RENVILLE COUNTY MINNESOTA

2021

Multi-Hazard Mitigation Plan

Renville COUNTY
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RENVILLE COUNTY MINNESOTA

MULTI-HAZARD MITIGATION PLAN

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Section 1 – Introduction

1.1 Introduction

Hazard mitigation is defined as any sustained action to reduce or eliminate long-term risk to human life and property from hazard events. The Federal Emergency Management Agency (FEMA) has made reducing hazards one of its primary goals, and a primary mechanism in achieving this goal is both the hazard mitigation planning process and the subsequent implementation of resulting projects, measures, and policies (FEMA, 2015).

From 1980 to 2020, damages due to natural disasters in the U.S. exceeded $1.875 trillion. 2017 was the costliest year on record with $306 billion in damage, and while the costliest disasters may occur in coastal states, in 2020, wildfires, hailstorms, drought, and tornadoes caused a record amount of billion-dollar disasters across the nation (Smith, 2020). Hazard mitigation planning is an effective process to prepare communities and lessen the impact of loss of life and property from future disasters. Although mitigation efforts will not eliminate all disasters, government at all levels should strive to be as prepared as possible for a disaster for the wellbeing of its citizens.

The Multi-Hazard Mitigation Plan (MHMP) is a requirement of the Federal Disaster Mitigation Act of 2000. The development of a local government plan is required to maintain eligibility for federal hazard mitigation grant funding programs. For communities to be eligible for future mitigation funds, they must adopt an MHMP.

Researchers at the National Institute of Building Sciences looked at the results of 23 years of federally funded mitigation grants provided by FEMA, the U.S. Economic Development Administration (EDA), and the U.S. Department of Housing and Urban Development (HUD). Their findings revealed that for every $1 spent on hazard mitigation funding in the nation, $6 is saved in future disaster costs (Multi-Hazard Mitigation Council, 2019).

Renville County is vulnerable to a variety of natural hazards that threaten the loss of life and property in the county. Hazards such as tornadoes, flooding, wildfires, blizzards, straight-line winds, and droughts have the potential for inflicting vast economic loss and personal hardship.

This MHMP represents the efforts of Renville County and its local governments to fulfill the responsibility of hazard mitigation planning. The intent of the plan is to limit the damages and losses caused by specific hazards.

1.1.1 SCOPE

U-Spatial, University of Minnesota, was contracted by MN Homeland Security and Emergency Management using FEMA Pre-Disaster Mitigation (PDM) grant funds to work with Renville County Emergency Management to facilitate an update to the 2014 Renville County MHMP. U-Spatial brings extensive geographic data analysis skills and hazard risk assessment expertise to the process. U-Spatial also employed the services of Hundrieser Consulting LLC for county and stakeholder outreach as well as mitigation action development related to this plan.

This MHMP evaluates and prioritizes the major natural hazards affecting Renville County as determined by frequency of event, economic impact, deaths, and injuries. Mitigation recommendations are based on input from state and local agencies, the public, and national best practices.

U-Spatial performed the hazard risk assessment for 1-percent annual chance floods (also known as 100-year floods) using the FEMA Hazus GIS tool. The Minnesota Homeland Security and Emergency Management (HSEM) office, which is a division of the Minnesota Department of Public Safety, has determined that Hazus should play a critical role in Minnesota's risk assessments.

This is a multi-jurisdictional plan that covers Renville County, including the cities of Bird Island, Buffalo Lake, Danube, Fairfax, Franklin, Hector, Morton, Olivia, Renville, and Sacred Heart. The Renville County mitigation activities identified in this plan also incorporate the concerns and needs of townships, school districts, and other participating entities.

Members from each of these jurisdictions actively participated in the planning process by assisting with public outreach, attending planning team meetings, providing local information, identifying mitigation actions, and reviewing the plan document (see Appendix C). The information in these forms was used to help identify mitigation actions for local implementation (see also Section 2.2). Each jurisdiction will adopt the plan by resolution after the plan is approved by FEMA. County and local city resolutions will be added by Renville County after final approval by FEMA (see Appendix D).

Renville County has specified the following goals for this MHMP update:

- Include more recent data documenting the critical infrastructure and hazards faced by Renville County.
- Reformat and reorganize the plan to reflect definitions of hazards as expressed in the 2019 State of Minnesota Multi-Hazard Identification and Risk Assessment Plan.
- Reflect current hazard mitigation priorities in Renville County.

1.1.2 HAZARD MITIGATION DEFINITION

Hazard mitigation may be defined as any action taken to eliminate or reduce the long-term risk to human life and property from natural hazards. The benefits of hazard mitigation planning include the following:

- saving lives, protecting the health of the public, and reducing injuries
- preventing or reducing property damage
- reducing economic losses

- minimizing social dislocation and stress
- reducing agricultural losses
- maintaining critical facilities in functioning order
- protecting infrastructure from damage
- protecting mental health
- reducing legal liability of government and public officials

1.2 State Administration of Mitigation Grants

FEMA currently has three mitigation grant programs that are administered by the State of Minnesota: the Hazard Mitigation Grant Program (HMGP), the Building Resilient Infrastructure and Communities (BRIC) program, and the Flood Mitigation Assistance (FMA) program. The HMGP, BRIC, and FMA programs are administered through the state of Minnesota Department of Public Safety HSEM Division. All applicants must have or be covered under an approved Hazard Mitigation Plan. Eligible applicants include state and local governments, certain private non-profit organizations or institutions, and tribal communities.

Section 2 – Public Planning Process

2.1 Planning Team Information

The Renville County MHMP planning team is headed by the Renville County emergency manager, who is the primary point of contact. Members of the Renville County MHMP planning team include representatives from the public and governmental sectors. Table 1 identifies the planning team individuals and the organizations they represent.

Table 1. Multi-Hazard Mitigation Planning (MHMP) Team

Name	Agency/Organization	Participant Title
Mike Hennen	Renville County Emergency Management	Emergency Management Director
Samantha Best	Renville County Emergency Management	Emergency Management Deputy Director
Alex Lange	Renville County GIS	GIS Specialist
Jeff Marlowe	Renville County Public Department	County Engineer
Scott Refsland	Renville Co Environmental Services/Emmet Township	RCES Director / Township Treasurer
Jill Bruns, RCPH	Renville County Public Health	Director
Deb Lingl	City of Bird Island	City Administrator
Jean Thielke	City of Buffalo Lake	City Clerk
Kevin Kokesch	City of Franklin	City Maintenance
Wendy Pederson	City of Franklin	City Administrator
Brian Stenholm	City of Olivia	City Emergency Manager
Dan Coughlin	City of Olivia	City Administrator
Jason Krumheuer	City of Olivia	Police Chief
Angi Wulf	City of Renville	City Clerk
Shane Wohlman	City of Renville	City Administrator
Nick Frank	Osceola Township	Supervisor
Carlton Gustafson	Palmyra Township	Supervisor
Karyn Lamb	Palmyra Township	Supervisor
Rita Berg	Palmyra Township	Chairman
Steve Bruns	Martinsburg Township	President
Heidi Rauenhorst	Hawk Creek Watershed	Coordinator
Daniel Schade	McLeod Coop Power	Operations Manager
Gregg Nistler	McLeod Coop Power	Assistant Engineering Manager
Teresa Martin	McLeod Coop Power	Accountant
Julie Rath	MN Valley Regional Rail Authority	Director
Gene Allex	Renville-Sibley Coop Power	Line Superintendent
Brandy Fisher	Southern MN Beet Sugar Cooperative	Safety Director
Dan DeSmet	Upper Sioux Tribal Community	EM Contact

Name	Agency/Organization	Participant Title
Deb Dirlam	Lower Sioux Community	EM Contact
Mike Aude	Lower Sioux Indian Community	EM Contact
Stephanie Johnson	Meeker County Sheriff's Office	Emergency Management Director
Kim Lindahl	Kandiyohi County Emergency Management	Emergency Management Director

Jurisdictional representatives were contacted throughout the HMP process to help facilitate local participation and provide feedback on the hazards of concern to their communities. This feedback was used to develop local mitigation actions that they would seek to implement upon plan adoption (see Section 6.3 and Appendix J).

2.2 Review of Existing Plans, Capabilities & Vulnerabilities

Renville County and its local communities utilized a variety of planning documents to direct community development. These documents included a Comprehensive/Master Plan, Emergency Operations Plan, Transportation Plan, etc. (see Appendix D for a full listing of plans and programs in place in Renville County). The planning process also incorporated the existing natural hazard mitigation elements from previous planning efforts. In addition, the 2019 Minnesota All-Hazard Mitigation Plan was consulted.

In the development of the Renville County MHMP, U-Spatial consultants reviewed and incorporated a variety of planning documents that direct community development and influence land use decisions for the county and its jurisdictions. In addition, U-Spatial consultants worked closely with the Renville County Emergency Management Director and other key county staff and local city officials to collect feedback on local mitigation capabilities and vulnerabilities that either support or hinder the ability to mitigate against natural hazards at the county and local level. Following is a summary of the assessment tools used to gather information on local capabilities and vulnerabilities during the planning process:

Capabilities Assessment (*hazard-specific*): In this assessment, detailed information was collected from Renville County on current plans and programs in place (i.e., existing programs, plans, or policies) as well as program gaps or deficiencies that currently exist to mitigate against damages caused by each natural hazard addressed in the plan. Section 5 identifies current gaps and deficiencies for mitigation and Section 6.1.3 describes the mitigation capabilities that are in place by Renville County to support mitigation.

Local Mitigation Surveys: As part of Renville County's 2021 MHMP update, participating jurisdictions and key county personnel were asked to fill out a Local Mitigation Survey (LMS) form. Questions in the LMS form addressed the following:

- Part A: Hazard Identification, Risk Assessment & Vulnerability Analysis
- Part B: Local Mitigation Capabilities Assessment
- Part C: Local Mitigation Projects
- Part D: Survey Participants.

The purpose of the survey was to gather jurisdictionally specific information needed to support the update of the plan and to help inform development of local-level mitigation actions for the next five-year planning cycle (for the full Renville County LMS report, see Appendix C).

2.3 Planning Process Timeline and Steps

In order to update the 2014 Renville County MHMP, U-Spatial consultants worked in coordination with the Renville County Emergency Management and members of the planning team. The updated plan includes new data documenting the types of hazards faced by Renville County residents and emergency planning officials as well as and new thinking on how to address these hazards.

2.3.1 RENVILLE COUNTY STAKEHOLDER COORDINATION

On April 22, 2020, U-Spatial hosted an online kickoff meeting that was attended by the Renville County Emergency Manager. The webinar included a project overview, U-Spatial's background, the roles and responsibilities of the Emergency Manager, the contents of the MHMP, the planning process, and the projected timeline of the project (see Appendix F for webinar slides).

On May 18, 2020, Renville County issued a news release inviting public feedback and participation for the Renville County MHMP update (for complete documentation, see Appendix G).

A planning team meeting took place on August 13, 2020, via Zoom video conference hosted by U-Spatial. Meeting participants included representatives from Renville County, city and township governments, neighboring jurisdictions, and other key stakeholders. The planning team was provided with an overview of the purpose, process, and timeline for the Renville County MHMP update, as well as the roles and responsibilities of planning team members. During the meeting, participants discussed the prioritization of natural hazards facing the county and local jurisdictions, provided feedback on plans and programs in place, and identified mitigation actions that would reduce future risk. Information gathered during this meeting was used to inform the development of mitigation strategies in the updated plan. See Appendix F for a full meeting summary.

On November 10, 2021, members of the MHMP planning team convened again via Zoom video conference with U-Spatial presenters. Together, they conducted a review of and discussed the updated risk assessment for Renville County. Draft mitigation strategies were developed for Renville County and each city participating in the plan (see Appendix F).

In order to provide opportunity for public input, Renville County issued a second news release on November 10, 2021, inviting public review and feedback on the draft plan. The news release provided information on where to view the plan and submit comments. U-Spatial hosted a webpage to post the full draft of the Renville County MHMP, including excerpts of the Renville County Master Mitigation Action Chart, each jurisdictional mitigation action chart, and an electronic feedback form.

Table 2 documents Hazard Mitigation update meetings and public outreach. Appendix G provides documentation of the public outreach for feedback on the draft plan by Renville County and jurisdictions. The public feedback period for the draft plan was open from 11/10/21 to 11/23/21, for a total of 14 days.

Table 2. Renville County Hazard Mitigation Update meetings and public outreach

Event	Date	Appendix
Kickoff Webinar	4/22/20	Appendix F, Planning Team Meetings
News Release #1	5/18/20	Appendix G, Public Outreach & Engagement Documentation
Planning Team Meeting #1	8/13/20	Appendix F, Planning Team Meetings
Planning Team Meeting #2	9/30/21	Appendix F, Planning Team Meetings
News Release #2	11/10/21	Appendix G, Public Outreach & Engagement Documentation

At the close of the public outreach period, the U-Spatial consultants worked with the Renville County Emergency Manager and members of the planning team to incorporate feedback from the public into the Multi-Hazard Mitigation Plan.

For more information on the planning process, see Sections 6 and 7.

2.3.2 OVERVIEW OF JURISDICTIONAL PARTICIPATION

Throughout the planning process, Renville County and the U-Spatial team worked to engage representatives from the county and each city in the update of the plan. Key activities for jurisdictions included assisting with public outreach, participating in planning team meetings, providing local-level information, reviewing and providing feedback to the plan update.

U-Spatial and Renville County actively used the following methods to engage jurisdictions in the MHMP plan update process:

- **Zoom Video Conferencing**: Planning team meetings were conducted via Zoom video conferencing hosted by U-Spatial. The use of virtual meetings was used to engage stakeholders remotely during Covid-19 pandemic restrictions. Virtual meetings proved to be a beneficial addition to the planning process, resulting in a high turnout from jurisdictional representatives and other stakeholders, as well as providing the ability for presenters to collect, respond to, and document feedback from participants through Zoom functions such as surveys, chat, and Q&A.

- **Email Correspondence**: Email was a primary tool used to communicate with representatives from Renville County, municipal governments, and other stakeholders. Emails were used to distribute news releases for public outreach, to invite participation in meetings and to share meeting summaries, as well as to request local-information and final review of the draft plan. Email proved to be an effective tool that resulted in increased jurisdictional participation and collection of locally specific information. Email was also used by the public to submit feedback to Renville County following news releases on the MHMP.

- **Phone Calls**: Phone calls were frequently used to conduct direct outreach or follow-up to jurisdictions to ensure participation or to collect information via one-on-one interviews. Phone calls proved to be an effective tool that resulted in increased jurisdictional participation and collection of quality information. Phone calls were especially useful in engaging very small communities that had limited staff or technological capabilities.

Cities participating in Renville County MHMP update varied by population and associated government resources to participate in the planning process (i.e., personnel, time, and technology). Rural communities with smaller populations (under 500) typically had part-time elected officials, limited to no city staff, and reduced City Hall hours in which to conduct business. Renville County and U-Spatial were sensitive to these local challenges and worked to help these local governments to participate using the methods that worked best to accommodate them, such as phone interviews to complete local mitigation survey forms (see Appendix C).

Table 3 provides an overview of the participation of each city that took part in the Renville County MHMP update planning process, with reference to the location of supporting documentation.

Table 3. Jurisdictional participation in planning process

Jurisdiction (Population)	News Release #1	Planning Team Mtg. #1	Local Mitigation Survey	Mitigation Action Chart	Planning Team Mtg. #2	News Release #2 & Plan Review
Renville County (14,723)	X	X	X	X	X	X
City of Bird Island (1005)	X	X	X	X	X	X
City of Buffalo Lake (660)	X	X	X	X		X
City of Danube (458)	X		X	X	X	
City of Fairfax (1250)	X		X	X		X
City of Franklin (493)		X		X	X	X
City of Hector (1012)	X		X	X		X
City of Morton (410)	X		X	X	X	X
City of Olivia (2343)	X	X	X	X	X	X
City of Renville (1301)	X	X	X	X	X	X
City of Sacred Heart (510)	X		X	X	X	X
Neighboring Jurisdictions:						
Kandiyohi County		X				
Meeker County		X			X	
Upper Sioux Tribal Community		X				
Lower Sioux Tribal Community		X				
McLeod County					X	
Sibley County						
Nicollet County						
Redwood County						
Brown County						
Yellow Medicine County						
Chippewa County						

Section 3 – Renville County Profile

3.1 General County Description

Renville County is located in south-central Minnesota, approximately 60 miles west of the Minneapolis-St. Paul Metropolitan area. It is bounded on the north by Chippewa, Kandiyohi, and Meeker Counties, on the west by Chippewa County, on the south by Nicollet, Brown, Redwood, and Yellow Medicine Counties, and by McLeod and Sibley Counties to the east. The land area of the county is comprised of approximately 987 square miles and there are 23 lakes and 4 major watersheds.

There are 10 cities and 27 townships in Renville County. The City of Olivia is the county seat and most populated city and contained a population of 2,484 in 2010. The county had an estimated total population of 14,548 in 2019.

Renville County is largely agricultural. The majority of the county's land is cropland, producing primarily corn and soybeans. In 2004, the City of Olivia was designated by the Minnesota Senate as the "Corn Capital of the World." There are two airports in the county, located in the Cities of Olivia and Hector.

3.2 Environmental and Geologic Characteristics

Renville County's topography originated as a tall grass mosaic prairie and wetland complex. Due to the wetland and prairie origins, an extensive network of drainage ditches and drain tile are located in the County. Due to intense row cropping, the land is left susceptible to wind and water erosion for extended periods of time. Soil erosion by wind and water are a major concern to the sustainability of Renville County soils.

Most of Renville County is very flat, with 95 percent of the area possessing a median slope of less than one percent. The central portion of the County is the flattest, with the west side containing slightly more relief. Steeper slopes and rocky outcroppings are found along the bluffs of the Minnesota River Valley. The soils are generally fine-textured. Soil conditions along with flat topography result in very slow natural drainage which has been addressed by an extensive system of drain tiling and open ditches.

Renville County contains bedrock formations, glacial drift, and modern sediments. Areas of exposed bedrock formations are both crystalline (granitic gneisses) and non-crystalline (pisolitic regolith). The last glacial advance in southern Minnesota flowed in from the northwest, carrying, and eventually depositing in the county, rocks such as carbonates, granites, and shale.

As an agricultural county, soils are one of Renville County's most valuable resources. Soils develop from the breakdown of rock minerals, intermixed with plant and animal remains. The formation of a soil is an extremely long process, taking place over hundreds to thousands of years. Renville County's soils were formed from deposits originally left by glaciers more than 10,000 years ago. The County has a wide variety of soil types due to the wide variety of parent material from which they were formed. Also important in the formation of the County's soils are factors such as climate, vegetation and topography.

3.3 Hydrography

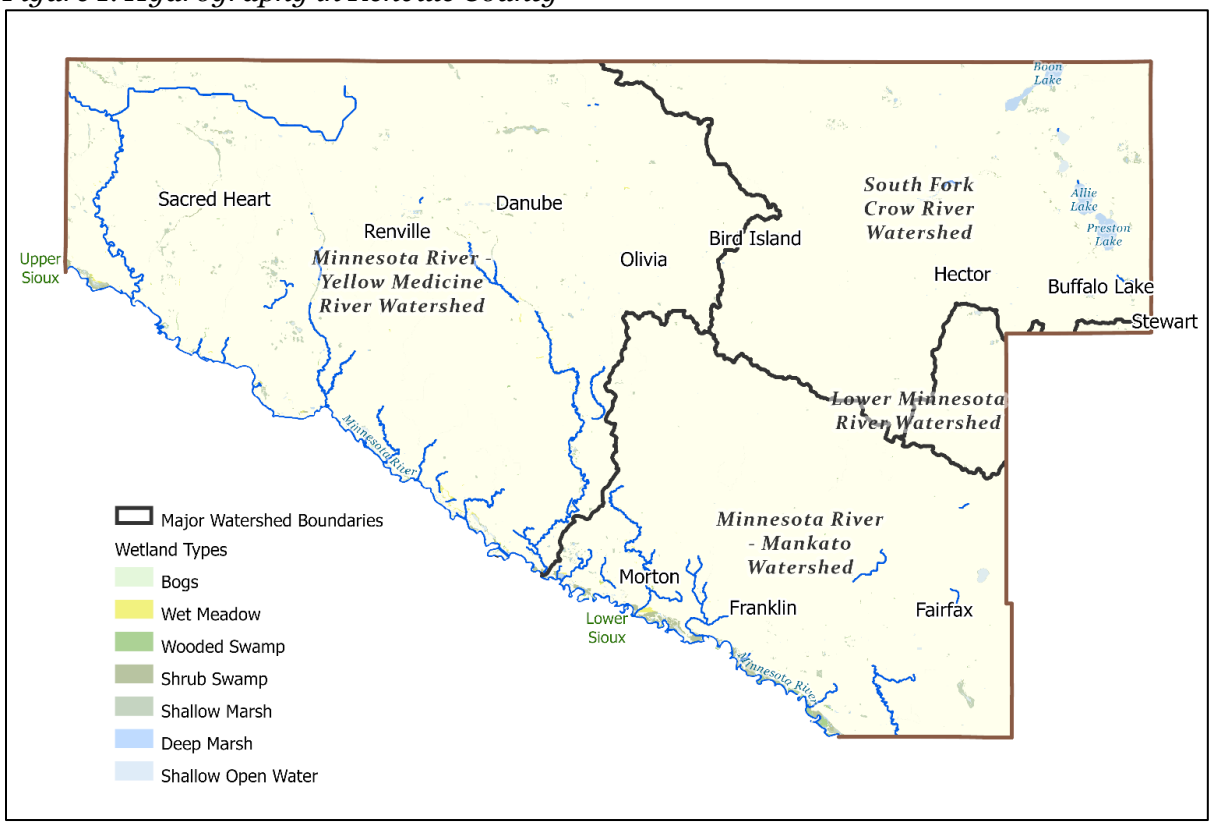
Renville County lies within the Minnesota River basin and the Upper Mississippi River basin. There are four major watersheds in Renville County, including the Minnesota River-Yellow Medicine River, Lower Minnesota River, Minnesota River-Mankato, and Crow River South Fork watersheds. The Minnesota River-Yellow Medicine River watershed is the largest, spanning 455 square miles within Renville County.

Renville County contains a number of Protected (i.e., Public) Waters, which are lakes, wetlands, and watercourses regulated by the Minnesota DNR. The inventory of the protected waters in the county includes 12 lakes, 21 watercourses (rivers and streams), and 12 wetlands (MN DNR, 2019a).

Waters across the State are continuously monitored for pollution and invasive species. The Minnesota Pollution Control Agency (MPCA) measures water pollutant levels. Waterbodies that do not meet water quality standards are designated as impaired and sent to the Environmental Protection Agency (EPA), along with pollutant-reduction goals to restore these waters (MPCA, 2017). The Minnesota Department of Natural Resources (MN DNR) is responsible for tracking and stopping the spread of aquatic invasive species. Waters with invasive species are labeled as infested.

The basic hydrography of Renville County is mapped in Figure 1.

Figure 1. Hydrography in Renville County



SOURCE: (MN DNR, 2013, 2019C, 2021C)

3.3.1 LAKES

There are 23 lakes in Renville County. The three largest lakes are in the northeast corner of the county. The largest lake is Boon Lake, which spans 763 acres, followed by Preston Lake (655 acres) and Allie Lake (509 acres). These lakes cover approximately 2,654 acres of the county's 631,739 acres (0.42%).

The MPCA classifies the following lakes as "impaired": Boon Lake and Preston Lake (MPCA, 2020). Lakes in Renville County have been identified as "impaired" due to pollutants or stressors found in these waters; examples include mercury in fish tissue, and eutrophication. Impaired waters do not meet the State's water quality standards and they affect growth and health of communities and economies. The Clean Water Act has a mandate requiring every state to address impairments (US EPA, 2015).

Lakes that are infested with an aquatic invasive species are also of concern (MN DNR, 2020d). The MN DNR does not document any lakes in Renville County as infested with an invasive aquatic species.

3.3.2 RIVERS

The Minnesota River is the one major river in Renville County. It serves as the county's southwestern boundary and is a tributary of the Mississippi River. The major creeks in three of the four watersheds in Renville County drain into the Minnesota River; in total 704 square miles or 71% of the county drains into the Minnesota River. Part of the river, from Lac Qui Parle Dam to the town of Franklin in Renville County, is designated as a Minnesota Wild & Scenic River (MN DNR, 2020d).

In Renville County, the MPCA has classified the Minnesota River as impaired.

3.3.3 WETLANDS

The term "wetland" is defined by the Minnesota Legislature as "…areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" (Wetland Standards and Mitigation, 2016). Important benefits of wetlands include storage area for excess water during flooding; filtering of sediments and harmful nutrients before they enter lakes, rivers, and streams; and fish and wildlife habitat.

Renville County contains wetlands mostly in the northeastern part of the county. These wetlands total 22,949 acres and cover 3.6% of the county (MN DNR, 2019c). These wetlands are mostly seasonally flooded basin (10,285 acres), shallow marsh (3,671 acres), and shallow open water (2,818 acres). The variety of wetland types are presented in the hydrography map in Figure 1.

Although not as prevalent as in lakes and rivers, the MPCA has identified a number of impaired wetlands throughout Minnesota; fortunately, none of these wetlands are located in Renville County.

3.3.4 GROUNDWATER

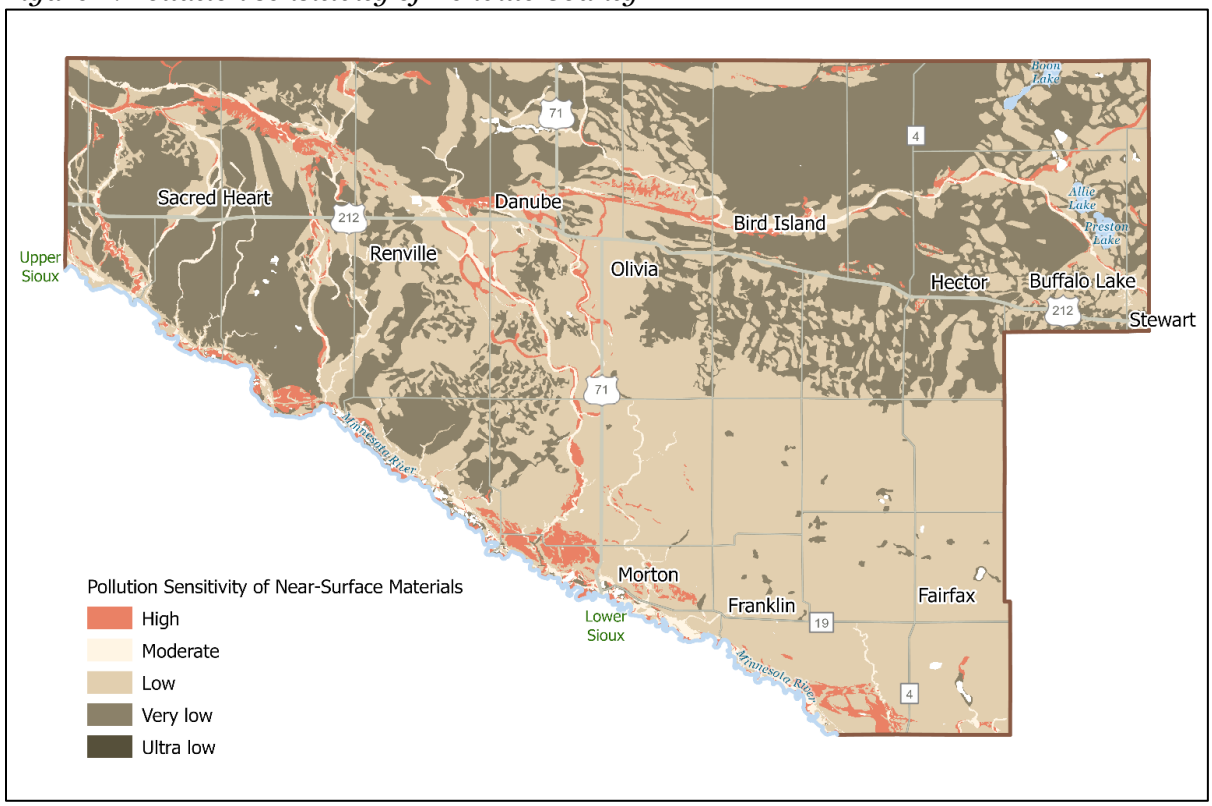
Groundwater serves a variety of vital functions in Renville County The Minnesota Department of Natural Resources has published a County Geologic Atlas of Renville's Hydrogeology that provides information on the sources and uses of groundwater in the county. Perhaps most significant, around 62% the

groundwater in this county used for municipal water purposes. The majority of this municipal water comes from buried sand and gravel aquifers. Livestock watering accounts for 15% of water use and agricultural/food processing accounts for 13%.

The primary water sources within Renville County are from the buried sand and gravel aquifers. 56% of groundwater is taken from deep buried aquifers, 21% comes from an intermediate depth, and 17% comes from shallow aquifers. Less than 7% of groundwater comes from bedrock. The deep buried sand and gravel aquifers are located in the northern half of the county while the southern half of the county contains mainly aquifers of a shallow to intermediate depth (MPCA, 2015).

With such an abundance of groundwater available, it is important to examine how sensitive this natural resource is to pollution. Groundwater sensitivity to pollution is measured by flow rate and soil permeability. Figure 2 maps pollution sensitivity of near-surface materials based on the time it takes water to travel through three feet of soil and seven feet of surficial geology, to a depth of ten feet from the land surface (Adams, 2016). The total travel time is then categorized into five sensitivity classes, ranging from high (<=170 hours) to ultra-low (>8,000 hours). Areas with special geologic conditions, such as karsts, peatlands, bedrock at or near the surface, and disturbed lands (e.g., open pit mines) require individual consideration. Of these special condition areas, only karst areas have been assigned a sensitivity ranking ("very high") due to karst areas consistently showing very fast water infiltration rates. The remaining special condition areas are classified together as they cannot be assigned a sensitivity ranking using the same methodology (MN DNR, 2020c).

Figure 2. Pollution sensitivity of Renville County



SOURCE: (MPCA, 2018A)

3.4 Climate

According to the Köppen climate classification system, Renville County's climate is classified as "Dfa" – a humid continental climate region with large seasonal temperature contrasts with precipitation distributed throughout the year (no dry season) and at least four months of the year averaging above 50° F but the warmest month averaging below 71.6 F° and at least one month averaging above 71.6 F° (Arnfield, 2020).

Since 1895, climate in the United States has been analyzed using the Climate Divisional Dataset. The boundaries of climate divisions have evolved significantly over the years: beginning in 1909 with 12 climatological districts that followed the principal drainage basins, to the current 344 climate divisions based largely on the USDA Bureau of Agricultural Economics Crop Reporting Districts (Guttman & Quayle, 1996). Climate division temperature, precipitation, and drought values are derived from the values reported by the weather stations in each climate division. In 2014, new methodologies to compute the climate division data were implemented, improving the data coverage and quality of the dataset (NOAA, 2020).

Table 4 displays monthly Climate Normals (three-decade averages) of temperatures as reported by the climate division in which Renville County is located.

Table 4. Renville County average monthly temperature, 1981–2010; 1990–2020

Month	MN Climate Division 5 1981–2010	MN Climate Division 5 1990–2020	MN Statewide 1981–2010	MN Statewide 1990–2020
January	11.9°F	12.1°F	9.9 °F	10.1 °F
February	17.3°F	16.6°F	15.4 °F	14.7 °F
March	29.7°F	29.7°F	27.9 °F	27.8 °F
April	44.8°F	43.7°F	42.9 °F	41.9 °F
May	57.0°F	56.6°F	55.1 °F	54.8 °F
June	66.4°F	66.6°F	64.4 °F	64.8 °F
July	70.9°F	70.8°F	69.0 °F	69.0 °F
August	68.4°F	68.3°F	66.8 °F	66.8 °F
September	59.3°F	60.3°F	57.7 °F	58.6 °F
October	46.4°F	46.7°F	44.8 °F	45.1 °F
November	30.7°F	31.5°F	29.2 °F	29.8 °F
December	16.1°F	18.2°F	14.5 °F	16.5 °F

SOURCE: (MIDWESTERN REGIONAL CLIMATE CENTER, 2021)

3.4.1 CLIMATE CHANGE ADAPTATION

Minnesota's climate is currently changing in ways that are pushing us to adapt to weather patterns and extreme events that pose major threats to our health, homes, environment, and livelihoods. These events cost our state millions in property loss, damaged infrastructure, disrupted business, medical care, and support services, and put residents and responders at risk. Understanding how our weather is changing now and into the future will help planners and decision-makers in emergency management and supporting fields extend our progress in climate adaptation and lead to more resilient communities (MDH, 2018).

The National Climate Assessment suggests that infrastructure planning (particularly water resources infrastructure) should "be improved by incorporating climate change as a factor in new design standards and asset management and rehabilitation of critical and aging facilities, emphasizing flexibility, redundancy, and resiliency" (Georgakakos, et al., 2014).

