly visible to drivers and pedestrians.</p> <p>Who: RC, RCSO, MnDOT, All Cities, All Townships</p> <p>Timeframe: Ongoing</p> <p>Cost: In-kind</p> <p>Priority Rank: 3</p>
<b><u>Strategies</u></b>	<p>Educate residents on the increased risk of crossing railroad tracks.</p> <p>Who: RC, RCSO, MnDOT</p> <p>Timeframe: Ongoing</p> <p>Cost: In-kind</p> <p>Priority Rank: 3</p>

<b>Strategy</b>	<b>Coordinate with MnDOT Rail Office to ensure safety. Make sure all railroad crossings are clearly visible to drivers and pedestrians.</b>		
<i>Criteria</i>	Cost	Benefit	Comments
<i>Social</i>		+	Increases safety for all users
<i>Technical</i>		+	Easy to identify railroad crossings
<i>Administrative</i>		+	Straightforward campaign
<i>Political</i>	NA	NA	
<i>Legal</i>	-		Legal responsibility of clearly identifying railroad crossings
<i>Economic</i>	-		Crossing arms and signals are expensive

<i>Environmental</i>	NA	NA	
<i>Priority</i>			3

<b>Strategy</b>	<b>Educate residents on the increased risk of crossing railroad tracks.</b>		
<i>Criteria</i>	Cost	Benefit	Comments
<i>Social</i>		+	Increases safety
<i>Technical</i>		+	Previous campaigns exist
<i>Administrative</i>		+	Easy to get information out with mass media
<i>Political</i>	NA	NA	
<i>Legal</i>	NA	NA	
<i>Economic</i>		+	Low cost and can potentially save lives
<i>Environmental</i>	NA	NA	
<i>Priority</i>			3

**A7 Hazard: Hazardous Materials**

Goal: Improve the effectiveness and quality of the various agencies addressing hazardous materials that may impact the county.

<u>Objective:</u>	The ability to quickly map an affected disaster area and assess the damage.
<u>Strategies</u>	Increase training of emergency personnel so that all types of potential spills will be readily recognized upon arrival at the scene of transportation crash. Who: RCSO, Amb, Fire, Timeframe: 2008-2012 Cost: In-kind Priority Rank: 5
<u>Strategies</u>	Work with state and federal agencies to identify and address hazardous

	<p>materials that have the potential to impact the county and region.          Who: RC, RCSO, Fire, MnDOT          Timeframe: Ongoing          Cost: In-kind          Priority Rank: 5</p>
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<b>Strategy</b> Increase training of emergency personnel so that all types of potential spills will be readily recognized upon arrival at the scene of transportation accidents.			
<i>Criteria</i>	Cost	Benefit	Comments
<i>Social</i>		+	Community and regional benefit
<i>Technical</i>	-		Emergency personnel turnover makes keeping trained personnel more difficult
<i>Administrative</i>	-		Number of hazardous materials
<i>Political</i>		+	May be political ramifications if not able to respond to a spill in a timely manner (helps having local emergency responders)
<i>Legal</i>	-		Legal responsibility of identifying if the load is hazardous
<i>Economic</i>	-		Training and specialized equipment is expensive
<i>Environmental</i>		+	Better able to contain and limit the damage of a spill
<i>Priority</i>			5

<b>Strategy</b> Work with state and federal agencies to identify and address hazardous materials that have the potential to impact the county and region.			
<i>Criteria</i>	Cost	Benefit	Comments
<i>Social</i>		+	Increasing coordination between government
<i>Technical</i>	-		Difficult identifying all hazard materials

<i>Administrative</i>	-		Coordinating between different levels of government can be challenging
<i>Political</i>	-	+	Trying to increase coordination and efficiency of government (cost if cooperation and efficiency does not occur)
<i>Legal</i>	NA	NA	
<i>Economic</i>	-	+	Cost of the program compared to the potential avoidance of damages related to a spill
<i>Environmental</i>		+	Better understanding of what hazardous materials are traveling through the county will allow for a more effective response to a spill
<i>Priority</i>			5

<u>Objective:</u>	Support policies and programs that assist in creating factual and timely information about hazardous materials in Rock County.
<u>Strategies</u>	Continue the use of mutual aid agreements and memoranda of understanding to improve coordination between local, state, and federal agencies, and appropriate private sector representatives. Who: RC, RCSO, Fire, HSEM Timeframe: Ongoing Cost: In-kind Priority Rank: 5
<u>Strategies</u>	Identify and work with state and federal agencies to better understand the hazardous material traversing Rock County on I-90 and by rail. Who: RC, RCSO, Amb, Fire Timeframe: 2014-2018 Cost: In-kind Priority Rank: 5

<b>Strategy</b>	<b>Continue the use of mutual aid agreements and memoranda of understanding to improve coordination between local, state, and federal agencies, and appropriate private sector representatives.</b>
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<i>Criteria</i>	Cost	Benefit	Comments
<i>Social</i>		+	Regional benefit
<i>Technical</i>	-		Agreement may be difficult/ gaps in coverage
<i>Administrative</i>	-		Coordination between different levels of government may be difficult
<i>Political</i>	-	+	Trying to increase coordination and efficiency of government (cost if cooperation and efficiency does not occur)
<i>Legal</i>	NA	NA	
<i>Economic</i>		+	Working together can decrease redundancies and can save money. Economies of scale can also make the system more efficient.
<i>Environmental</i>		+	Potential to decrease spills regarding hazardous materials
<i>Priority</i>			5

<b>Strategy</b>	<b>Identify and work with state and federal agencies to better understand the hazardous material traversing Rock County on I-90 and by rail.</b>		
<i>Criteria</i>	Cost	Benefit	Comments
<i>Social</i>		+	Increases the safety of the community water supply
<i>Technical</i>	-		Difficult identifying all hazard materials traveling through Rock County
<i>Administrative</i>	-		Difficult identifying all hazard materials traveling through Rock County
<i>Political</i>			
<i>Legal</i>	-		Legal responsibility to identify hazardous materials
<i>Economic</i>		+	Proactive approach can potentially save money and environment

<i>Environmental</i>		+	Better understanding the threat hazardous material pose will allow for a more effective response to a spill
<i>Priority</i>			5

<u>Objective:</u>	Work with 302 facilities to ensure compliance with hazardous material regulations.
<u>Strategies</u>	Tour 302 facilities annually to be familiar with the facilities and where hydrants and other safety equipment are located. Who: RC, RCSO, FIRE Timeframe: Ongoing Cost: In-kind Priority Rank: 5
<u>Strategies</u>	Contact 302 facilities when regulations change or new regulations are implemented that affect 302 facilities. Who: RC, RCSO, FIRE Timeframe: Ongoing Cost: In-kind Priority Rank: 5

Strategy	Tour 302 facilities annually to be familiar with the facilities and where hydrants and other safety equipment are located.		
Criteria	Cost	Benefit	Comments
<i>Social</i>		+	Better able to contain an incident at a 302 facility
<i>Technical</i>		+	Emergency responders will understand the local capabilities at the 302 facility
<i>Administrative</i>		+	Setting up an annual tour should be relatively easy to set up and administer
<i>Political</i>	NA	NA	
<i>Legal</i>	-		Private property issues regarding annual tour

<i>Economic</i>		+	Low cost for better understanding how to respond to an emergency at a 302 facility
<i>Environmental</i>		+	Proactive approach to prevent or contain an incident at a 302 facility
<i>Priority</i>			5

Strategy			
Contact 302 facilities when regulations change or new regulations are implemented that affect 302 facilities.			
<i>Criteria</i>	Cost	Benefit	Comments
<i>Social</i>		+	Maintaining facility to improve public safety
<i>Technical</i>		+	Benefits associated with economies of scale in relation to staying up to date regarding new regulation
<i>Administrative</i>		+	Can be easily notified by the state and this information can be passed onto local 302 facilities
<i>Political</i>	NA	NA	
<i>Legal</i>	-		Compliance with new regulation
<i>Economic</i>		+	Low cost
<i>Environmental</i>		+	Helping to insure 302 facilities are in compliance with new regulations will hopefully help to safeguard the environment
<i>Priority</i>			5

**A8 Hazard: Meth Labs**

Goal: Reduce the negative impacts associated with methamphetamine labs in the county.

<u>Objective:</u>	Increase the awareness and risks of Meth labs
<u>Strategies</u>	Educate the public about the warning signs of meth and potential dangers of the drug especially to school officials, health officials along with mail carriers,

	<p>cable repair men, plumbers, electricians, and delivery personnel (UPS, FEDEX).</p> <p>Who: All Cities, All Townships, RCSO, FIRE, SWHHS, Sch</p> <p>Timeframe: Ongoing</p> <p>Cost: In-kind</p> <p>Priority Rank: 4</p>
<u>Strategies</u>	<p>Educate landlords on the warning signs of a possible meth lab and encourage the elimination of abandoned houses/buildings and make sure wooded areas are checked regularly.</p> <p>Who: All Cities, All Townships, RCSO, FIRE</p> <p>Timeframe: Ongoing</p> <p>Cost: In-kind</p> <p>Priority Rank: 4</p>
<u>Strategies</u>	<p>Educate landowners that they are responsible for the cost of Meth lab cleanups, so there is an increased economic incentive for monitoring properties.</p> <p>Who: All Cities, All Townships, RCSO, FIRE</p> <p>Timeframe: Ongoing</p> <p>Cost: In-kind</p> <p>Priority Rank: 4</p>

<b>Strategy</b>	<b>Educate the public about the warning signs of meth and potential dangers of the drug especially school officials, health officials along with mail carriers, cable repair men, plumbers, electricians, and delivery personnel (UPS, FEDEX).</b>		
<i>Criteria</i>	Cost	Benefit	Comments
<i>Social</i>		+	Community benefit associated with decreasing access and use of meth
<i>Technical</i>	-		Cooks and drug dealers are constantly changing operational methods to try and stay ahead of the authorities
<i>Administrative</i>		+	Easy to get information out with mass media
<i>Political</i>	-		Consequences of not adequately addressing the problem
<i>Legal</i>	NA	NA	

<i>Economic</i>	-		The costs of fighting the war on drugs is extremely high
<i>Environmental</i>		+	Hopefully helping to decrease the negative effects of meth
<i>Priority</i>			4

<b>Strategy</b>	<b>Educate landlords on the warning signs of a possible meth lab and encourage the elimination of abandoned houses/buildings and make sure wooded areas are checked regularly.</b>		
<i>Criteria</i>	Cost	Benefit	Comments
<i>Social</i>		+	Community benefit associated with decreasing access and use of meth
<i>Technical</i>	-		Monitoring in rural areas can be time intensive
<i>Administrative</i>	-		Identifying landlords (may not live in area)
<i>Political</i>	NA	NA	
<i>Legal</i>	-		Private property issues
<i>Economic</i>			The costs of fighting the war on drugs is extremely high
<i>Environmental</i>		+	Hopefully helping to decrease the negative effects of meth
<i>Priority</i>			4

<b>Strategy</b>	<b>Educate landowners that they are responsible for the cost of Meth lab cleanups, so there is an increased economic incentive for monitoring properties.</b>		
<i>Criteria</i>	Cost	Benefit	Comments
<i>Social</i>		+	Public not liable for the costs related to cleanup
<i>Technical</i>	-		Owners of the property may not live in the area
<i>Administrative</i>	-		Difficult to reach and inform landowners

<i>Political</i>	NA	NA	
<i>Legal</i>		+	Legal issues associated with ownership
<i>Economic</i>		+	Owners will have an economic incentive to monitor properties
<i>Environmental</i>		+	Hopefully helping to decrease the negative effects of meth
<i>Priority</i>			4