Federal, state, and tribal governments are increasingly integrating climate change adaptation into existing decision-making, planning, or infrastructure-improvement processes (Georgakakos, et al., 2014). Definite predictions are difficult to make, as changes may vary depending on geographical location, even within Minnesota. Intense study of these topics is ongoing.

Rural communities are particularly vulnerable to climate change, due to their dependence upon natural resources, physical isolation, limited economic diversity, higher poverty rates and aging populations. According to *Climate Change Impacts in the United States: The Third National Climate Assessment*,

> Warming trends, climate volatility, extreme weather events, and environmental change are already affecting the economies and cultures of rural areas. Many rural communities face considerable risk to their infrastructure, livelihoods, and quality of life from observed and projected climate shifts. These changes will progressively increase volatility in food commodity markets, shift the ranges of plant and animal species, and, depending on the region, increase water scarcity, exacerbate flooding and coastal erosion, and increase the intensity and frequency of wildfires across the rural landscape (Hales et al., 2014).

The Assessment also notes that transportation systems in rural areas are more vulnerable to risks such as flooding since there are typically fewer transportation options and infrastructure redundancies. In addition, power and communication outages due to severe weather events typically take longer to repair in rural areas, which can increase the vulnerability of elderly populations. Rural area populations are also more vulnerable since they typically have limited financial resources to deal with the effects of climate change.

The composition of the region's forests is expected to change as increasing temperatures shift tree habitats northward. While forests in the Midwest are currently acting as a net absorber of carbon, this could change in the future due to projected increases in insect outbreaks, forest fires, and drought, which will result in greater tree mortality and carbon emissions (Pryor et al., 2009).

3.4.2 CLIMATE DATA TRENDS

Over 50 years of storm data on record document that Minnesota has experienced an increase in the number and strength of weather-related natural disasters, particularly those related to rising temperatures and heavy downpours.

According to the 2015 Minnesota Weather Almanac,

> During the three most recent decades, the Minnesota climate has shown some very significant trends, all of which have had many observable impacts…Among the detectable measured quantity changes are: (1) warmer temperatures, especially daily minimum temperatures, more weighted to winter than any other season; (2) increased frequency of high dew points, especially notable in mid- to late

summer as they push the Heat Index values beyond 100°F; and (3) greater annual precipitation, with a profound increase in the contribution from intense thunderstorms (Seeley M. , 2015).

Temperature and precipitation projections below are taken from the Minnesota Department of Health (MDH) Region 5 profile. Appendix H provides the full MDH profile for Region 5, which includes Renville County. This report is one of a series of custom climate profile reports produced for each of the six HSEM regions in the state for reference to climate change projection data, impacts, and considerations for emergency management and preparedness professionals in this HSEM region. The information in this report was used to help inform the updated risk assessments in Section 4 of this plan for natural hazards and their relationship to climate change.

Temperature

The 2018 MDH report details how average temperatures have been affected by climate change:

> There has been an increase in winter and summer temperatures. Our average winter lows are rising rapidly, and our coldest days of winter are now warmer than we have ever recorded. In fact, Minnesota winters are warming nearly 13 times faster than our summers. The continued rise in winter temperatures will result in less snowpack, which will increase chances for grassland/wildfires as well as drought. The warmer winter temperatures will also have major consequences for our ecosystems, including native and invasive species, whose growth, migration, and reproduction are tied to climate cues. The increase in Lyme disease across Minnesota is also likely influenced in part by the loss of our historical winters, due to a longer life-cycle period for ticks. Freeze-thaw cycles are likely to increase as well, damaging roads, power lines, and causing hazardous travel conditions. By mid-century our average summer highs will also see a substantial rise, coupled with an increase in more severe, prolonged heat waves that can contribute to drought and wildfires and pose a serious health threat, particularly to children and seniors (MDH, 2018).

Changes in average temperatures are detailed in Table 5.

Increasing temperatures impact Minnesota's agricultural industry. As a result of increasing temperature, crop production areas may shift to new regions of the state where the temperature range for growth and yield of those crops is optimal. According to the National Climate Assessment, the Midwest growing season has lengthened by almost two weeks since 1950 due in large part to earlier timing of the last spring freeze. This trend is expected to continue. While a longer growing season may increase total crop production, other climate changes, such as increased crop losses and soil erosion from more frequent and intense storms and increases in pests and invasive species, could outweigh this benefit.

Table 5. Temperature trends for HSEM Region 5

Average Summer Maximum Temperature			Average Winter Minimum Temperature		
1981–2010	2050–2075	Change	1981–2010	2050–2075	Change
82.1 °F	89.6 °F	+7.5 °F	7.9 °F	16.9 °F	+9.0 °F

SOURCE: (MDH, 2018)

There may be higher livestock losses during periods of extreme heat and humidity. Losses of livestock from extreme heat led to a challenge in the disposal of animal carcasses. Currently there are only two rendering facilities in Minnesota available for livestock disposal. To minimize the detrimental effects of heat stress on animal metabolism and weight gain, Minnesota farmers have also begun redesigning and retrofitting dairy, hog, and poultry barns with better watering, feeding, and ventilation systems (Seeley, 2015).

Precipitation

Climate change has also affected precipitation, as described in detail in the 2018 MDH report:

> There has been an increase in total average as well as heavy precipitation events, with longer periods of intervening dry spells. Our historical rainfall patterns have changed substantially, giving rise to larger, more frequent heavy downpours. Minnesota's high-density rain gauge network has captured a nearly four-fold increase in "mega-rain" events just since the year 2000, compared to the previous three decades. Extreme rainfall events increase the probability of disaster-level flooding. However, there is also an increased probability that by mid-century heavy downpours will be separated in time by longer dry spells, particularly during the late growing season. Over the past century, the Midwest has not experienced a significant change in drought duration. However, the average number of days without precipitation is projected to increase in the future, leading Minnesota climate experts to state with moderate-to-high confidence that drought severity, coverage, and duration are likely to increase in the state. Modeling future precipitation amounts and patterns is less straight-forward compared to temperature. Some climate models do a better job than others representing rainfall for the Midwest, and available data sources only provide average estimates on a monthly scale, masking the spikes in extremes that trigger flood and drought disasters (MDH, 2018).

3.5 Demographics

Renville County contains 12 cities and 27 townships. In 2010, Renville County had a population of 15,730, averaging 16 people per square mile of land area (U.S. Census Bureau, 2020b). The county seat, Olivia City, is the largest city in the county with a 2010 population of 2,484. Table 6 lists the communities in Renville County along with their respective population numbers.

Population growth trends have an important influence on the needs and demands of a variety of services such as transportation, law enforcement, and emergency response. Understanding population trends and location of population concentrations is essential for making projections regarding potential impacts in the event of a disaster.

Table 6. Renville County population by community, 2010 and 2020

Community	2010 Population	2020 Population	% of County 2020
Bandon Township	175	132	0.90%
Beaver Falls Township	197	206	1.40%
Birch Cooley Township	245	229	1.56%
Bird Island City	1,042	1005	6.83%
Bird Island Township	205	201	1.37%
Boon Lake Township	378	355	2.41%

Community	2010 Population	2020 Population	% of County 2020
Brookfield Township	156	143	0.97%
Buffalo Lake City	733	660	4.48%
Cairo Township	232	196	1.33%
Camp Township	186	161	1.09%
Crooks Township	191	175	1.19%
Danube City	505	458	3.11%
Emmet Township	226	178	1.21%
Ericson Township	206	224	1.52%
Fairfax City	1,235	1250	8.49%
Flora Township	188	167	1.13%
Franklin City	510	493	3.35%
Hawk Creek Township	201	195	1.32%
Hector City	1,151	1012	6.87%
Hector Township	226	196	1.33%
Henryville Township	208	177	1.20%
Kingman Township	201	172	1.17%
Martinsburg Township	197	157	1.07%
Melville Township	225	194	1.32%
Morton City	411	410	2.78%
Norfolk Township	161	149	1.01%
Olivia City	2,484	2343	15.91%
Osceola Township	158	129	0.88%
Palmyra Township	179	168	1.14%
Preston Lake Township	271	248	1.68%
Redwood Falls City*	0	0	0.00%
Renville City	1,287	1301	8.84%
Sacred Heart City	548	510	3.46%
Sacred Heart Township	270	243	1.65%
Troy Township	284	256	1.74%
Wang Township	249	246	1.67%
Wellington Township	185	154	1.05%
Winfield Township	224	230	1.56%
Total	15,730	14723	100.00%

*There is a small sliver with 0 pop. in Renville County

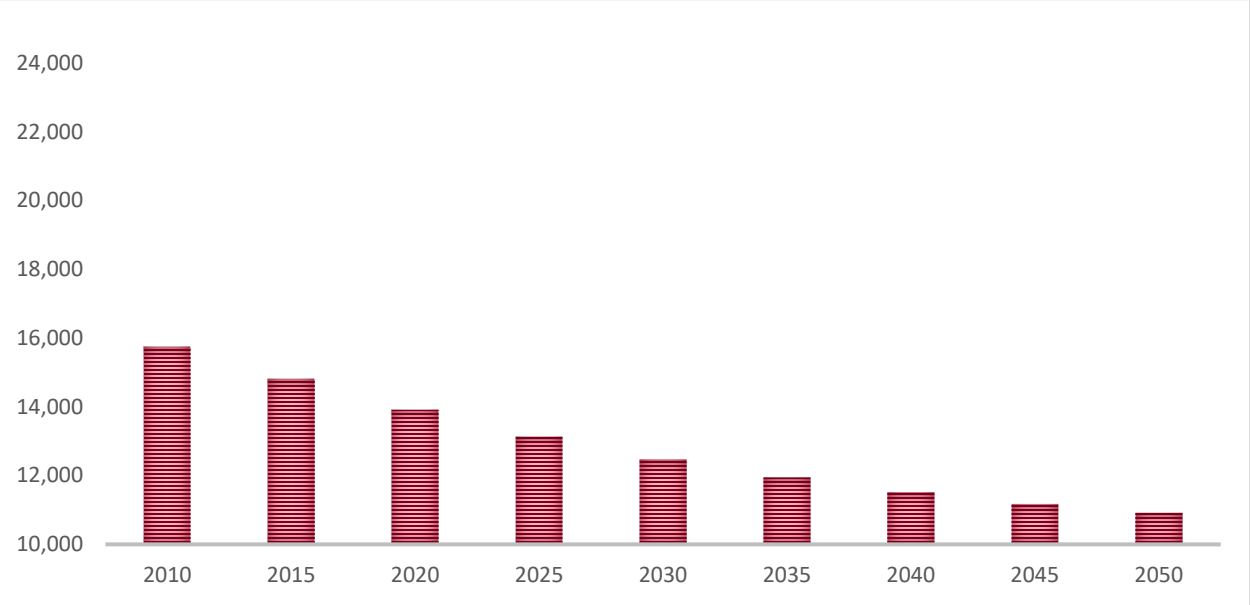
SOURCE: (U.S. CENSUS BUREAU, 2020B)

The county's population saw some growth during the 1940s when it reached its record high population of 24,625 in 1940. From 1940 to 2010 Renville County's population has been steadily decreasing, shrinking by 36% during that time period (U.S. Census Bureau, 2020b). Population predictions show a continued downward trend, and the Minnesota State Demographic Center projects a 31% decline in Renville County's population through 2050 (Minnesota State Demographic Center, 2020). Figure 3 provides an overview of the county's historic population change, and projected population is detailed in Figure 4.

Figure 3. Renville County's population change, 1920–2019

SOURCE : (U.S. CENSUS BUREAU, 2020A)

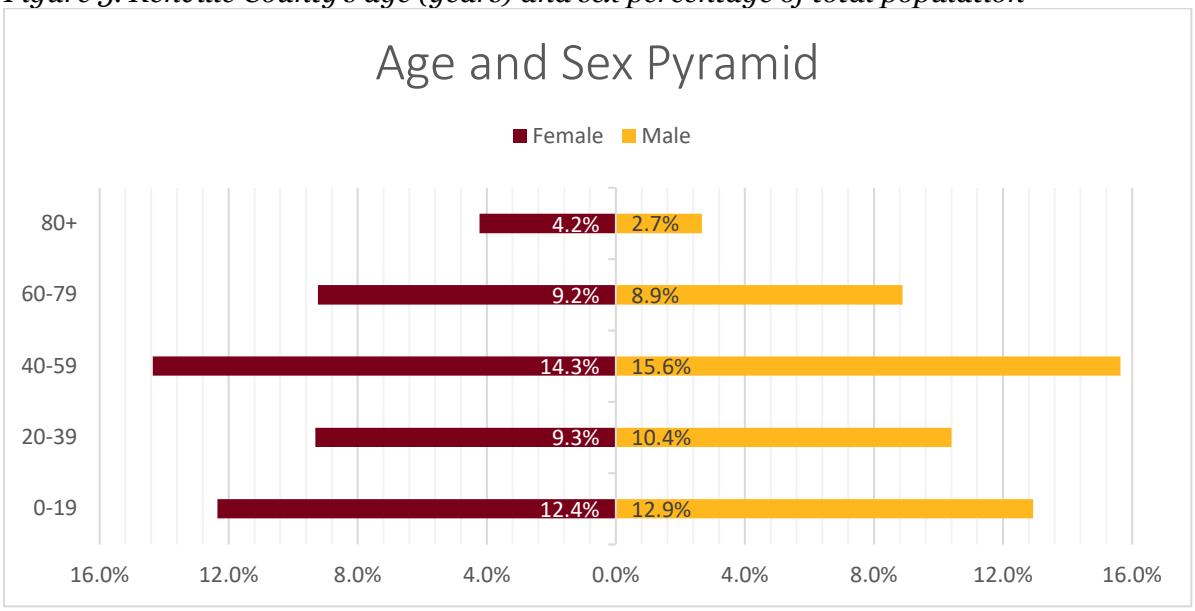
Figure 4. Renville County's projected population change, 2010–2050



SOURCE: (MINNESOTA STATE DEMOGRAPHIC CENTER, 2020)

Renville County's total population consists of 49.5% females and 50.5% males. 6.9% of the total population is aged 80 and older, and 25.3% of the total population is under 20 years old. 40–59-year-olds make up the largest age category in Renville County, at 30.0% of the population. Figure 5 breaks down the percentage of the total population into categories of age and sex.

Figure 5. Renville County's age (years) and sex percentage of total population



SOURCE: (U.S. CENSUS BUREAU, 2020B)

3.6 Economy

As of 2018, the Education and Health Services industry supersector employed (22%) of people in Renville County, followed Trade, Transportation and Utilities (21%), and Manufacturing (15%). The total number of jobs in the county decreased by over 3.4% between 2008 and 2018. The 10-year change in the average annual employment of each industry supersector in Renville County is in Table 7.

Table 7. Average annual employment by Industry Supersector, Renville County

Industry Supersector	Average # of Employees (2008)	Average # of Employees (2018)	% Change
Natural Resources and Mining	589	496	−15.79%
Construction	226	237	4.87%
Manufacturing	1,162	910	−21.69%
Trade, Transportation and Utilities	1,180	1,259	6.69%
Information	N/A	29	N/A
Financial Activities	210	162	−22.86%
Professional and Business Services	199	235	18.09%
Education and Health Services	1,656	1,294	−21.86%
Leisure and Hospitality	289	821	184.08%
Other Services	84	81	−3.57%
Public Administration	462	367	−20.56%
Total, All Industries	**6,102**	**5,893**	**−3.43%**

SOURCE: (MN DEED, 2020)

The 2018 median household income in Renville County was $57,886 compared to a Minnesota average of $70,315. The median household income in Renville County increased by 21% from 2010 to 2018. The percent of the county's population living below the poverty level in 2018 was 10.4%, compared to an 9.6% average for the state of Minnesota (U.S. Census Bureau, 2020c).

3.7 Critical Infrastructure

Critical infrastructure systems are among the most important assets of a community. While different infrastructures accomplish different goals, their continued operations are integral to the health, safety, and economic and cultural well-being of the residents of Renville County. Critical infrastructure is identified based on FEMA guidelines (FEMA, 2013a) as well as input from Renville County and classified into the following groups: Emergency and Shelter Facilities, Infrastructure Systems, High Potential Loss Structures, and Significant County Assets. For the complete list of critical infrastructure in Renville County, see Appendix I.

3.7.1 ESSENTIAL FACILITIES

Emergency and shelter facilities are vital to the health and welfare of entire populations, providing services and functions essential to communities, especially during and after a disaster. Emergency and shelter facilities include healthcare facilities, emergency services, evacuation centers/shelters, and schools (often used as evacuation centers/shelters). U-Spatial provided Renville County with an interactive online application to verify the names and locations of all emergency and shelter facilities. The verified locations were mapped, and the resulting spatial data were provided to the county. Figure 6 shows the emergency and shelter facilities in a few representative communities with concentrated facilities.

Healthcare Facilities

Renville is served by 23 public and private healthcare facilities. These facilities include clinics, hospitals, and assisted living and nursing homes. The Renville County Public Health offices are located in Olivia. One hospital, Olivia Hospital and Clinic, is also in Olivia. It includes the Renville County Hospice. The Fairfax Medical Center is located in Fairfax, and OHC clinics are located in Renville and Hector. Centracare Kidney Olivia is a dialysis center in Olivia.

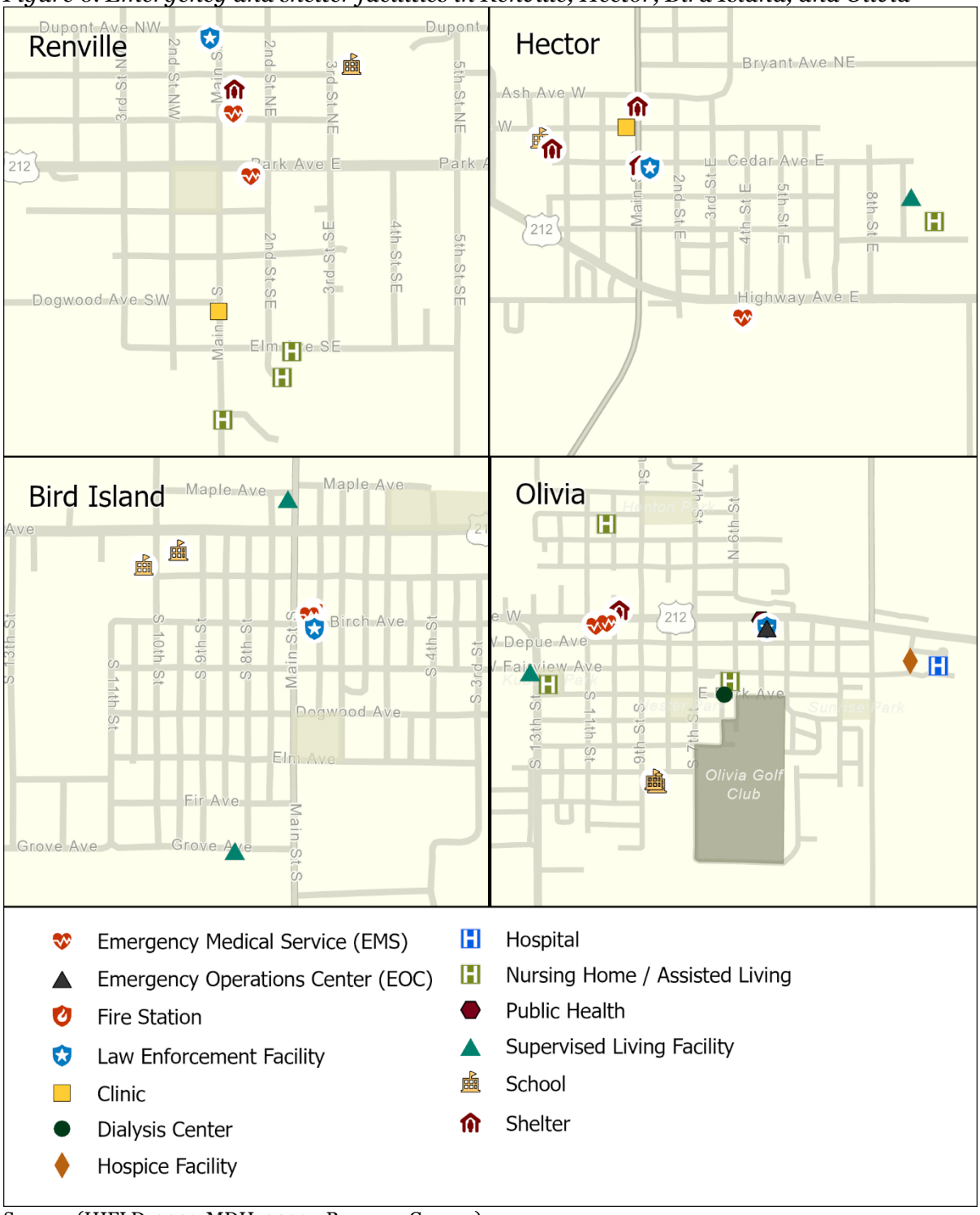
There are twelve nursing homes in Renville: two in Bird Island, Buffalo Lake, Fairfax, and Hector, four in Olivia, three in the city of Renville, and one in Franklin.

Emergency Services

Law Enforcement: There are ten police departments in the county: Franklin, Bird Island, Fairfax, Danube, Renville, Olivia, Sacred Heart, Buffalo Lake, Hector, and Morton. The Sheriff's Department is also located in the city of Renville and contains the Renville County Jail.

The one Emergency Operation Center is located in the Renville County Emergency Operations Center in the City of Olivia.

Figure 6. Emergency and shelter facilities in Renville, Hector, Bird Island, and Olivia



SOURCE: (HIFLD, 2021; MDH, 2021A; RENVILLE COUNTY)

Fire & Rescue Services: Renville County has 10 fire departments and EMS providers. They are located in Fairfax, Sacred Heart, Danube, Bird Island, Morton, Franklin, Olivia, Hector, Buffalo Lake, and Renville.

In addition to EMS services, ambulance services also operate from Hector, Buffalo Lake, Franklin, and Olivia Ambulance Service.

Schools & Evacuation Centers/Shelters

There are ten schools in Renville County. Seven are elementary or middle schools serving preschool through eighth grade students. These are Buffalo Lake-Hector Elementary in Buffalo Lake, Cedar Mountain Elementary in Franklin, and Renville County West Elementary in Renville. The BOLD Elementary in Olivia serves students from Bird Island, Olivia, and Lake Lillian districts. Similarly, the G.F.W. Middle School in Fairfax serves the Gibbon-Fairfax-Winthrop communities.

There are also two religious K-8 schools, St. Mary's School in Bird Island, and Prairie Lutheran Schools in Fairfax. The high schools are Buffalo Lake-Hector High School, located in Hector, Renville County West Senior High School, located in Renville, and the BOLD High School is located in Olivia.

There are ten facilities within Renville County designated as shelters to be used in the event of an issued evacuation. These shelters are different types of buildings, but the majority are community centers: The City of Bird Island Municipal Building in Bird Island, the Danube Community Center in Danube, the Franklin Community Center in Franklin, the Olivia National Guard Armory in Olivia, the Renville Community Center in Renville, the Sacred Heart Community Center in Sacred Heart and the Morton Fire Hall in Morton. Hector has two evacuation locations: the Hector Community Center and the Hector City Office & Palace Theater.

3.7.2 INFRASTRUCTURE SYSTEMS

Infrastructure systems include the transportation systems and utility systems fundamental to the functioning of communities. These systems allow for emergency facilities to operate and connect to residents; they are the lifelines for communities.

Transportation Systems

The infrastructure of transportation systems facilitates the movement of individuals, goods, and services.

The primary roadways passing through the county are U.S. Highway 71 and 212, and Minnesota State Highways 4, 19, and 23.

The Minnesota Department of Transportation classifies roads into route systems according to the services a road is intended to provide. Table 8 lists the total miles of road for each route system within Renville County.

According to the MN DNR, there are 239 bridges and culverts in Renville County. Of these, 45 are restricted bridges, 26 rated at <40-ton combination vehicle, and 19 at 40-ton max combination vehicle.

Table 8. Road miles by route system

Route System Defined	Miles
County Road	266
County State Aid Highway (CSAH)	442
MN Highway	52
Municipal	92
Private Road-Public Access	.1
Ramp or Connector	1.6
State Park Road	.5
Township Road	967
US Highway	74
Total	1,895.2

SOURCE: (MNDOT, 2012)

Railways: There are two rail lines in Renville County. The Twin Cities and Western (TC&W) Railroad operates a class two rail line that runs parallel to U.S. Highway 212, through the communities of Buffalo Lake, Hector, Bird Island, Olivia, Danube, Renville, and Sacred Heart. The other rail line is the Minnesota Valley Regional Rail Authority/Minnesota Prairie Line Inc., which is a class three line that runs along State Highway 19 through the communities of Fairfax, Franklin, and Morton.

Airports: There are two airports located within the County, one near Olivia and one outside Hector. The Hector Municipal Airport is owned by the city of Hector and consists of four runways. Two runways are asphalt and 2,776-feet long (elevations 1,078 feet and 1,077 feet), while the other two runways are turf and 2,580-feet long. The Olivia Regional Airport lies two miles west of Olivia and is owned by the city of Olivia. At an elevation of 1,076 feet, the airport has two asphalt runways that are 3,498-feet long.

Utility Systems

The infrastructure of utility system networks facilitates the process of providing essential utilities to consumers. A map of the major utilities systems in Renville County is displayed in Figure 7.

Water & Sewer: Renville is home to sixteen wastewater treatment plants. Bird Island, Buffalo Lake, Franklin, Hector, and Morton each have two plants. Olivia, Sacred Heart, Fairfax, Danube, Lake Allie (near Buffalo Lake), and the city of Renville have one each.

Energy: Twenty-one electrical substations are located within Renville along with 100 major electric transmission lines. East River Electric Power, Great River Energy, Southern Minnesota Municipal and Xcel Energy all serve the county, with Xcel owning the vast majority of substations and lines.

One hydrocarbon gas liquids (HGL) pipeline, owned by Kinder Morgan, cuts across the northeast corner of the county. One petroleum pipeline, owned by Midstream Partners, cuts across the northwest corner. Twelve natural gas pipelines run across the county. One is owned by Alliance Pipeline, and the others by Northern Natural Gas. Additionally, there are six power plants, one each in Buffalo Lake, Fairfax, Hector, and Sacred Heart, and two in the city of Renville.

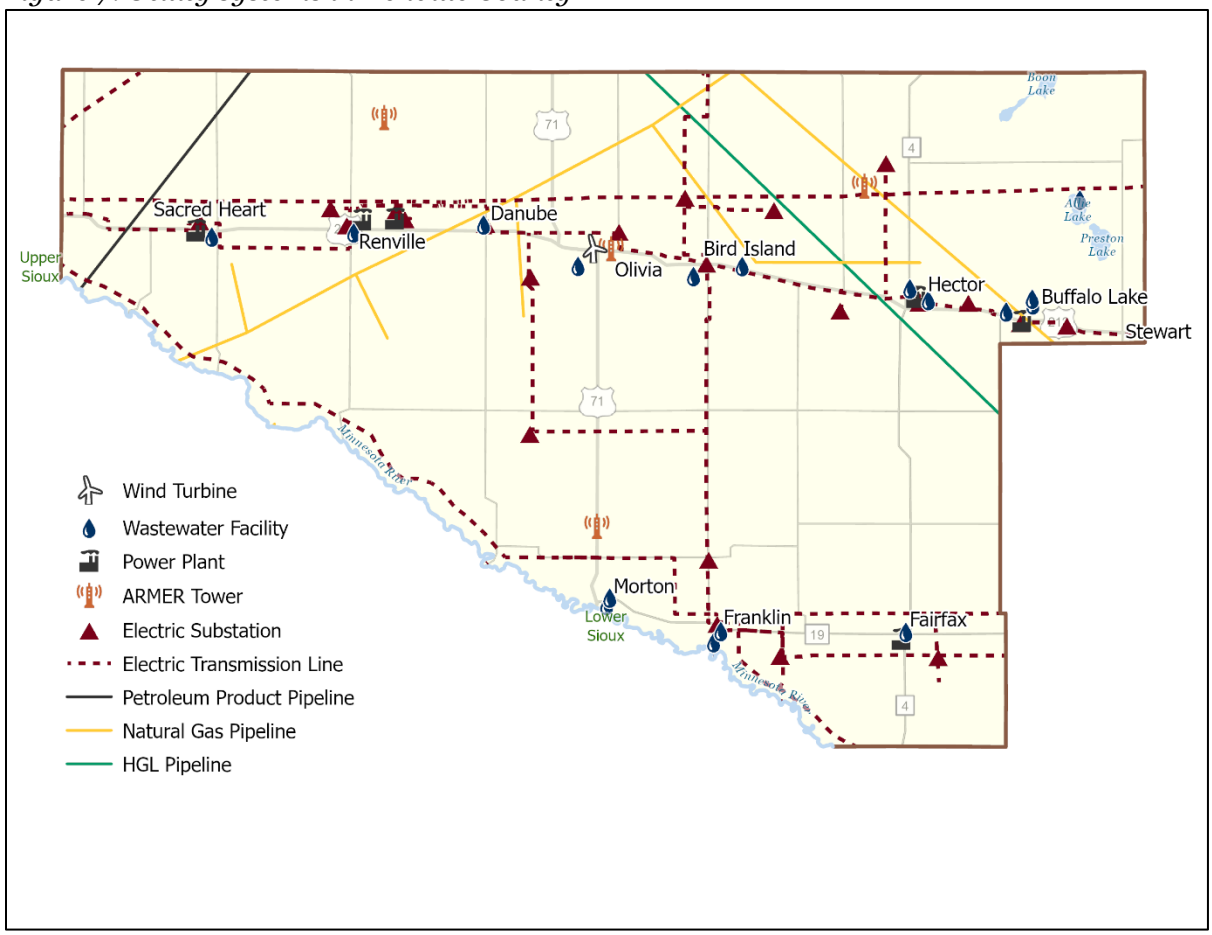
Communication: Administered in coordination with the Minnesota Statewide Radio Board, the Allied Radio Matrix for Emergency Response (ARMER) Program manages the implementation of a 700/800 megahertz (MHz) shared digital trunked radio communication system capable of servicing the radio communication needs of every public safety entity operating in Minnesota (MN DPS, 2021). There are four ARMER towers in Renville County.

3.7.3 HIGH POTENTIAL LOSS STRUCTURES

High potential loss structures are structures which would have a high loss or negative impact on the community if they were damaged or destroyed (FEMA, 2004b). These structures include dams, levees (see Section 3.4.4), and facilities storing hazardous materials.

A hazardous materials facility contains materials that would threaten the public if released. The inventory of these facilities in Renville County includes those required to register with the EPA due to the type and quantity of hazardous materials being stored or produced at the facility. Thirteen of these facilities have been identified in Renville County. Due to the sensitive nature of these data, the locations of these facilities have not been mapped in this plan.

Figure 7. Utility systems in Renville County



SOURCE: (MN GIO, 2016; MPCA, 2018B; US EIA, 2020)

3.7.4 SIGNIFICANT COUNTY ASSETS

Significant county assets include larger employers which represent a primary economic sector of a community, buildings of government services deemed to be significant, and cultural or historic assets that are important to a community.

Employers: While every employer is an important asset to a community, the loss or disruption of certain employers, or the primary economic sector of a community, will have a large negative impact on the respective communities. Twenty-four employers fitting this profile were identified in Renville. They include the county government, Olivia Hospitals and Clinics, and manufacturing and agricultural facilities.

Government Buildings: Government buildings deemed to be significant is at the discretion of the communities, but often include government service centers, the courthouse, jails, and prisons. Previously mentioned government emergency services (police and fire), as well as schools, are not included in this list. Renville has identified 25 significant government buildings, including city halls, community centers, and libraries.

Cultural Resources: Cultural resources are cultural or historic assets that are unique, irreplaceable, or important to a community. Eight such assets have been identified in Renville County. These assets include seven buildings including a historic train station, and a park that was the site of a battle in the Dakota War of 1862.