<u>Objective:</u>	Increase the monitoring of ingredients used to manufacture meth.
<u>Strategies</u>	Educate store owners on the ingredients used to manufacture meth, and what they can do to prevent or limit the sale of the ingredients. Who: RCSO Timeframe: Ongoing Cost: In-kind Priority Rank: 4
<u>Strategies</u>	Continue to work with store owners to ensure reporting to the sheriff's office occurs when products are sold that are used in making meth. Who: RCSO Timeframe: Ongoing Cost: In-kind Priority Rank: 4

<b>Strategy</b>	<b>Educate store owners on the ingredients used to manufacture meth, and what they can do to prevent or limit the sale of the ingredients.</b>		
<i>Criteria</i>	Cost	Benefit	Comments
<i>Social</i>		+	Will help decrease the supply of meth
<i>Technical</i>	-		Gaining cooperation with all stores in Rock County
<i>Administrative</i>		+	A number of hardware stores and pharmacies already monitor these ingredients and notify the sheriff's office
<i>Political</i>	-	+	Passing laws to limit the sale of ingredients used in

			manufacturing meth
<i>Legal</i>	-		Legal issues regarding ingredients and limiting the sale of those items
<i>Economic</i>	-		Decreasing the supply of meth will drive up the price making it more profitable for producers of meth, which may increase the number of producers
<i>Environmental</i>		+	Hopefully helping to decrease the negative effects of meth
<i>Priority</i>			4

<b>Strategy</b>	<b>Continue to work with store owners to ensure reporting to the sheriff's office occurs when products are sold that are used in making meth.</b>		
<i>Criteria</i>	Cost	Benefit	Comments
<i>Social</i>		+	Will help decrease the supply of meth
<i>Technical</i>	-		Different ingredients are used when other ingredients become harder to obtain
<i>Administrative</i>		+	A number of hardware stores and pharmacies already monitor ingredients used to make meth and notify the sheriff's office
<i>Political</i>	-	+	Passing laws to limit the sale of ingredients used in manufacturing meth
<i>Legal</i>	-		Legal issues regarding ingredients and limiting the sale of those items
<i>Economic</i>	-		Decreasing the supply of meth will drive up the price making it more profitable for producers of meth, which may increase the number of producers
<i>Environmental</i>		+	Hopefully helping to decrease the negative effects of meth
<i>Priority</i>			4

<u>Objective:</u>	Ensure that law enforcement and hazardous material professionals (HAZMAT) are properly trained in the evaluation and cleanup of a meth lab.
<u>Strategies</u>	Work with law enforcement and HAZMAT personnel to evaluate equipment needs for meth-lab clean up. Who: RCSO, Fire Timeframe: Ongoing Cost: In-kind Priority Rank: 4

Strategy	Work with law enforcement and HAZMAT personnel to evaluate equipment needs for meth-lab clean up.		
Criteria	Cost	Benefit	Comments
<i>Social</i>	-		No local HAZMAT Team
<i>Technical</i>	-		Rock County does not have a HAZMAT Team, so response times are longer
<i>Administrative</i>	-		Coordinating between Regional HAZMAT Teams and ensuring effective service
<i>Political</i>	NA	NA	
<i>Legal</i>	-		Legal issues regarding cleanup (if owner of the property does not have the means to pay)
<i>Economic</i>	-		High costs associated with having a local HAZAMAT Team
<i>Environmental</i>	-	+	More difficult to contain the negative environmental effects if response times are longer/ equipment is critical for an effective environmental cleanup
<i>Priority</i>			4

**A9 Hazard: Civil Disturbance/Terrorism**

Goal: Decrease the probability of a civil disturbance or terrorist attack in Rock County and regionally.

<u>Objective:</u>	Increase the safety of county and municipal buildings.
<u>Strategies</u>	<p>Install a security system in select public buildings to increase safety. The security system can be modeled after the system in the courtroom with a panic alarm and lockdown capabilities.</p> <p>Who: RC, All Cities, RCSO  Timeframe: Ongoing  Cost: \$15,000 per building  Priority Rank: 4</p>
<u>Strategies</u>	<p>Create a hierarchy for which building should have security systems installed first.</p> <p>Who: RC, All Cities, RCSO  Timeframe: 2014-2018  Cost: In-kind  Priority Rank: 4</p>
<u>Strategies</u>	<p>Consider limiting public access in high profile county and city locations (e.g. county courthouse, city hall, schools) in times of increased potential for terrorist activity. These times could follow the Federal Department of Homeland Security warning system.</p> <p>Who: RC, All Cities, Sch  Timeframe: Ongoing  Cost: In-kind  Priority Rank: 4</p>

<b>Strategy</b>	<b>Install a security system in select public buildings to increase safety. The security system can be modeled after the system in the courtroom with a panic alarm and lockdown capabilities.</b>		
<i>Criteria</i>	Cost	Benefit	Comments
<i>Social</i>		+	Increased security on public grounds
<i>Technical</i>		+	Already exists in the courtroom, so other security systems can be model after this system
<i>Administrative</i>		+	Have experience with security systems (the courtroom)
<i>Political</i>	-		Selecting which public buildings

<i>Legal</i>	NA	NA	
<i>Economic</i>	-	+	Cost of installing security systems in public building/ As technology improves the cost of duplicating the security system in the courtroom to other public building decreases
<i>Environmental</i>	NA	NA	
<i>Priority</i>			4

<b>Strategy</b>	<b>Create a hierarchy for which buildings should have security systems installed first.</b>		
<i>Criteria</i>	Cost	Benefit	Comments
<i>Social</i>		+	Managing public funds while also increasing security on public grounds
<i>Technical</i>	-		Identifying and evaluating the need for security systems in various public buildings
<i>Administrative</i>		+	Have experience with security systems (the courtroom)
<i>Political</i>	-	+	Creating project priority according to need
<i>Legal</i>	-		Legal issues regarding having security in one building and not the next (hierarchy for selecting which buildings)
<i>Economic</i>		+	Will help to decrease project costs since all building may not need a security system
<i>Environmental</i>	NA	NA	
<i>Priority</i>			4

<b>Strategy</b>	<b>Consider limiting public access in high profile county and city locations (e.g. county courthouse, city hall, schools) in times of increased potential for terrorist activity. These times could follow the Federal Department of Homeland Security warning system.</b>		
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<i>Criteria</i>	Cost	Benefit	Comments
<i>Social</i>		+	Increases safety
<i>Technical</i>	-		Logistics of offering services, while decreasing access
<i>Administrative</i>	NA	NA	
<i>Political</i>	-		Decreased access may cause public pushback
<i>Legal</i>	NA	NA	
<i>Economic</i>		+	Low cost way of increasing security
<i>Environmental</i>	NA	NA	
<i>Priority</i>			4

<u>Objective:</u>	Increase security through landscape design, vehicle barriers, and separation of public and private functions.
<u>Strategies</u>	When remodeling or building a new public building consider the design to increase security. Who: RC, All Cities, All Townships Timeframe: Ongoing Cost: In-kind Priority Rank: 4
<u>Strategies</u>	When landscaping around a public building consider the design to increase security. Who: RC, All Cities, All Townships Timeframe: Ongoing Cost: In-kind Priority Rank: 4

<b>Strategy</b>	<b>When remodeling or building a new public building consider the design to increase security.</b>		
<i>Criteria</i>	Cost	Benefit	Comments

<i>Social</i>		+	Increases safety in these facilities
<i>Technical</i>	-		Identifying best practices
<i>Administrative</i>	-		Garnering support (may seem unnecessary in a rural community)
<i>Political</i>		+	Increase security on public grounds (less chance of a serious incident)
<i>Legal</i>	NA	NA	
<i>Economic</i>		+	May help to decrease security costs in the long run
<i>Environmental</i>	NA	NA	
<i>Priority</i>			4

Strategy	When landscaping around a public building consider the design to increase security.		
<i>Criteria</i>	Cost	Benefit	Comments
<i>Social</i>		+	May increase safety around these facilities
<i>Technical</i>	-		How effective can this be
<i>Administrative</i>	-		Garnering support (may seem unnecessary in a rural community)
<i>Political</i>		+	Increase security on public grounds (less chance of a serious incident)
<i>Legal</i>	NA	NA	
<i>Economic</i>	-		May increase the costs of the project
<i>Environmental</i>	NA	NA	
<i>Priority</i>			4

<u>Objective:</u>	Work with state and federal agencies engaged in the statewide domestic preparedness strategy to identify options for Rock County.
<u>Strategies</u>	Increased communication and information sharing between local, state, and federal law enforcement agencies. Who: RC, RCSO, All Cities, FIRE Timeframe: Ongoing Cost: In-kind Priority Rank: 4
<u>Strategies</u>	Keep local emergency plans up to date to adequately address civil disturbances and terrorism. Who: RC, RCSO, All Cities, All Townships Timeframe: 5 year update cycle Cost: \$20,000 every 5 years Priority Rank: 4

Strategy	Increased communication and information sharing between local, state, and federal law enforcement agencies.		
Criteria	Cost	Benefit	Comments
<i>Social</i>		+	More effective services
<i>Technical</i>		+	Speed up processes
<i>Administrative</i>	-		Networking and gaining cooperation from different levels of government
<i>Political</i>	-	+	Trying to increase coordination and efficiency of government (cost if cooperation and efficiency does not occur)
<i>Legal</i>	NA	NA	
<i>Economic</i>		+	Working together can decrease redundancies and can save money. Economies of scale can also make the system more efficient.
<i>Environmental</i>	NA	NA	

Priority			4
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Strategy	Keep local emergency plans up to date to adequately address civil disturbances and terrorism.		
Criteria	Cost	Benefit	Comments
<i>Social</i>		+	Authorities will be better prepared
<i>Technical</i>	-		The perception of safety can result in complacency
<i>Administrative</i>	-		Garnering support for adequately address civil disturbances and terrorism
<i>Political</i>	-		Civil disturbance and terrorism may not be seen by the public as a critical issue in Rock County
<i>Legal</i>	NA	NA	
<i>Economic</i>	-		Costly to update plans
<i>Environmental</i>	NA	NA	
Priority			4

### A10 Hazard: Public Health Emergencies

Goal: Reduce the threat of public health emergencies through education and awareness.