3.8 Land Use and Ownership

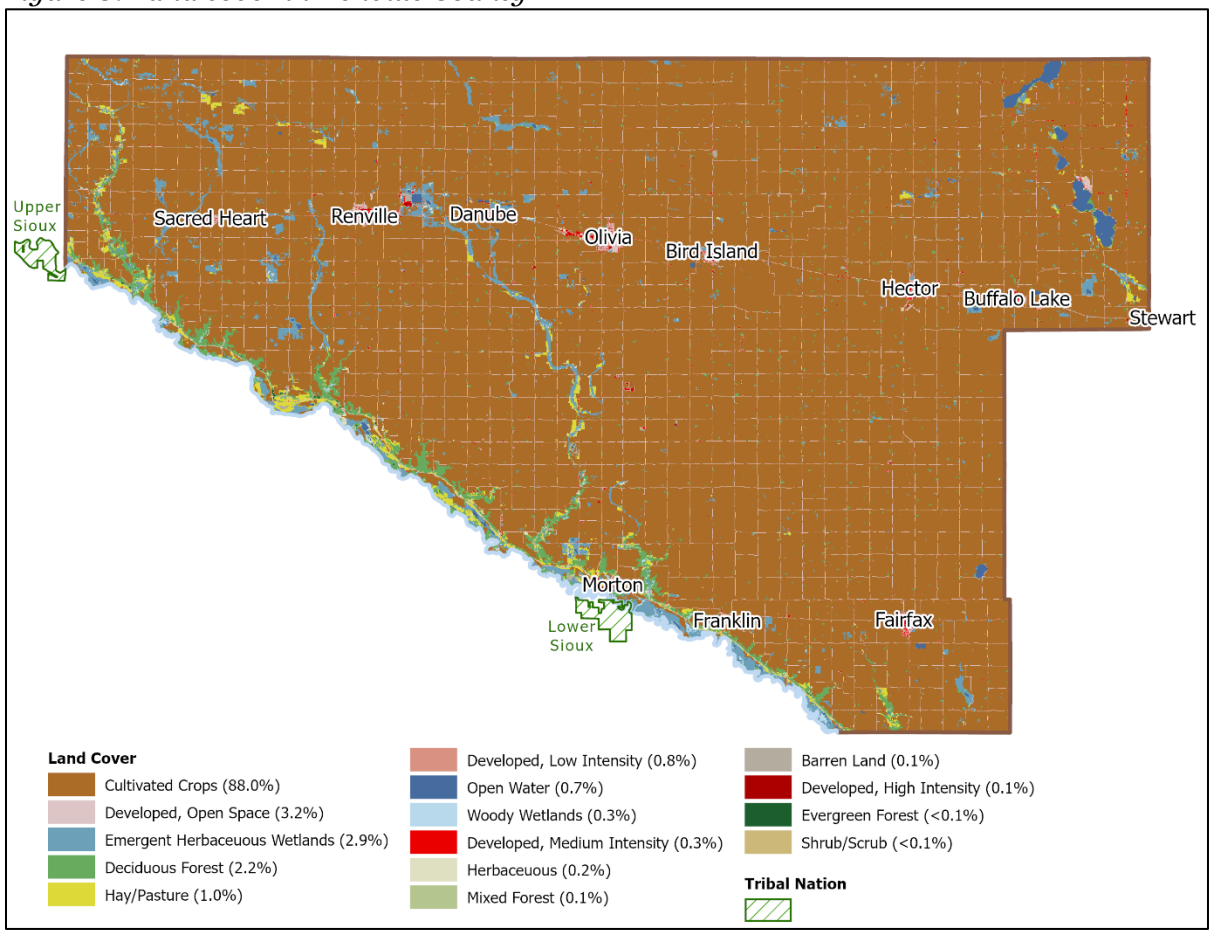
Renville County is a largely agricultural county. The county is 987 square miles, 88% of which is covered by cultivated crops, followed by developed open space (3%), and emergent herbaceous wetlands (3%) (USGS, 2016). A map of Renville County's land cover is displayed in Figure 8.

Nearly 95% of the land in Renville County is cropland. The term "cropland" encompasses five components: harvested cropland, crop failure, cultivated summer fallow, cropland used only for pasture, and idle cropland (USDA ERS, 2019). Between 2012 and 2017, the area of total cropland in the county grew by 1.5%, from 589,089 acres in 2012 to 598,247 acres in 2017 (USDA, 2012, 2017). "Harvested cropland" are the acres of cropland that are planted and successfully harvested. Table 9 shows a breakdown of Renville County's harvested cropland in 2017.

In addition to growing crops, Renville County is also home to a few hundred feedlots. A 2016 inventory counted 469 active feedlots in the county. Nearly 53% of the feedlots raise cattle as the primary stock and 40% raise pigs. An average of 8,451 animals are on each feedlot (MPCA, 2016).

Ownership of the county is divided between eight different agencies; the majority being privately owned (96%). Land ownership is displayed in Figure 9.

Figure 8. Land cover in Renville County



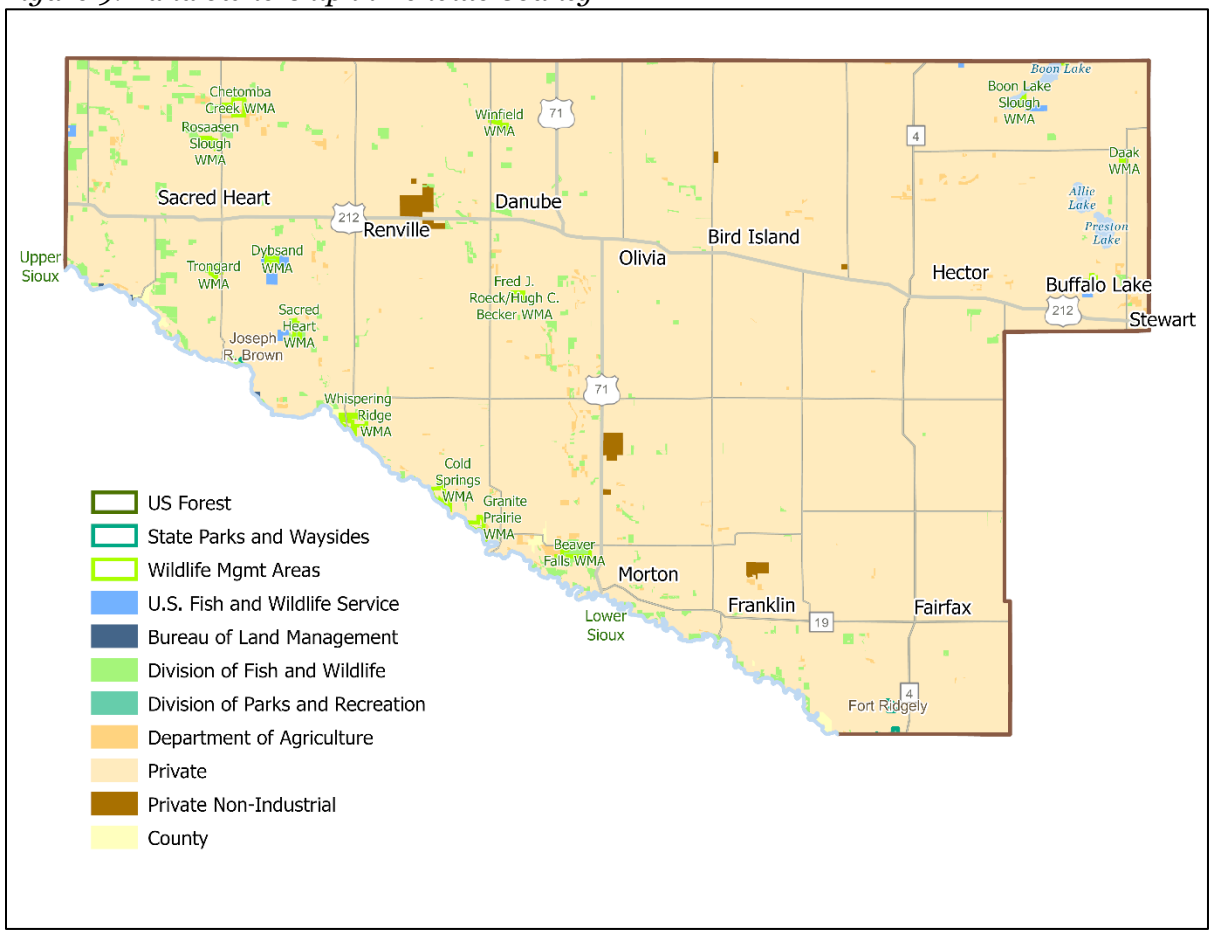
SOURCE:(USGS, 2016)

Table 9. Renville County's harvested cropland, 2017

Crop	Acres	% of Harvested Cropland
Corn (grain & silage)	266,064	45.93%
Soybeans	228,655	39.47%
Sugar Beets	45,729	7.89%
Beans, Dry Edible (e.g., chickpeas & lima)	7,819	1.35%
Hay & Haylage	4,553	0.79%
Wheat	2,290	0.40%
Oats	394	0.07%
Barley	274	0.05%
Other	23,563	4.07%
Total	**579,341**	**100%**

SOURCE: (USDA NASS, 2017)

Figure 9. Land ownership in Renville County



SOURCE: (MN DNR, 2008)

Section 4 – Risk Assessment and Vulnerability Analysis

The goal of mitigation is to reduce or eliminate the future impacts of a hazard, including loss of life, property damage, disruption to local and regional economies, and the expenditure of public and private funds for recovery. Sound mitigation practices must be based on sound risk assessment. A risk assessment involves quantifying the potential loss resulting from a disaster by assessing the vulnerability of buildings, infrastructure, and people.

The risk assessments in this plan are based on widely accepted tools and databases as well as consultation with hazard mitigation planning expertise at FEMA and HSEM as well as technical guidance from the MN DNR State Climatology Office. Geographic Information System (GIS) tools are used throughout to demonstrate geographically based risk and vulnerabilities.

This assessment identifies the characteristics of natural hazard events, the severity of the risk, the likelihood of these events occurring, and the vulnerability of each jurisdiction's population and assets.

4.1 Hazard Identification and Prioritization

The cornerstone of the risk assessment is identification of the hazards that affect jurisdictions. To facilitate the planning process, several sources were employed to ensure that the natural hazards are identified prior to assessment. Listed below are the natural hazards addressed in the 2019 Minnesota State Hazard Mitigation Plan:

- Flooding
- Dam/Levee Failure
- Wildfires
- Windstorms
- Tornadoes
- Hail
- Lightning
- Winter Storms
- Landslides (Erosion and Mudslides)
- Land Subsidence (Sinkholes and Karst)
- Drought
- Extreme Heat
- Extreme Cold
- Earthquakes
- Coastal Erosion & Flooding

4.1.1 HAZARD PRIORITIZATION

As part of the plan update process, the planning team reviewed, updated, and prioritized the hazards faced by residents of Renville County, updated the existing mitigation actions published in the 2014 Multi-Hazard Mitigation Plan, and proposed new mitigation actions.

To engage in this process, the planning team drew on a number of data sources. First, the team examined the hazards identified in the 2014 Multi Hazard Mitigation Plan. The natural hazards that pose risk to Renville County were discussed and adjusted to reflect the definitions of natural hazards used in the 2019 Minnesota State Hazard Mitigation Plan.

While the focus of this MHMP is on natural hazards, planning took place with the understanding that many non-natural hazards could occur as a result of natural disasters (i.e., disruption in electrical service due to downed powerlines from heavy snow, ice storms, or high wind events).

The prioritization of hazards for the Renville County MHMP Update (Table 10) was based upon group review and discussion of the natural hazards that pose risk to the county during the MHMP Planning Team Meeting #1 on August 13, 2020. In the review of each hazard, the group was asked to consider if the risk to severe natural hazards had increased or decreased since the last plan, and if this affected their priority level to mitigate against that hazard. The group agreed that since the last plan the prioritization of hail, drought, and extreme cold should all be moved from moderate to high due to an increase in those weather events. The prioritization of flooding was also moved from moderate to high due to an increase in rain and flood events since the last plan. Landslides were not addressed in the last plan but were felt to be a low to moderate concern. The prioritization of all other natural hazards was unchanged since the last plan. Appendix F provides the discussion notes from the August 13, 2020 meeting.

Table 10. Prioritization of Hazards for 2021 Renville County MHMP Update

Natural Hazards	Hazard Priority
Blizzards	High
Heavy Snow	High
Ice Storms	High
Windstorms	High
Lightning	High
Hailstorms	High
Tornadoes	High
Flooding	High
Landslides	Low to Moderate
Extreme Cold	High
Extreme Heat	High
Drought	High
Dam Failure	Low
Wildfire	Low

4.1.2 NATIONAL CENTERS FOR ENVIRONMENTAL INFORMATION (NCEI) STORM EVENTS DATABASE

Much of the storm data used in this plan is from the NOAA National Centers for Environmental Information's (NCEI) Storm Events Database. The NCEI receives storm data from the National Weather Service (NWS), which receives the information from various local, state, and federal sources. The Storm Events Database contains records documenting:

- the occurrence of storms and other significant weather phenomena having sufficient intensity to cause loss of life, injuries, significant property damage, and/or disruption to commerce;

- rare, unusual weather phenomena that generate media attention, such as snow flurries in South Florida or the San Diego coastal area; and
- other significant meteorological events, such as record maximum or minimum temperatures or precipitation that occur in connection with another event (NCEI, 2021).

Records in the Storm Events Database go back as far as January 1950; however, only tornado events were being reported from the beginning. Revisions to the type of storm events reported to the database are ongoing. As of July 16, 2018, 55 different types of storm events were being reported to the Storm Events Database (NCEI, 2021). Storm Events Database hazard categories used in this plan are listed in Table 11 below. For some hazards, other sources are used in the hazard histories to create a more comprehensive record.

A summary table of events related to each hazard type is included in the hazard profile sections that follow in Section 5. Please note, frequency statements in hazard profile sections are based on the hazards reported for the entire period of record. In some cases, events may be underreported.

The Storm Events Database is updated regularly. NCEI receives data from the NWS approximately 75 days after the end of a data month therefore, during the timeframe of compiling this plan, data more current than what is used in this report will become available (NCEI, 2021).

The economic and property loss estimates in the Storm Events Database are often preliminary in nature and may not match the final assessment of losses related to given weather events.

Table 11. National Centers for Environmental Information Event Types

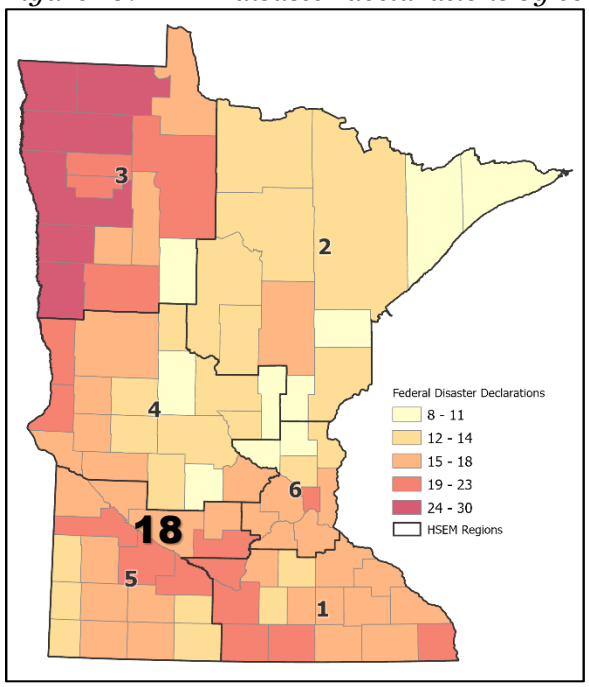
Hazard	NCEI Event Types	Period of Record
Flooding	Flood, Flash Flood, Heavy Rain	1996–present
Windstorms	Thunderstorm Wind, High Wind, Strong Wind	1955–present
Tornadoes	Tornado	1950–present
Wildfire*	Wildfire	1996–present
Hail	Hail	1955–present
Lightning	Lightning	1996–present
Winter Storms	Winter Weather, Winter Storm, Blizzard, Heavy Snow, Ice Storms, Lake Effect Snow, Sleet	1996–present
Extreme Cold	Cold, Wind Chill	1996–present
Extreme Heat	Excessive Heat, Heat	1996–present

SOURCE (NCEI, 2021)

4.1.3 FEMA- AND MINNESOTA-DECLARED DISASTERS AND ASSISTANCE

Another historical perspective is derived from FEMA-declared disasters. Fourteen major disaster and four emergency declarations in Renville County have been made between 1957 and January 2021 (Figure 10), for a total of 18. These are listed in Table 12.

Figure 10. FEMA disaster declarations by county



SOURCE: (FEMA, 2021A)

Table 12. FEMA-declared major disasters & emergency declarations, Renville County (1957–April 2021)

Declaration Number	Declaration Year	Incident	Incident Period
EM-3453-MN	2020	Covid-19	01/20/2020–current
DR-4531-MN	2020	Covid-19 Pandemic	01/20/2020–current
DR-4442-MN	2019	Severe Winter Storm, Straight-Line Winds, and Flooding	03/12/2019–04/28/2019
DR-4390-MN	2018	Severe Storms, Tornadoes, Straight-Line Winds, and Flooding	06/15/2018–07/12/2018
DR-4182-MN	2014	Severe Storms, Straight-Line Winds, Flooding, Landslides, and Mudslides	06/11/2014–07/11/2014
DR-1982-MN	2011	Severe Storms and Flooding	03/16/2011–05/25/2011
DR-4009-MN	2011	Severe Storms, Flooding, and Tornadoes	07/01/2011–07/11/2011
DR-1900-MN	2010	Flooding	03/01/2010–04/26/2010
EM-3310-MN	2010	Flooding	03/01/2010–04/26/2010
EM-3242-MN	2005	Hurricane Katrina Evacuation	08/29/2005–10/01/2005
DR-1370-MN	2001	Severe Winter Storms, Flooding, And Tornadoes	03/23/2001–07/03/2001
DR-1158-MN	1997	Severe Winter Storms	01/03/1997–02/03/1997
DR-1175-MN	1997	Severe Flooding, High Winds, Severe Storms	03/21/1997–05/24/1997
DR-993-MN	1993	Severe Storms, Tornadoes, and Flooding	05/06/1993–08/25/1993
DR-946-MN	1992	Severe Storms, Tornadoes, and Flooding	06/16/1992–06/20/1992
EM-3013-MN	1976	Drought	06/17/1976–06/17/1976
DR-255-MN	1969	Flooding	04/18/1969–04/18/1969
DR-188-MN	1965	Flooding	04/11/1965–04/11/1965

SOURCE: (FEMA, 2021A)

Minnesota Statutes Chapter 12A established a framework for state agencies to help communities recover from disaster. In 2014, Governor Mark Dayton signed legislation establishing the state's Disaster Assistance Contingency Account to assist local communities after a natural disaster when federal aid is not available. Damage required to declare a disaster is half the threshold of the federal/FEMA public assistance (only) program threshold (MN HSEM, 2019). Renville County was included in eight State Disaster Declarations (Table 13).

The Hazard Mitigation Grant Program (HMGP), Building Resilient Infrastructure and Communities (BRIC), and Flood Mitigation Assistance (FMA) Program are FEMA-administered hazard mitigation assistance programs which provide funding for eligible mitigation planning and projects which reduce disaster losses and protect life and property from future disaster damages (FEMA, 2021b). Table 14 lists the projects in the county funded by a hazard mitigation assistance program.

Table 13. State disaster declarations in Renville County, 2014–2021

DR	Date Declared	Incident Period	Incident Type	Eligible Counties & Tribes
SD-050 (open)	12/7/2020	7/25–27/2020	Heavy rains, flooding, and slope failures	Nicollet, Renville, Sibley
SD-046 (open)	10/12/2020	6/23–7/3/2020	Heavy rains and flooding	Kittson, Le Sueur, Morrison, Renville, Washington
SD-041	3/20/2020	12/28–12/31/2019	Severe Winter Storm	Renville
SD-033 (open)	9/10/2019	6/27–7/9/2019	Heavy rains and flooding	Dodge, Fillmore, Goodhue, Olmsted, Redwood, Renville, Wabasha
SD-032 (open)	12/3/2018	9/18–9/20/2018	Severe thunderstorms, heavy rains, damaging winds, tornadoes	Faribault, Goodhue, Le Sueur, Martin, Renville, Rice, Steele, Waseca, Prairie Island Indian Community
SD-023	11/3/2017	10/2/2017	Severe thunderstorms, heavy rain, flooding	Redwood, Renville
SD-021 (open)	9/27/2017	8/16/2017	Severe thunderstorms, heavy rain, flooding	Redwood, Renville
SD-012	10/19/2016	8/10/2016	Heavy rainfall, flooding	Renville, Wabasha

SOURCE: (MN HSEM, 2021)

Table 14. Historical hazard mitigation funding awarded in Renville County

DR/project #	Sub-Grantee	Project Type	Federal Share (%75)
4009.06-P	Renville County	Mitigation Plan	$ 32,288

SOURCE: (MN HSEM, 2021)

4.2 Jurisdictional Change in Risk or Vulnerability Assessment

Jurisdictions in Renville County have varying vulnerabilities to and concerns about impacts to their communities. Interviews with jurisdictional representatives in addition to the Local Mitigation Survey resulted in some specific concerns (see Appendix C). Participants were asked to provide feedback on how their community's vulnerability to natural hazards had either increased (due to changes such as development) or decreased (due to local mitigation efforts) over the past 5 years.

At the local jurisdictional level, several communities did note an increase in development over the last five years as a factor for an increase in vulnerability to severe weather or disaster events.

4.2.1 JURISDICTIONAL RESPONSES

As part of the Local Mitigation Survey form, Renville County Emergency Management and each city jurisdiction were asked to provide a vulnerability assessment that described what structures, systems, populations, or other community assets were susceptible to damage and loss from specific hazard events. Following are examples of common responses related to noted local vulnerabilities (as preserved in Appendix C: Part A, Question 3) for each jurisdiction. This information was used to help tie local vulnerability back to the exposure of people, buildings, infrastructure, and the environment to the natural hazards listed in Table 10 and to assist local governments in development of related local mitigation actions to reduce risk.

Renville County

All Storms (power outages): All storm events can cause power outages that not only affect people but could be an issue in the livestock industry.

Blizzards, Heavy Snow: Road closures occur until we can plow roads open; some roads will not receive same-day service. Road damage can occur in the spring due to large drifts of melting snow creating wet/soft road base soils. Power substations, power poles and power lines are subject to damage, and during a blizzard access to the damaged sites is limited. Equipment breakdowns and occurrences can occur during snow removal, which can present a serious risk of safety to the operator & mechanic, particularly during extreme cold temperatures.

Ice Storms: Additional salt/sand is required to melt ice off roads. Salt causes additional corrosion to steel used in bridge construction. Power substations, power poles and power lines are subject to damage due to ice formation creating additional weight.

Tornadoes: Tornadoes pose a risk of damage to our equipment and storage facilities. We have seven storage shops with limited backup storage.

Windstorms: Trees being blown down result in blocking roads. We can also experience damage to buildings used for equipment storage.

Lightning: Trees knocked down due to lightning & damage to buildings used for equipment storage.

Hail: Hail damage can occur to buildings used for equipment storage & damage to any equipment outside during the hail event.

Flooding: Erosion to roads due to water overtopping the road or excessive rain can cause weak base soils and erosion. Bridges are susceptible to erosion due to the high flow rates in the streams. Culverts experience erosion that sometimes cannot be identified for several years. During flood events immediate road closures & repairs are necessary for public safety. The county-owned rail line is located along the Minnesota River and is often vulnerable to mudslides. If the MN River floods due to heavy rain events, additional damage occurs to roads lying within the floodplain. Due to the southern townships being located within the Minnesota River Valley, road washouts are common during heavy rain events.

Ice Storms, Windstorms: A large majority of the rural electric coops' power lines are above ground and jeopardized by high winds and ice.

City of Bird Island

Blizzards, Ice Storms, Lightning, Tornadoes, Windstorms: The city's wastewater lift station and water treatment plant are vulnerable if power goes down, as we do not have adequate generators to keep power going. As the City's Municipal Building also serves as a storm shelter, a generator is also needed to keep power on at this location. Xcel Energy has above-ground power lines and poles that have been affected by heavy snow, ice and wind.

Flooding: Flooding has caused damage to our roadways and water distribution system; and sometimes, back up into basements. If Ditch 66 becomes full, with the flow restrictor pipe in place, there is nowhere for the water to go. As a result, flooding and backups are inevitable.

Tornadoes, Windstorms: Roadways become impassable due to streets, brush, and other debris on the streets. Public/private buildings/structures are vulnerable, especially those that are substandard or in disrepair.

Extreme Cold: Water lines can become frozen, leaving dwellings without water service, or the necessity to receive water service from an adjacent property.

City of Buffalo Lake

Flooding: City lift stations could fail during storms if power goes out and alert system does not activate. We have several homes that may experience sewer backup.

Windstorms, Tornadoes: We have a trailer park without storm shelter. Residents have to get to the community center for protection. In addition, the city's warning siren sometimes cannot be heard on the edges of town depending on the direction of the wind.

Extreme Cold: We have residents that are vulnerable to extreme cold weather episodes, especially if power goes out.

Snowstorms, Blizzards: We have residents who are vulnerable if snowed in would not be able to get to medical appointments, etc.

City of Danube

Flooding: Our city sewer lift station is vulnerable to failure during flood events if the power goes down or the lift station is flooded. We also have basements in homes and streets that continue to be flooded.

Windstorms: We have had power lines and power poles that were knocked down.

Extreme Cold: Extreme cold temperature changes have created frost heaves to occur on many city streets in Danube.

City of Fairfax

Flooding: Extreme rainfall events can cause localized flooding. Risks include flooding of basements, overwhelming the storm sewer system requiring bypass, and overwhelming the sewer system due to I&I requiring bypass.

Extreme Cold: Some of the city's infrastructure is built at a shallower level than current standards. Extreme cold has the potential of freezing these lines causing sewer backups and water line breaks.

City of Franklin

Flooding: We have homes that continue to have water in the basements due to extreme rain events. The boat landing is also in need of continual repairs due to flooding.

Ice Storms, Blizzards: We have power lines and power poles that have failed or may fail due to heavy snow and ice storms.

Landslide: The bluff of the MN River is deteriorating due to heavy rain events, runoffs, and excess tiling. However, this has not posed a risk to the city or any structures. It is general deterioration.

Extreme Cold: Extreme cold temperatures have caused water lines to freeze and recently caused the road substrate to erupt.

Hail: We have homes, buildings, etc. that have been damaged by hail.

City of Hector

Flooding: Our city sewer lift station will become overwhelmed during flood events. We also have basements in homes that continue to be flooded.

Ice Storms, Blizzards: We have power lines and power poles that have failed or may fail due to heavy snow and ice storms. During blizzard conditions our public safety units are unable to respond to emergency situations due to snow-blocked roads.

Windstorms and Tornadoes: We have a mobile home park without a storm shelter where residents are vulnerable to high wind events.

Extreme Cold/Heat: We have seniors & children are vulnerable to extreme cold/heat especially if the power goes down during storm events.

Lightning: Lightning strikes can cause power outages and ignite structure fires.

City of Morton

Flooding: We have a fair number of homes that are susceptible to flooding during heavy rain events. Also, our city park is in the same watershed and has had flooding damages in the past.

City of Olivia

Extreme Cold: Dry (snowless) starts to a winter season combined with unseasonably cold conditions can cause ground frost levels to go to depths where it impacts underground water utility pipes. If the ground was particularly moist in the fall, these cold conditions can also cause paved and graveled streets and roads to deteriorate, crack, or buckle.

Flooding: We have some areas of the city where stormwater pipes are not large enough to keep up with the larger rain events we have witnessed in recent years. Even when the pipes are adequate to accommodate larger volumes of water, much of the water collected is conveyed to drainage ditches which are also struggling to accommodate larger water volumes coming from an increasing number of tile lines and drainage connections. If the ditch backs up, some neighborhoods will remain flooded until ditch water levels drop. Also, the city's wastewater treatment plant has flooded a few times in recent years due to the adjacent drainage ditch backing up and overflowing. This has resulted in having to cut power to the facility and forcing the city to work with the State Duty Officer regarding such emergency events.

Windstorms, Tornadoes: We have one mobile home park within city limits without a suitable storm shelter available to the residents of the park, so these individuals are especially vulnerable to high wind and tornadic events. In addition, approximately 2/3 of the city's electric utility grid is above ground and in certain locations can be vulnerable in high wind conditions if falling trees or branches make contact with existing electric lines.

Ice Storms: With 2/3 of the city's electric grid above ground, ice conditions can cause considerable damage to electric lines due to added weight breaking the wires directly or else creating a "galloping" situation with the added weight combined with high winds, which can break cables or

pull wires loose. Additionally, falling trees or tree limbs due to ice buildup can also create added hazards for city electric lines.

Lightning: The city maintains storm warning sirens located in various areas of the community. In order to achieve maximum reach of those sirens, they are placed on very tall poles which also makes them vulnerable to lightning strikes. While grounded and protected to meet or exceed industry specifications, the city's water and wastewater treatment facility operations are monitored and maintained by very high-tech electronic controls and monitors. Lightning has damaged elements of these systems previously.

Blizzards: Given the terrain in and around the city of Olivia, white-out and blizzard conditions happen a few times most winters. With Highways 212 and 71 both running through the city, when these winter emergencies strike it can occasionally create a significant strain on local and regional resources in terms of law enforcement and public works personnel. Furthermore, if the State closes access to highways there may be dozens of stranded motorists in need of temporary parking and/or shelter.

City of Renville

Ice Storms, Blizzards: Power lines and power poles that have failed or may fail due to heavy snow and ice storms.

Windstorms, Lightning: Power lines and power poles that have failed or may fail due to high winds and lightning strikes. We also have 2 mobile home parks without storm shelters where residents are vulnerable to high wind events.

Flooding: Our city is very susceptible to street flooding when we have lots of rain or saturated soil conditions. The city's storm drains flow into a nearby ditch that is prone to flooding due to increased demand on the ditch system with additional field tile lines being continually added. If the power goes down, our wastewater plant and lift stations are vulnerable due to undersized back-up generators.

Extreme Cold: Our population consists of a higher number of seniors and children that can be affected if the power goes out.

City of Sacred Heart

Flooding: It seems like the city lift station can handle up to 4–5 inches of rain, but more than that means we have to do by-pass. There is concern that the County Drainage Ditch #104 that we discharge into could flood into parts of the wastewater facility.

Windstorms, Tornadoes: In the past, the bleachers and scoreboard at the ballpark have been damaged or blown over during strong wind events. Both have been rebuilt and have handled high winds since. Power line failure is still a concern in storms, due to trees falling and there are still a

lot of old poles in town. Xcel Energy did inspect poles during the summer of 2020 and replaced some and anchored others.

Ice Storms, Blizzards: There have been incidents where our town has lost power for a few hours, but Xcel Energy usually has power back up in a few hours.

Extreme Cold: The water tower may be susceptible to freezing during extreme cold if the power goes down. The water plant does not have a generator.

4.2.2 FUTURE DEVELOPMENT

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

As part of the vulnerability assessment conducted for the Renville County MHMP update, jurisdictions were asked to describe if there were any factors related to population growth, zoning, or development they felt have increased their community's vulnerability to future severe weather or disaster events (see Section 4.1.2). The following response is as noted in Appendix C: Part A, Question 5.

City of Bird Island

A 15-unit assisted living facility is being planned for construction in 2021, where seniors may need assistance during a disaster event.

In the development of local mitigation actions, all jurisdictions were encouraged to consider hazard mitigation strategies that would reduce risk in relation to future development, such as the update of local comprehensive plans, enforcement of ordinances, and incorporation of infrastructure improvements to reduce local vulnerabilities (see Appendix J).

Renville County Emergency Management will work to keep the jurisdictions covered by the MHMP engaged and informed during the plan's cycle. By keeping jurisdictional leaders involved in the monitoring, evaluation, and update of the MHMP, they will keep their local governments aware of the hazards that face their communities and how to mitigate those hazards through planning and project implementation.

Section 6 of this plan further outlines the process by which Renville County will address the maintenance of this plan, including monitoring, evaluation, and update of the plan, as well as implementation and continued public involvement.

4.3 Shared Vulnerabilities for all Hazards

Vulnerability is the susceptibility to physical injury, harm, damage, or economic loss (FEMA, 2006). While a community's vulnerability may vary by hazard, certain population groups and structures are vulnerable to multiple hazard types. This section highlights the population groups and structures which may not be as resilient to natural hazards or deserve special attention.

4.3.1 POPULATION VULNERABILITY

The degree to which a person is vulnerable to the impacts of a hazard depends on how well they can react before, during, and after a hazardous event. The Centers for Disease Control and Prevention (CDC) Agency for Toxic Substances & Disease Registry (ATSDR) defines social vulnerability as "…the resilience of communities when confronted by external stresses on human health, stresses such as natural or human-caused disasters, or disease outbreaks" (ATSDR, 2020). Exacerbating these stressors are the increasing number of extreme weather events attributed to Minnesota's changing climate (MPCA, 2018c).

The ATSDR created the CDC Social Vulnerability Index (SVI) to help identify vulnerable communities who may need support in preparing for hazardous or recovering from disaster. The CDC SVI is created at the census tract level using American Community Survey (ACS) five-year data. Table 15 displays how the ACS data is organized into 15 social variables, which are further grouped into four themes (ATSDR, 2020).