<u>Objective:</u>	Identify public health emergencies effectively and efficiently.
<u>Strategies</u>	Increase coordination and communication between first responders and public health departments. Who: RC, RCSO, All Cities, FIRE, SWHHS Timeframe: Ongoing Cost: In-kind Priority Rank: 5
<u>Strategies</u>	Encourage Rock County residents to sign up for emergency alerts through the Nixle Alert System. The Nixle Alert System allows verified government

	<p>agencies to send out messages to residents via phone, email, and web. The Nixle Alert System allows local government to send out information to residents regarding an increased risk of a disease or other health emergencies.</p> <p>Who: RC, All Cities, SWHHS  Timeframe: Ongoing  Cost: In-kind  Priority Rank: 5</p>
<u>Strategies</u>	<p>Coordinate more effectively with the local media and public through multiple mediums including, but not limited to Nixle and Facebook.</p> <p>Who: RC, All Cities, SWHHS  Timeframe: Ongoing  Cost: In-kind  Priority Rank: 5</p>
<u>Strategies</u>	<p>Update the Rock County Emergency Operations plan to reflect changes made to the mediums used to educate the public regarding an increased risk of a disease or other health emergencies.</p> <p>Who: RC  Timeframe: 2014-2018  Cost: In-kind  Priority Rank: 5</p>

Strategy	Increase coordination and communication between first responders and public health departments.		
Criteria	Cost	Benefit	Comments
<i>Social</i>		+	Better able to respond to a public health emergency
<i>Technical</i>	-		Effective coordination is difficult
<i>Administrative</i>	-		Garnering support from all key stakeholders
<i>Political</i>	-	+	Trying to increase coordination and efficiency of government (cost if cooperation and efficiency does not occur)
<i>Legal</i>	NA	NA	

<i>Economic</i>		+	Coordination could result in more efficient operations
<i>Environmental</i>	NA	NA	
<i>Priority</i>			5

<b>Strategy</b>	<b>Encourage Rock County residents to sign up for emergency alerts through the Nixle Alert System. The Nixle Alert System allows verified government agencies to send out messages to residents via phone, email, and web. The Nixle Alert System allows local government to send out information to residents regarding an increased risk of a disease or other health emergencies.</b>		
<i>Criteria</i>	Cost	Benefit	Comments
<i>Social</i>		+	Increased communication between government and public
<i>Technical</i>		+	Nixle Alert System is already setup so just have to encourage residents to sign up
<i>Administrative</i>		+	Straight forward program that has been implemented in other counties
<i>Political</i>		+	Highly visible program so politically beneficial to support
<i>Legal</i>	NA	NA	
<i>Economic</i>		+	Low cost big impact
<i>Environmental</i>	NA	NA	
<i>Priority</i>			5

<b>Strategy</b>	<b>Coordinate more effectively with the local media and public through multiple mediums including, but not limited to Nixle and Facebook.</b>		
<i>Criteria</i>	Cost	Benefit	Comments
<i>Social</i>		+	Increased communication between government and public
<i>Technical</i>		+	Multiple media is a fast and easy way to get current information

			out to the public
<i>Administrative</i>	-		Multiple media outlets may be time consuming to manage
<i>Political</i>	NA	NA	
<i>Legal</i>	NA	NA	
<i>Economic</i>		+	Low cost big impact
<i>Environmental</i>	NA	NA	
<i>Priority</i>			5

<b>Strategy</b>	<b>Update the Rock County Emergency Operations plan to reflect changes made to the mediums used to educate the public regarding an increased risk of a disease or other health emergencies.</b>		
<i>Criteria</i>	Cost	Benefit	Comments
<i>Social</i>		+	Getting information out is critical in containing a public health emergency (new media mediums can help with getting information out fast and effectively)
<i>Technical</i>	-		Staying up to date on social media
<i>Administrative</i>	-		Media mediums are constantly changing so managing these may be time intensive
<i>Political</i>	NA	NA	
<i>Legal</i>	NA	NA	
<i>Economic</i>		+	Effective and efficient communication can save time, money, and potentially lives
<i>Environmental</i>	NA	NA	
<i>Priority</i>			5

<b>Objective:</b>	Increased distribution of medications and medical supplies in the case of emergency.
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<u>Strategies</u>	Encourage Rock County Public Health, which is part of Southwest Health and Human Services, to continue work with Minnesota Department of Health (MDH) for the mass distribution of needed medicines and supplies for public health emergencies. Who: RC, SWHHS, MDH Timeframe: Ongoing Cost: In-kind Priority Rank: 5
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<b>Strategy</b>	<b>Encourage Rock County Public Health, which is part of Southwest Health and Human Services, to continue work with Minnesota Department of Health (MDH) for the mass distribution of needed medicines and supplies for public health emergencies.</b>		
<i>Criteria</i>	Cost	Benefit	Comments
<i>Social</i>		+	Benefits region
<i>Technical</i>	-		Offering effective service
<i>Administrative</i>	-		Agreement between counties regarding services can cause conflict
<i>Political</i>		+	MDH helps to ensure effective services
<i>Legal</i>	NA	NA	
<i>Economic</i>		+	Economies of scale can be achieved through Southwest Health and Human Services
<i>Environmental</i>	NA	NA	
<i>Priority</i>			5

<u>Objective:</u>	Limit the spread of highly contagious diseases.
<u>Strategies</u>	Develop/adopt a West Nile Virus protection plan. This may include but is not limited to having cities spray for mosquitoes. Who: SWHHS, All Cities Timeframe: 2014-2018 Cost: In-kind

	Priority Rank: 5
<u>Strategies</u>	Develop and implement a quarantine plan that limits the spread of highly contagious diseases. Who: RC, RCSO, SWHHS, Hosp Timeframe: 2014-2018 Cost: In-kind Priority Rank: 5

Strategy	Develop/adopt a West Nile Virus protection plan. This may include but is not limited to having cities spray for mosquitoes.		
Criteria	Cost	Benefit	Comments
<i>Social</i>		+	Community benefit
<i>Technical</i>	-		What worked in the past may not work in the future
<i>Administrative</i>	-		Coordination between communities may be difficult
<i>Political</i>	NA	NA	
<i>Legal</i>	-		Legal issues regarding spraying for mosquitoes
<i>Economic</i>		+	Cost of the project
<i>Environmental</i>	-		May be unintended consequences of spraying
<i>Priority</i>			5

Strategy	Develop and implement a quarantine plan that limits the spread of highly contagious diseases.		
Criteria	Cost	Benefit	Comments
<i>Social</i>		+	Community benefit

<i>Technical</i>	-		Difficult to identify uncommon diseases early
<i>Administrative</i>	-		Administering a quarantine will be difficult
<i>Political</i>	-	+	When to order a quarantine
<i>Legal</i>	-		Legal issues civil rights
<i>Economic</i>		+	Quarantine may help to contain the contagious disease
<i>Environmental</i>	NA	NA	
<i>Priority</i>			5

### A11 Hazard: Water Supply Contamination

Goal: Preserve and protect the quality and quantity of Rock County’s ground water resources.

<u>Objective:</u>	Ensure that an emergency supply of clean drinking water is available even in the case of emergencies.
<u>Strategies</u>	Periodically update to Emergency Operations Plan to identify alternate sources of drinking water including the location and quantities of bottled water. Who: RC, SWHHS, RWS Timeframe: 2014-2018 Cost: In-kind Priority Rank: 5
<u>Strategies</u>	Ensure water storage towers are quickly disconnected from the water source if the water supply is contaminated. Who: RC, SWHHS, RWS Timeframe: Ongoing Cost: In-kind Priority Rank: 5

<b>Strategy</b>	<b>Periodically update to Emergency Operations Plan to identify alternate sources of drinking water including the location and quantities of bottled water.</b>
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<i>Criteria</i>	Cost	Benefit	Comments
<i>Social</i>		+	Will help to ensure an emergency water supply
<i>Technical</i>	-		Warehouse supplies of bottle water fluctuate
<i>Administrative</i>	-		Keeping up to date on quantities may be difficult
<i>Political</i>	-		Not having access to clean drinking water
<i>Legal</i>	NA	NA	
<i>Economic</i>	-		Cost of updating the plan
<i>Environmental</i>	NA	NA	
<i>Priority</i>			5

<b>Strategy</b>	<b>Ensure water storage towers are quickly disconnected from the water source if the water supply is contaminated.</b>		
<i>Criteria</i>	Cost	Benefit	Comments
<i>Social</i>		+	Community will have an emergency water supply
<i>Technical</i>	-		The logistics of quickly disconnecting the water source to the tower has to be timely. This may be difficult
<i>Administrative</i>	-		Monitoring to ensure problems are detected early
<i>Political</i>	-		Not having access to clean drinking water
<i>Legal</i>	-		Legal issues regarding contamination of the water supply
<i>Economic</i>		+	Will decrease the cost of purchasing bottled water
<i>Environmental</i>	NA	NA	
<i>Priority</i>			5

<b>Objective:</b>	Minimize contamination of groundwater from abandoned wells.
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<u>Strategies</u>	Promote an abandoned well sealing program within the county. Who: LMO, RWS Timeframe: 2014-2018 Cost: \$5,000 per year Priority Rank: 5
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Strategy	Promote an abandoned well sealing program within the county.		
Criteria	Cost	Benefit	Comments
<i>Social</i>		+	Helps to ensure clean water for the area
<i>Technical</i>	-		Private land owners may not want to identify abandon well, fearing they will have to pay to seal them
<i>Administrative</i>	-		Working with private landowners may be difficult
<i>Political</i>	-	+	Private property issues verse environmental issues
<i>Legal</i>	-		Legal issues regarding compliance to a well sealing program
<i>Economic</i>		+	More economical to prevent contamination of the water supply than treat the water supply for contamination
<i>Environmental</i>		+	Will help to ensure area aquifers do not become contaminated
<i>Priority</i>			5

<u>Objective:</u>	Promote an interconnected water supply in the case of water shortages in a specific area or city.
<u>Strategies</u>	Maintain city wells in Beaver Creek, Hills, and Steen. These wells are essential if the current rural water systems would need to shut down. Who: BC, Hills, CS, RWS Timeframe: Ongoing Cost: In-kind Priority Rank: 5

Strategy	Maintain city wells in Beaver Creek, Hills, and Steen. These wells are essential if the current rural water systems would need to shut down.		
Criteria	Cost	Benefit	Comments
<i>Social</i>		+	Wells serve as an emergency backup to the rural water system
<i>Technical</i>	-		Water would have to be conserved if these wells were used to support the rural water system in the area
<i>Administrative</i>	-		Monitoring usage may be difficult
<i>Political</i>	-		Issues over water usage
<i>Legal</i>	-		Issues over water usage
<i>Economic</i>	-	+	Costs of maintain the well/ safe reliable reserves
<i>Environmental</i>	NA	NA	
<i>Priority</i>			5

## A12 Hazard: Utility Failure

Goal: Eliminate or reduce the effect of power failure in Rock County.

<u>Objective:</u>	Guarantee critical facilities have back up power in case of utility failure.
<u>Strategies</u>	Ensure critical facilities such as hospitals and rural water suppliers have access to back up power generators. Who: RC, CL, Hosp, RWS, VH Timeframe: Ongoing Cost: \$500,000 Priority Rank: 4
<u>Strategies</u>	Add a backup generator to the Luverne High School. This will allow the Luverne High School to be better equipped to be an emergency primary care facility. Who: RC, CL, FIRE, RCSO, Luverne HS Timeframe: 2014-2018

	Cost: \$165,000 Priority Rank: 4
<u>Strategies</u>	Ensure critical facilities, like hospitals, run simulations to confirm the generators will power all the critical infrastructure in the facility. Who: RC, All Cities, Hosp, FIRE, RCSO, RWS Timeframe: Annually Cost: In-kind Priority Rank: 4
<u>Strategies</u>	Examine the needs and costs for providing back up generation where none currently exists. Who: RC, CL, RWS Timeframe: 2014-2018 Cost: \$50,000-100,000 Priority Rank: 4

Strategy	Ensure critical facilities such as hospitals and rural water suppliers have access to back up power generators.		
Criteria	Cost	Benefit	Comments
<i>Social</i>		+	Ensures critical facilities are operational
<i>Technical</i>	-		Backup generator may not be available to power all of the critical facilities
<i>Administrative</i>	-		Ensuring generators are operational
<i>Political</i>	-		Defining critical facilities
<i>Legal</i>	NA	NA	
<i>Economic</i>	-		Power generator are expensive to purchase and operate
<i>Environmental</i>	NA	NA	
<i>Priority</i>			4