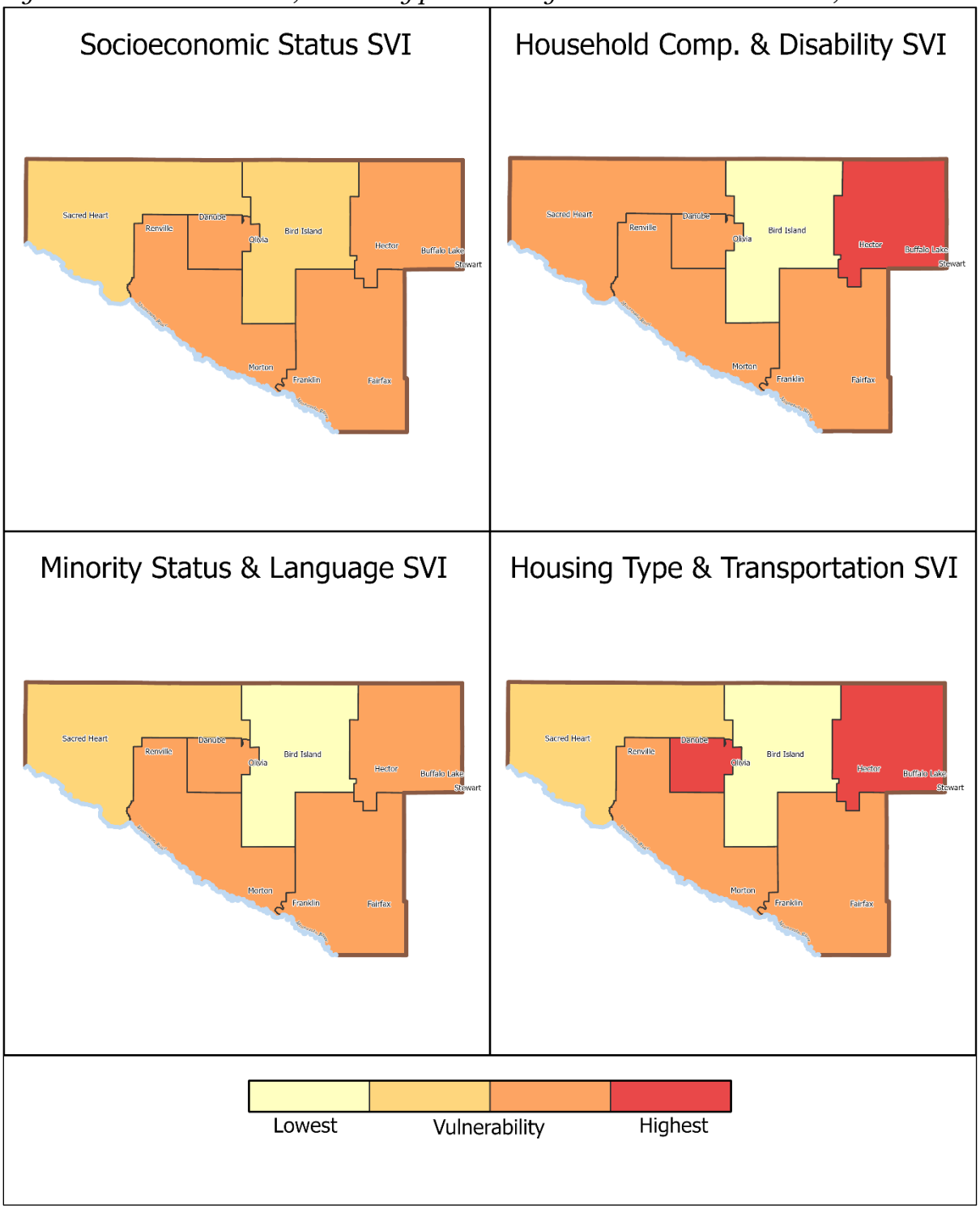
Table 15. Social Vulnerability Index (SVI) Variables

Overall vulnerability	Socioeconomic status	Below poverty Unemployed Income No high school diploma
	Household composition & disability	Aged 65 or older Aged 17 or younger Older than age 5 with a disability Single-parent households
	Minority status & language	Minority Speaks English "less than well"
	Housing type & transportation	Multi-unit structures Mobile homes Crowding No vehicle Group quarters

SOURCE: (ATSDR, 2020)

Census tracts within Minnesota were ranked and given a percentile value from 0 to 1, with higher values indicating greater vulnerability compared to other census tracts in the state. Theme-specific percentile rankings were generated by summing the percentiles of the variables comprising each theme and ordering the summed percentiles. For more information about the SVI methodology, visit https://svi.cdc.gov. A map of each SVI theme for Renville County is displayed in Figure 11.

Figure 11. 2018 SVI Themes, ranked by percentile against all MN census tracts, Renville County



SOURCE: (ATSDR, 2020)

4.3.2 STRUCTURE VULNERABILITY

Renville County-specific building data was sourced from the county tax databases and parcel polygon data. The total estimated building exposure for the county is shown in Table 16.

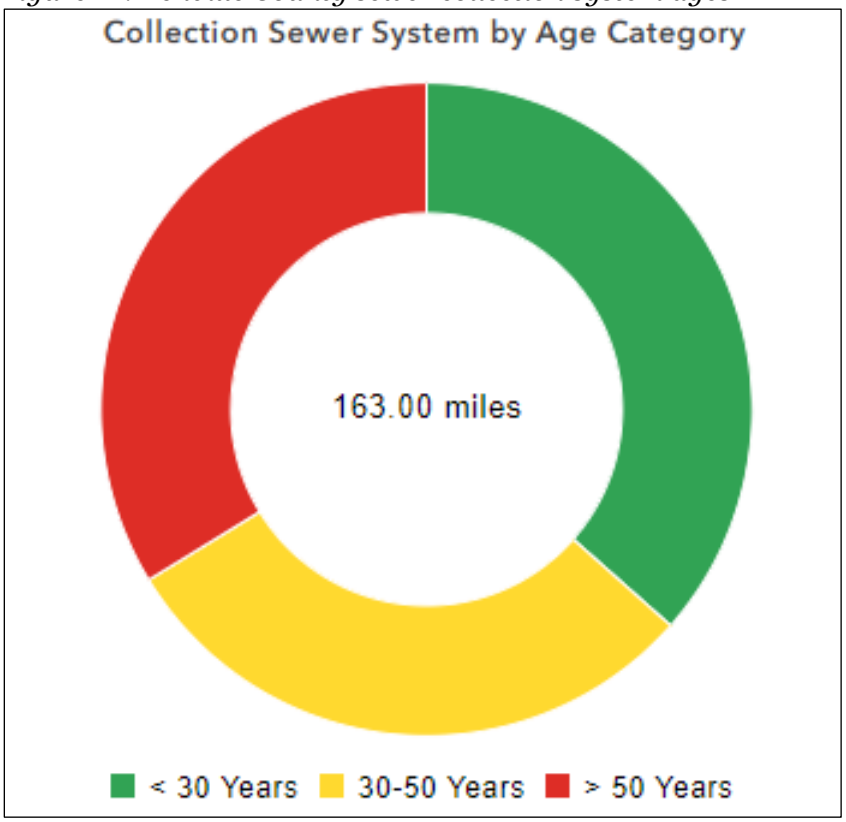
Renville County's infrastructure systems are outlined in Section 3.7. Estimates of county infrastructure economic exposure were not available. Because infrastructure protects public health and provides vital services to residents and Minnesota's infrastructure is aging, the State Auditor's office hosts an online infrastructure stress visualization tool to assist with planning and to provide transparency about the condition of water and wastewater infrastructure systems in the state. This tool indicates that 34% of the 163 miles of sewer collection system in the county are over 50 years old. 37% of the collection system is less than 30 years old (OSA, 2020). A chart of this age distribution is located in Figure 12.

Table 16. Renville County Total Building Exposure

General Occupancy	County Total Buildings	County Building and Contents Value
Residential	10,099	$662,103,584
Commercial	801	$153,629,986
Other	8,430	$822,574,906
Totals	19,330	$1,638,308,476

SOURCE: RENVILLE COUNTY

Figure 12. Renville County sewer collection system ages



SOURCE: (OSA, 2020)

Table 17. Mobile home park locations

Name	Address	City
Brookview Mobile Estates	300 Selle Ave	Buffalo Lake
Meadowcrest LLC	704 E Hickory	Olivia
Renville Mobile Home Court	450 Elm Ave SE	Renville
Sunset Mobile Home Park	221 Greenwood Ave W	Hector

SOURCE: RENVILLE COUNTY HEALTH AND HUMAN SERVICES

Water and wastewater utilities provide critical services to the community that need to remain in operation for as long as possible and return to operation quickly following a severe storm situation. Undersized sewer systems can experience capacity issues following heavy rain events, resulting in overflows containing stormwater as well as untreated human and industrial waste, toxic substances, debris, and other pollutants.

Mobile homes, and therefore the people living in mobile homes, are particularly vulnerable to natural hazards. Evidence show that mobile home parks are disproportionately located in more hazard-prone regions, often undesirable or marginal lands like floodplains, and that mobile homes are particularly vulnerable to high-wind events (Rumbach et al., 2020). While Minnesota law requires most mobile home parks to have storm shelters, many do not (Sepic, 2017). Given the vulnerability of mobile home residents it is important to have a general understanding of where mobile homes are located. Licensed mobile home park locations in Renville County are identified in Table 17.

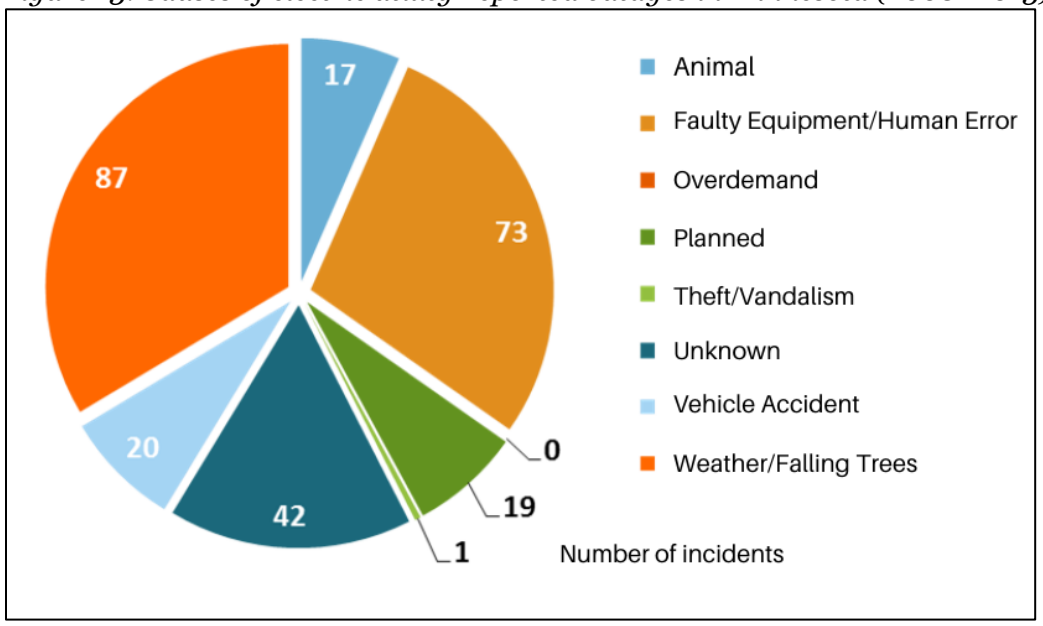
4.3.3 ELECTRIC UTILITIES AND OUTAGES

Loss of power is often the result of a natural hazard. According to the U.S. Department of Energy (2016), the leading cause of electric outages in Minnesota from 2008 through 2013 was severe weather/falling trees (see Figure 13), affecting nearly half a million Minnesotans annually. While the power grid is vulnerable to weather-induced power outages, certain communities are more vulnerable to prolonged outages, which are dependent on a few factors, including the type of severe weather event (the grid being the most vulnerable to high wind events); the transmission and distribution infrastructure (overhead infrastructure being the most exposed and therefore susceptible to failure); and the density of the community (a greater number of customers affected by power outage in rural areas than in urban areas) (Mukherjee et al., 2018).

Because of the significance of physical and economic disruption power outages can cause, HSEM prepared a Rural Electric Annex to the MN State All Hazard Mitigation Plan to make rural electric cooperatives eligible for FEMA's Hazard Mitigation Assistance (HMA) Program. Thirty-five percent of Minnesota's population, and 85% of Minnesota's territory, is covered by electrical distribution cooperatives. Flooding, windstorms, tornado, and winter storms are the greatest risks to electric utilities.

The damage to rural electric cooperative infrastructure has often been how Minnesota reaches economic damage thresholds for federal disaster declaration (MN HSEM, 2014). Rural electric cooperatives are vulnerable and could very well be becoming more vulnerable without mitigation against future damages.

Figure 13. Causes of electric utility-reported outages in Minnesota (2008–2013)



SOURCE: (US DOE, 2016)

In a survey to Minnesota electric cooperatives, 59% of respondents indicated that flooding has adversely affected or damaged critical infrastructure in their service area. Debris may damage the infrastructure immediately or decrease the life of the utility poles, which may be more easily damage in a subsequent event. Eighty-three percent of respondents indicated that windstorms have a high potential to impact electrical infrastructure, and nearly all (94%) cooperatives surveyed indicated that they have been affected or damaged by a tornado in the past. The most vulnerable electrical structures to wind events are overhead utility lines and the poles (MN HSEM, 2014).

Winter storms are another very common risk to electric utilities and pose additional challenges that put crews and equipment in danger. Difficult winter driving conditions put crews on icy or wind-drifted and snowy roads. And in the case of ice storms and extreme cold winter temps, crews are subject to harsh conditions when repairing utility lines.

Power outages can also make vulnerable populations more vulnerable. Outages may force the closure of businesses, schools, and government offices. State and local governments may experience economic challenges related to large-scale power outages when they must open shelter facilities and to care for people displaced from their homes. Public agencies are frequently responsible for debris removal and clean-up in the event of a storm or tornado. Police and fire personnel may be responsible for securing downed power lines if they are dangerous to nearby residents.

People recovering from illnesses, the elderly, children, and low-income populations may be more vulnerable to the impacts of power outages than others. Those who are dependent on power for their health care needs become immediately at risk. Homeowners may see food spoiled, move to a temporary shelter, experience flooding inside of their homes, or have their pipes burst all due to the lack of power (MN HSEM, 2014).

Section 5 – Hazard Profiles

As part of the risk assessment, each natural hazard that poses risk to the county was independently reviewed for its past hazard history, relationship to future trends, and jurisdictional vulnerability to future events. A capabilities assessment was also conducted by the county to review the plans and programs that are in place or that are lacking (program gaps or deficiencies) for the implementation of mitigation efforts, as related to each natural hazard. An assessment was also conducted for local jurisdictions to identify the plans, policies, programs, staff, and funding they have in place in order to incorporate mitigation into other planning mechanisms (see Section 7.1 and Appendix C).

Hazards that were deemed by Renville County to be of moderate to high risk are addressed in the following hazard profiles. Hazards that were determined to be of low risk or without substantive mitigation actions to address them are not required to be included (see Section 4.1.1).

5.1 Flooding

Flooding is the most significant and costly natural hazard in Minnesota. The type, magnitude, and severity of flooding are functions of the amount and distribution of precipitation over a given area, the rate at which precipitation infiltrates the ground, the geometry and hydrology of the catchment, and flow dynamics and conditions in and along the river channel.

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

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

During the past several decades, agencies have used the “100-year floodplain” as the design standard for projects funded by the federal government. However, today floods of that magnitude are occurring far more often than once per century (Natural Resources Defence Council, 2015). In recognition of increasing risks, in January of 2015 the President issued an executive order that updates flood protection standards that guide federally funded projects in or near floodplains or along coastlines. These new standards require federally-funded projects to either build two feet above the 100-year flood elevation for standard

projects and three feet above for critical buildings like hospitals and evacuation centers; or build to the 500-year flood elevation (The White House, 2015).

Please note, the term "100-year floodplain" has largely been discontinued in favor of "1-percent annual chance floodplain."

5.1.1 HISTORY OF FLOODING

Minnesota experienced the wettest year on record in 2019. Heavy precipitation between February and May contributing to flooding throughout the state. Renville County was included in DR-4442 for extensive flooding in April 2019. In September 2019, over half the state received at least two times the normal amount of precipitation. The average precipitation for the year statewide was 35.51 inches, with many stations of over 50 years of observations breaking their own precipitation records. (MN DNR, 2019). Renville County had 37.88 inches of rain in 2019. This total was the fourth-highest annual total of precipitation in the county. The record precipitation in Renville County was 39.16 inches in 1991.

Table 18 below lists all Renville County's historical flood events from 2014–2021 as recorded by the NCEI. One death has been reported as a result of flooding. The cumulative property damage estimate is greater than $60 million dollars (NCEI, 2019).

The USGS provides information from gauge locations at points along various rivers across the United States. There is one active USGS gauging stations located in Renville County and one in Morton in Redwood County according to the National Water Information System. Table 19 below shows data on its highest-recorded annual peaks (gauge heights). Five discontinued gauge stations are not included. If the two highest peaks for the last five years are not in the top five peaks on record, they are included with their overall risk indicated in parentheses (USGS, 2021b).

Table 18. Flood Events in Renville County, January 2014–August 2021

Date	Event Type	Description
7/25/2020	Flash Flood	Heavy rain caused flash flooding that closed a couple of roads between County Road 3 and Fairfax, and south along the Minnesota River.
7/1/2019	Flash Flood	Three to six inches of rain fell around the Morton area. Approximately 30 homes were flooded. Three homes had six to eight feet of water in their basements, and Minnesota Highway 19 was closed east of Morton due to a mudslide.
3/17/2019	Flood	Numerous roads were closed for several days due to flooding from snow melt. Rapid runoff led to impassable roads.
7/3/2018	Flash Flood / Flood	Two separate events were recorded on this day, with one death recorded as a result of the floods. Heavy rainfall caused flash flooding. The worst areas were in the southern and central third of the county. Over 50 township and county roads were affected. After flood waters receded, an individual was found in a water-swollen drainage ditch, two days after his car was discovered submerged a mile upstream.
8/17/2017	Flash Flood	Very heavy rainfall and its associated flooding led to temporarily closures of numerous county parks. Several county roads in southwest Renville County became impassable and we also closed.

Date	Event Type	Description
8/10/2016	Flash Flood	Nearly five inches of rain fell in Olivia causing several vehicles to stall in water on low lying streets. One person needed the fire department to be rescued. The city administrator in Olivia says at least 100 homes had been impacted by flood-related damage.
6/18/2014	Flood	Several county roads and highways were damaged due to flood waters, especially along the Minnesota River Valley area.

SOURCE: (NCEI, 2019)

Table 19. Historical Peak Streamflow data (in feet) for USGS gauging stations.

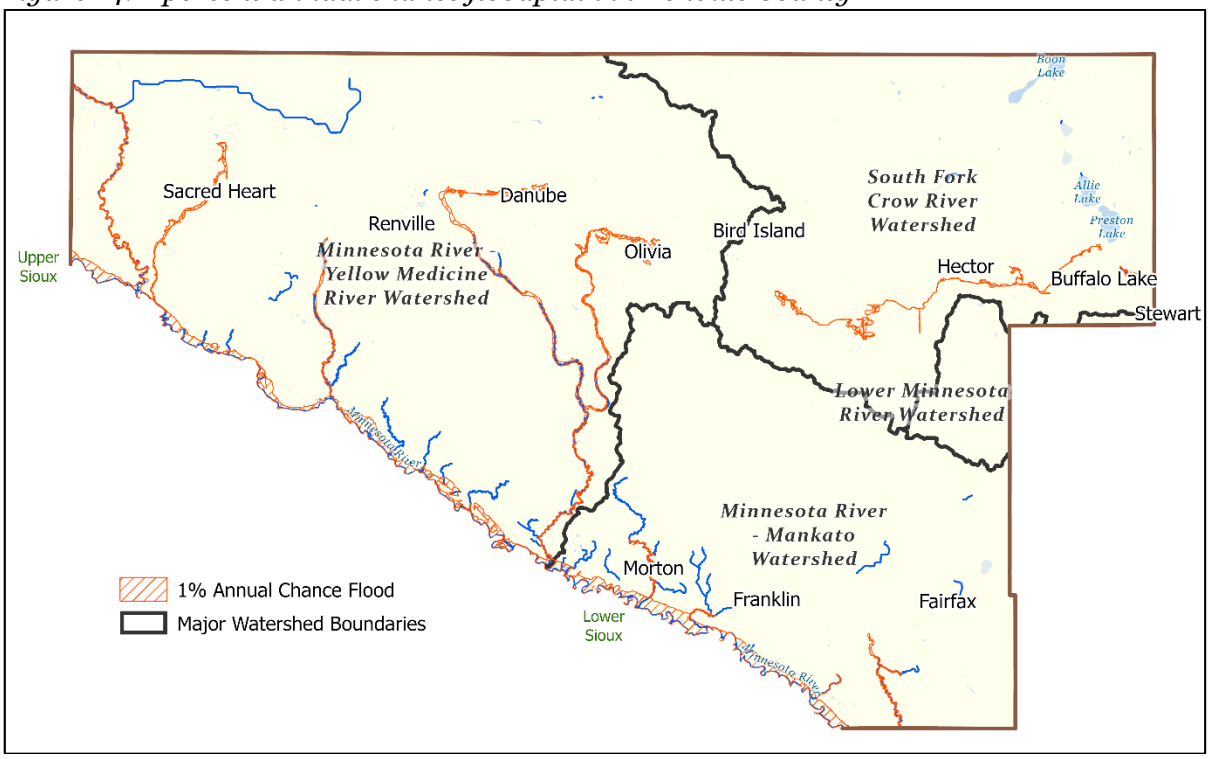
USGS 05316570 Beaver Creek near Beaver Falls Renville, MN 1972-2019			USGS 05316580 Minnesota River at Morton Redwood, MN 2001-2019		
(1)	Jun. 20, 2014	15.22	(1)	Mar. 31, 2019	28.85
(2)	Apr. 2, 1997	14.73	(2)	Jun. 21, 2014	27.45
(3)	Aug. 19, 2017	14.03	(3)	Apr. 4, 2011	27.42
(4)	Oct. 4, 2017	14.03	(4)	Mar. 25, 2010	27.29
(5)	Aug. 12, 2016	14.02	(5)	Jul. 4, 2018	26.11

SOURCE: (USGS, 2021B)

5.1.2 PROBABILITY OF OCCURRENCE

A potential risk and economic loss analysis for a 1-percent annual chance flood was performed using a FEMA tool, Hazus for ArcGIS. Flood grids were developed from flood boundaries in conjunction with cross-section data where available. Additional areas of the county without cross-section data were modeled with the flood boundary and HAZUS EQL analysis. The remainder of the flood grids were produced with HAZUS H&H analyses. The resulting Hazus 1-percent annual chance floodplain output is shown in Figure 14.

Figure 14. 1-percent annual chance floodplain in Renville County



SOURCE: (MN DNR, 2021A)

5.1.3 CLIMATE CHANGE PROJECTIONS

As Minnesota's climate changes, the quantity and character of precipitation is changing. Average precipitation has increased in the Midwest since 1900, with more increases in recent years. According to the Minnesota DNR State Climatology Office "Since 2000, Minnesota has seen a significant uptick in devastating, large-area extreme rainstorms as well. Rains that historically would have been in the 98th percentile annually (the largest 2%) have become more common. Climate projections indicate these big rains will continue increasing into the future."

The Midwest has seen a 45% increase in very heavy precipitation (defined as the heaviest 1% of all daily events) from 1958 to 2011 (National Climate Assessment Development Advisory Committee, 2013). This precipitation change has led to amplified magnitudes of flooding. Increased precipitation may also show seasonal changes, trending toward wetter springs and drier summers and falls. An example of a recent year with this character was 2012, when many MN counties were eligible for federal disaster assistance for drought, while others were eligible for flooding, and 7 were eligible for both in the same year (Seeley, 2013). In 2007, 24 Minnesota counties received drought designation, while 7 counties were declared flood disasters. In 2012, 55 Minnesota counties received federal drought designation at the same time 11 counties declared flood emergencies. In addition, the yearly frequency of the largest storms—those with 3 inches or more of rainfall in a single day—has more than doubled in just over 50 years. In the past decade, such dramatic rains have increased by more than 7% (MN Environmental Quality Board, 2014).

Southeastern Minnesota has experienced three 1000-year floods in the past decade: in September 2004, August 2007, and September 2010 (Meador, 2013). The 2004 flood occurred when parts of south–central Minnesota received over 8 inches of precipitation. Faribault and Freeborn counties received over 10

inches in 36 hours. The deluge led to numerous reports of stream flooding, urban flooding, mudslides, and road closures (MN DNR, 2004). During the 2007 event, 15.10 inches fell in 24 hours in Houston County, the largest 24-hour rainfall total ever recorded by an official National Weather Service reporting location. The previous Minnesota record was 10.84 inches in 1972. The resulting flooding from the 2007 rainfall caused 7 fatalities (MN DNR, 2007). In September 2010, a storm on the 22–23rd resulted in more than 6 inches of rain falling over 5,000 square miles in southern Minnesota. Rainfall totals of more than 8 inches were reported in portions of 10 counties. The heavy rain, falling on soils already sodden from a wet summer, led to numerous reports of major rural and urban flooding. For many monitoring locations in southern Minnesota, stream discharge resulting from the deluge was the highest ever seen during an autumn flood (Minnesota Climatology Working Group, 2010). Three of the five wettest years in Renville County occurred in the last two decades (DNR, 2020).

5.1.4 VULNERABILITY

Potential economic loss estimates were based on Renville County-specific building data. Renville County provided parcel tax and spatial databases that included building valuations, occupancy class, square footage, year built, and number of stories. The quality of the inventory is the limiting factor to a Hazus flood model loss estimation. Best practices were used to use local data and assumptions were made to populate missing (but required) values.

Hazus reports the percent damage of each building in the floodplain, defined by the centroid of each building footprint. After formatting the tax and spatial data, 19,330 points were input to Hazus to represent buildings with a total estimated building plus contents value of $1.6 billion. Approximately 52% of the buildings (and 40% of the building value) are associated with residential housing. The estimated loss by occupancy class for the entire county is shown in Table 20.

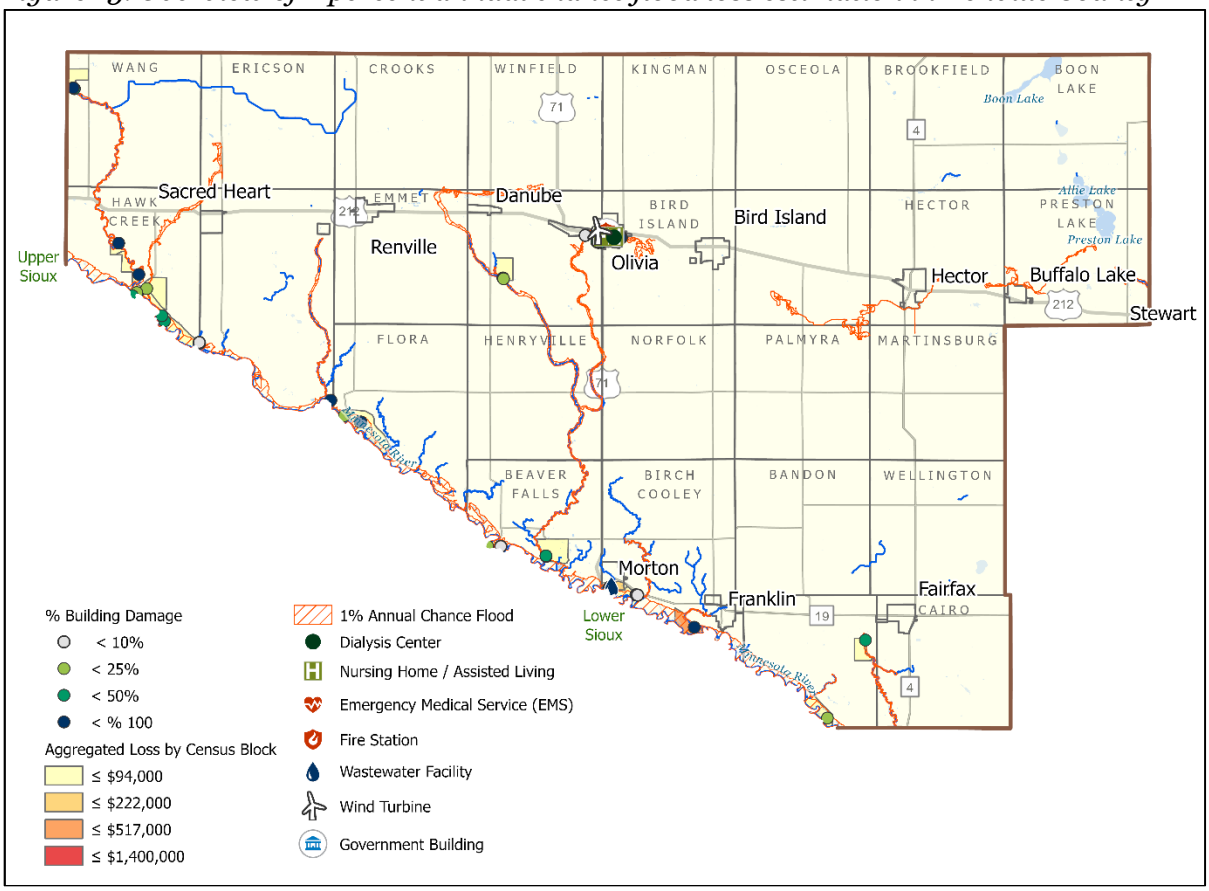
The distinction between building attributes within a parcel was not known, so the maximum percent damage to a building in that parcel was used to calculate loss estimates for the entire parcel. The sum of all the losses in each census block were aggregated for the purposes of visualizing the loss. An overview of these results with the percent damage of buildings is shown in Figure 15. Please note: It is possible for a building location to report no loss even if it is in the flood boundary. For example, if the water depth is minimal relative to 1st-floor height, there may be 0% damage.

Table 20. Summary of 1-percent annual chance flood loss estimation by occupancy class

General Occupancy	County Total Buildings	County Building and Contents Value	Floodplain Total Buildings	Floodplain Building + Contents Value	Buildings with damage	Building + Contents Loss
Residential	10,099	$662,103,584	140	$23,181,450	137	$7,172,365
Commercial	801	$153,629,986	24	$6,937,800	24	$508,122
Other	8,430	$822,574,906	41	$4,509,800	37	$1,258,090
Totals	19,330	$1,638,308,476	205	$34,629,050	198	$8,938,577

SOURCE: (FEMA, 2021C)

Figure 15. Overview of 1-percent annual chance flood loss estimation in Renville County



SOURCE: (FEMA, 2021c)

Hazus Critical Infrastructure Loss Analysis

Critical facilities and infrastructure are vital to the public and their incapacitation or destruction would have a significant negative impact on the community. These facilities and infrastructure were identified in Section 3.8 and verified by Renville County.

Buildings identified as essential facilities for the Hazus flood analysis include hospitals, police and fire stations, and schools (often used as shelters). Loss of essential facilities are vulnerable to structural failure, extensive water damage, and loss of facility functionality during a flood, thereby negatively impacting the communities relying on these facilities' services. Fortunately, none of Renville County's essential facilities included in the Hazus flood analysis are located within the 1-percent annual chance floodplain.

Extreme precipitation resulting in flooding may overwhelm water infrastructure, disrupt transportation, and cause other damage. Particularly where stormwater, sewage and water treatment infrastructure is aging or undersized for more intense rainstorms, extreme rain events may pose both health and ecological risks in addition to costly damage (USGCRP, 2018).

It is important to identify if any critical infrastructure within the 1-percent annual chance floodplain, given the higher risk of the facility or infrastructure being incapacitated or destroyed during a flood. In

Renville County, ten critical infrastructure locations were found to be at risk in the 1-percent annual chance flood Table 21. No other information is available about these facilities. Critical infrastructure in the floodplain is mapped in the City of Olivia in Figure 16.

Potential economic losses were estimated by Census County Subdivision. The city of Olivia was identified as having a significant estimated loss. All jurisdictions with buildings identified in the 1% annual chance flood zone are listed in Table 22.

The cities of Olivia and Morton as well as the communities of Birch Cooley Township and Hawk Creek Township are shown Figure 16. In addition to the aggregate economic loss by census block, the point locations used to represent flooded buildings are symbolized by percent damage to the building.

The status of jurisdictional participation in the National Flood Insurance Program and any repetitive loss properties are detailed in Section 6.1.1. National Flood Insurance Program (NFIP).

Table 21. Critical infrastructure identified in 1-percent annual chance flood boundary

Facility Name	Location
Olivia Fire Department	Olivia City
Olivia Ambulance Service	Olivia City
Olivia Fire Department	Olivia City
Centracare Kidney Olivia	Olivia City
Park View Village (Bethesda)	Olivia City
Fairview Place (Bethesda)	Olivia City
Olivia City Hall*	Olivia City
Olivia Community Center*	Olivia City
Morton WWTP	Morton City
Hometown WindPower Olivia	Olivia City

*These two critical infrastructure facilities share a building.