Strategy	Add a backup generator to the Luverne High School. This will allow the Luverne High School to be better equipped to be an emergency primary care facility.		
Criteria	Cost	Benefit	Comments
<i>Social</i>		+	Regional location for short term housing and emergency primary care in the case of widespread power outages
<i>Technical</i>	-		Capacity at the location
<i>Administrative</i>	-		Ensuring generators are operational
<i>Political</i>		+	Having an operational emergency primary care facility
<i>Legal</i>	-		Issues regarding not having an emergency primary care facility
<i>Economic</i>	-		Power generator are expensive to purchase and operate
<i>Environmental</i>	NA	NA	
<i>Priority</i>			4

Strategy	Ensure critical facilities, like hospitals, run simulations to confirm the generators will power all the critical infrastructure in the facility.		
Criteria	Cost	Benefit	Comments
<i>Social</i>		+	Community benefit: the critical facilities are operational in case of a power outage
<i>Technical</i>		+	Ensures critical infrastructure is connected to the generator and the generator can power what is needed
<i>Administrative</i>	-		Assisting in running simulations
<i>Political</i>	-		Not having critical facilities being operational
<i>Legal</i>	NA	NA	
<i>Economic</i>	-	+	Cost of maintaining generators/ potential lives saved by ensuring

			critical facilities are operational
<i>Environmental</i>	NA	NA	
<i>Priority</i>			4

<b>Strategy</b>	<b>Examine the needs and costs for providing back up generation where none currently exists.</b>		
<i>Criteria</i>	Cost	Benefit	Comments
<i>Social</i>		+	More locations may be identified as essential
<i>Technical</i>	-		Identifying additional critical facilities
<i>Administrative</i>	-		Garnering support to fund purchasing additional power generators
<i>Political</i>	-		Identifying locations may be political
<i>Legal</i>	NA	NA	
<i>Economic</i>	-		Cost of purchasing additional generators
<i>Environmental</i>	NA	NA	
<i>Priority</i>			4

<u>Objective:</u>	Harden the utility grid. Improve utility grid reliability in adverse weather conditions.
<u>Strategies</u>	<p>Promote redundancy in the power grid. Redundancy helps to contain power outages to smaller areas and for power to be maintained throughout most of the county. The utility grid system as a whole will become more reliable as redundancy is increased.</p> <p>Who: RC, All Cities, Utilities  Timeframe: Ongoing  Cost: \$50,000-300,000  Priority Rank: 4</p>

<u>Strategies</u>	<p>Use all available technologies to help decrease the probability of large scale outages. Replace overhead power lines with underground lines or use new overhead line technologies.</p> <p>Who: RC, All Cities, Utilities  Timeframe: Ongoing  Cost: \$150,000 plus (project may vary depending on assessment)  Priority Rank: 4</p>
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Strategy			
Promote redundancy in the power grid. Redundancy helps to contain power outages to smaller areas and for power to be maintained throughout most of the county. The utility grid system as a whole will become more reliable as redundancy is increased.			
Criteria	Cost	Benefit	Comments
<i>Social</i>		+	Utility grid will become more reliable
<i>Technical</i>	-		Identifying how much redundancy there should be
<i>Administrative</i>	-		Identifying needs
<i>Political</i>	-	+	Identifying how much redundancy there should be
<i>Legal</i>	NA	NA	
<i>Economic</i>	-		Cost of creating redundancy may increase energy costs
<i>Environmental</i>		+	Redundancy and a smarter grid promotes energy conservation and efficiency
<i>Priority</i>			4

Strategy			
Bury select power lines to decrease the probability of large scale outages. Replace overhead power lines with underground lines.			
Criteria	Cost	Benefit	Comments
<i>Social</i>		+	Burying power lines helps to harden the utility grid

<i>Technical</i>		+	The risk of a power outage is lower when the power lines are buried
<i>Administrative</i>	-		Identifying needs regarding making the grid more reliable
<i>Political</i>	-		Selecting which power lines to bury
<i>Legal</i>	NA	NA	
<i>Economic</i>	-	+	It is more costly to bury power lines compared to stringing power lines, but there is less risk of power outages when they are buried
<i>Environmental</i>		+	A smarter grid promotes energy conservation and efficiency
<i>Priority</i>			4

### A13 Hazard: Flood/Dam Failure

Goal: Minimize negative impacts of flood events by identifying problem areas and potential solutions to correct them.

<u>Objective:</u>	Ensure that any future developments constructed within Rock County and each city within the county are located outside of 100-year flood plains.
<u>Strategies</u>	Encourage Beaver Creek to adopt Rock County's zoning regulations in regards to development within the flood plain. Rock County's zoning regulations prohibits any further development within the floodplains. The cities of Jasper and Luverne have adopted similar regulation in regards to flood plain development as Rock County. Who: RC, BC, CL, CJ Timeframe: Ongoing Cost: In-kind Priority Rank: 4
<u>Strategies</u>	Continuation of flood plain mapping and zoning in the county's official land use maps and in its zoning ordinances. Who: LMO, BC, CL, Hills, CJ, FEMA Timeframe: Ongoing Cost: In-kind Priority Rank: 4
<u>Strategies</u>	Promote a buffer system along creeks and streams that are prone to flooding

	(Grass Strips, CRP, RIM, etc). Who: LMO, BWSR, SWCD Timeframe: Ongoing Cost: In-kind Priority Rank: 4
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Strategy			
Encourage Beaver Creek to adopt Rock County's zoning regulations in regards to development within the flood plain. Rock County's zoning regulations prohibits any further development within the floodplains. The cities of Jasper and Luverne have adopted similar regulation in regards to flood plain development as Rock County.			
Criteria	Cost	Benefit	Comments
<i>Social</i>		+	Will reduce the risk of homes and businesses being flooded
<i>Technical</i>	-		Identifying the actual risk of flooding using outdated FIRM maps
<i>Administrative</i>	-		Garnering support in the City of Beaver Creek
<i>Political</i>	-		May be political implications of adopting the regulation. Some people do not like regulations limiting what they can and can not do.
<i>Legal</i>	-		Some people enjoy the scenic view of a river and stream, so they build close to the river or stream. Adopting Rock County's zoning regulation will restrict development and that may create opposition to the regulation.
<i>Economic</i>		+	Potential flood loses will be reduced
<i>Environmental</i>	-		Pollution and sediment entering the stream if proper setbacks and conservation efforts are not in place
<i>Priority</i>			4

Strategy			
Continuation of flood plain mapping and zoning in the county's official land use maps and in its zoning ordinances. Ensure that Rock County's policies and regulations regarding floodplain management are in compliance with the National Flood Insurance Program (NFIP).			
Criteria	Cost	Benefit	Comments

<i>Social</i>		+	Helps residents understand the risk of flooding and the NFIP
<i>Technical</i>	-		Identifying the actual risk of flooding using outdated FIRM maps
<i>Administrative</i>	-		Difficult using outdated FIRM maps
<i>Political</i>	NA	NA	
<i>Legal</i>	-	+	Legal issues regarding flood plain mapping and zoning
<i>Economic</i>	-	+	Costly to update but may reduce costs associated with flooding in the long run
<i>Environmental</i>		+	Helps to limit the damages associated with flooding
<i>Priority</i>			4

<b>Strategy</b>	<b>Promote a buffer system along creeks and streams that are prone to flooding (Grass Strips, CRP, RIM, etc).</b>		
<i>Criteria</i>	Cost	Benefit	Comments
<i>Social</i>		+	Helps to preserve the natural state of the waterway
<i>Technical</i>		+	Buffers are tied and test and are effective
<i>Administrative</i>	-		Convincing private land owners to give up farmable land and install a buffer to prevent runoff and
<i>Political</i>	NA	NA	
<i>Legal</i>	-		Some people enjoy the scenic view of a river and stream, so they build close to the river or stream. There may be legal issues associated with this strategy.
<i>Economic</i>		+	Inexpensive way to promote ground cleaner water
<i>Environmental</i>		+	Decreases contaminates from entering the waterway
<i>Priority</i>			4

<u>Objective:</u>	Update the 100-year flood plain maps for Rock County.
<u>Strategies</u>	Encourage Rock County communities to advocate that the FIRM maps in Rock County be updated. Who: RC, LMO, All Cities, All Townships, FEMA Timeframe: 2014-2018 Cost: \$250,000 Priority Rank: 5

Strategy	Encourage Rock County communities to advocate that the FIRM maps in Rock County be updated.		
Criteria	Cost	Benefit	Comments
<i>Social</i>		+	Information related to flood insurance would be more accurate; could encourage more communities to participate in the NFIP
<i>Technical</i>		+	Improvements to mitigate the effects of flooding would be included in the FIRM maps. The FIRM maps were originally produced in the 1970s.
<i>Administrative</i>	-		Helping to coordinate the update to the FIRM maps
<i>Political</i>	-		Old maps are extremely dated
<i>Legal</i>	-		A number of FEMA Letters of Map Amendment have been obtained by homeowners in Rock County
<i>Economic</i>	-		Costly to update maps
<i>Environmental</i>		+	Improved flood planning and environmental management
<i>Priority</i>			4

<u>Objective:</u>	Minimize inflow into sewer treatment systems.
<u>Strategies</u>	Ensure cities that utilize centralized sewer treatment systems have compliant systems that keep inflow to a minimum. Who: LMO, All Cities,

	<p>Timeframe: Ongoing          Cost: In-kind          Priority Rank: 4</p>
<u>Strategies</u>	<p>Ensure septic tank systems are in compliance with state regulations.          Who: LMO, All Cities, All Townships          Timeframe: Ongoing          Cost: In-kind          Priority Rank: 4</p>

Strategy			
Ensure cities that utilize centralized sewer treatment systems have compliant systems that keep inflow to a minimum.			
Criteria	Cost	Benefit	Comments
<i>Social</i>		+	Will help to maintain cleaner ground water
<i>Technical</i>	-		The location of inflow can be difficult to identify
<i>Administrative</i>	-		Implementing best practices
<i>Political</i>	NA	NA	
<i>Legal</i>	-		Legal issues regarding inflow and compliance to sewer treatment regulation
<i>Economic</i>	-		Project costs associated with replacing sewer pipes and other measures to decrease inflow
<i>Environmental</i>		+	Less rainwater and groundwater will enter the sanitary sewer so the volume of water being treated will go down
<i>Priority</i>			4

Strategy	
Ensure septic systems are in compliance with state regulations.	

<i>Criteria</i>	Cost	Benefit	Comments
<i>Social</i>		+	Community benefit: ensuring septic system are working properly
<i>Technical</i>	-		Regulations change and compliance may require a professional
<i>Administrative</i>	-		Tracking compliance
<i>Political</i>	-		Regulations requiring changes to an operational but not compliant septic system
<i>Legal</i>	-		Legal issues associated with noncomplying septic systems
<i>Economic</i>	-		Cost of updating or replacing a failing septic system
<i>Environmental</i>		+	This strategy will help ensure septic systems are working properly. There are a number of environmental issues associated with raw sewage leaking into the ground and infiltrating the ground water.
<i>Priority</i>			4

## II Identification and Analysis of Mitigation Strategies: National Flood Insurance program (NFIP)

### Participation in the Nation Flood Insurance Program

FEMA’s National Flood Insurance Program (NFIP) is intended to provide flood insurance, assist with floodplain management, and complete flood hazard mapping (Refer to Chapter 4, Section II A5 for more information regarding flooding). A number of jurisdictions in Rock County participate in the National Flood Insurance Program (NFIP). These jurisdictions include: City of Beaver Creek, City of Hardwick, City of Jasper, City of Luverne, and Rock County.<sup>86</sup> The Cities of Hills, Kenneth, Magnolia, and Steen are not participating in the NFIP.

#### Participation in the National Flood Insurance Program, Rock County

CID Community	Jurisdiction	Init FHBM Identified	Init FIRM Identified	Curr EFF Map Date	Reg-Emer Date
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<sup>86</sup> Fema. National Flood Insurance Program. Accessed: 11/8/13. Available: <http://www.fema.gov/cis/MN.pdf>

270407	City of Beaver Creek	8/23/1974	NA	NSFHA	5/25/1984
270408	City of Hardwick	8/2/1974	NA	NSFHA	6/8/1984
270410	City of Jasper	3/29/1974	7/1/1986	9/1/1986 (L)	9/1/1986
270411	City of Luverne	2/15/1974	5/17/1982	5/17/1982	5/17/1982
270642	Rock County	7/1/1977	7/1/1977	7/1/1988 (L)	7/1/1988

FEMA <http://www.fema.gov/cis/MN.pdf>

The planning team identified one central goal to mitigate the negative impact of flooding in Rock County. To accomplish the goal, there are three outline objectives and six strategies. The highest priority ranking goal related to flood was for the FIRM maps to be updated. Updated FIRM Maps would help Rock County, cities within Rock County, and property owners better assess problem areas and identify solutions to address the problem areas.

### III Implementation of Mitigation Actions

#### Prioritization

The planning team prioritized the strategies on a scale of 1 to 5. This ranking scale places the highest priority on strategies with a 5 and the lowest priority with a 1. The STAPLEE Process assisted the planning team in assigning the priority ranking.

Through the STAPLEE Process the Goals Subcommittee evaluated every strategy based on social, technical, administrative, political, legal, economic, and environmental criteria. These seven criteria allowed for a more precise priority ranking. Before the priority rankings were finalized, the Goals Subcommittee shared their priority rankings with the entire planning team.

#### Strategy Implementation and Administration

This priority rank does not mean that all strategies with a priority ranking of 5 have to be accomplished before strategies with a 4 and so on can be implemented. The purpose of the prioritization is to show that the planning team talked about possible options and with unlimited resources, this is what they chose to accomplish first. Due to scarce resources, it may be necessary to start with a goal that have less upfront costs and is relatively easier to implement. The goals, objectives, and strategies being outlined in the Rock County AHMP are recommendations from the planning team, so during implementation modifications can take place.

Rock County Emergency Management is the primary agency responsible for implementation and administration of this plan. The County will implement mitigation strategies within the next five years, and will seek appropriate funding to do so.

Local jurisdictions with comprehensive plans and land use controls will be strongly encouraged to incorporate applicable goals, objectives, and strategies into their local plans upon their next update. Transmittal of the final plan will include a letter from the County Emergency Manager requesting that each participating jurisdiction 1) adopt this Hazard Mitigation Plan as a primary policy document, and 2) review and incorporate all applicable policies of this document into the community's existing plans by inclusion or by reference.

Upon adoption of this plan, the County and participating Cities should also at the same time evaluate development and management controls, such as zoning and floodplain ordinances, to maintain consistency with this plan. For example, encourage the City of Beaver Creek to adopt Rock County's zoning regulations in regards to development within the flood plain.

### **Sources of Funding**

Funding sources for mitigation actions vary from FEMA to other federal, state, and local funding sources. Certain mitigation actions lend themselves to specific funding sources.

- Mitigation actions for Public Health Emergencies are typically led by Public Health Services, with funding through the Minnesota Department of Health and other sources.
- Mitigation actions for Transportation Infrastructure will likely be accomplished in conjunction with MnDOT/Federal Highway Administration, County State Aid, and other County/Township/City-funded projects. MnDOT may pay \$500-\$700 per acre, per year for living snow fence projects in priority locations, which is often supplemented by the Conservation Reserve Program (CRP) through USDA Farm Service Agency and SWCD.
- Mitigation action items for Drought/Water Supply may find funding from DNR, the Minnesota Board of Water and Soil Resources (BWSR), Minnesota Pollution Control Agency (MPCA), US Environmental Protection Agency (EPA) and US Department of Agriculture (USDA).
- Mitigation actions for flooding/dam failure beyond property acquisition, relocation and elevation may be fundable through DNR, BWSR, and local Soil & Water Conservation District sources.
- Mitigation actions for Fires (both structure/vehicle fires and wildfires) may be fundable by local fire departments through FEMA's Assistance to Firefighters Grants (AFG), Staffing for Adequate Fire and Emergency Response Grants (SAFER), Fire Prevention and Safety Grants (FP&S), and Assistance to Firefighters Fire Station Construction Grants (SCG) programs. The DNR also works with local fire departments to conduct wildfire training programs.
- Mitigation actions for hazardous materials mitigation and response may be funded by Minnesota Pollution Control Agency (MPCA) and US Environmental Protection Agency (EPA). An example project may include: water and sewer projects, Brownfield cleanups, Voluntary Investigation and Cleanup (VIC) projects, and Tank Compliance and Assistance Program.
- Other actions would have to be funded from general tax levies, ongoing program budgets, and by private citizens.

### **Action items for Participating Jurisdictions**

Rock County is a rural county with few full-time paid staff in the area of emergency management. Jurisdictions in Rock County rely on Rock County Emergency Management for services regarding emergency management and hazard mitigation. Rock County Emergency Management maintains

regular communication with all local units of government in the county to facilitate intergovernmental cooperation.

Combining strategies between jurisdictions is due to the rural nature of the county, and that a number of jurisdictions are similar in regards to the natural or manmade hazard the strategy is trying to mitigate. A number of strategies in the Rock County AHMP have “All Cities” listed as who will be working to implement the strategy. Some strategies specifically outline a specific city or multiple specific cities to work together on implementing the strategy. The listed entities under each strategy have had the opportunity to provide input and recommendations in regards to the strategy and will work together to implement the strategy.

# CHAPTER 8: PLAN MAINTENANCE

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This Chapter documents procedures for long-term plan maintenance. Section I describes monitoring, evaluating and updating the plan. Section II addresses the need for continued public involvement.

## **I Monitoring, Evaluating, and Updating the Plan**

### **Plan Monitoring**

The Rock County All Hazard Mitigation Plan (AHMP) is not a static document. It is the intent of the plan to serve as a guide for mitigating current and future hazards. Rock County Emergency Management Department maintains regular contact with all jurisdictions in the county. This will allow the Rock County Emergency Management Director and Department to monitor and implement strategies outlined in the AHMP. The Rock County Emergency Management Director will evaluate the goals that have been implemented by Rock County and jurisdictions within the County. The Rock County Emergency Management Director will also evaluate the Rock County AHMP on the number of strategies that have been implementation and the number of goals that were reached.

Public participation is critical in implementing strategies outlined in the plan. Local residents and representatives have a better understanding of the issues that face their communities. Technical issues regarding the implementation of goals may different from community to community. Maintaining regular contact with the jurisdictions in Rock County will help to ensure that the Rock County Emergency Management Director and Department are able to effectively implement the strategies outline in the plan.

### **Evaluating the Plan**

It is recommended that the County Emergency Management Director review and formally evaluate the plan within 3 years of adoption, as well as after every disaster event, to adequately prepare for the plan update. When implementing strategies from the existing plan it is important to consider improvements that can be made to the planning process, implementation, and evaluation of the plan. AHMP are evolving documents that need to stay up to date. Information gathering and evaluation should be taking place throughout the five year cycle of updating the plan. This will help to insure existing risk assessments are accurate and that mitigation efforts are effective.

### **Updating the Plan**

FEMA requires that plans be reviewed, updated and re-approved every five years or sooner. The planning process timeline for reviewing, updating, and approving an AHMP at Minnesota Homeland Security and Emergency Management (HSEM) and Federal Emergency Management Agency (FEMA) is around 15 months. Within three years of adoption, the Emergency Management Director will formulate a work plan and seek input from Rock County AHMP Planning Team members, local units of government, and local residents to start the process to update the Rock County AHMP. The Emergency Management Director will also extend an invitation to non-participating jurisdictions to join the planning process for the update.

The Rock County Emergency Management Department will work the Development Planner at Southwest Regional Development Commission (SRDC) to collect information regarding hazard events during the five year update cycle. This includes but is not limited to: keeping newspaper articles describing hazard events, taking notes regarding feedback from residents of Rock County in relations to hazard events and mitigation efforts, working with cities and townships to document hazard events, and plan for mitigation measures to mitigate the effects of hazard events and potential hazard events.

## **II Continued Public Involvement**

Rock County maintains a website that includes a page for Emergency Management. The SRDC also maintains a website that includes a page for hazard mitigation. Both of these websites will be the main point of access for the public regarding information about the Rock County AHMP. A PDF copy of the approved plan will be available on these pages along with other information related to the update and hazard mitigation. The public will have access to the plan and be able to provide input regarding progress on the mitigation strategies.

<http://www.co.rock.mn.us/emergencymgmt.html>

<http://www.swrdc.org/planning/hazard.aspx>

### **Other Opportunities for Involvement**

Hazard mitigation has been a regional effort in Southwest Minnesota with services overlapping between counties. All Hazard Mitigation Plan (AHMP) development starts with reviewing the counties existing mitigation plan and comparing the plan with the neighboring counties. There are many opportunities during the development of a plan for involvement provided from neighboring communities, agencies involved in hazard mitigation, businesses, academia, and other relevant private and non-profit interests. SRDC has helped to development mitigation plans for the following counties in southwest Minnesota:

- Cottonwood County (2011)
- Jackson County (2008)
- Lincoln County (2010)
- Lyon County (2010)
- Murray County (2005, update 2012)
- Nobles County (2005; update 2011)
- Pipestone County (2010)
- Redwood County (2005; update 2012)

### **Conclusion**

Hazards can occur with little or no warning. The relatively unpredictable nature of some hazards makes mitigating the effects of an event more difficult, but history and probability says that natural and manmade hazards are going to occur. Since hazardous events are going to take place, hazard mitigation is here to minimize the damages to property and loss of life.

The All-Hazards Mitigation approach seeks to reduce the chances of hazards occurring, and when they do occur to minimize their effects on people and property. While we are all at some risk from hazards, through this process we can reduce our vulnerability to the effects of hazards.

# APPENDIX

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## A. Mitigation Strategies Acronym List

### Rock County Local Units of Government

RC	Rock County Administration and Emergency Management
LMO	Rock County Land Management Office
SWCD	Soil and Water Conservation District
RCSO	Rock County Sheriff's Office
SWHHS	Southwest Health and Human Services
BC	City of Beaver Creek
Hard	City of Hardwick
Hills	City of Hills
CJ	City of Jasper
CK	City of Kenneth
CL	City of Luverne
CM	City of Magnolia
CS	City of Steen
BPT	Battle Plain Township
BCT	Beaver Creek Township
CT	Clinton Township
DT	Denver Township
KT	Kanaranzi Township
LT	Luverne Township
MgT	Magnolia Township
MrT	Martin Township
MdT	Mound Township
RDT	Rose Dell Township
ST	Springwater Township
VT	Vienna Township

### Other Parties with an interest in All Hazards Mitigation

Amb	Ambulance Districts
Fire	Fire Departments
Hosp	Hospitals and Clinics
Sch	Local School Districts
RWS	Rural Water Systems
BWSR	Minnesota Board of Water and Soil Resources
MDH	Minnesota Dept. of Health
MnDOT	Minnesota Dept. of Transportation
HSEM	Minnesota Division of Homeland Security & Emergency Management
EXT	University of Minnesota Extension in Rock County
VH	Minnesota Veterans Home, Luverne
FEMA	U.S. Federal Emergency Management Administration
USGS	U.S. Geological Survey

MNFIRE	Minnesota Fire Marshal
SRDC	Southwest Regional Development Commission
BAH	Minnesota Board of Animal Health

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## B. Local Mitigation Progress

This appendix outlines the goals, objectives, and strategies that have been completed or included in the updated Rock County All Hazard Mitigation Plan (AHMP). The goals, objectives, and strategies are from the original Rock County AHMP.