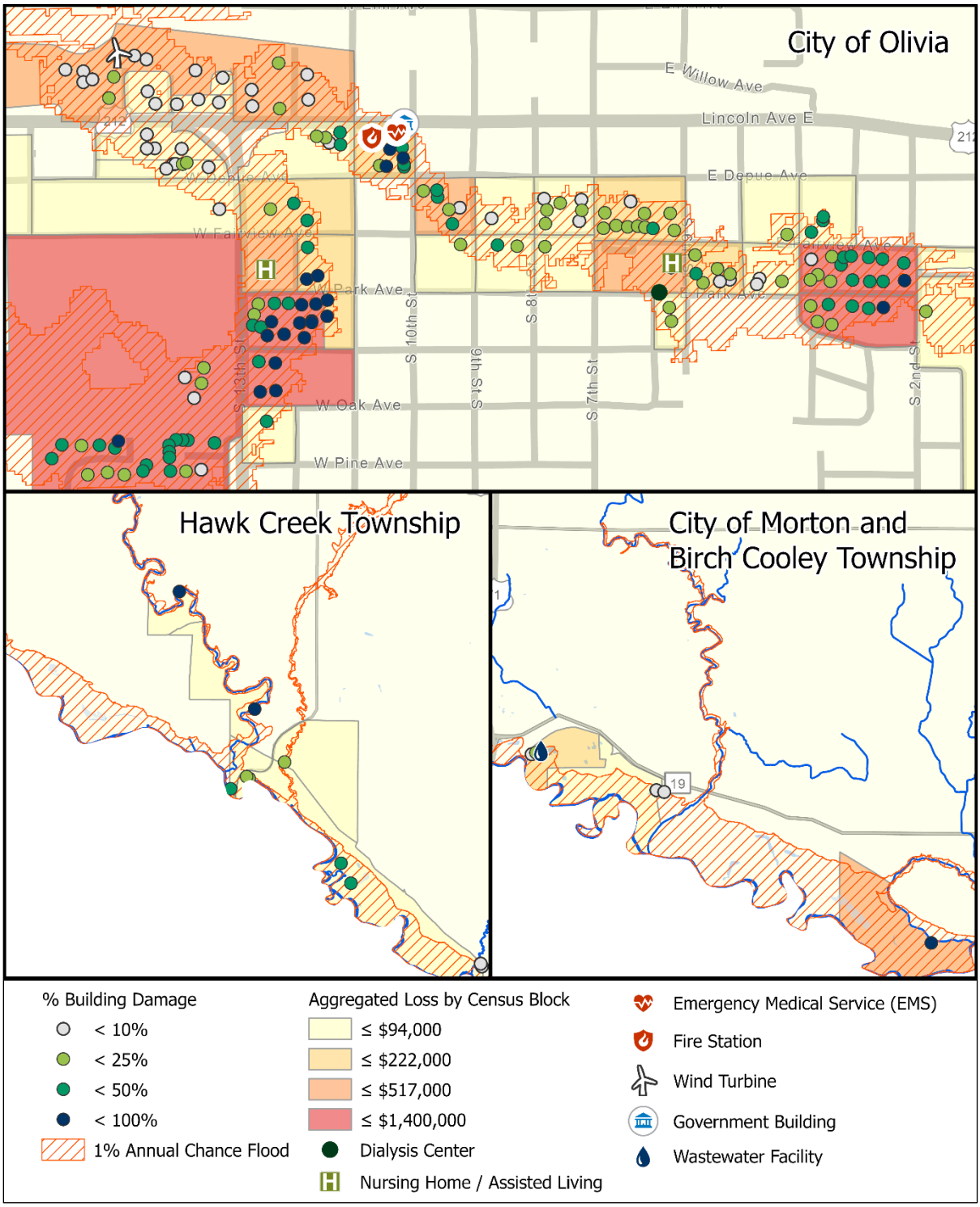
Table 22. 1-percent annual chance flood building-related loss estimates by jurisdiction

Jurisdiction (county subdivision)	Count of Buildings in Floodplain	Estimated Building and Contents Loss*
Beaver Falls Township	4	$2,458
Birch Cooley Township	3	$408,427
Camp Township	2	$81,097
Flora Township	3	$82,345
Hawk Creek Township	10	$88,262
Morton City	2	$150,322
Olivia City	168	$8,034,731
Sacred Heart Township	1	$8,087
Troy Township	3	$16,308
Wang Township	2	$66,542
Total	198	$8,938,577

*It is possible for a building to register no loss even if it is in the flood boundary. For example, if the water depth is minimal relative to 1st-floor height, there may be 0% damage.

SOURCE: (FEMA, 2021C)

Figure 16. 1-percent annual chance flood building-related loss estimates



SOURCE: (FEMA, 2021C)

5.1.5 PROGRAM GAPS AND DEFICIENCIES

Renville County Emergency Management identified several program gaps and deficiencies that make its citizens more vulnerable to flooding. The following gaps and deficiencies should be addressed with new mitigation efforts to reduce that vulnerability:

National Flood Insurance Program (*NFIP*): The City of Franklin is noted to have FEMA-Mapped High-Risk Areas but does not participate in the NFIP.

Surface Water Run-off Management: Controlling runoff from various sources continues to be a challenge and priority to control what runs downstream.

Increasing Culverts and Raising Roads: Some roads, bridges, and culverts within Renville County continue to need improvements as they are impacted by annual high rain events. The county needs funding assistance to improve roads and culverts that experience repetitive flooding.

Road Infrastructure: Continued culvert replacement to prevent road flooding is a strain on our smaller townships that have limited funding for road infrastructure.

Shoreline Stabilization: Continued efforts are needed to stabilize vulnerable shoreline that is eroding due to high rain events and wave action.

5.2 Windstorms

A windstorm is a wind strong enough to cause damage to trees and buildings and typically exceeding 34 mph (Pielke, 2012). Windstorm events encompass a variety of types of damaging wind, including:

- *straight-line wind*: a thunderstorm wind not associated with rotation,
- *downdraft*: a small-scale column of air that rapidly sinks toward the ground,
- *downburst*: a strong downdraft with an outrush of damaging winds at or near the earth's surface,
- *microburst* and *microburst*: outward bursts of strong winds at or near the earth's surface, differentiated by the diameter of the burst,
- *gustnado*: a small whirlwind originating from the ground and not connected to any cloud-based rotation), and
- *derecho*: a widespread, long-lived windstorm associated with a band of rapidly moving showers or thunderstorms (NSSL, 2020).

Tornadoes are categorized as separate hazards from windstorms. The National Weather Service (2018b) classifies windstorm events using the following criteria.

- *Strong wind events* are non-convective winds gusting less than 50 knots (58 mph), or sustained winds less than 35 knots (40 mph), resulting in a fatality, injury, or damage.
- *High wind events* are sustained non-convective winds of 35 knots (40 mph) or greater lasting for one hour or longer or gusts of 50 knots (58 mph) or greater for any duration.
- *Thunderstorm wind events* are winds arising from convection (occurring within 30 minutes of lightning being observed or detected), with speeds of at least 50 knots (58 mph), or lower wind speeds producing a fatality, injury, or damage. Downbursts and gustnadoes are classified as thunderstorm windstorm events.

When wind speeds are not able to be measured, they are estimated. Part of the process to determine wind speed is observing the damage. Table 23 lists the expected effects of increasing wind speeds.

Table 23. Effects of wind speed

Wind Speed	Effects
26–38 knots (30–44 mph)	Trees are in motion. Lightweight loose objects (e.g., lawn furniture) may be tossed or toppled.
39–49 knots (45–57 mph)	Large trees bend; twigs, small limbs, and a few larger dead or weak branches may break. Old/weak structures may sustain minor damage. Buildings under construction may be damaged. A few loose shingles may be removed from houses. Carports may be uplifted and minor cosmetic damage may occur to mobile homes.
50–64 knots (58–74 mph)	Large limbs break; shallow rooted trees may be pushed over. Semi-trucks may be overturned. Significant damage to old/weak structures may occur. Shingles and awnings may be removed from houses, damage may occur to chimneys and antennas, mobile homes and carports may incur minor structural damage, and large billboard signs may be toppled.
65–77 knots (75–89 mph)	Trees experience widespread damage, including breaking and uprooting. Mobile homes may incur significant structural damage, including being pushed off foundations or overturned. Roofs may be partially peeled off industrial/commercial/warehouse buildings. Some minor roof damage may occur to homes. Weak structures (e.g., farm buildings, airplane hangars) may be severely damaged.
78+ knots (90+ mph)	Many large trees may be broken and uprooted. Mobile homes may be severely damaged; moderate roof damage to homes may occur, roofs may be partially peeled off homes and buildings. Moving automobiles may be pushed off dry roads. Barns and sheds may be demolished.

SOURCE: (NWS, 2018B)

5.2.1 HISTORY

Renville County experienced 11 high wind and 133 thunderstorm wind events between 1955 and August 2021, with wind speeds up to 85 knots (98 mph) (NCEI, 2021). The majority of these windstorms occurred in June (31%) and July (29%). Wind damage to property and crops have cost the county more than $28.5 million since 1960 (CEMHS, 2019). Table 24 lists the wind-related events that have occurred in Renville County since 2014. Thunderstorm wind events from 1955–2018 are mapped in Figure 17.

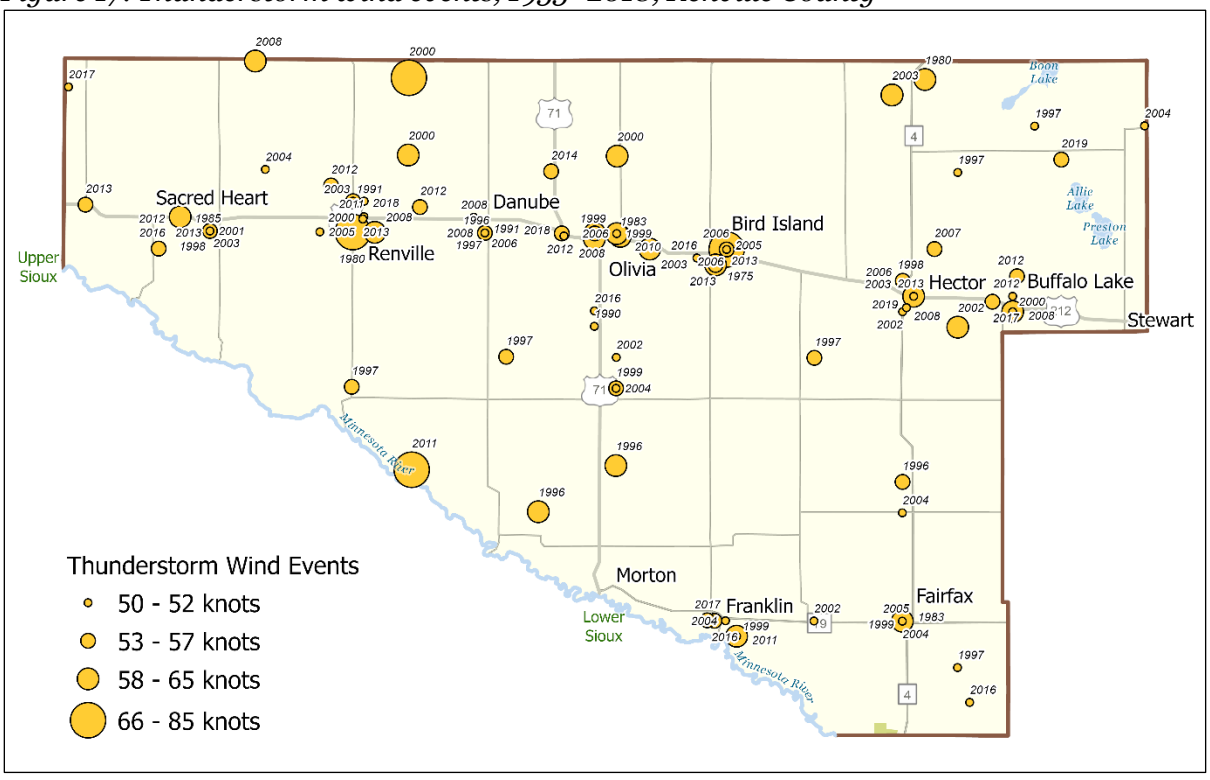
Table 24. Wind events in Renville County, January 2014–August 2021

Date	Event Type	Description
6/4/2019 (3 events)	Thunderstorm wind	Scattered thunderstorms caused brought large hail, straight-line winds, and a downburst, causing wind damage. Numerous trees branches and power lines were downed. Significant damage to grain bins occurred at a farm in Buffalo Lake. $30,000 in property damages occurred.
7/3/2018	Thunderstorm wind	A couple of severe thunderstorms produced severe wind gusts in portions of central Minnesota during the morning. There were no reports of damage, but winds gusted as high as 70 mph.
5/24/2018	Thunderstorm wind	Several complexes of thunderstorms produced large hail stones and downed trees and power lines. There were several wind sensors that measured wind gusts between 50 to 55 mph.

Date	Event Type	Description
8/16/2017	Thunderstorm wind	Small low-topped supercells developed within a band of heavy rain and produced numerous tornadoes. In addition, a large circulation was noted in southwest Minnesota. Several trees were downed in Franklin.
6/11/2017 (2 events)	Thunderstorm wind	A mesoscale convective system produced severe hail, wind, and a tornado. There were numerous reports of downed trees and power lines.
8/4/2016 (2 events)	Thunderstorm wind	A large complex of storms moved across central Minnesota. A few storms bowed out and caused severe wind gusts near Olivia. Several trees were downed. $2,000 worth of property damages occurred.
7/16/2016	Thunderstorm wind	A significant bow echo caused significant wind damage, downing trees and power lines near Sacred Heart. There were several wind gusts measured at 40-50 mph across south central Minnesota.
6/17/2016	Thunderstorm wind	A large complex of thunderstorms developed and produced severe winds and hail. Several trees and power lines were blown down east of Morton.
9/3/2014	Thunderstorm wind	Scattered thunderstorms became severe as they moved eastward across Renville County. A semi-truck was blown over on U.S. Highway 71 north of Olivia.

SOURCE: (NCEI, 2021)

Figure 17. Thunderstorm wind events, 1955–2018, Renville County



SOURCE: (NCEI, 2021)

5.2.2 PROBABILITY OF OCCURRENCE

To determine the probability of future wind-related events in Renville County, records of previous wind-related events (strong wind, high wind, and thunderstorm wind) in the county were examined for the period of record. Because the datasets have two different periods of record, separate relative frequencies were calculated. Thunderstorm wind events, which date back to January of 1955, have a relative frequency of 2.0 per year. The relative frequency of all wind-related events since January of 1996 is 4.1 per year. These relative frequencies can be used to infer the probability of these events occurring in the future.

5.2.3 CLIMATE CHANGE PROJECTIONS

Lack of high-quality long-term data sets make assessment of changes in wind speeds very difficult (Kunkel et al., 2013). One analysis generally found no evidence of significant changes in wind speed distribution (Pryor et al., 2009), while other models suggest an increase in the frequency and intensity of severe thunderstorms as the climate changes (USGCRP, 2018). The lack of confidence in the projections of future changes in thunderstorms, tornadoes, hail, and windstorms, is in part due to the difficulty in monitoring and modeling these small-scale and short-lived events (USGCRP, 2018). Since the impact of more frequent or intense storms can be significant, climate scientists are actively researching the connections between climate change and severe weather.

5.2.4 VULNERABILITY

The likelihood of a windstorm event does not vary geographically within the county, but the vulnerability of its citizens is not constant. Vulnerability to injury from all kinds of windstorms decreases with adequate warnings, warning time, and sheltering in a reinforced structure. Therefore, residents living in rural areas, living alone or with limited mobility, or living in a manufactured home may be more vulnerable. Also at a higher risk to windstorms are those who work outdoors or do not have permanent housing.

Structural vulnerability depends in part upon the construction of a building and its infrastructure. Residents of mobile homes are more vulnerable to fatality or injury from windstorms because mobile homes are not able to withstand high winds as well as other structural dwellings, with 50 mph (43.4 knots) being the lower limit of wind speeds capable of damaging mobile homes (AMS, 2004). Steps to mitigate these vulnerabilities have been taken by the state, requiring all mobile home parks to provide an evacuation plan, and parks with at least 10 homes licensed after March 1, 1988 to provide a storm shelter (MDH, 2020). However, mobile home parks often do not provide the required storm shelters (Sepic, 2017). Building codes have also changed to improve the strength of new mobile home construction but there are still many older mobile homes in use that do not meet these new standards.

The Housing Type & Transportation and Household Composition & Disability themes of the Social Vulnerability Index (Table 15) include variables that can be helpful in identifying where these vulnerable citizens are concentrated within the county.

5.2.5 PROGRAM GAPS AND DEFICIENCIES

Renville County Emergency Management identified several program gaps and deficiencies that make its citizens more vulnerable to summer storms, including windstorms, that should be addressed with new mitigation efforts to reduce vulnerability. These include:

Above-Ground Power Lines: Most of the power lines in the county are above ground and subject to damage from high winds and falling tree limbs from severe summer storms. Power lines that are above ground are susceptible to coming down during severe storm events, resulting in power outages.

Public Education: Continued public education needs to be conducted during tornado season to inform the public about what a tornado watch/warning is and what to do when warning sirens are activated. Renville County Emergency Management and local cities need to continue to encourage all residents to be ready for long-term power outages resulting from severe spring and summer storm events such as thunderstorms or straight-line winds.

Additional Storm Shelters/Tornado Safe Rooms: Additional storm shelter areas in the county would enhance public safety. Construction or retrofit of facilities should be evaluated for areas where there are vulnerable populations, such as municipal campgrounds, mobile home parks and schools.

5.3 Tornadoes

Tornadoes are violently rotating columns of air formed in a thunderstorm when the rotating air of an updraft meets the spinning air of a downdraft, which has turned upward (UCAR, 2021). With wind speeds reaching up to 300 mph, they are one of nature's most violent storms (Hogeback, 2020).

Since 2007, tornado strength in the United States has been measured using the Enhanced Fujita Scale (EF Scale), which replaced the original Fujita Scale (F Scale). The EF Scale is a set of estimated wind speeds based on damage (Table 25). The EF Scale incorporates the use of 28 damage indicators to derive estimated wind speeds and assign an associated EF rating (NWS, 2020b; SPC, 2007). The EF Scale is used extensively by the NWS to investigate tornadoes, and by engineers in correlating damage to buildings and building techniques.

Table 25. Enhanced Fujita Scale (EF Scale)

EF Rating	3-second gust (mph)
0	65–85
1	86–110
2	111–135
3	136–165
4	166–200
5	Over 200

SOURCE: (NWS, 2020B)

5.3.1 HISTORY

From 1950 through 2018, 1,940 tornadoes occurred throughout Minnesota, resulting in 99 deaths and nearly 2,000 injuries (MN DNR, 2019b). While most tornadoes in Minnesota are minor (F0/EF0) and occur without injury, a number of the tornadic events will forever be remembered due to the sheer death and destruction they left behind. Examples include the St. Cloud/Sauk Rapids tornado of 1886, which claimed 72 lives, injured 213, and remains the deadliest tornado in the State's history. May 6, 1965 is

another day often remembered for tragedy when six tornadoes ravaged the Twin Cities, killing 13, injuring 683, and causing $51 million in damages (without inflation adjustment) (MN DNR, 2019b).

The peak months of tornadic activity in Minnesota are June and July respectively (MN DNR, 2019b). According to the NCEI Storm Events Database, 25 tornadoes have occurred in Renville County between 1950 and February 2020, resulting in five injuries (NCEI, 2021), and an estimated 16.8–31.8 million U.S. dollars in property and crop damage (CEMHS, 2019; NCEI, 2021). The strength of these tornadoes ranged from F0 to F2. The costliest of these tornadoes occurred on June 24, 2003, when an F2 tornado caused significant damage in Buffalo Lake. Roofs were blown off of a number of homes, businesses, and a church. Sheds and garages were also blown down, a grain elevator was destroyed, and hundreds of trees were broken. In total, 29 houses were damaged beyond repair, 51 sustained major damage, and 120 more suffered minor damage. Five people sustained minor injuries and damages were reported at 14 million U.S. dollars (NCEI, 2021). There has been one tornado in Renville County since the county's last hazard mitigation plan update in 2014. This EF0 tornado occurred on June 9, 2020, touching down briefly in an open field north of Danube.

5.3.2 PROBABILITY OF OCCURRENCE

Estimating the probability of future tornadoes in Renville County was done using two methods. The first method summed the total number of tornadoes which either touched down in or traveled through the county. This sum was divided by the number of years tornado data was recorded, resulting in the annual relative frequency of tornado occurrences in the county. Based on records in the NCEI Storm Events Database through August 2021, the relative frequency of tornados in Renville County is 0.4 per year. (These 25 tornadic events occurred in 13 of the 70 years on record.)

Because tornadoes often cross county lines and tornadic frequency may be better understood using events from a larger area, a second method was used to describe the frequency of tornadic events within a 50-mile radius of any location within the county. A grid of 900 square-meter cells was used to cover Minnesota and 50 miles beyond its border. From the center of each cell, the number of tornadoes that intersected a 50-mile radius was counted. Each cell was assigned a total tornado line count, which was then divided by the tornado dataset's period of record, resulting in the annual relative frequency of tornadoes occurring within 50 miles of the respective cell.

For any location in Renville County, there was an annual frequency of 3.7–4.5 tornadoes within a 50-mile radius. The historical frequency was only slightly higher in the southeast than the northwest. These relative frequencies can be used to infer the probability of these events occurring in the future.

Figure 18 shows the tornadoes that have occurred in Renville County from 1950 through February 2020, as well as the annual frequency of tornado occurrences within 50 miles of any location within the county.

5.3.3 CLIMATE CHANGE PROJECTIONS

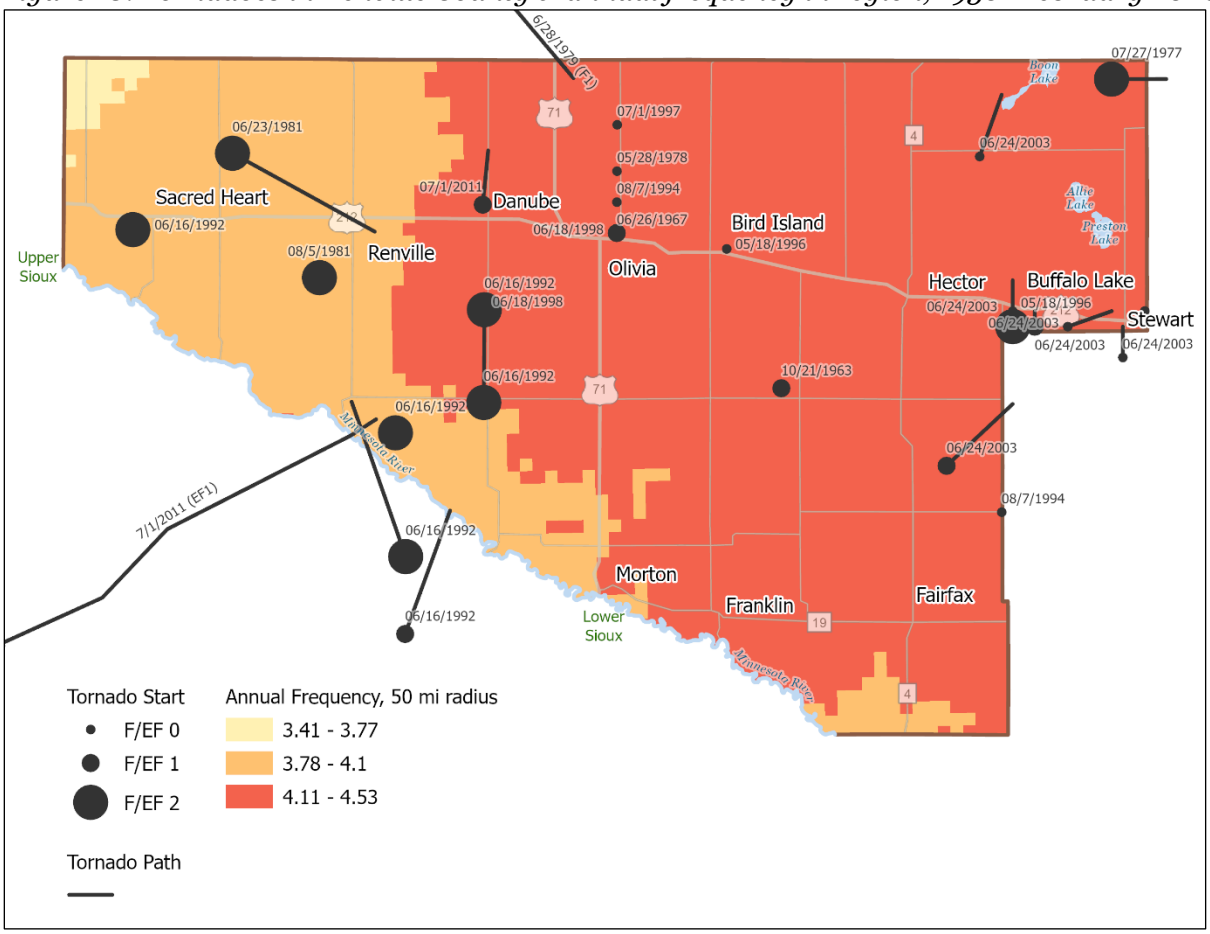
Tornadoes and other severe convective storms are the largest annual aggregated risk peril to the insurance industry, costing the U.S. $11.23 billion (in 2016 USD) each year (Gunturi & Tippett, 2017). Although recent research has yielded insights into the connections between global warming and the factors that cause tornados and severe thunderstorms, such as atmospheric instability and increases in

wind speed with altitude (Del Genio et al., 2007), these relationships remain mostly unexplored, largely because of the challenges in observing thunderstorms and tornadoes and simulating them with computer models (USGCRP, 2018).

According to Brooks et al., while the mean annual number of tornadoes in the U.S. has remained relatively consistent the variability of tornado occurrences has increased since the 1970s. According to the data, tornadoes have been occurring in larger clusters since the 1970's, with an overall decrease in the number of tornado days but an increase in the number of tornadoes that occur on tornado days (2014).

An increase in the variability of tornado occurrences affects the timing of the start of the tornado season (Brooks et al., 2014). The earliest reported tornado in Minnesota occurred on March 6, 2017, when two tornadoes touched down in southern Minnesota. These tornadoes occurred 12 days earlier and 115 miles further north than the previous record from 1968. According to State Meteorologist Paul Huttner, "Those records fit seasonally and geographically with longer term climate trends pushing weather events earlier in the season and further northward" (Huttner, 2017).

Figure 18. Tornadoes in Renville County & annual frequency in region, 1950–February 2020



SOURCES: (MN DNR, 2019b; NCEI, 2021)

5.3.4 VULNERABILITY

The likelihood of a tornado does not vary significantly across geography within Renville County; however, certain populations may be more vulnerable and less resilient to the impacts of a tornado. In general, tornado casualties decrease when people receive adequate warnings with sufficient time to seek shelter in a reinforced structure. Because communication is critical before a tornadic event, certain citizens may be more negatively impacted by a tornado, including those living in rural areas, individuals with limited mobility, people who do not live near an outdoor warning siren, or those who do not use social media.

As discussed in section 4.4.3, people living in mobile homes are particularly vulnerable to tornadoes due to them not being able to withstand the strong winds produced by a tornado. According to NOAA's Storm Prediction Center, from 1985–2002, 49% of tornado fatalities in the United States were people who remained within or attempted to flee from mobile homes (AMS, 2004). While Minnesota law requires most mobile home parks to have storm shelters, many do not (Sepic, 2017). Section 4.3 lists the mobile home parks in Renville County.

Some of the vulnerability factors mentioned above are included as social factors in the Housing Type & Transportation and Household Composition & Disability themed SVI map (Table 15*)* and may provide general insight on where in the county these vulnerable communities are located.

5.3.5 PROGRAM GAPS AND DEFICIENCIES

Renville County Emergency Management identified that there are several program gaps and deficiencies that make its citizens more vulnerable to summer storms, including tornadoes, that should be addressed with new mitigation efforts to reduce vulnerability. These include:

Above-Ground Power Lines: Most of the power lines in the county are above ground and subject to damage from high winds and falling tree limbs from severe summer storms. Power lines that are above ground are susceptible to coming down during severe storm events, resulting in power outages.

Public Education: Continued public education needs to be conducted during tornado season to inform the public about what a tornado watch/warning is and what to do when warning sirens are activated. Renville County Emergency Management and local cities need to continue to encourage all residents to be ready for long-term power outages resulting from severe spring and summer storm events such as thunderstorms or straight-line winds.

Additional Storm Shelters/Tornado Safe Rooms: Additional storm shelter areas in the county would enhance public safety. Construction or retrofit of facilities should be evaluated for areas where there are vulnerable populations, such as municipal campgrounds, mobile home parks and schools.

5.4 Hail

A hailstorm is a storm producing spherical balls of ice. Hailstones form in a thunderstorm's unstable air mass when warm moist air rises rapidly into the upper atmosphere and subsequently cools, leading to the formation of ice crystals. The ice crystals grow into hailstones through the storm's updraft and downdraft cycle, each time being coated with a layer of ice until the hailstone becomes too heavy to be carried by the updraft and falls to the ground.

A number of factors determine the damage potential from hail including hailstone size, texture, numbers, fall speed, speed of storm translation, and strength of the accompanying wind (TORRO, 2021). The maximum hailstone size is the most important parameter relating to structural damage. Studies have determined that most property damage begins when hailstone diameters are ≥ .75 in., while crop damage can occur from hailstones as small as .25 in (Changnon et al., 2009) depending on the crop and growth stage. Table 26 shows the TORnado and storm Research Organization's (TORRO) Hailstorm Intensity Scale, which describes the typical damage from different sized hailstones.

Hailstorms occur throughout the year though are most frequent between May and August (NWS, 2020c). Although hailstorms rarely cause injury or loss of life, they do cost Minnesota nearly $16 million in property and crop damage each year (CEMHS, 2019). In 2017, 44% of properties in Minnesota were affected by damaging hail events (Samanta & Wu, 2017).

Table 26. TORRO hailstorm intensity scale

	Intensity Category	Typical Hail Diameter (in.)	Typical Damage Impacts
H0	Hard Hail	.2	No damage
H1	Potentially Damaging	.2–.6	Slight general damage to plants, crops
H2	Significant	.4–.8	Significant damage to fruit, crops, vegetation
H3	Severe	.8–1.2	Severe damage to fruit and crops, damage to glass and plastic structures, paint and wood scored
H4	Severe	1–1.6	Widespread glass damage, vehicle bodywork damage
H5	Destructive	1.2–2	Wholesale destruction of glass, damage to tiled roofs, significant risk of injuries
H6	Destructive	1.6–2.4	Bodywork of grounded aircraft dented, brick walls pitted
H7	Destructive	2–3	Severe roof damage, risk of serious injuries
H8	Destructive	2.4–3.5	Severe damage to aircraft bodywork
H9	Super Hailstorms	3–4	Extensive structural damage. Risk of severe or even fatal injuries to persons caught in the open
H10	Super Hailstorms	> 4	Extensive structural damage. Risk of severe or even fatal injuries to persons caught in the open

SOURCE: (TORRO, 2021)

5.4.1 HISTORY

Renville County experienced 168 hail events from 1955 through August 2021; 48% of these hailstorms produced hailstones ≥ 1 in. diameter. The largest hailstone recorded in Renville County was 2.75 in., which occurred three times at three different locations (NWS, 2020c). Hail damage to property and crops have cost the county more than 32.9 million dollars since 1960, ranking the county 6th for hail damage incurred by Minnesota counties (CEMHS, 2019). Table 27 lists hail events in Renville County that produced hailstones ≥ 1 in. diameter since January 2014.

Figure 19 shows the hail events in Renville County from 1955 through February 2020 that produced hailstones ≥ 1 in. in diameter.