The plan **must** describe the status of hazard mitigation actions in the previous plan by identifying those that have been completed or not completed. For actions that have not been completed, the plan **must** either describe whether the action is no longer relevant or be included as part of the updated action plan.

Complete – (Completed)

Not Completed – (Not Completed)

- Added to updated AHMP – (Added / Ongoing)
- No longer relevant – (Not Relevant)

A qualitative approach was used by the planning team to judge and prioritize the mitigation strategies based on perceived costs and benefits. The process used to judge and prioritize the mitigation strategies was the STAPLEE Process. Refer to the Planning Process Chapter for more information relating to the STAPLEE Process and the planning process. There was no priority ranking in the original Rock County AHMP.

The plan **must** describe if and how any priorities changed since the plan was previously approved. If no changes in priorities are necessary, plan updates may validate the information in the previously approved plan.

**Hazard: Violent Storms/Extreme Temperatures – this hazard includes summer and winter storms, lightning, tornados, hail, and wind (Hazard Rank High and Moderate)**

**Violent Storms/Extreme Temperatures Goal:** Minimize negative impacts caused by severe weather and extreme temperatures (Not Completed) (Added/ Ongoing – page 138-148)

**Objectives:**

1. Educate county residents on the importance and need of adequate supply of safety shelters. Also, increase the shelter capacity for the county's nursing home residents. (Completed – page 75 / Ongoing)
2. To have staff at the county schools, hospitals, and nursing homes trained for severe weather emergency response (evacuation routes). (Added – page 142, 143)
3. County citizens that are better notified of current weather conditions. (Added – page 143-145)
4. To have designated tornado and winter storm shelters in town for people with no appropriate shelter. (added – page 140,141)
5. To have a backup generator for winter electric failure to insure proper heating of designated shelters and homes. (added – page 145,146)

**Strategies:**

1. Conduct a study to determine where the County and each city within the county are deficient in safety shelters, and conduct a review of the area serviced by the warning system. (Not Completed)  
Who: RC, RCSO, Hard, Hills, CL, CM  
When: 2008
2. Each spring, Rock County Emergency Management personnel will educate local schools, nursing homes, hospitals, etc. on the importance of doing a “Severe Weather Awareness Week” workshop for their staff. This would identify evacuation routes and safety shelters, along with other important information. (Complete/Ongoing)  
Who: RC, Sch, Hosp  
Ongoing  
When:  
Cost: In-kind
3. Encourage the distribution of NWS weather radios to all residents who want one, especially those in rural areas away from community sirens. Also, the County should set up a program to advertise the weather radios to the general public and explore ways to distribute them through a cost-share program. (Complete/ Ongoing)  
Who: RC  
When: 2008-2012  
Cost: \$10,000
4. Ensure that each manufactured home park has an updated emergency management plan and work with park managers to improve communication during severe storm events, ensure that residents are familiar with the emergency management plan and that residents recognize the evacuation routes within the plan and where they can go for shelter. (Complete/ Ongoing)  
Who: RC, LMO, CL  
When: 2008-2012  
Cost: In-kind

5. Work with fire and ambulance volunteers to develop a safe shelter plan for the county including shelters, shelter capacity, and transportation routes. (Complete/Ongoing)

Who: RC, LMO, RCSO, BC, Hard, Hills, CJ, CK, CL, CM, CS  
2010

When: 2009-  
Cost: In-kind

Amb, Fire, Hosp, Sch, VH

### **Hazard: Hazardous Materials/Transportation Accidents (Hazard Rank High)**

**Materials/Accidents Goal:** Improve the effectiveness and quality of the various agencies addressing hazardous materials that may impact the county. (Added/ Ongoing – page 171-178)

#### **Objective:**

1. The ability to quickly map the affected disaster area as well as surrounding areas within the county. (Ongoing/ Added – page 171,172)
2. To have properly trained HAZMAT personnel/emergency management personnel. (Ongoing/ Added)
3. Make sure the wind turbines, train tracks, and airport are lighted so that people will see them and are free of debris. (Completed/ Ongoing)
4. Make sure emergency personnel are able respond to a variety of transportation accidents. (Ongoing/ Added – page 171,172)
5. Support policies and programs that assist in creating factual and timely information about hazardous materials in Rock County. (Ongoing/ Added – page 171,172)

#### **Strategies:**

1. Increase training of emergency personnel so that all types of potential spills will be readily recognized upon arrival at the scene of transportation accidents. (Ongoing/ Added – page 171,172)

Who: RCSO, HAZ, Amb, Fire,  
2012

When: 2008-  
Cost: In-kind

2. Make sure road maintenance personnel keep the train tracks clear of debris when they are grading the roads and maintain adequate lighting at wind turbines, railroads, and airport. (Ongoing)

Who: RC, LMO, BC, Hills, CJ, CL, BCT, LT, MgT, MrT, RDT  
Ongoing

When:  
Cost: In-kind

3. Work with state and federal agencies to address hazardous materials that have the potential to impact the county and region. (Ongoing/ Added – page 171,172)

Who: RC, RCSO, HAZ, Fire, MnDOT  
Ongoing

When:  
Cost: In-kind

4. Continue to expand the use of mutual aid agreements and memoranda of understanding to improve coordination between state, local, and federal agencies, and appropriate private sector representatives. (Ongoing/ Added – page 173,174)

Who: RC, RCSO, HAZ, Fire, HSEM  
Ongoing

When:  
Cost: In-kind

### **Hazard: Fire —Structure Fires and Wildfires (Hazard Rank High and Low)**

**Fire Goal:** Eliminate or lessen the negative impacts from fire. (Ongoing/ Added – page 154-160)

#### **Objectives:**

1. Partnership between landowners that limits the potential for wildfires to spread through the establishment of fire breaks. (Ongoing/ Added – page 154,155)
2. Increase fire prevention and safety for residential units throughout the county including school districts. (Ongoing/ Added – page 155,156)
3. Safer commercial structures by having building codes include alarms and sprinkler systems. (Ongoing/ Added – page 157,158)
4. Easy accessibility for the county's fire trucks and firefighting personnel. (Ongoing/ Added – page 158)
5. Maintain existing mutual aid agreements. (Ongoing/ Added – page 158,159)

#### **Strategies:**

1. Encourage township road authorities to cut back road ditches and bale where appropriate, which will limit potential for spreading of wildfires. (Ongoing/ Added 154,155)

Who: RC, LMO, All Townships, Fire  
Ongoing

When:  
Cost: In-kind

2. Participate in the nationally coordinated "Firewise" program to increase resident education. (Ongoing/ Added – 154,155)

Who: All Cities, Fire  
Ongoing

When:  
Cost: In-kind

3. Encourage that snow removal ordinances are followed and encourage building construction to include fire/smoke alarms and sprinkler systems. (Ongoing/ Added – page 83)

Who: LMO, All Cities, Fire  
Ongoing

When:  
Cost: In-kind

4. Encourage each property within the county and each city within the county have road or alley access of sufficient size to handle modern fire fighting vehicles. (Ongoing/ Added – page 158,159)  
Who: LMO, All Cities, Fire  
Ongoing  
When:  
Cost: In-kind
5. Coordinate and identify regional fire departments outside of the county who could directly assist in fighting fires in Rock County. (Ongoing/ Added – page 158,159)  
Who: RC, RCSO, Fire  
Ongoing  
When:  
Cost: In-kind

**Hazard: Meth Lab (Hazard Rank High)**

**Meth Lab Goal:** Reduce the negative impacts found with methamphetamine labs in the county. (Ongoing/ Added – page 176-181)

**Objectives:**

1. Identify who is responsible for meth lab clean up and identify the responsibilities of the property owners. (Ongoing/ Added – page 176-179)
2. Educate the public about the warning signs of meth and potential dangers of the drug especially school officials, health officials along with mail carriers, cable repair men, plumbers, electricians, and delivery personnel (UPS, FEDEX). (Ongoing/ Added – page 176-179)
3. Educate landlords on the warning signs of a possible meth lab. (Ongoing/ Added – page 176-179)
4. Educate store owners on the ingredients used to make meth, and what they can do to prevent or limit the sale of the ingredients. (Ongoing/ Added – page 179, 180)
5. Ensure that law enforcement and hazardous materials professionals (HAZMAT) are properly trained in the cleanup and evaluation of a meth lab. (Ongoing/ Added – page 181)

**Strategies:**

1. Enforce the county ordinance that deals with who is responsible for the clean up of a meth lab. (Ongoing/ Added – page 176-179)  
Who: LMO, RCSO, NRPH  
Ongoing  
When:  
Cost: In-kind
2. Encourage the elimination of abandoned houses/buildings and make sure wooded areas are checked regularly. (Ongoing/ Added – page 177-179)  
Who: All Cities, All Townships  
Ongoing  
When:  
Cost: In-kind

3. Work with law enforcement and HAZMAT personnel to evaluate needs for equipment to deal with meth-lab clean up. (Ongoing/ Added – page 181)  
 Who: RCSO, HAZ, Fire  
 Ongoing  
 When:  
 Cost: In-kind
4. Increase education of school officials, health care workers, and the general public about the warning signs of meth. (Ongoing/ Added – page 176-179)  
 Who: RCSO, NRPH, Sch  
 Ongoing  
 When:  
 Cost: In-kind

**Hazard: Utility Failure (Hazard Rank High)**

**Utility Failure Goal:** Eliminate or reduce the effect of power failures that occur within the county. (Ongoing/ Added – page 196-201)

**Objectives:**

1. Critical facilities have back up power in case of utility failure. (Ongoing/ Added – page 196-197)

**Strategies:**

1. Ensure that critical facilities such as hospitals and rural water suppliers have access to back up power generators. (Ongoing/ Added – page 196-197)  
 Who: RC, CL, Hosp, RWS, VH  
 Ongoing  
 When:  
 Cost: \$50,000-100,000
2. Examine needs and costs for providing back up generation where none currently exists. (Ongoing/ Added – page 196-197)  
 Who: RC, CL, RWS  
 2010  
 When: 2009-  
 Cost: In-kind

**Hazard: Drought (Hazard Rank Moderate)**

**Drought Goal:** Minimize the negative impacts of drought conditions in Rock County. (Ongoing/ Added – page 148-154)

**Objectives:**

1. Accurate inventories of the recharge rates and capacities of the county's aquifers. (Ongoing/ Added – page 148,149)
2. Any water supplier should have a wellhead protection plan. (Ongoing/ Added – page 149,150)

3. To ensure Rock County's ground water supplies are sufficient to meet demands. (Ongoing/ Added – page 150-152)

**Strategy:**

1. Educate the public and private leaders of the importance of wellhead protection and water conservation in times of low rainfall. (Ongoing/ Added – page 149,150)  
Who: LMO, CL, RWS When: 2008-2012  
Cost: \$25,000 per year
2. Perform necessary studies to determine the capacities and recharge rates of the county's aquifers in order to better assess use restrictions and provisions during times of drought. (Ongoing/ Added – page 148,149)  
Who: LMO, CL, RWS When: 2010-2012  
Cost: In-kind