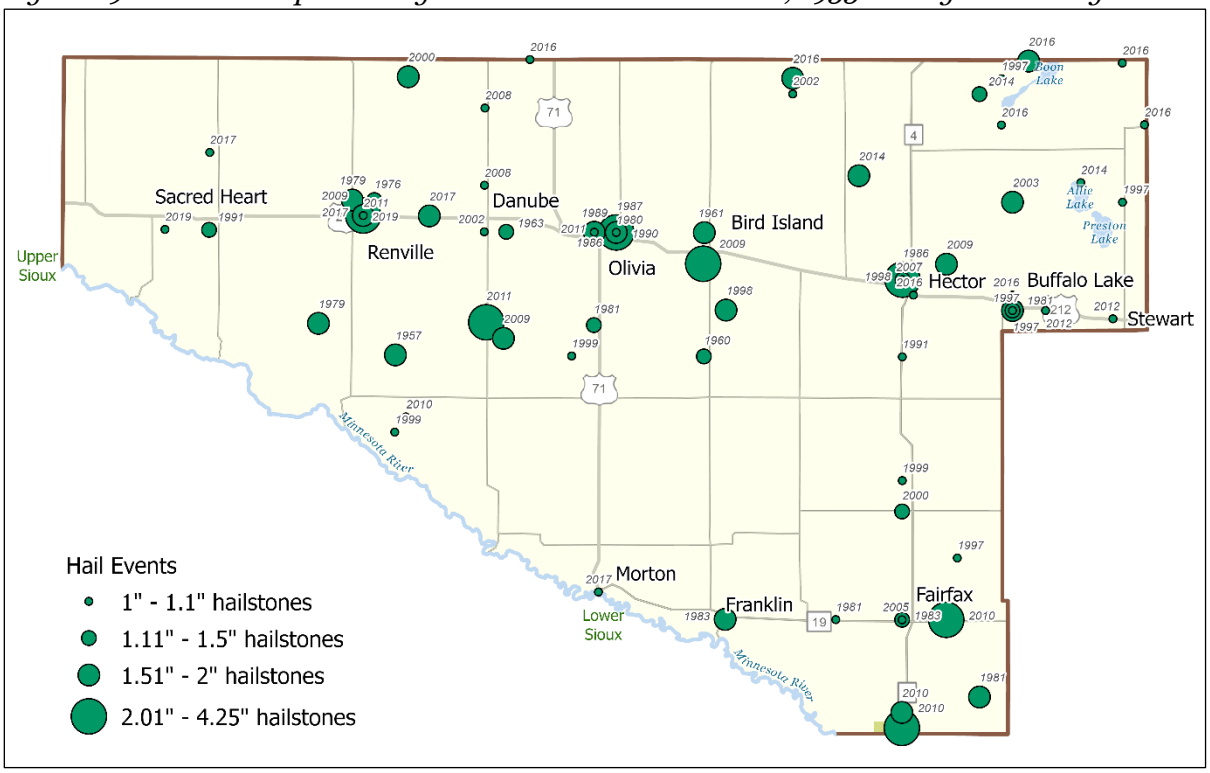
Table 27. Storms producing hail ≥ 1 in. diameter, Renville County, January 2014–August 2021

Date	Location	Hailstone Diameter (in.)	Damage
9/5/2020 (6 events)	Multiple	1–2	Elevated thunderstorms developed over west central and southwest Minnesota. These storms produced large hail.
7/11/2020 (2 events)	Bird Island	1.25–2	A swath of large hail, including wind driven hail, occurred across the county. Local farmers had major damage to their corn and soybean fields.
4/11/2019 (2 events)	Multiple	1	Thunderstorms developed and a few large hail stones fell across southwest Minnesota during the morning of Thursday, April 11th. Hail was reported from Sacred Heart and Renville.
7/25/2017 (2 events)	Multiple	1.75	During the evening of July 25th, a line of storms crossed through central Minnesota and produced severe hail. Storms continued into the morning hours of July 26, producing thunderstorm wind damage. Hail fell in Renville and Danube.
7/4/2017	Sacred Heart	1	Thunderstorms developed in portions of west central and southwest Minnesota. A few storms became severe and produced up to hen egg size hail.
3/6/2017	Morton	1	A powerful storm system produced a swath of large hail and some damaging wind gusts from central Minnesota, southward into the central plains. A swath of large hail, up to quarter size, fell from the Renville and Redwood County line to northeast past the town of Morton.
7/5/2016	Bird Island	1.75	Two areas of thunderstorms developed across west central Minnesota and produced several large hail stones. These two storms moved southeast across central and southern Minnesota and produced a swath of damaging winds, large hail and a few tornadoes during the late afternoon and early evening.
6/17/2016 (2 events)	Multiple	1	A large complex of thunderstorms developed across North Dakota during the early morning of Friday, June 17th. As the storms moved through Minnesota, they brought heavy winds and large hail. Hail fell for ten minutes within Renville County and was reported at Hector and Buffalo Lake.
5/24/2016 (2 events)	Lakeside	1–1.75	Scattered thunderstorms produced two areas of large hail across southern and central Minnesota. These storms produced large hail and a damaging wind gusts.

Date	Location	Hailstone Diameter (in.)	Damage
9/3/2014 (2 events)	Multiple	1–2	Scattered thunderstorms developed early morning in southeast South Dakota before moving into southwest Minnesota. Some of the thunderstorms became severe as they moved eastward across Renville County. Hail was reported from Hector and Lakeside.
5/8/2014	Lakeside	1.5	Several rounds of thunderstorms occurred Thursday afternoon and evening, bringing tornados, damaging winds, and hail.

SOURCE: (NWS, 2020C)

Figure 19. Hail events producing hailstones ≥ 1 in. diameter, 1955 through February 2020



SOURCE: (NWS, 2020C)

5.4.2 PROBABILITY OF OCCURRENCE

To determine the probability of future hailstorms in Renville County, records of previous hail events in the county were examined for the period of record. From January 1955 through February 2020, the relative frequency of hail events was 2.4 per year. This relative frequency can be used to infer the probability of hail events occurring in the future.

5.4.3 CLIMATE CHANGE PROJECTIONS

Numerous models suggest an increase in the frequency and intensity of severe thunderstorms as the climate changes (USGCRP, 2018) but scientists are less confident of how it will specifically affect hail. Some studies indicate climate changes will result in fewer overall hail days but an increase in the mean hail size, the frequency of large hail events, and the overall damage potential of hail (Brimelow et al., 2017). The lack of confidence in the projections of future changes in thunderstorms, tornadoes, hail, and windstorms is in part due to the difficulty in monitoring and modeling these small-scale and short-lived events (USGCRP, 2018). Since the impact of more frequent or intense storms can be significant, climate scientists are actively researching the connections between climate change and severe weather.

5.4.4 VULNERABILITY

Renville County's agricultural lands and structures are vulnerable to hail damage and its citizens to injury and possibly death. Data from the Spatial Hazard Events and Losses Database for the United States (SHELDUS) was examined to identify the county's monetary losses due to hail damage to crops, property, injury, and death. From 1960 through 2018, Renville County reported $32,926,516 in hail damages, ranking 6th among Minnesota counties in total hail damages. Renville County's losses are primarily due to crop damages reported at $32,042,032, followed by $884,483 in property damages. Crop indemnity payments due to hail totaled $11,222,278 for the period of record spanning 1989–2018 (CEMHS, 2019).

Within Renville County, the vulnerability of jurisdictions to hailstorms does not vary geographically. As with all summer storms, those who work outdoors or do not have permanent housing are at greater risk during hailstorms.

5.4.5 PROGRAM GAPS AND DEFICIENCIES

Renville County Emergency Management identified that there are several program gaps and deficiencies that make its citizens more vulnerable to summer storms, including hail. The following gaps and deficiencies should be addressed with new mitigation efforts to reduce that vulnerability:

Above-Ground Power Lines: Most of the power lines in the county are above ground and subject to damage from high winds and falling tree limbs from severe summer storms. Power lines that are above ground are susceptible to coming down during severe storm events, resulting in power outages.

Public Education: Continued public education needs to be conducted during tornado season to inform the public about what a tornado watch/warning is and what to do when warning sirens are activated. Renville County Emergency Management and local cities need to continue to encourage all residents to be ready for long-term power outages resulting from severe spring and summer storm events such as thunderstorms or straight-line winds.

Additional Storm Shelters/Tornado Safe Rooms: Additional storm shelter areas in the county would enhance public safety. Construction or retrofit of facilities should be evaluated for areas where there are vulnerable populations, such as municipal campgrounds, mobile home parks and schools.

5.5 Lightning

Lightning is a common weather phenomenon that typically occurs as a by-product of a thunderstorm. The potential hazard posed by lightning is significant. Each year in the United States lightning kills an average of 49 people and injures hundreds more (NWS, 2021b). It is impossible to predict where individual lightning strikes will occur due to the nature of lightning being widespread, frequent, and random. People can be struck by lightning through numerous ways, including a direct strike; a side flash (lightning strikes a taller object and a portion of the current strikes a nearby person); a ground current (energy from a lightning strike travels outward along the ground surface); and through conduction (lightning strike traveling through wires, pipes, or other metal surfaces) (NWS, 2021a).

While many lightning casualties happen at the beginning of an approaching storm, more than half of lightning deaths occur after a thunderstorm has passed. Lightning can strike more than 10 miles from the storm in an area with clear sky above (NWS, 2017). There is little an individual can do to substantially reduce risk outdoors in a thunderstorm. The safest action is to get inside a building or vehicle.

5.5.1 HISTORY

Although not the most frequent natural hazard, there are reports of lightning hazards occasionally occurring in the county. According to the NCEI Storm Events Database, which maintains records of lightning strikes that result in fatality, injury, and/or damage, Renville County experienced one lightning event since January 1996. The event took place on July 23, 2016, when a church in Sacred Heart was destroyed by a fire that started from a lightning strike. No one was injured, but the church was a total loss (NCEI, 2021).

There are reports of hazardous lightning events occurring in the county prior to 1996 in the Spatial Hazard Events and Losses Database for the US (SHELDUS), which provides damage and loss amounts. According to SHELDUS, 27 lightning events occurred in the county prior to 1996, with the most recent taking place in July 1986. These lightning events cost the county $338,041 dollars (ADJ 2018) in property and crop damages (CEMHS, 2019).

The number of cloud-to-ground lightning flashes is reported by the county as part of the NCEI Severe Weather Data Inventory. This 27-year dataset revealed cloud-to-ground lightning strikes occur on average 4,499 times per year in Renville County, or 4.6 strikes per square mile, per year (NCEI, 2018).

5.5.2 PROBABILITY OF OCCURRENCE

The odds of an individual in the U.S. being killed or injured by lightning during a given year is 1 in 1.2 million (NWS, 2018a). For more local statistics on hazardous lightning events the NCEI Storm Events Database was examined for events that occurred in Renville County. Based on the number of previously reported events, the relative frequency of lightning events in the county is less than one per year. This relative frequency can be used to infer the probability of hazardous lightning events occurring in the future is very low (NCEI, 2021).

5.5.3 CLIMATE CHANGE PROJECTIONS

The projected possible intensity and frequency of tornadoes, hail, and damaging thunderstorm winds, the conditions associated with lightning, are uncertain. These conditions—tornadoes, large hail, and damaging thunderstorms are difficult to compare historically but may become more concentrated on fewer days or multiple events may occur at one time. These events could happen without necessarily increasing overall numbers or severity (ICAT, 2017) . Severe rain events are becoming more common and may include an additional risk of lightning.

5.5.4 VULNERABILITY

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Public Education: Continued public education needs to be conducted during tornado season to inform the public about what a tornado watch/warning is and what to do when warning sirens are activated. Renville County Emergency Management and local cities need to continue to encourage all residents to be ready for long-term power outages resulting from severe spring & summer storm events such as thunderstorms or straight-line winds.

Additional Storm Shelters/Tornado Safe Rooms: Additional storm shelter areas in the county would enhance public safety. Construction or retrofit of facilities should be evaluated for areas where there are vulnerable populations, such as municipal campgrounds, mobile home parks and schools.

5.6 Winter Storms

Winter storms encompass a number of winter weather events which the National Weather Service (NWS) organizes into the following categories: blizzard, heavy snow, ice storm, winter storm, and winter weather. Winter weather events are common in Minnesota and can be costly. According to the Spatial Hazard Events and Losses Database (SHELDUS), winter weather events in Minnesota have cost more than $957 million dollars in damages since 1960 (CEMHS, 2019).

The definitions below are used to record winter storm events in the NWS Storm Events Database (NCEI, 2021).

Blizzard: A blizzard is a winter storm that has the following conditions for at least three consecutive hours: (1) sustained winds or frequent gusts of 35 mph or greater, and (2) falling and/or blowing snow which reduces visibility to less than ¼ mile. Blizzards are the most dramatic and destructive of all winter storms generally characterized as bearing large amounts of snow accompanied by strong winds (Figure 20). They have the ability to completely immobilize travel in large areas and can be life threatening to humans and animals in their path. Blizzards in Minnesota have claimed the lives of 10 people since 1996: (NCEI, 2021).

According to the NWS, there is no fixed temperature requirement for blizzard conditions, but the life-threatening nature of low temperatures in combination with blowing snow and poor visibility increases dramatically when temperatures fall below 20° F. In Minnesota, blizzards typically occur between October and April, with the majority occurring the months of January, March, and November, respectively.

Figure 20. Thanksgiving Weekend Blizzard, 2019

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Damages from blizzards can range from human and livestock deaths to significant snow removal costs. Stranded drivers can make uninformed decisions, such as leaving the car to walk in conditions that put them at risk. Because of the blinding potential of heavy snowstorms, drivers are also at risk of collisions with snowplows or other road traffic. Drivers and homeowners without emergency plans and kits are vulnerable to the life-threatening effects of heavy snowstorms such as power outages, cold weather, and inability to travel, communicate, obtain goods, or reach their destinations. Heavy snow loads can cause structural damage, particularly in areas where there are no building codes or where residents live in manufactured home parks. The frequency of structural fires tends to increase during heavy snow events, primarily due to utility disruptions and the use of alternative heating methods by residents.

Heavy Snow: A heavy snow event is characterized as snow accumulation meeting or exceeding the local/regional defined 12 and/or 24-hour warning criteria. Depending on the area, this could mean 4–8 inches or more of snow in 12 hours or less, or 6–10 inches or more of snow in 24 hours or less. Heavy snow events may cause structural damage due to the weight of snow accumulation.

Ice Storm: An ice storm is characterized by a buildup of ice (typically ¼–½ inch or more) due to freezing rain or other type of precipitation; however, even small accumulations of ice on sidewalks, streets, and highways may create extremely hazards conditions to motorists and pedestrians. The terms “freezing rain” and “freezing drizzle” warn the public that a coating of ice is expected on the ground and other exposed surfaces.

Heavy accumulations of ice can bring down electrical wires, telephone lines, and even trees, telephone poles, and communication towers. The NWS notes that over 85% of ice storm-related deaths are the result of traffic accidents.

Winter Storm & Winter Weather: A winter storm is an event that has more than one winter hazard (i.e., heavy snow and blowing snow; snow and ice; snow and sleet; sleet and ice; or snow, sleet, and ice) and meets or exceeds locally/regionally defined 12- and/or 24-hour warning criteria for at least one of the precipitation elements. Winter weather is a winter precipitation event that causes a death, injury, or a significant impact to commerce or transportation, but does not meet locally/regionally defined warning criteria. The winter weather classification is also used to document out-of-season occurrences of winter precipitation.

5.6.1 HISTORY

Renville County has an active history of winter-related weather events. Since 1996, the county experienced 102 events, including blizzards, heavy snows, ice storms, winter storms, and winter weather (NCEI, 2021). Winter weather events in the county have cost over $8.3 million dollars in property and crop damages since 1960 (CEMHS, 2019). Table 28 provides descriptions from the NCEI Storm Events Database of the events that have occurred since 2014, the year the county's MHMP was last updated.

Table 28. Winter-related weather events in Renville County, January 2014–August 2021

Date	Type	Description
3/15/2021	Winter Storm	4–7 inches of snow fell across Renville County.
12/23/2020	Blizzard	Blizzard conditions developed late Wednesday morning and continued into the early evening. Sustained winds of 30–40 mph, with gusts to 50–55 mph, combined with snowfall to cause whiteout conditions across the county.
10/20/2020	Winter Storm	Snowfall amounts across the county ranged from 6–8 ½ inches.
2/12/2020	Blizzard	Blizzard conditions occurred with winds gusting up to 30–40 mph. Surface visibility was less than one quarter of a mile.
2/8/2020	Winter Storm	Snow in Renville County was reported at 6–10 inches.
1/18/2020	Blizzard	By mid-morning wind speeds reached 25–35 mph, with gusts of up to 45 mph. Whiteout conditions were observed across the county through the late afternoon.
1/17/2020	Winter Storm	Snowfall rates of a half inch per hour occurred during the morning. Gusty winds accompanied the snowfall and continued through the storm. 5–8 inches of snow fell with some freezing drizzle during the afternoon and evening.
4/11/2019	Blizzard	Several waves of precipitation occurred across the county with heavy snow at the start, followed by a mixture of sleet and snow. Wind speeds increased to created significant blowing and drifting snow, causing blizzard conditions for several hours. Snowfall totals averaged 9–13 inches across the county.

Date	Type	Description
3/9/2019	Winter Storm	The county saw a mixture of rain and freezing rain for several hours before changing over to snow. Snowfall totals of around 6–8 inches fell across the county.
2/24/2019	Blizzard	Blizzard conditions developed early in the morning. Several roads closed and several car accidents occurred. Winds were around 30 mph, with gusts of 50 mph at times during the height of the storm. Snowfall accumulated around two inches across the county.
2/20/2019	Winter Storm	6–8 inches of snow fell across the county. The heaviest snowfall occurred during the early morning with snowfall rates of one inch per hour.
2/7/2019	Blizzard	Blizzard conditions developed across Renville County during the afternoon as winds increased to 30–40 mph, and visibility dropped to one quarter of a mile or less for several hours. During the height of the blizzard, several roads were nearly impassable. The National Guard was activated due to white-out conditions, and stranded motorists.
4/14/2018	Blizzard	As the winter storm intensified Saturday morning, winds increased to 25–30 mph with gusts above 45 mph. Visibility was very poor and numerous accidents occurred, along with cars stuck in the snow across the county.
4/13/2018	Winter Storm	Several waves of precipitation fell across Renville County. The first wave produced a few inches of snow by the early evening. It was mixed at times with sleet and rain. The next batch of heavy snowfall developed and continued into the evening of the next day. The heaviest snowfall fell at rates of 1–2 inches per hour. Total snowfall amounts ranged from 12–18 inches.
3/23/2018	Winter Storm	6–8 inches of snow occurred over the area.
3/5/2018	Winter Storm	The area received 4–6 inches of snowfall during this winter storm.
3/12/2017	Winter Storm	A winter storm dropped 7–9 inches of snow across Renville County. The heaviest snow fell in the far southern part of the county.
12/10/2016	Winter Storm	Several snowfall observations recorded between 6 and 8 inches in southern Renville County, with the highest totals reaching around ten inches along the Minnesota River.
11/18/2016	Blizzard	Winds gusting over 40 mph combined with around 6 inches of snowfall and created whiteout conditions. Roads become impassable in western Renville County.
2/7/2016	Blizzard	Winds of 35–40 mph, with gusts up to 45 mph at times, created widespread blowing snow and blizzard conditions. The worst conditions occurred in the southern part of the county.
2/2/2016	Winter Storm	Heavy snow fell across the county along with winds of 20–35 mph. This created very hazardous driving conditions. Six inches of snow fell in the southern part of the county. Blowing snow developed during the afternoon and continued through the early morning.
12/25/2015	Winter Storm	6–8 inches of snow were reported near the Redwood, Renville County line near Redwood Falls.
11/30/2015	Winter Storm	7–8 inches of snow fell within the county.
3/22/2015	Winter Storm	Between 6 and 7 inches of snow fell during this storm. The heaviest snow fell in the far eastern part of the county.

Date	Type	Description
1/8/2015	Blizzard	Winds gusted up to 50 mph in open country. Roads became hazardous with several roads closed during the height of the blizzard.
12/15/2014	Winter Storm	Freezing rain fell across western Renville County by the early afternoon. By the midafternoon western roadways were ice covered, with some areas receiving around one quarter of an inch of freezing rain. Snow started falling during the afternoon, along with gusty northwest winds. This caused some white out conditions during the evening before the winds lessened overnight.
11/9/2014	Winter Storm	8–10 inches of snow occurred in the far northwest side of the county, to around an inch in the far southern part. In addition, sleet and freezing rain mixed with the snow during the morning.
4/16/2014	Winter Storm	Snowfall amounts ranged from 8–10 inches.
4/3/2014	Winter Storm	8–9 inches of snowfall occurred across the far southeastern part of Renville County.
2/26/2014	Blizzard	Blizzard conditions occurred for several hours during the afternoon and evening. Winds gusted above 35 mph.
2/20/2014	Blizzard	A few inches of snowfall occurred within a 12-hour period. Winds increased significantly during the afternoon with gusts of over 45 mph at times in open country. These winds combined with the snow and created whiteout conditions for several hours, causing numerous roads to close.
1/26/2014	Blizzard	2–5 inches of snow fell during a 6–12-hour period. Wind speeds increased and developed blizzard conditions. White out conditions led to vehicle spin outs and crashes across the area.
1/22/2014	Blizzard	Wind speeds increased during the morning and caused whiteout conditions for several hours across the county. By the afternoon, wind speeds diminished allowing for conditions to improve by sunset.
1/16/2014	Blizzard	Blizzard conditions occurred for several hours. A peak wind gust of 50 mph occurred during the height of the storm.

SOURCE: (NCEI, 2021)

5.6.2 PROBABILITY OF OCCURRENCE

To determine the probability of future winter-related storm events in Renville County, records of previous events (blizzards, heavy snows, ice storms, winter storms, and winter weather) were summed and divided by the dataset's period of record, resulting in the annual relative frequency of winter-related storms. Based on records in the NCEI Storm Events Database through February 2020, the relative frequency of winter-related storm events in Renville County is 4.1 per year. This relative frequency can be used to infer the probability of these events occurring in the future.

5.6.3 CLIMATE CHANGE PROJECTIONS

Historically, winter storms have had a large impact on public safety in Minnesota. This will continue, with a possible increase in annual total snowfall (MPCA, 2018c). Winter weather is often the cause of power outages. Pressures on energy use, reduced reliability of services, potential outages, and the potential rise in household costs for energy are major climate change risks to public health.

According to the 2015 Minnesota Weather Almanac, seasonal snowfall records across the state from 1890–2000 showed that 41 of 46 climate stations recorded an increase in average annual snowfall, by as much as 10 inches. Climate change is causing the atmosphere to hold more moisture, that drives heavier than normal precipitation. Higher snowfall levels can result in greater runoff potential during spring snowmelt, and many watersheds in Minnesota have shown more consistent measures of high-volume flows during spring, often at or above flood stage (Seeley, 2015).

5.6.4 VULNERABILITY

Transportation systems, electrical distribution systems, and structures are vulnerable to winter storms throughout the county. These events do not vary geographically within the county; all jurisdictions are equally vulnerable. While it is highly likely these events will continue occurring annually, the amount of snow and ice and number of winter-related storm events to occur each year are unpredictable. Citizens living in climates such as these must always be prepared for situations that put their lives or property at risk. It is important that extra consideration be given to the vulnerable populations and energy infrastructure discussed in section 4.3.

5.6.5 PROGRAM GAPS AND DEFICIENCIES

Renville County Emergency Management identified several program gaps and deficiencies that make its citizens more vulnerable to severe winter storms. The following gaps and deficiencies should be addressed with new mitigation efforts to reduce that vulnerability:

Above-Ground Power Lines: Most of the power lines in Renville County are above ground and subject to damage from ice storms, wind, and falling tree limbs. Power lines that are above ground are susceptible to coming down during severe winter storm events, resulting in power outages.

Public Education: Renville County Emergency Management and local cities need to continue to encourage all residents to be ready for long-term power outages or to be snowed in during dangerous winter events such as ice storms and blizzards.

Backup Power: Not all designated shelter facilities have generator back-up power to provide the ability to care for residents if displaced during a severe winter event coupled with an extended power outage.

5.7 Extreme Cold

Due to Minnesota's position in the middle of the continent and subsequent climate, the state may experience extremely frigid temperatures in winter. Winter in Renville County can be especially dangerous when low temperatures and wind create arctic-like wind chills.

Wind chill, defined as how cold people and animals feel when outside, is based on the rate of heat loss from exposed skin caused by wind and cold. As wind increases it draws heat from the body, driving down skin temperature and eventually the internal body temperature.

The National Weather Service (NWS) issues a wind chill warning when life-threatening wind chill values are expected or occurring. The criteria for issuing official wind chill warnings and advisories are set by the local weather forecasting office (WFO). The Minneapolis WFO (MPX) uses a wind chill warning

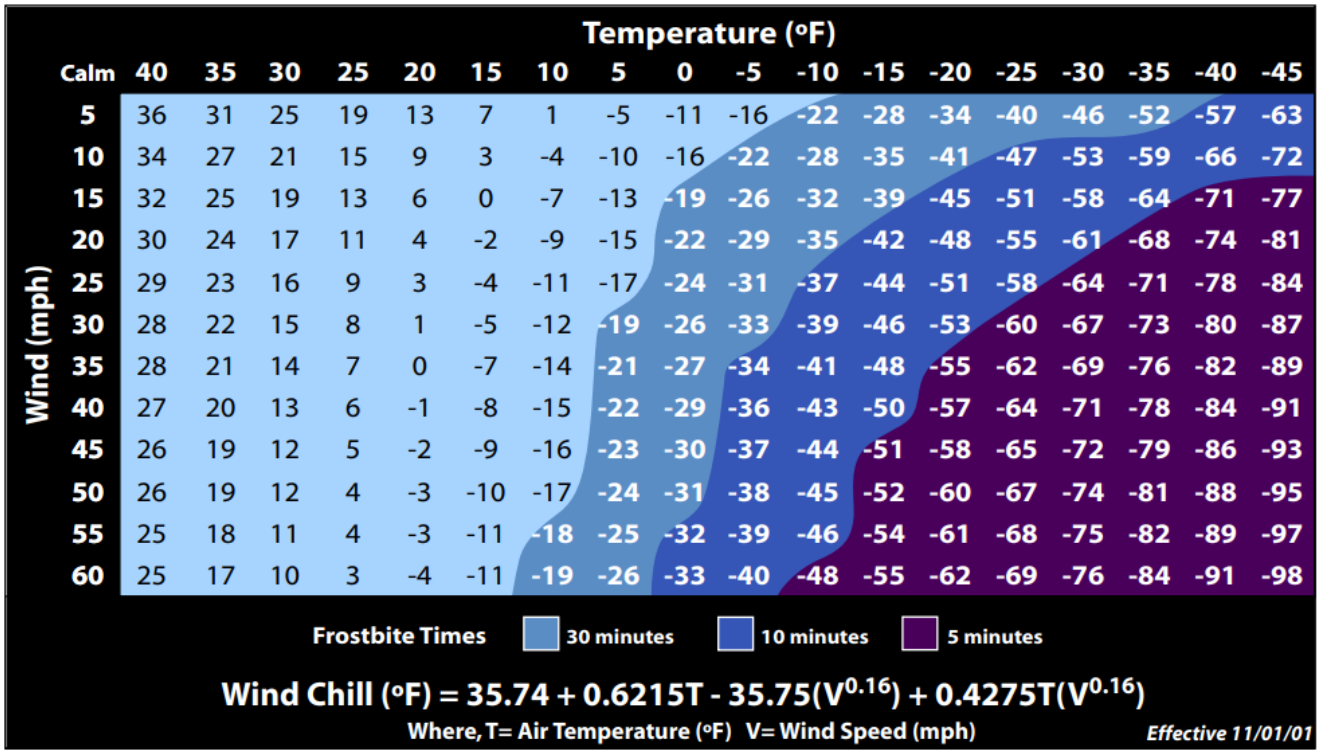
criteria of −35 °F or colder to issue a wind chill warning and −25 °F and colder for a wind chill advisory in Renville County (NWS, 2010). Figure 21 shows the relationship between temperature and wind speed to measure wind chill.

5.7.1 HISTORY

Extreme cold temperatures affect Renville County nearly every year. January is the coldest month in the Central Minnesota climate division, with an average monthly minimum temperature of 3.4 °F (Vose et al., 2021). Extreme cold data was compiled from the Midwestern Regional Climate Center (MRCC) using daily minimum temperature data from weather stations in Renville County, which have complete datasets (< 10% missing data), as well as cold-related events reported in the NCEI Storm Events Database. Extreme cold days in Renville County were counted each day a station's daily minimum temperature reached −18 °F, a standard used by the National Weather Service to report cold weather events (2018b).

There are no weather stations in the county currently reporting daily temperature. The station referenced is located in Brownton, MN just outside the Renville County line. From January 1, 2014 through June 5, 2020, daily low temperatures ≤ −18 °F were recorded 25 times at the Brownton station (GHCN, 2020; NWS, 2020a; NWS COOP, 2020). Renville County experiences an average of 3–4 extreme cold days each year. The lowest daily low temperature reported since January 2014 was −31 °F recorded by the Brownton station on December 19, 2016.

Figure 21. NWS wind chill temperature index



SOURCE: (NWS, 2010)

The lowest temperature ever reported in Renville County occurred on January 12, 1912 when temperatures plummeted to -38 °F at the Bird Island station (GHCN, 2020; NWS COOP, 2020).

Daily minimum temperatures mentioned above do not factor in wind chill. The NCEI Storm Events Database includes eight cold/wind chill and twenty extreme cold/wind chill events affecting Renville County since 1996 (NWS, 2020c). No one in Renville County died or was injured from these events. Table 29 shows cold-related events in Renville County as reported to the NCEI Storm Events Database since January 2014.

Table 29. Cold events in Renville County, January 2014–August 2021

Date	Event type	Description
2/14/2021	Extreme cold/ wind chill	An Arctic air mass moved across the Upper Midwest. The lowest wind chill value of –35 °F occurred for a few hours prior to midnight.
2/13/2021	Extreme cold/ wind chill	An Arctic air mass moved across the Upper Midwest. The lowest wind chill value of –43 °F occurred near Olivia.
2/12/2020	Extreme cold/ wind chill	Weather sensors indicated that wind chill values dropped below –35 °F by midafternoon of Wednesday, February 12th. These wind chill values continued until Thursday morning.
3/3/2019	Extreme cold/ wind chill	The Olivia airport measured wind chill values below –35 °F for several hours during the morning of Sunday, March 3rd. The coldest value was –38 °F.
2/8/2019	Extreme cold/ wind chill	The Redwood Falls airport, which borders Redwood and Renville Counties, measured wind chill values less than –35 °F for several hours during the morning of Friday, February 8th. The coldest wind chill was –38 °F.
1/29/2019	Extreme cold/ wind chill	Several weather sources measured wind chill values lower than –35 °F from Tuesday afternoon through Thursday morning. The coldest wind chill was –59 °F at the Olivia airport.
1/1/2018	Extreme cold/ wind chill	Several sources reported that wind chill values averaged around –35 °F early Monday morning.
12/30/2017	Extreme cold/ wind chill	Several sources reported wind chill values averaging around –40 °F, which started early Saturday morning and continued through Sunday morning. The worst conditions occurred Sunday morning when wind speeds combined with cold lows to produce wind chills around –41 °F.
12/17/2016	Extreme cold/ wind chill	Airport and public weather stations indicated wind chill values dropping before –35 °F for several hours. The coldest wind chill values were around sunrise when a few locations reached –45 °F in open areas.
1/17/2016	Extreme cold/ wind chill	Several sources of weather observations indicated that wind chill values dropped to around –35 °F for a few hours.
3/2/2014	Extreme cold/ wind chill	Several sources of surface observations indicated that temperatures and wind speeds were cold enough to produce wind chill values of –35 °F or colder.
1/27/2014	Extreme cold/ wind chill	Wind chill values dropped below –35 °F across the county and lasted for several hours.
1/22/2014	Extreme cold/ wind chill	Wind chill values dropped below –35 °F for several hours across the county.
1/20/2014	Extreme cold/ wind chill	Wind chill values dropped to –35 °F and stayed at or below that temperature through the early morning of Tuesday, January 21st.

Date	Event type	Description
1/5/2014	Extreme cold/ wind chill	A prolonged period of wind chill values below –35 °F occurred in the county, with wind chills of –50 °F or colder during the height of the cold conditions.

SOURCE: (NCEI, 2021)

5.7.2 PROBABILITY OF OCCURRENCE

To determine the probability of future cold-related events in Renville County, records of previous cold/wind chill and extreme cold/wind chill events were summed and divided by the dataset's period of record, resulting in the annual relative frequency. Based on records in the NCEI Storm Events Database through January 2020, the relative frequency of cold-related events in Renville County is 1.1 per year. (NCEI, 2021). This relative frequency can be used to infer the probability of these events occurring in the future.

5.7.3 CLIMATE CHANGE PROJECTIONS

Although climate research indicates that Minnesota's average winter lows are rising rapidly and our coldest days of winter are now warmer than we have ever recorded (MN DNR, 2020a) cold temperatures have always been a part of Minnesota's climate and extreme cold events will continue. An increase in extreme precipitation or storm events such as ice storms as the climate changes could lead to a higher risk of residents being exposed to cold temperatures during power outages or other storm-related hazards during extreme cold.

5.7.4 VULNERABILITY

The risk of extreme cold does not vary geographically within the county. Citizens living in climates such as these must always be prepared for situations that put their lives or property at risk. The youngest and more elderly citizens, homeless persons, individuals with chronic medical conditions, and those who are working or recreating outdoors are most at risk for frostbite and hypothermia (MDH, 2021b).

It is not always the depth of the cold that poses a threat but rather unpreparedness for the cold, such as an individual with a vehicle breakdown who lacks a personal winter safety kit in the vehicle. The cost of propane can make rural citizens more vulnerable to issues with extreme cold. A propane shortage and resulting crisis, such as that which occurred in 2014, may increase the cost of heating homes and farms to a prohibitive amount (Eaton, 2014). The Minnesota Department of Commerce presents options and suggestions for homeowners who use propane on their website: https://mn.gov/commerce/consumers/tips-tools/propane/

The CDC publication "Extreme Cold: A Prevention Guide to Promote Your Personal Health and Safety" outlines preparation measures individuals can take to reduce their vulnerability to extreme cold. Highlights in this document include advice about travel preparations, securing your home water supply, and safety during recreation (CDC, 2021).

5.7.5 PROGRAM GAPS AND DEFICIENCIES

Renville County Emergency Management identified several program gaps and deficiencies that make its citizens more vulnerable to extreme cold. The following gaps and deficiencies should be addressed with new mitigation efforts to reduce that vulnerability:

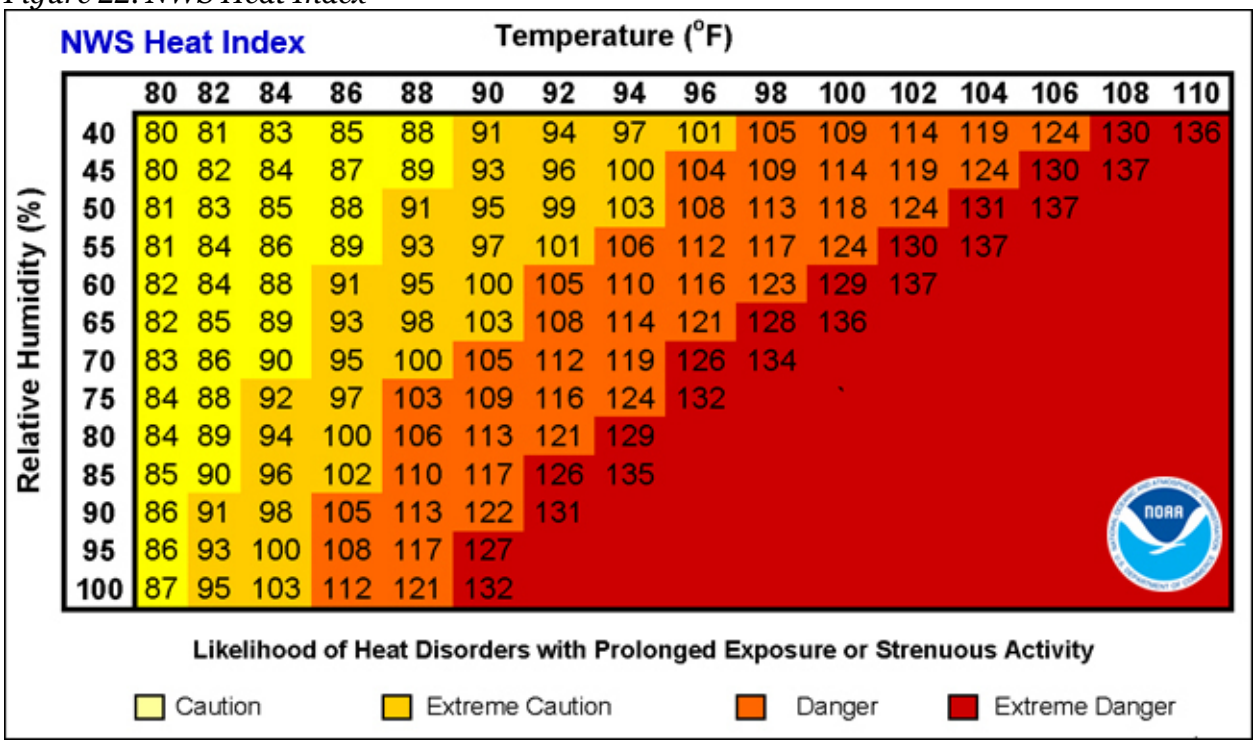
Generators for Backup Power to Healthcare Facilities: Not all assisted living, long-term care, and nursing home facilities have backup generator power. In the event of extreme cold periods, coupled with a power outage, these facilities would be at high risk with vulnerable populations.

Generators for Backup Power to Shelter Facilities: Not all designated shelter facilities have generator back-up power to provide heat if there is a loss of power during an extreme cold event.

5.8 Extreme Heat

Extreme heat is the combination of very high temperatures and exceptionally humid conditions. When the atmospheric moisture content is high, the rate of perspiration from the body decreases and the human body feels warmer (NWS, 2021c). Heat stress can be indexed by combining the effects of temperature and humidity. The NWS Heat Index in Figure 22 is a measure of how hot the body feels when relative humidity is factored in with actual air temperature. The heat index values are for shady locations—exposure to direct sunlight may increase these values by up to 15 °F.

Figure 22. NWS Heat Index



SOURCE: (NWS, 2021c)

Figure 23. Heat effects on the body

Classification	Heat Index	Effect on the body
Caution	80°F - 90°F	Fatigue possible with prolonged exposure and/or physical activity
Extreme Caution	90°F - 103°F	Heat stroke, heat cramps, or heat exhaustion possible with prolonged exposure and/or physical activity
Danger	103°F - 124°F	Heat cramps or heat exhaustion likely, and heat stroke possible with prolonged exposure and/or physical activity
Extreme Danger	125°F or higher	Heat stroke highly likely

SOURCE: (NWS, 2021c)

Extreme heat events are linked to a range of illnesses, even death, and can exacerbate pre-existing chronic conditions (Moss, 2017). Medical costs related to extreme heat can be enormous: in 2005, the total was $1.5 billion nationwide, or more than $16,000 per patient (Union of Concerned Scientists, 2009). Heat-related hazards have cost Renville County over $63,000 in property damages since 1960 (CEMHS, 2019). Figure 23 describes the effects increasing levels of heat has on the body during prolonged exposure and/or physical activity.

5.8.1 HISTORY

According to data obtained from the Midwestern Regional Climate Center (MRCC), July is the warmest month in Central Minnesota, the climate division in which Renville County is located, with a mean high temperature of 81.3 °F (Vose et al., 2021). To measure the frequency of extreme heat days in Renville County, the county's weather station's daily maximum temperatures were examined with 90 °F used as the benchmark. Renville County contains no active weather stations with complete datasets (< 10% missing data). Instead, the station in Brownton, MN was referenced. From January 1, 2014 through June 5, 2020, daily high temperatures ≥ 90 °F were reported 20 times from the Brownton station (GHCN, 2020; NWS, 2020a; NWS COOP, 2020). Renville County experiences an average of 3–4 extreme heat days each year. The highest daily maximum temperature recorded during this time was 98 °F reported by the Brownton station on June 29, 2018.

The highest temperature ever reported in Renville County occurred on August 1, 1988 when temperatures reached 108 °F at the Olivia 3E station (GHCN, 2020; NWS, 2020a; NWS COOP, 2020).

Daily maximum temperatures do not factor in humidity. The NCEI Storm Events Database receives data on heat and excessive heat events from the National Weather Service (NWS). According to the NWS, a heat event results from a combination of above normal high temperatures and relative humidity, while an excessive heat event is characterized by well above normal high temperatures and high humidity (2018b). Heat-related events are reported to the Storm Events Database whenever heat index values meet or exceed regionally established heat thresholds. In Minnesota, a heat advisory is issued when the maximum heat index is around 100 °F or higher. An excessive heat warning occurs when the maximum heat index is around 105 °F and the minimum heat index is around 75 °F or higher (NCEI, 2021).

Since January 1996, six heat and three excessive heat events occurred in Renville County (NCEI, 2021). Only one of these events occurred since the county's last Hazard Mitigation Plan update - an excessive

heat event on July 20, 2016, when heat indices across Renville County rose over 105 °F for several hours during the afternoons of July 20 and 21. The highest the heat index reached was 113 °F. No injuries or fatalities resulted from this event.

5.8.2 PROBABILITY OF OCCURRENCE

To determine the probability of future heat-related events in Renville County records of previous heat and excessive heat events were summed and divided by the dataset's period of record, resulting in the annual relative frequency of heat-related events. Based on records in the NCEI Storm Events Database through January 2020, the relative frequency of heat-related events in the county is .4 per year. These nine events occurred in six of the 24 years on record. This relative frequency can be used to infer the probability of these events occurring in the future.

5.8.3 CLIMATE CHANGE PROJECTIONS

Seven of Minnesota's 10 warmest years occurred in the last 15 years. Projected increases of 2°F to 6°F more are expected by 2050 and 5°F to 10°F more by 2100 (MN EQB, 2014). The Midwest has experienced major heat waves, and their frequency has increased over the last six decades (Perera et al., 2012). For the U.S., mortality increases 4% during heat waves compared with non-heat wave days (Anderson & Bell, 2011). Heat stress is projected to increase as a result of climbing summer temperatures and humidity (Schoof, 2012).

Renville County's exposure to extreme heat is expected to increase if no action is taken to reduce heat-trapping emissions. Several factors are used to indicate changes in extreme heat exposure, including cooling degree days. Cooling degree days are used to indicate the amount of cooling a building will need in response to weather, based on a threshold of 65 °F. Days with a daily average temperature above this threshold are known as cooling degree days referencing the need for cooling inside buildings. Cooling degree days are calculated from the daily average temperature minus 65 °F. For example, if a weather station recorded an average daily temperature of 78 °F, cooling degree days for that station would be 13. In 2019, Renville County had 457 cooling degree days. With medium action to curb climate change, Renville County is projected to have 522 cooling degree days by 2050. With low action to curb climate change the expected number of cooling degree days within the county jumps to 682 days by 2050 (MDH & University of Minnesota, 2019).

5.8.4 VULNERABILITY

The Minnesota Department of Health released a 2012 Minnesota Extreme Heat Toolkit, to help local governments prepare for extreme heat events. In their toolkit, they note extreme heat events are often dubbed "silent killers" because deaths and illnesses from these events are often misunderstood and underreported. Minnesota has no official system to report deaths and illnesses linked to extreme heat (MDH, 2012). It is important to not underestimate the danger of extreme heat events within the state.

High temperatures can be exacerbated by the urban heat island effect in densely developed areas, an effect that amplifies higher temperatures in areas with a higher concentration of impervious and paved surfaces. These types of surfaces absorb more heat and hold it for longer than vegetation cover (EPA, 2019). Impervious surfaces cover 3% of Renville County (MDH & University of Minnesota, 2019).

Impervious surfaces are not spread evenly throughout the county and attention should be given to cities or areas within the county that contain the largest amounts of this type of surface cover. Except for these areas, the risk of extreme heat does not vary geographically.

The impact extreme heat has on individuals is not equal. According to the Center for Disease Control and Prevention (CDC), population groups more vulnerable to extreme heat include:

- Older adults (≥65 years old). The elderly are not able to easily adjust to sudden changes in temperature and are more likely to have a chronic medical condition, or take medication affecting their body's ability to control its temperature.
- Infants and children. Young children and infants have limited control with their surroundings and rely on others to keep them cool and hydrated.
- Individuals with chronic health conditions. These individuals are less likely to respond to changes in temperature, may be taking a medication which exacerbates the effects of extreme heat, or have a condition which is a risk-factor for heat-related illness (e.g., heart disease, mental illness, poor blood circulation, and obesity).
- People with low income. These individuals may not be able to afford to properly cool their home and may face transportation challenges when trying to access cooling shelters.
- Athletes and people working outdoors. Both groups are likely to exert energy while being exposed to the heat (CDC, 2020).

Warming temperatures will continue to increase the risk of extreme heat, especially among these already vulnerable populations. In 2018, 22% of Renville County's population was over 65 years old, 30% of the county was classified as low income, and 22% of the county were beneficiaries of Medicare (MDH & University of Minnesota, 2019). Many of the population groups vulnerable to extreme heat are included as social variables in the CDC's SVI data, specifically in the Socioeconomic Status, and Household Composition & Disability themes. See Section 4.3.1 for information on geographic variability of social vulnerabilities in SVI themes.

5.8.5 PROGRAM GAPS AND DEFICIENCIES

Renville County Emergency Management identified several program gaps and deficiencies that make its citizens more vulnerable to extreme heat. The following gaps and deficiencies should be addressed with new mitigation efforts to reduce that vulnerability:

Generators for Backup Power to Healthcare Facilities: Not all assisted living, long-term care, and nursing home facilities have backup generator power. In the event of extreme heat periods coupled with a power outage these facilities would be at high risk with vulnerable populations.

Generators for Backup Power to Shelter Facilities: Not all designated shelter facilities have generator back-up power to provide cooling if there is a loss of power during an extreme heat event.

5.9 Drought

Within the broad domain of natural hazards that comprise disaster science, drought is unequivocally the most difficult to define. This is primarily due to its insidious nature, and because the parameters that

typically control it vary both spatially and temporally. For instance, the hydro-meteorological conditions that constitute drought in one location may not necessarily qualify as drought in a contrasting climate. Even in regions that share a statistically similar climate, other factors such as soil type, antecedent moisture conditions, ground cover, and topography all play a vital role in dictating drought emergence. To further complicate matters, drought is associated with a diverse number of climatic and hydrological stressors, all of which come with a unique set of collective impacts that affect nearly every corner of our economy and environment. Subsequently, there are over 150 different definitions of drought, not just because it is difficult to define, but precisely on the grounds that drought affects different regions in different ways (Fu et al., 2013). When one attempts to merge and understand these various definitions and impacts, it is evident that drought can be integrated into five principal categories, including: meteorological, agricultural, hydrological, ecological, and socio-economic drought (Figure 24).

Meteorological drought is qualified by any significant deficit of precipitation. Hydrological drought is manifest in noticeably reduced river and stream flow and critically low groundwater tables. The term agricultural drought indicates an extended dry period that results in crop stress and harvest reduction. Socioeconomic drought refers to the situation that occurs when water shortages begin to affect people and their lives. It associates economic goods with the elements of meteorological, agricultural, and hydrological drought. Many supplies of economic goods (e.g., water, food grains, and hydroelectric power) are greatly dependent on the weather.

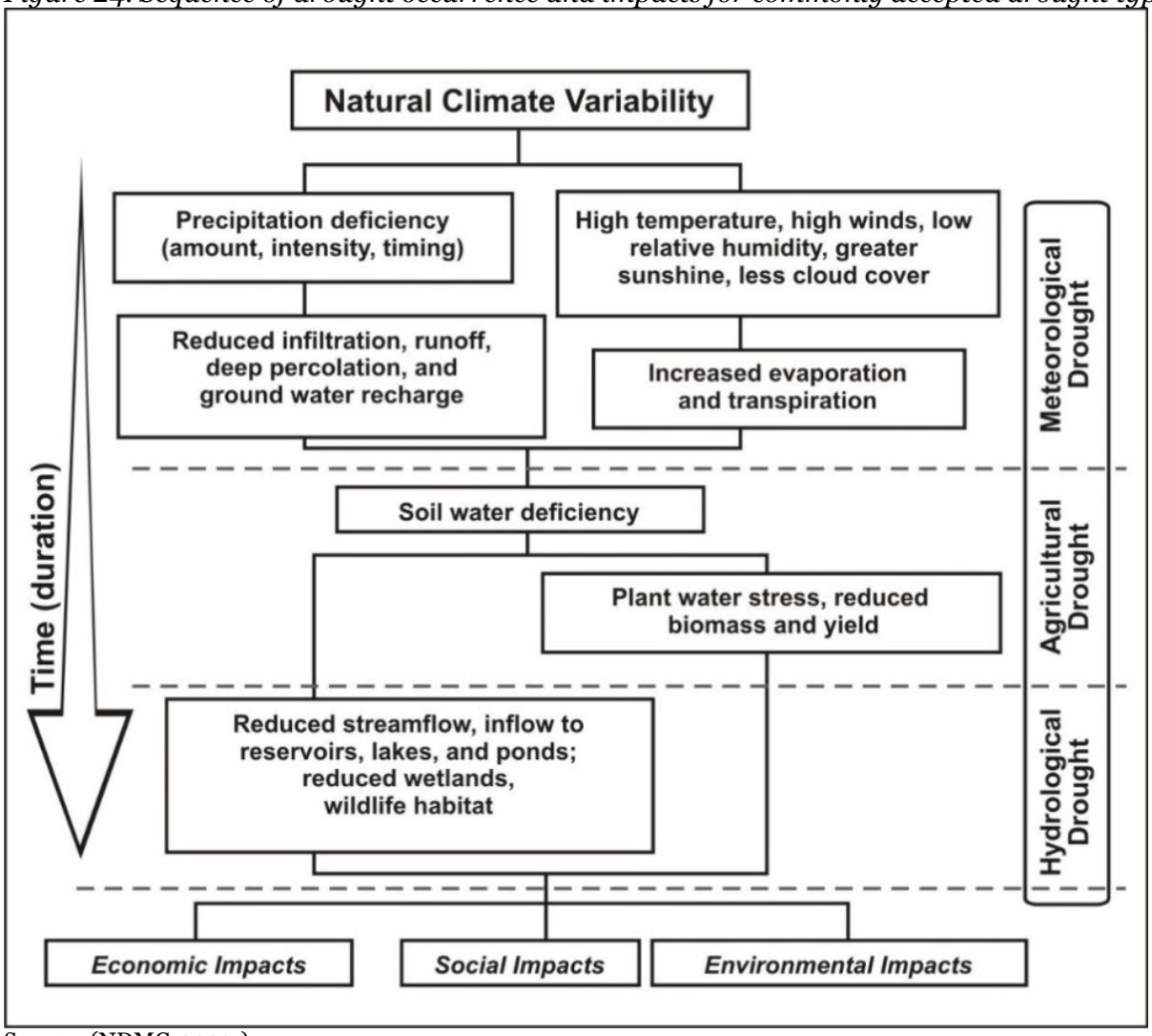
There are numerous approaches to assessing drought conditions. The current gold standard for accurate drought conditions in the United States is the United States Drought Monitor (USDM) Map. Established by the National Drought Mitigation Center (NDMC) in 1999, the Drought Monitor is a weekly map that depicts drought conditions in all 50 states and Puerto Rico. Each weekly map is produced by a NDMC-assigned author. Though drought map authors utilize a broad domain of geospatial, climatic data, as well as drought indices that cover every aspect of drought, perhaps their most valuable resource is the input they receive each week from hundreds of drought experts throughout the country. The drought monitor map is thus a collective synthesis of the best quantitative and the most reliable qualitative information available. Figure 25 displays an example map and statistics table prepared by the USDM for Minnesota on August 3, 2021.

In total, there are four drought categories:

- moderate (D1)
- severe (D2)
- extreme (D3)
- exceptional (D4)

A fifth category, abnormally dry (D0), is used to depict areas that are abnormally dry but not yet in drought. Abnormally dry conditions are indicative of the meteorological circumstances that precede drought onset and those that are coming out of drought. D0 is often considered a bellwether of drought but it is also an accurate warning sign that crop growth may be slowed, and wildfire risk may be elevated (NDMC et al., 2021). Table 30 describes the impacts reported from previous droughts in Minnesota for each drought level.

Figure 24. Sequence of drought occurrence and impacts for commonly accepted drought types



SOURCE: (NDMC, 2021B)

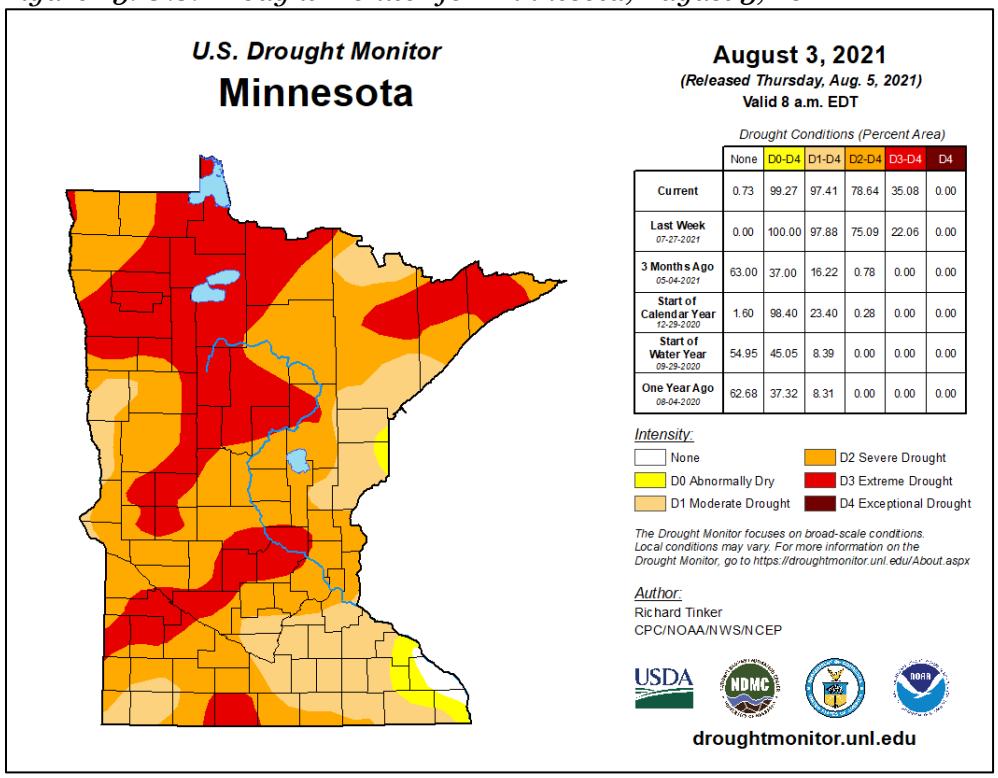
The decision to declare or alter a drought category in each location is dependent upon a comprehensive set of climate products that are specifically manufactured to quantify drought. Many of these products are referred to as drought indices, and these indices each serve a specific purpose. There are indices that are designed for measuring short-term drought, and there are indices that are built to reflect long-term drought. Similarly, other indices are useful for sector-specific areas such as water resources or agriculture. The NCEI Storm Events Database uses the US Drought Monitor's drought classification system as a guide to determine which droughts to include in the database. For locations east of the Rocky Mountains, only drought events categorized as severe (D2) or higher are included (NWS, 2018b).

Table 30. Observed drought impacts in Minnesota

Category		Impact
D0	Abnormally Dry	Soil moisture is low; pasture and row crops are stressed Fire danger increases Weather is good for construction projects Lake and river levels decline; water temperatures rise
D1	Moderate Drought	Winter snow events are canceled River and lake levels are lower than normal
D2	Severe Drought	Ground is hard; seed corn is short; feed is expensive; crop yields are low Fire danger is high; burn permits are required Landscaping is stressed; leaves change colors early Bears search for food; trout runs are hampered; fish kills occur River flow is very low; snowpack is significantly lower; well levels decrease
D3	Extreme Drought	Corn is harvested early; emergency haying and grazing are authorized Wildfires are widespread Surface waters are near record lows
D4	Exceptional Drought	Minnesota has had little or no experience in D4, so no impacts have been recorded at that level in the Drought Impact

SOURCE: (NDMC ET AL., 2021)

Figure 25. U.S. Drought Monitor for Minnesota, August 3, 2021



SOURCE: (NDMC et al., 2021)

5.9.1 HISTORY

According to the USDM, since 2000, the longest drought ≥ D2 in Renville County is 39 consecutive weeks, which occurred September 18, 2012–June 17, 2013. This is also the most intense drought the county has experienced. For 26 weeks about 96% of the county was classified as being in a D3 extreme level drought. The county has experienced a few short droughts ≥ D2 since its last Hazard Mitigation Plan in 2014. The most serious drought is occurring now, August 2021, with 36% of the county being in a D2 level drought and the remaining 64% in level D3 (NDMC et al., 2021). As of August, 2021 is the 3rd driest year in Renville County 127 years; rainfall is 8.3 inches below normal as of the writing of this plan (NIDIS, 2021). Drought conditions in 2021 are the worst Minnesota has experienced since 1988. By the end of July 2021, the DNR had suspended water appropriations in 17 major watersheds, mostly in northern Minnesota. Suspension of more surface water appropriations is expected, unless there is a dramatic change in the current precipitation pattern (MN DNR, 2021b).

The drought of 1988 is another significant drought that impacted all of Minnesota. Below normal precipitation coupled with declining lake levels, ground water levels, and stream flow created statewide concern. To facilitate coordination of drought response actions, a State Drought Task Force was convened by the Director of the Division of Waters. The State Drought Task Force brought together local, state, and federal officials to share information and coordinate drought response strategies. Several actions were taken following the summer of 1988 to better prepare the state for the next drought. The Governor

Table 31. Average percent of Renville County's land area by drought category

Timeframe	No Drought	D0	D1	D2	D3	D4
(T1) 8/30/11 - 8/29/16	38.5%	21.6%	19.2%	11.2%	9.6%	0%
(T2) 8/30/16 – 8/30/21	85.3%	10.1%	1.5%	2.5%	0.5%	0%
% Change (T1 to T2)	+122%	−53.2%	−92.2%	−77.7%	−94.8%	0%

(NDMC et al., 2021)

appointed a Twin Cities Water Supply Task Force specifically to make recommendations on how to meet future water demands in the event of low flow conditions on the Mississippi River. The U.S. Corps of Engineers initiated review of its operating plans for the Mississippi River headwater reservoirs, and the 1989 legislature charged the Metropolitan Council with preparing water use and supply plans for the metropolitan area. Today the responsibilities, plans and actions related to drought planning are outlined in the Minnesota Statewide Drought Plan (MN DNR, 2009).

When comparing the two most recent five-year timeframes (2011–2015 and 2016–2020), the USDM data shows a reduction in the percent of county land affected by drought at all levels. Table 31 shows the breakdown of this comparison.

5.9.2 PROBABILITY OF OCCURRENCE

To determine the probability of future droughts in Renville County, records of previous droughts were summed and divided by the dataset's period of record, resulting in the annual relative frequency of

droughts. The USDM database was examined from January 4, 2000–September 13, 2021 for any occurrence of drought ≥ D1 in Renville County, regardless of the duration of the drought. According to the weekly reported data, the relative frequency of the county experiencing drought conditions ≥ D1 is 11.4 weeks per year, and the relative frequency of drought conditions ≥ D2 is 4.9 weeks per year (NDMC et al., 2021). The relative frequency of past droughts can be used to infer the probability of similar droughts occurring in the future.

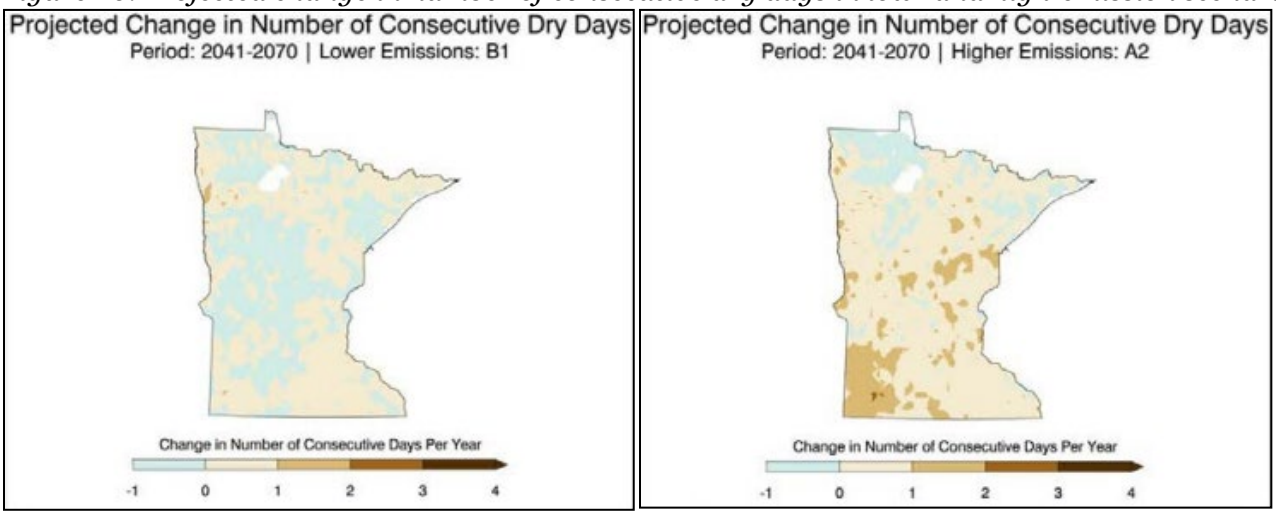
5.9.3 CLIMATE CHANGE PROJECTIONS

In 2007, 24 Minnesota counties received drought designation, while seven counties were declared flood disasters; in 2012, 55 Minnesota counties received federal drought designation at the same time 11 counties declared flood emergencies (MN EQB, 2014); and as of the writing of this plan, August 2021, 100% of Minnesota is experiencing a level of drought, with nearly two-thirds of Renville County being in an extreme drought (D3) (NDMC et al., 2021). Droughts have been happening throughout Minnesota's history, but it is not yet clear the degree to which climate change may impact future droughts (Moss, 2017). While there was no apparent change in drought duration in the Midwest over the past century (Dai, 2011), the average number of days without precipitation is projected to increase in the future (USGCRP, 2018).

The climate models used in the 2014 National Climate Assessment projects Minnesota to have an increase in days over 90°F by mid-century, however, the future drought situation is less clear. The climate model run with the lower-emissions scenario projects no significant change in the number of consecutive days of no rain, while the higher emissions scenario show an increase in dry periods, increasing Minnesota's drought risk (Moss, 2017). These climate models are shown in Figure 26.

Even in areas where precipitation does not decrease, projected higher air temperatures will cause increased surface evaporation and plant water loss, leading to drier soils. As soil dries out, a larger proportion of the incoming heat from the sun goes into heating the soil and adjacent air rather than evaporating its moisture, resulting in hotter summers under drier climatic conditions (Mueller & Seneviratne, 2012).

Figure 26. Projected change in number of consecutive dry days in low- and high-emission scenarios



SOURCE: (PRYOR ET AL., 2014)

5.9.4 VULNERABILITY

One way to identify county assets vulnerable to drought is by examining the impacts of previous droughts. Overseen by the National Drought Mitigation Center (NDMC), the Drought Impact Reporter (DIR) is a comprehensive database that gathers drought-related reports from a variety of sources and identifies the sector(s) impacted by each drought. The NDMC (NDMC et al., 2021) defines a drought impact as "[a]n observable loss or change that occurred at a specific place and time because of drought." A drought meeting this definition is categorized based on the sector(s) the drought impacts; therefore, a single drought affecting multiple sectors will be counted once for each respective sector it impacted.

DIR records show eight drought incidents impacting three categories in Renville County. All incidents occurred between October 2003 and June 2021 and are displayed in Table 32.

Table 32. Reported drought impacts for Renville County

Category	# of drought impacts reported
Agriculture	4
Business & Industry	0
Energy	0
Fire	2
Plants & Wildlife	0
Relief, Response & Restrictions	7
Society & Public Health	0
Tourism & Recreation	1
Water Supply & Quality	1

(NDMC ET AL., 2021)

Thus far, the only report in the DIR of the 2021 drought affecting Renville County is about the strawberry farmers in central Minnesota needing to irrigate their crops due to the lack of rain (NDMC, 2021a).

Since droughts are regional in nature, jurisdictions within Renville County do not vary in their vulnerability to drought; however, the impact from droughts are not equal.

Drought conditions may impact soil moisture reserves, groundwater supplies, lake levels and stream flows. Water-dependent industries that experience the greatest impacts include: agriculture, public utilities, forestry and tourism (MN DNR, 2021b). In addition, droughts may negatively affect an individual's health by contributing to poor air quality caused by wildfire smoke and particulate, or a dusty environment. The 2021 drought resulted in elevated fire danger in roughly the northern two-thirds of the state, and record high particulate readings across Minnesota due to the Canadian wildfires (Huttner, 2021). Populations vulnerable to these conditions include children, older adults, and those with respiratory issues. The Household Composition & Disability SVI theme map is made up of these population groups and should be reviewed to better understand the vulnerability of each jurisdiction (ATSDR, 2020).

According to the DIR, Renville County's agriculture sector has been impacted by drought more than once, and with 88% of the county's land devoted to cultivated crops, the county's agriculture community is vulnerable to the economic impact a drought may have on crops. From 1989–2018, Renville County

received $43,311,167 (2018 ADJ) in crop indemnity payments due to drought, placing it as the 5th-highest-paid county in Minnesota (CEMHS, 2019).

5.9.5 PROGRAM GAPS AND DEFICIENCIES

Renville County Emergency Management identified several program gaps and deficiencies that make its citizens more vulnerable to drought. The following gaps and deficiencies should be addressed with new mitigation efforts to reduce that vulnerability:

Water Conservation Provisions/Use Restrictions: Water conservation provisions and use restrictions in times of drought should be included in county or city ordinances.

5.10 Landslides

Erosion is the wearing away of land, such as the loss of a riverbank, beach, shoreline, or dune material. It is measured as the rate of change in the position or displacement of a riverbank or shoreline over a period of time. Short-term erosion typically results from periodic natural events, such as flooding, hurricanes, storm surges and windstorms, but may be intensified by human activities. Long-term erosion is a result of multi-year impacts such as repetitive flooding, wave action, sea level rise, sediment loss, subsidence, and climate change. Death and injury are not typically associated with erosion; however, major incidents of erosion, such as landslides, can destroy buildings and infrastructure (FEMA, 2013b).

The movement of a mass of rock, debris, or earth down a slope by the force of gravity is considered a landslide. They occur when the slope or soil stability changes from stable to unstable, which may be caused by earthquakes, storms, erosion, fire, or additional human-induced activities. Slopes greater than 10 degrees are more likely to slide, as are slopes where the height from the top of the slope to its toe is greater than 40 feet. Slopes are also more likely to fail if vegetative cover is low and/or soil water content is high. Potential impacts of a landslide include environmental disturbance, property and infrastructure damage, and injuries or fatalities (USGS, 2021a).

Slope materials that become saturated with water may develop a debris flow or mud flow. The resulting slurry of rock and mud may pick up trees, houses, and cars, thus blocking bridges and tributaries causing flooding along its path (USGS, 2021a).