**Hazard: Flood/Dam Failure (Hazard Rank Moderate and Low)**

**Flood Goal:** Minimize negative impacts resulting from flood events by identifying problem areas and potential solutions to correct them. (Ongoing/ Added – page 201-206)

**Objectives:**

1. Ensure that any future developments constructed within the county and each city within the county are located outside of 100-year flood plains. (Ongoing/ Added – page 201,202)
2. Cities that utilize centralized sewer treatment systems have compliant systems that keep inflow to a minimum. (Ongoing/ Added – page 204,205)
3. Update the 100-year flood plain maps for Rock County. (Not Completed/ Ongoing/ Added – page 204)

**Strategies:**

1. Continuation of flood plain mapping and zoning in the county's official land use maps and in its zoning ordinances. (Ongoing/ Added – page 201,202)  
Who: LMO, CL, Hills, CJ, FEMA When:  
Ongoing Cost: In-kind
2. Promote a buffer system along creeks and streams that are prone to flooding (Grass Strips, CRP, RIM, etc). (Ongoing/ Added – page 201,202)  
Who: LMO, BWSR When:  
Ongoing Cost: In-kind

3. Encourage Rock County communities with identified flood plains within or adjacent to their borders to work with FEMA to get maps updated and accurate as possible. (Ongoing/ Added – page 204)

Who: RC, LMO, CL, CH, CJ, BPT, BCT, CT, DT, LT, ST, FEMA  
2012

When: 2008-  
Cost:

\$250,000

#### **Hazard: Environmental Problems (Hazard Rank Moderate)**

**Environmental Problems Goal:** Reduce the risk of plant loss from insects/pests and diseases. (Ongoing/ Added – page 131-135)

##### **Objectives:**

1. Keep informed of current pests and insects that could threaten Rock County. (Ongoing/ Added – page 131,132)
2. Educate citizens on the types of fungi, insects, and pests that could potentially cause a problem for plants and trees. (Ongoing/ Added – page 132,133)

##### **Strategies:**

1. Utilize information provided by the University of Minnesota Extension, private industry, and the Department of Agriculture on how to handle certain pests and insects. (Ongoing/ Added – page 131,132)

Who: Ext, All Townships  
Ongoing

When:  
Cost: In-kind

2. Use current information services that provides useful and factual information about infectious diseases and various insects and pests. (Ongoing/ Added – page 132,133)

Who: NRPH, Ext  
Ongoing

When:  
Cost: In-kind

#### **Hazard: Animal Disease (Hazard Rank Moderate)**

**Animal Disease Goal:** To reduce the risk to Rock County animals from potentially deadly disease. (Ongoing/ Added – page 135-138)

##### **Objective:**

1. Make sure that Rock County farmers are following guidelines set forth by governing bodies at the federal, state, and local levels. (Ongoing/ Added – page 135,136)
2. Develop a plan for farmers if there is an outbreak of disease or a major disaster occurs. (Ongoing/ Added – page 136,137)

**Strategies:**

1. Encourage agricultural officials to give presentations about the warning signs of various diseases that are likely to affect the county. (Ongoing/ Added – page 135,136)  
Who: Ext, All Townships  
Ongoing  
When:  
Cost: In-kind
2. Encourage Rock County government officials to work with farmers to develop ways of containing a disease. (Ongoing/ Added – page 135,136)  
Who: LMO, Ext, All Townships  
Ongoing  
When:  
Cost: In-kind
3. Create and expand a section in the Emergency Operations Plan that deals with response and care of animals in an outbreak of disease or a major disaster along with disposal. (Ongoing/ Added – page 135,136)  
Who: RC, LMO, Ext  
2012  
When: 2010-  
Cost: In-kind

**Hazard: Civil Disturbance/Radiological/Terrorism (Hazard Rank Low and Moderate)**

**Terrorism Goal:** Protect Rock County critical infrastructure and county residents from terrorist attack. (Not Completed) (Ongoing/ Added – page 181-187)

**Objectives:**

1. New facility construction that is responsive to potential terrorist activity, where appropriate. (Ongoing/ Added – page 181-183)
2. Encourage safe county and city public facilities. (Ongoing/ Added – page 181-183)
3. Increase level of security using landscape design, vehicle barriers, and separation of public and private functions. (Ongoing/ Added – page 184-185)
4. Work with state and federal agencies engaged in the statewide domestic preparedness strategy to identify options for Rock County. (Ongoing/ Added – page 185-187)

**Strategies:**

1. Consider zoning and building code changes and updates that reflect building measures to withstand terrorist attacks, where appropriate. (Not Completed)  
Who: LMO, RCSO, All Cities  
Ongoing  
When:  
Cost: In-kind
2. Consider limiting public access in high profile county and city locations (e.g. county courthouse, city hall, schools) in times of increased potential for terrorist activity.

These times could follow the Federal Department of Homeland Security warning system. (Ongoing/ Added – page 181-183)

Who: RC, All Cities, Sch

When:

Ongoing

Cost: In-kind

3. Increased education-better informed public workers through increased communication and shared information. (Ongoing/ Added – page 185-187)

Who: RC, RCSO, All Cities, Sch, HSEM

When:

Ongoing

Cost: In-kind

4. Update the local emergency plans to adequately address terrorism. (Ongoing/ Added – page 185-187)

Who: RC, RCSO

When: 2010-

2012

Cost: In-kind

### **Hazard: Water Supply Contamination (Hazard Rank Moderate)**

**Water Supply Goal:** Preserve and protect the quality of Rock County's ground water resources.

(Ongoing/ Added – page 193-196)

#### **Objectives:**

1. Ensure that an emergency supply of clean drinking water is available even in the case of emergencies. (Ongoing/ Added – page 193-194)
2. Clean groundwater for each Rock County community. (Ongoing/ Added – page 193-196)
3. Minimize contamination of groundwater from abandoned wells. (Ongoing/ Added – page 194-195)
4. Promote the interconnected water supply in the case of emergencies. (Ongoing/ Added – page 195-196)

#### **Strategies:**

1. Provide updates to the Emergency Response Plan that identifies alternate sources of drinking water including the location of adequate amounts of bottled water. (Ongoing/ Added – page 193-194)  
Who: RC, NRPH, RWS  
When: 2008-2010  
Cost: In-kind
2. Promote an abandoned well sealing program within the county. (Ongoing/ Added – page 194-195)

Who: LMO, RWS  
2012  
per year

When: 2008-  
Cost: \$5,000

3. Maintain city wells in Hills and Steen that are accessible if Rural Water (current source) would need to shut down. (Ongoing/ Added – page 195-196)  
Who: Hills, CS, RWS  
Ongoing  
When:  
Cost: In-kind

### **Hazard: Infectious Disease/Public Health Emergencies (Hazard Rank Low)**

**Infectious Disease Goal:** Reduce the threat of infectious diseases through education and awareness. (Ongoing/ Added – page 187-193)

#### **Objectives:**

1. Better coordination with local media in the case of medical emergencies. (Ongoing/ Added – page 187-189)
2. Increased distribution of medications and medical supplies in the case of emergency. (Ongoing/ Added – page 190,191)
3. An effective quarantine plan that limits the spread of highly contagious diseases. (Ongoing/ Added – page 191-193)

#### **Strategies:**

1. Update the Rock County Emergency Operations plan to reflect recent changes made to the State plan and to coordinate more effectively with the local media. (Ongoing/ Added – page 187-189)  
Who: RC  
When: 2008
2. Encourage Nobles Rock Public Health Service to continue work with MDH for the mass distribution of needed medicines and supplies for public health emergencies. (Ongoing/ Added – page 190,191)  
Who: RC, NRPH, MDH  
When: 2008-2009  
Cost: In-kind
3. Implement a quarantine plan in coordination with local doctors and other health professionals in the county. (Ongoing/ Added – page 191-193)  
Who: RC, RCSO, NRPH, Hosp  
Ongoing  
When:  
Cost: In-kind
4. Develop/adopt a West Nile Virus protection plan and a cooperative partnership with other cities to spray for mosquitoes. (Ongoing/ Added – page 191-193)

Who: NRPH, All Cities  
2012

When: 2008-  
Cost: In-kind

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### **C. Documentation of Meeting and Notices**

- Meetings Agendas
- Media Releases
- Sign-in Sheets

## Rock County All Hazard Mitigation Plan Update

### Meeting #1

### Planning Process

**Location:** Rock County Commissioners Board Room Courthouse Annex.

**Date / Time:** Thursday July 18<sup>th</sup> @ 9am

### Agenda

9:00 Introduction to Planning Team

9:05 Presentation

- Purpose
- Benefit
- Adoption Procedure
  - Jurisdictions and County
- Planning Process
  - Meeting #2
  - Meeting #3
  - Public Hearing
  - Up to 4 sub-committee meetings
- Participation in Plan
  - Profile of Rock County
    - The demographic section of the plan is updated if anyone wants a copy for review

9:30 Hazards identified in the initial plan

- The hazards identified in the initial plan will be reviewed and validated. Historical data since the initial plan was approved will be discussed to determine if a hazard is still applicable or if it should be deleted.
- Hazards not addressed in the initial plan may also be added. All participating jurisdictions should be involved with hazard validation. (bring in data on previous occurrences)
- Create committee for questions related to hazards

10:00 Adjourn

### Meeting One Results

- An understanding of the planning process
- An updated list of hazards
- Research and data gathering responsibilities in regards to hazards
- **Schedule meeting #2**

## Rock County All Hazard Mitigation Plan (AHMP) Update

### Meeting #2

### Planning Process

**Location:** Law Enforcement Center: 1000 North Blue Mound Ave, Luverne

**Date / Time:** Thursday August 15th @ 9am

### Agenda

9:00 Welcome and Introductions

9:05 Discuss Hazard Identification Worksheet

9:10 Hazards Identification – Power Point Presentation

- Data Gathering – Hazard Specific
- Natural and Manmade Hazards
  - Risk Assessment
    - Locations Affected by the Hazard
    - Extent of the Hazard
    - Previous Occurrence of the Hazard
    - Probability of Future Events of this Hazard
  - Vulnerability
    - Plans and Programs
    - Gaps and Deficiencies
    - Existing Mitigation Measures

10:30 Adjourn

### *Results from meeting #2*

- Gain information in regards to hazards so the Hazard Mitigation Planning Team, representatives from local government, and community members can assess each hazard identified in the Hazard Identification Worksheet before meeting #3

## Rock County All Hazard Mitigation Plan (AHMP) Update

### Meeting #3

### Planning Process

**Location:** Law Enforcement Center: 1000 North Blue Mound Ave, Luverne

**Date / Time:** Thursday October 10th @ 9am

### Agenda

9:00 Welcome and Introductions

9:05 Discuss Current Vision

9:10 Previous Goals, Objectives, and Strategies

- Data Gathering – Hazard Specific
  - What strategies are working
  - New strategies to help accomplish previously identified goals
- Discuss goals from other plans
- Identify new Goals, Objectives and Strategies

10:15 Establish two Sub-Committees

- Need to start reviewing the Risk Assessment Section of the Plan
- Need to review the Goals, Objectives, and Strategies Section of the Plan

10:30 Adjourn

### *Results from meeting #2*

- Refine existing Goals, Objectives, and Strategies
- Formulate new Goals, Objectives and Strategies
- A subcommittee to start reviewing the different sections of the Plan
- A subcommittee to review Goals, Objectives, and Strategies

## Rock County All Hazard Mitigation Plan (AHMP) Update

### Subcommittee Meeting #1 STAPLEE Process

**Location:** Law Enforcement Center: 1000 North Blue Mound Ave, Luverne

**Date / Time:** Thursday December 5th @ 9am

### Agenda

- 9:00 Welcome and Introductions
- 9:05 Discuss Current Issues
- 9:15 Goals, Objectives, and Strategies
  - STAPLEE Process
  
- 10:30 Adjourn

### *Results from meeting*

- Better understanding of the STAPLEE Process
- Consensus regarding the STAPLEE Process
- Prioritized ranking of strategies

## Rock County All Hazard Mitigation Plan (AHMP) Update

### Subcommittee Meeting #2 Plan Review

**Location:** Rock County Courthouse

**Date / Time:** Friday March 21th @ 1:30pm

### Agenda

1:30 Welcome and Introductions

1:35 Discuss Current Issues

1:45 Plan Review

- Discuss Planning Team recommendations and modifications
- Finalize Planning Team recommendation and modifications
- Finalize plan so the Risk Assessment Section can be sent to James McClosky for review before the entire plan is submitted

3:00 Adjourn

### *Results from meeting*

- Finalized Risk Assessment Section
- Finalized Draft Plan

## Rock County All Hazard Mitigation Plan (AHMP) Update

**Meeting: Public Review**

**Planning Process**

**Location:** Law Enforcement Center: 1000 North Blue Mound Ave, Luverne

**Date / Time:** Monday June 2nd @ 3-6pm

### **Agenda**

3:00 Review comments from Rock County AHMP Planning Team

3-6pm Collective feedback and suggestions from public

A draft Rock County AHMP is available at <http://www.swrdc.org/>

### *Results from Public Review Meeting*

- Feedback to finalize Rock County AHMP before submitting the plan to HSEM and FEMA

Media Release – Immediate

July 25, 2013

### **Rock County Hazard Identification Meeting Scheduled for August 15<sup>th</sup>**

The Southwest Regional Development Commission (SRDC) is currently working on the update to the Rock County All Hazard Mitigation Plan (AHMP). The purpose of the Plan is to identify risks and vulnerabilities associated with disasters, and develop long-term strategies for protecting people, resources, and property in future hazard events. Through the planning process the planning team will identify hazards and with help from the public will prioritize these hazards and identify actions to mitigate the effects of the hazards. The planning team encompasses representatives from various Rock County organizations. Team members are: Kyle Oldre, Jason Kloss, Eric Hartman, Arlyn Gehrke, Evan Verbrugge, Douglas Bos, Dan Nath, Mark Sehr, Ken Hoime, and Peter Bakken

Hazards include both natural and man-made. Natural hazards include ice storms, drought, and tornados. Man-made hazards include public health emergencies, water supply contamination, terrorism and civil disturbances.

The planning team requests your assistance to help prioritize the hazards and to identify mitigation actions. The hazard identification and prioritization meeting is scheduled for Thursday August 15th at 9am at the Law Enforcement Center, 1000 North Blue Mound Ave, Luverne.

The Rock County All Hazard Mitigation Plan is a multi-party effort between Rock County Emergency Management, Rock County citizens, local public agencies, people in the private sector, and people in regional and state organizations. The Plan update is funded partly through a grant provided by the Minnesota Division of Homeland Security and Emergency Management (HSEM) and the Federal Emergency Management Agency (FEMA). This Plan will make Rock County eligible for funding from five hazard mitigation assistance programs that include: Hazard Mitigation Grant Program, Pre-Disaster Mitigation, Flood Mitigation Assistance, Repetitive Flood Claims, and Severe Repetitive Loss. For more information on the Rock County All Hazard Mitigation Plan visit <http://www.swrdc.org/planning/hazard.aspx>.

-end-

Media Release – Immediate

September 18, 2013

### **Rock County Hazard Identification Meeting Scheduled for October 10th**

The Southwest Regional Development Commission (SRDC) is currently working on the update to the Rock County All Hazard Mitigation Plan (AHMP). The purpose of the Plan is to identify risks and vulnerabilities associated with disasters, and develop long-term strategies for protecting people, resources, and property in future hazard events. Through the planning process the planning team will identify hazards and with help from the public will prioritize these hazards and identify actions to mitigate the effects of the hazards. The planning team encompasses representatives from various Rock County organizations. Team members are: Kyle Oldre, Jason Kloss, Eric Hartman, Arlyn Gehrke, Evan Verbrugge, Douglas Bos, Dan Nath, Mark Sehr, Ken Hoime, and Peter Bakken.

Hazards include both natural and man-made. Natural hazards include but are not limited to ice storms, drought, and tornados. Man-made hazards include but are not limited to public health emergencies, water supply contamination, terrorism and civil disturbances.

*The planning team requests your assistance to help identify mitigation strategies in regards to the specific hazards outlined by the planning team. The mitigation strategies meeting to outline goals, actions, projects, and implementation actions is scheduled for Thursday October 10th at 9:00 a.m. at the Law Enforcement Center, 1000 North Blue Mound Ave, Luverne, MN.*

The Rock County All Hazard Mitigation Plan is a multi-party effort between Rock County Emergency Management, Rock County citizens, local public agencies, people in the private sector, and people in regional and state organizations. The Plan update is funded partly through a grant provided by the Minnesota Division of Homeland Security and Emergency Management (HSEM) and the Federal Emergency Management Agency (FEMA). This Plan will make Rock County eligible for funding from five hazard mitigation assistance programs that include: Hazard Mitigation Grant Program, Pre-Disaster Mitigation, Flood Mitigation Assistance, Repetitive Flood Claims, and Severe Repetitive Loss. For more information on the Rock County All Hazard Mitigation Plan visit <http://www.swrdc.org/planning/hazard.aspx>.

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**Rock County Hazard Mitigation Plan  
Public Review**

**Monday June 2<sup>nd</sup>, 2014**

**3 – 6pm**

Law Enforcement Center: 1000 North Blue Mound  
Ave, Luverne

*How can we be better prepared for disasters?  
Severe Storms, Tornado, Ag & Public Health Emergencies*

For more information, contact:

Kyle Oldre; Rock County Emergency Management,

[Kyle.oldre@co.rock.mn.us](mailto:Kyle.oldre@co.rock.mn.us)

Drew Hage, Southwest Regional Development Commission,

507-836-1633, [drewh@swrdc.org](mailto:drewh@swrdc.org)

A draft plan is available at [www.swrdc.org](http://www.swrdc.org)

**All- Hazard Mitigation Local In-Kind Match  
Public Meeting Sign In Sheet  
DR 1990.05**

Date: 7-18-13

Time Held: 9 am to 10:20 am

City/ County Location: Luverne

Purpose: Meeting #1

PRINT NAME	SIGNATURE	COMMUNITY AFFILIATION
Eric Hartman	<i>[Signature]</i>	Rock County
Ken Hoime	<i>[Signature]</i>	Rock Co. Comm.
<del>Doug B</del>	<del><i>[Signature]</i></del>	<del>MMAA's Twp</del>
ARLYN GEHRKE	<i>[Signature]</i>	ROCK COUNTY LMO
Jeff Wienette	<i>[Signature]</i>	R.C. Sheriff's Office
Mark Schv	<i>[Signature]</i>	Highway
Kyle Oldre	<i>[Signature]</i>	EM
Drew Hays	<i>[Signature]</i>	SRDL

Reported by: *[Signature]*  
Signature

Agency: Southwest Regional Development Commission

The match for participation by members of the public is \$19.75/hour throughout the year 2013. HSEM will review DEED statewide wage data to determine the appropriate match. The formula for in-kind match for public meetings is:  
 \_\_\_ Number of Attendees x \_\_\_ Number of Hours x \$19.75/ hour = \$ \_\_\_ In-Kind Match

The Community Affiliation is if the attendee wish to state a public or private organization they are representing or if they are representing themselves.

**Note:** County and City employees that are attending as part of the mitigation planning effort are to have their base and fringe salary documented for local cash match. Federal funded salary may not be used for match.

**All- Hazard Mitigation Local In-Kind Match  
Public Meeting Sign In Sheet  
DR 1990.05**

Date: 8-15-13 Time Held: 9am to 11:15am  
 City/ County Location: Luverne AHMP Purpose: Meeting #2

PRINT NAME	SIGNATURE	COMMUNITY AFFILIATION
Ken Horine	<i>[Signature]</i>	Rec'd Co Comm.
JAN NATH	<i>[Signature]</i>	LUVERNE FIRE DEPT
ARLYN GEHRKE	<i>[Signature]</i>	ROCK CO LAND MGT
Kyle Oldre	<i>[Signature]</i>	Rock EM
Mark Selva	<i>[Signature]</i>	RCAD
PETER BARKEN	<i>[Signature]</i>	BC TNSP
Don Degebus	<i>[Signature]</i>	Luxton
EVAN VERBIZUCCH	<i>[Signature]</i>	Sheriff's office
Draw Hage	<i>[Signature]</i>	SRDC
John Call	<i>[Signature]</i>	City of Luverne

Reported by: *[Signature]* Agency: SRDC  
 Signature

The match for participation by members of the public is \$19.75/hour throughout the year 2013. HSEM will review DEED statewide wage data to determine the appropriate match. The formula for in-kind match for public meetings is:  
 \_\_\_ Number of Attendees x \_\_\_ Number of Hours x \$19.75/ hour = \$ \_\_\_ In-Kind Match

The Community Affiliation is if the attendee wish to state a public or private organization they are representing or if they are representing themselves.

**Note:** County and City employees that are attending as part of the mitigation planning effort are to have their base and fringe salary documented for local cash match. Federal funded salary may not be used for match.

**All- Hazard Mitigation Local In-Kind Match  
Public Meeting Sign In Sheet  
DR 1990.05**

Date: 10-11-13

Time Held: 9 am to 10:45

City/ County Location: Luverne

Purpose: Meeting #3

PRINT NAME	SIGNATURE	COMMUNITY AFFILIATION
EVAN VERBRUGGE	<i>Evelyn</i>	RCSD
ARLYN GERRIG	<i>Arlyn</i>	LMO
<i>David B.</i>	<i>David B.</i>	//
<i>Eric</i>	<i>Eric</i>	lma
Kyle Olden	<i>Kyle Olden</i>	Admin / E.M
Brew Hays	<i>Brew Hays</i>	SRDC

Reported by: *Brew Hays*  
Signature

Agency: SRDC

The match for participation by members of the public is \$19.75/hour throughout the year 2013. HSEM will review DEED statewide wage data to determine the appropriate match. The formula for in-kind match for public meetings is:  
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**Note:** County and City employees that are attending as part of the mitigation planning effort are to have their base and fringe salary documented for local cash match. Federal funded salary may not be used for match.



# Addendums

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Addendums to the Rock County All Hazard Mitigation Plan (AHMP) are available separately.

## **I Capabilities Worksheet**

The Capabilities Worksheet identifies planning capabilities, policies and ordinances, programs, studies and reports, staff, and community partners that are relevant to hazard mitigation.

## **II Resolutions of Participation**

The following jurisdictions signed resolutions to participate in the Rock County AHMP.

- City of Beaver Creek
- City of Hardwick
- City of Hills
- City of Kenneth
- City of Luverne
- City of Magnolia
- City of Steen

Rock County has the land use authority over the townships, so Rock County will represent the townships in the All Hazard Mitigation Plan (AHMP).

## **III Resolutions of Adoption**

The following jurisdictions signed resolutions to adopt the Rock County AHMP.

- County
- City of

*To be appended following FEMA approval and adoption by each participating jurisdiction.*

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