Landslides and mudslides often occur together with other major natural disasters, thereby exacerbating relief and reconstruction efforts. Wildfires may remove vegetation from hillsides, significantly increasing runoff and landslide potential. Floods and landslides are closely related, and both involve precipitation, runoff, and ground saturation that may be the result of severe thunderstorms; however, landslides also take place over time and often take place when no natural disaster is evident.

5.10.1 HISTORY

There have been several reports of landslides impacting Renville County the past few years. The most recent event occurred on July 1, 2019, when a night of heavy rain resulted in flooding and several mudslides across Highway 19 between Morton and Franklin (2019). A similar event happened a year prior when heavy rains caused flash flooding and mudslides, damaging roads, railroad lines, and drainage ditches (Lange, 2018).

Other than these incidents, there are no other reports of landslides or mudslides occurring in the county since its last Hazard Mitigation Plan in 2014.

Given the lack of data on landslide incidents in Minnesota, the locations of Best Management Practices (BMPs) reported to the MN Board of Soil and Water Resources (BWSR) were used to identify areas in the state which may be more susceptible to landslides. BMPs are ways to manage land and activities to protect water quality and promote soil conservation, they can be a structural "thing" or part of a process. The BWSR identifies five BMPs which may be implemented to mitigate against erosion and slope failure issues that may result in landslide. Descriptions of these BMPs and the number of them installed in Renville County are in Table 33.

Table 33. Best Management Practices (BMP) affiliated with erosion, slope failure, and landslides

Practice Name	Code	Description	Count of practice in County
Grade Stabilization Structure	410	A structure used to control the grade and head cutting in natural or artificial channels. Includes side-inlet controls for existing drainage ditches and/or streams.	54
Streambank and Shoreline Protection	580	Treatment(s) used to stabilize and protect banks of streams or constructed channels, and shorelines of lakes, reservoirs, or estuaries.	27
Stream Channel Stabilization	584	Measures used to stabilize the bed or bottom of a channel.	7
Water and Sediment Control Basin	638	An earth embankment, or combination ridge and channel, generally constructed across the slope and minor watercourses to form a sediment trap and water detention basin.	31

SOURCE: (MN BWSR, 2021)

While BMPs are spread throughout Renville County, a concentration of BMPs is along the Minnesota River and other creeks and streams in the western half of the county. Townships with the greatest number of BMPs include Wang, Beaver Falls, Birch Cooley, and Crooks, respectively.

The lack of landslide data in Minnesota has prompted researchers from eight colleges and universities across Minnesota to examine the prevalence of landslides across the state and compile an inventory of geological activity. By summer 2021, this research will produce tools and data for mitigation and restoration including a landslide inventory and landslide susceptibility map (Gran, 2016).

5.10.2 PROBABILITY OF OCCURRENCE

The lack of landslide data makes it difficult to determine the probability of future landslides in Renville County by reviewing historic incidents. The USGS conducted an analysis for potential landslide of the

conterminous US, and while highly generalized and not intended to be used for local planning, still provides a general overview of landslide potential. The delineation process of this research is based on geologic formations of the US which were classified as having high, medium, or low landslide incidence; and being of high, medium, or low susceptibility to landslides (Radbruch-Hall et al., 1982). The research found the area in Renville County most susceptible to landslides is along the Minnesota River Valley, being moderately susceptible to landslides and having a low count of incidents.

In addition to reviewing the USGS study the locations of installed BMPs affiliated with erosion and slope failure can be an indicator as to where these issues have happened in the past and may continue being an issue in the future. We can infer from available data that the probability of destructive landslides occurring in susceptible areas in the county is low to moderate.

5.10.3 CLIMATE CHANGE PROJECTIONS

The increased magnitude and frequency of flooding events and storm activity that may result from climate change may in turn increase the risk of soil erosion and landslides. According to University of Washington geologist Dave Montgomery, "If the climate changes in a way that we get a lot more rainfall you would expect to see a lot more landslides" (Phillips, 2014).

In Minnesota, the wettest days are getting wetter. This can contribute to increased erosion in many locations due to flooding and saturation of soils. Reduced ice cover on lakes and shorelines (due to warmer temperatures) could potentially expose shorelines to increased erosion or damage during weather events when they previously may have been covered with ice (Pryor et al., 2014).

According to the 2014 National Climate Assessment, "Increased precipitation intensity also increases erosion, damaging ecosystems and increasing delivery of sediment and subsequent loss of reservoir storage capacity" (Pryor et al., 2014).

5.10.4 VULNERABILITY

Properties, structures, and individuals located in areas susceptible to slope failure are vulnerable to landslides. Radbruch-Hall's study determined the area along the Minnesota River is at a higher risk of landslide than other areas (1982), so special attention should be given to communities along the Minnesota River.

The locations of BMPs installed to counter erosion and slope failure issues can also be considered when trying to identify areas of the county more vulnerable to landslides. Nearly 11% of the BMPs in the county have been implemented in Wang Township, followed by the townships of Beaver Falls, Birch Cooley, and Crooks, which each contain 10% of the county's BMPs.

Most parcels in the county on which BMPs are installed are classified as agriculture with the remaining parcels classified as residential, commercial, forest/parks/wildlife refuge, railroad, and county public property. Structures on these parcels may be more vulnerable to issues of erosion and landslides given the nature of the BMPs installed on the properties.

5.10.5 PROGRAM GAPS AND DEFICIENCIES

Renville County Emergency Management identified several program gaps and deficiencies that make its citizens more vulnerable to landslides. The following gaps and deficiencies should be addressed with new mitigation efforts to reduce that vulnerability:

Erosion on County Road Slopes: County roads near the Minnesota River have eroding bluffs which erode onto roadways during flood events causing road issues. Attempts by the Renville County SWCD to stabilize these have not been effective.

High Rain Events and Erosion-related Hazards: Erosion, landslides, land subsidence, and soil surface displacement continue to be ongoing concerns. Continued high rainfall amounts are changing the landscape of Minnesota River valley in Renville County and lakeshore areas.

5.11 Dam & Levee Failure

A dam is a structure built across a stream or river to retain water for the purpose of storage or control. The difference in elevation between the water at the top and bottom of a dam creates large amounts of potential energy, allowing the chance for failure. Dam failures are typically not caused by storm events. In the U.S., 36% of dam failures are due to mechanical reasons (malfunctioning gates, conduits, or values); 34% are from hydraulic failures (overtopping due to inadequate spillway design, debris blockage, or the settlement of the dam crest), and 30% are caused by structural failures (foundation defects from settlement and slope instability) (FEMA, 2013c).

A levee is a structure, typically made from embankments of dirt, built along the edges of rivers and streams to contain, control, or divert the flow of water to prevent flooding of the adjacent land (Lotha et al., 2019). Common causes for levees failing include foundation failure, surface erosion, or overtopping (USACE, 2010). Both dam and levee failures can be devastating, resulting in loss of human life, downstream property damage, lifeline disruption (transportation routes and utility lines required to maintain or protect life), and environmental damage. Dams and levees require constant monitoring and regular maintenance to ensure their integrity.

Dam & Levee Regulation

There are over 1,150 dams in Minnesota (MN DNR, 2020b). Dam regulatory authorities vary between state and federal agencies based mainly on the ownership of the dam.

The MN DNR Dam Safety Program has the mission of protecting the life and safety of people by ensuring that dams are safe. Minnesota's Dam Safety Program sets minimum standards for dams and regulates the design, construction, operation, repair, and removal of both privately and publicly (non-federal) owned dams (MN DNR, 2020b). The federal government is responsible for regulating and maintaining dam safety of federally owned dams. No single agency regulates all federally owned dams. 42% of federal dams are owned and managed by the U.S. Army Corp of Engineers (USACE) and the Bureau of Reclamation. The remaining federal dams are owned and managed by other federal agencies, including the Fish and Wildlife Service, Forest Service, the Department of Defense, and the Bureau of Indiana Affairs, among others (Normand, 2019).The Federal Energy Regulatory Commission (FERC) Dam Safety Program is the largest dam safety program in the U.S. The Commission works with federal and state

agencies to ensure and promote dam safety of over 3,000 dams across the U.S. The Commission inspects projects on an unscheduled basis to investigate potential dam safety problems; complaints about constructing and operating a project; safety concerns related to natural disasters; and issues concerning compliance with the term and conditions of a license (FERC, 2020).

Similar to dams, levees in Minnesota are regulated by various federal, state, and local entities that own the levee. While the USACE has designed and built many of the levees in the U.S., the USACE is only responsible for the maintenance of federally owned levees in the USACE system.

Dam & Levee Inventory

There are four dams and zero levees in Renville County. Table 34 provides the properties of each dam.

Table 34. Dams in Renville

Dam Name	Owner	Waterway	Type	Height (ft)	Length (ft)	Purpose	Condition	Rating
Lake Allie	MNDNR - Trails	County Ditch No. 28A	No Data	No Data	No Data	No Data	Poor	No Data
Preston Lake	County of Renville	Judicial Ditch 28A	Other	7’	No Data	Recreation	Satisfactory	No Data
Mud Lake	County of Renville	Little Rock Creek	Other	7’	110’	No Data	Fair	Class III
Birch Cooley 19	Shelly Goblisch	No Data	Earth	32’	No Data	Fish and Wildlife Pond	No Data	Class III

SOURCES: (MN DNR, 2014; USACE, 2021)

5.11.1 HISTORY

According to the State Dam Safety Engineer at the MN DNR, there are no records of a dam failure in Renville County.

5.11.2 PROBABILITY OF OCCURRENCE

To determine the probability of future dam failures in Renville County, records of previous failures and the period in which they occurred were examined. The MN DNR has no records of dam failures occurring in the county; therefore, the relative frequency of these events is 0 per year. This relative frequency can be used to infer that the probability of dam failures occurring in the future is very low.

5.11.3 CLIMATE CHANGE PROJECTIONS

Dams are designed based on assumptions about a river’s annual flow behavior that will determine the volume of water behind the dam and flowing through the dam at any one time. Changes in weather patterns due to climate change may change the expected flow pattern, and indirectly increase the likelihood of dam failures. It is conceivable that bigger rainfalls at earlier times in the year could threaten a dam’s designed margin of safety, causing dam operators to release greater volumes of water earlier in a storm cycle in order to maintain the required margins of safety. Such early releases of increased volumes can increase flood potential downstream.

Minnesota had a dam failure due to a large storm event in June 2012. The Forebay Canal in Carlton County had operated as designed for nearly 100 years. The intensity of the 2012 rain event caused a failure

of the canal wall, which caused significant damage. Climate change is adding a new level of uncertainty that needs to be considered with respect to assumptions made during dam construction.

5.11.4 VULNERABILITY

Although dam regulatory authorities differ between various federal and state agencies, all authorities attempt to classify dams according to the potential impacts from a dam failure or mis-operation. In response to the numerous classification systems, FEMA's Interagency Committee on Dam Safety created a downstream hazard potential classification system that is adaptable to any agency's current system. Table 35 provides an overview of the main criteria agencies consider when determining a dam's downstream hazard potential. This classification system does not imply that the dam is unsafe, but rather categorizes dams based on the probable loss of human life and the impacts on economic, environmental, and lifeline interests (FEMA, 2004a). Dams for which a hazard potential has not been designated, or is not provided, are classified as "Undetermined."

An Emergency Action Plan (EAP) is a document which identifies potential emergency conditions at a dam and specifies preplanned actions to be followed during a dam failure to minimize property damage or loss of life. An EAP is required for Class I dams and strongly recommended for Class II dams (MN DNR, 2020b).

Two of the dams in Renville County are a Class III (low hazard potential), and no hazard information is available for the other two dams. None of the dams have an EAP; therefore, no information is available or required about vulnerable structures or populations in the event of a failure.

In addition to dams being classified by their hazard potential, the physical condition of dams is inspected and given a condition ranking. The condition of a dam is categorized into one of the following classifications:

> *Satisfactory*: No existing or potential dam safety deficiencies are recognized. Acceptable performance is expected under all loading conditions (static, hydrologic, seismic) in accordance with the applicable regulatory criteria or tolerable risk guidelines.
>
> *Fair*: No existing dam safety deficiencies are recognized for normal loading conditions. Rare or extreme hydrologic and/or seismic events may result in a dam safety deficiency. Risk may be in the range to take further action.
>
> *Poor*: A dam safety deficiency is recognized for loading conditions which may realistically occur. Remedial action is necessary. "Poor" may also be used when uncertainties exist as to critical analysis parameters which identify a potential dam safety deficiency. Further investigations and studies are necessary.
>
> *Unsatisfactory*: A dam safety deficiency is recognized that requires immediate or emergency remedial action for problem resolution.
>
> *Not Rated*: The dam has not been inspected, is not under state jurisdiction, or has been inspected but, for whatever reason, has not been rated. (USACE, 2008)

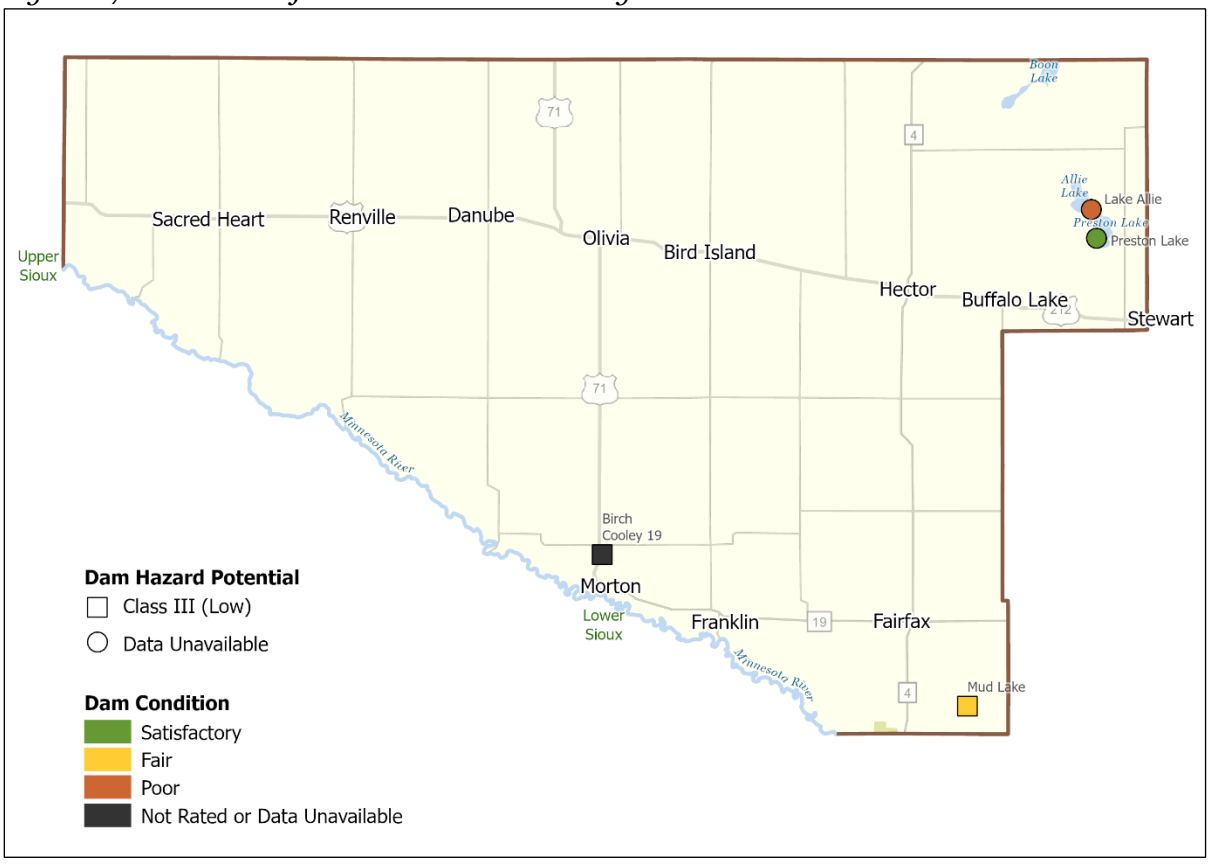
Dams in "Poor" or "Unsatisfactory" conditions may be more vulnerable to failure and pose a greater threat to the surrounding community and infrastructure. One of the dams in Renville, which has been given a condition ranking, is ranked below "Fair". The location and condition of dams in Renville County are mapped in Figure 27.

Table 35. Downstream hazard potential classification criteria

Hazard Potential Classification	Loss of Human Life	Economic, Environmental, Lifeline Losses
Class III (Low)	None expected	Low and generally limited to owner
Class II (Significant)	None expected	Yes
Class I (High)	Probable - one or more expected.	Yes (but not necessary for this classification)

SOURCE: (USACE, 2008)

Figure 27. Condition of dams in Renville County



SOURCE: (USACE, 2021)

5.11.5 PROGRAM GAPS AND DEFICIENCIES

Renville County Emergency Management did not identify any program gaps or deficiencies that make its citizens more vulnerable to dam and levee failure.

Section 6 – Mitigation Strategy

The goal of mitigation is to protect lives and reduce the impacts of future hazard events including property damage, disruption to local and regional economies, the amount of public and private funds spent to assist with recovery, and to build disaster-resistant communities. Mitigation actions and projects should be based on a well-constructed risk assessment, provided in Section 5 of this plan. Mitigation should be an ongoing process adapting over time to accommodate a community's needs.

6.1 Community Capability Assessments

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

- Appendix D: Lists the plans and programs in place in Renville County as related to hazard mitigation.
- Appendix C: As part of the Renville County MHMP update, the county and city governments were asked to participate in filling out a "Local Mitigation Survey" (LMS) form to report on their current mitigation capabilities and program gaps. Appendix C provides the LMS reports gathered for Renville County.

Information from the capability assessments was used to support development of local mitigation actions for implementation over the next five years (see column *Comments on Implementation& Integration)*.

6.1.1 NATIONAL FLOOD INSURANCE PROGRAM (NFIP)

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

Table 36 lists and describes jurisdictional participation in the National Flood Insurance Program (NFIP).

Table 36. NFIP participation in Renville County

Community Name	Participation in the NFIP	FEMA Map	Description of Participation
Renville County	Participating	FEMA-mapped high-risk areas	Renville County has adopted and enforces Chapter 9 of the Renville County Land Use Ordinance, Flood Plain Regulations.
Bird Island	Participating	No FEMA-mapped high-risk areas	The City of Bird Island adopted Floodplain Ordinance 208 in 2011 to establish eligibility in the National Flood Insurance Program and to minimize developments that would increase flood hazards or be damaged by flooding. Ongoing enforcement of this Ordinance will continue. In addition, the City will authorize storm sewer improvements that will help to alleviate flooding events throughout town, and will continue to adequately maintain the system.
Buffalo Lake	Not Participating	No FEMA-mapped high-risk areas	The city does not have a FEMA map and is not participating.
Danube	Not Participating	No FEMA-mapped high-risk areas	The city does not have a FEMA map and is not participating.
Fairfax	Participating	No FEMA-mapped high-risk areas	The City of Fairfax adopted City Code Chapter 115 in 2009 to help address flooding issues. The FEMA maps identify no floodplains within corporate limits. The City participates in NFIP to allow citizens access to cheaper flood insurance if they so choose to participate in it. We also take continuing steps towards managing localized flooding events through storm sewer improvements as part of street reconstruction projects and regular maintenance of the existing system.
Franklin	Not Participating	FEMA-mapped high-risk areas	The City of Franklin does not participate in the NFIP because there are no structures in the flood zone within city limits.
Hector	Not Participating	No FEMA-mapped high-risk areas	The city does not have a FEMA map and is not participating.
Morton	Participating	FEMA-mapped high-risk areas	The City of Morton has adopted and enforces Article 4. Floodplain and Shoreland Protection in the city's Zoning Ordinance.
Olivia	Participating	No FEMA-mapped high-risk areas	The City of Olivia has No Special Flood Hazard Area mapped and does not have a specific floodplain ordinance. The City participates in NFIP to allow citizens access to cheaper flood insurance if they so choose to participate in it. We also take continuing steps towards managing localized flooding events through storm water management improvements and maintenance of the existing system.

Community Name	Participation in the NFIP	FEMA Map	Description of Participation
Renville	Not Participating	No FEMA-mapped high-risk areas	The city does not have a FEMA map and is not participating.
Sacred Heart	Not Participating	No FEMA-mapped high-risk areas	The city does not have a FEMA map and is not participating.

SOURCE: (CEIL STRAUSS, MN FLOODPLAIN MANAGER, PERSONAL COMMUNICATION, APRIL 6, 2020)

Repetitive loss properties are defined as properties that have had two or more flood insurance claims of $1,000 or more in any rolling 10-year period. Property owners are asked to consider mitigation activities such as acquisition, relocation, or elevation, among other options. FEMA's Repetitive Loss (RL) properties strategy is to eliminate or reduce the damage to property and the disruption to life caused by repeated flooding of the same properties. Property owners are notified of their status by FEMA.

There are no RL properties in Renville County. For more on the areas that flood repeatedly, see Section 5.1.

6.1.2 PLANS AND ORDINANCES

Renville County and its incorporated communities have a number of plans and ordinances in place to ensure the safety of residents and the effective operation of communities including a Zoning Ordinance, Floodplain Ordinance, Emergency Operations Plan, and Wellhead Protection Plan.

6.1.3 PLANS AND PROGRAMS IN PLACE TO ADDRESS NATURAL HAZARDS

Renville County has numerous plans and programs in place to address natural hazards. Some of these programs are specific to a hazard and others address impacts and human safety for many types of events ("All Hazards"). For the purpose of grouping related natural hazards, "Summer Storms" encompasses Tornadoes, Windstorms, Lightning, and Hail. Following is a description of the plans and programs in place by Renville County to support mitigation for the hazards addressed in this plan.

All Hazards

All-Hazards Emergency Operations Plan: Renville County Emergency Management maintains an all-hazards emergency operations Plan which details key emergency management functions (i.e., Public Information and Warning, Evacuation, Mass Care Sheltering, etc.) that may be necessary in advance of, during and following hazard events that pose risk to life safety. This includes events such as severe summer and winter storms, tornadoes, extreme temperatures, flooding, and wildfire.

Public Warning and Emergency Notification: In the event of emergencies or hazardous conditions that require timely and targeted communication to the public, Renville County utilizes the CodeRED emergency notification system which users must sign up for ("opt-in service"). As part of CodeRED's automated weather warnings, residents can opt to receive the following warning information: flash flood, thunderstorm, tornado, and winter storm. Renville County also has IPAWS (Integrated Public Alert Warning System) which allows for both targeted and countywide emergency notifications to both residents and visitors (not an "opt-in" service). Severe spring and summer storm warnings are initiated by the National Weather Service or by local trained SkyWarn spotters. Extreme cold temperature warnings and extreme heat warnings, and winter weather warnings are issued by the National Weather Service. Residents receive warnings by NOAA weather radio, local media, CodeRED, cell phone apps and the outdoor warning siren system.

Preparedness Outreach: Renville County Emergency Management utilizes our Emergency Management website; Renville County Emergency Management, Renville County Sheriff, and Renville County Facebook pages; and local news media to communicate with residents and visitors on emergency preparedness. A link for the CodeRED emergency notification system is located on the Renville County website.

Shelter Facilities: There are designated shelter facilities within Renville County that have an MOU with the American Red Cross. A severe storm or a period of extreme heat/cold coupled with a major power outage may require emergency sheltering for those in need. Renville County Emergency Management and Renville County Public Health maintain a list of shelters within the county and have trained staff for shelter operations. Renville County has sheltering and pet sheltering plans in place.

NOAA Weather Radios: Renville County Emergency Management promotes the use of NOAA weather radios by schools, long-term care facilities, county buildings, local residents, and visitors to receive information broadcast from the National Weather Service. We promote use of these radios in advance of and during our severe weather months using our Renville County and Renville County Emergency Management social media outlets and during the NWS severe weather awareness weeks.

Backup Power: Generator back-up power is in place for the Renville County EOC, Public Works Building, Sheriff's Office-Dispatch-Jail, and Health & Human Services.

School Closings: All school districts within Renville County have a school closing policy and communications plan in place if inclement weather or other event creates a hazardous situation for students or staff.

Severe Winter Storms

Winter Hazard Awareness Week: Renville County Emergency Management helps promote and participates in the National Weather Service's "Winter Hazard Awareness Week" held in November each year. The event provides education to residents on the dangers of winter weather

and how to properly prepare themselves. We utilize the Renville County Emergency Management Facebook page and local news media to share information with the public.

Snow Removal: The Renville County Public Works Department is responsible for the removal of snow and ice from county roads, as well as some township roads and city streets based on interagency agreements. The department completes its snow removal process in accordance with the Renville County Public Works Department Snow Removal Policy. MnDOT removes snow from State Highways as well as disperses salt/sand as needed.

Severe Summer Storms

Outdoor Warning Sirens: There are 11 geographical areas in Renville County that have outdoor warning sirens. Sirens are activated when the National Weather Service notifies dispatch of high winds or tornado conditions that pose a risk to the public. Warning sirens are owned by the jurisdictions where they are located and maintained by those jurisdictions. All sirens are remotely activated by the Renville County Sheriff's Office.

SKYWARN Program: Renville County Emergency Management works with the National Weather Service to offer training on an annual basis to local fire and law enforcement departments and local residents that wish to be trained as volunteers. SKYWARN Spotters help to keep their local communities safe by providing timely and accurate reports of severe weather to their local National Weather Service office.

Severe Weather Awareness Week: Renville County Emergency Management helps promote and participates in the National Weather Service's "Severe Weather Awareness Week" held in April each year. The week-long event seeks to educate residents on the dangers of severe storms and highlights the importance of preparing for severe weather before it strikes. We utilize our Emergency Management Facebook page and local news media to share information with the public.

Tree Management: The Renville County Highway Department actively clears trees on the right-of-way of county-owned roads to reduce the danger of trees falling on roads during severe storm events such as thunderstorms, straight-line winds or ice storms. Local road authorities are encouraged to do the same.

MDH Requirements for Manufactured Home Parks: The Renville County Public Health Department works with the owners of manufactured home parks (MHP's) within the County to ensure that they are meeting Minnesota Department of Health (MDH) requirements for storm shelters and evacuation plans. Shelter and evacuation plans must be approved by the municipality in which they are located and submitted to MDH. MHPs within Renville County include Brookview Mobile Estates in Buffalo Lake, Sunset Mobile Home Park in Hector, Renville Mobile Home Court in Renville, and Discher Properties in Renville.

County Parks & Campgrounds: All Renville County parks with camping facilities have storm shelters constructed to help protect RV and tent campers that are vulnerable to severe weather

events such as high winds and damaging hail and thunderstorms. The only park without a storm shelter is Anderson Lake Park, a recreational fishing area which does not offer overnight camping.

Flooding

Floodplain Mapping & Ordinance: Renville County's Planning & Zoning Department maintains the floodplain maps and floodplain management ordinance for the county.

National Flood Insurance Program (*NFIP*): Renville County and nearly all cities participate in the NFIP (either with or without FEMA-mapped high-risk areas). Only the City of Franklin is noted to have FEMA Mapped High Risk Areas but does not participate in the NFIP.

Renville County Floodplain Management: The Renville County Planning and Zoning Office is the repository for the National Flood Insurance Program's Flood Insurance Rate Maps (FIRM), as well as flood boundary and floodway maps for rural Renville County. The Planning and Zoning Office can assist county residents in determining whether their property is affected by an officially mapped flood area. Flood Insurance Rate Maps are available on the Planning & Zoning website for all Renville County townships.

Road & Bridge Maintenance and Repair: The Renville County Public Works Department maintains an inventory of the condition of county roads and bridges and slates improvement projects as needed on an annual basis. Following high-rain events or flood disasters the Public Works Dept. assesses damages due to erosion and flood damage and implements mitigation for those areas such as road re-surfacing, culvert replacement, and ditch/bank stabilization.

Renville County Floodplain & Shore-land Ordinances: The Renville County Environmental Services Department administers land use and zoning ordinances for rural and unincorporated portions of Renville County, including for floodplains and shore-land. The department also provides information and support for environmental health issues that may impact water quality after flooding occurs. Renville County's 'County-Wide' Zoning Ordinance addresses shore-land management regulations including building regulations to mitigate against flooding during high-water elevation (for structures along lakes, ponds, flowages, rivers, and streams).

Stormwater Management Ordinance & Plans: Renville County Zoning Ordinance Article #7 addresses stormwater management for the county.

Enforcement of MPCA Stormwater Standards for New Development: New residential and commercial development is required to meet MPCA stormwater standards and are required to obtain and National Pollutant Discharge Elimination System (NPDES); the county requires a copy of this before approvals are granted. All the townships have drainage standards that meet or exceed the required rainfall events. Each project has to provide the county with a Stormwater Pollution Prevention Plan (SWPPP) before the county grants approval through the platting process. The county keeps employees on staff that are qualified through training to review these plans.

Renville County Drainage Administration: Renville County has a Drainage Systems Manager and two Drainage Technicians that oversee management of 767 miles of open ditch and 1,811 miles of underground tile in Renville County, consisting of over 143 drainage systems. Renville County has digitized the original drainage system maps. Private landowners with property that adjoin county ditches are encouraged to help keep them free and clear of debris.

Renville County Multi-Purpose Drainage Management Plan: The Renville County Multi-Purpose Drainage Management Plan was developed to supplement drainage projects with methods aimed at reducing peak flows and erosion, trapping sediment, reducing nutrient loading, and improving water quality throughout five watersheds located in Renville County. The plan includes practices that can be incorporated by individual landowners that can contribute towards higher water quality through erosion control, soil stability, and nutrient management.

Watershed Districts: The Renville County Soil and Water Conservation District, Buffalo Creek Watershed District, High Island Watershed Project, Crow River Organization of Water, and Hawk Creek Watershed Project are located within Renville County and oversee regional planning and project efforts related to projects within the watershed that reduce the impacts of high rain events and resulting localized flooding and erosion.

Wildfire

Local Fire Departments: There are 10 fire departments located in Renville County. Each department is responsible for wildfires within their department boundaries; however, they often work together on larger fires, including wildfires.

Burning Permits/Restrictions: The Renville County Sheriff's Office regulates when burning is available and requires those burning to notify the county prior to lighting a fire.

Mutual Aid Agreements: All of the municipal fire departments in Renville County have mutual aid agreements with each contiguous department that borders their respective fire district. Written mutual aid agreements are on file with each city.

Fire Prevention Week: Fire prevention week is held annually each October with the main emphasis on educating the youth through visiting schools. Most fire departments participate and provide an opportunity for local residents to learn fire safety with open houses.

Extreme Cold

Extreme Cold Safety Awareness: Renville County Emergency Management and Renville County Public Health promote public awareness of personal safety measure to take during periods of extreme cold, such as minimizing exposure and being prepared with survival kits in vehicles during winter.

Extreme Heat

Extreme Heat Safety Awareness: Renville County Emergency Management and Renville County Public Health promote public awareness of personal safety measure to take during periods of extreme heat, such as minimizing exposure and staying hydrated.

Drought

Renville County Water Plan: The Renville County Water Plan describes both surface and groundwater quantities and quality. It also addresses the county's water needs and concerns.

Public Awareness: In the event of drought conditions, Renville County Emergency Management works in concert with the NWS and MN DNR to raise public awareness of the dry conditions and increased danger of wildfire.

Landslides

Setback Ordinance: Renville County Planning and Zoning Department has an ordinance in place that states the setback for construction by bluff areas is 30 feet and an increased setback can be imposed if construction is near an actively eroding bluff.

Renville County Soil and Water Conservation District: The Renville County Soil & Water Conservation District provides access to natural resource management and conservation services and provides technical, financial, and educational assistance to landowners to address natural resource concerns. The SWCD manages a cost share program to fund practices for erosion control, sedimentation control, or water quality improvements designed to protect and improve soil and water resources. Projects that may be eligible for cost-share funding include critical area planting, diversions, windbreak/shelterbelt establishment, grassed waterway, livestock waste management, filter strips, sediment basins, streambank and shoreline protection, strip-cropping, terraces, well decommissioning, and forestry conservation practice.

Dam Failure

None

6.2 Mitigation Goals

The goals and strategies for natural hazards in the 2019 Minnesota State Hazard Mitigation Plan were adopted for use in the Renville County Plan. This framework, as outlined below, will allow for integration of the mitigation actions that are listed by Renville County and its jurisdictions into the state plan. The state will then be able to develop a statewide strategy that will benefit all of Minnesota.

Flooding Goal: Reduce deaths, injuries, property loss and economic disruption due to all types of flooding (riverine, flash, coastal, dam/levee failure).

Wildfire Goal: Reduce deaths, injuries, property loss, natural resource and economic disruption due to wildfires (forest, prairie, grass, and peat bogs).

Windstorms Goal: Reduce deaths, injuries, property loss, and economic disruption due to windstorms.

Hail Goal: Reduce deaths, injuries, property damage, and economic disruption due to hailstorms.

Winter Storms Goal: Reduce deaths, injuries, property loss, and economic disruption due to winter storms (blizzard, ice, and ice storm).

Lightning Goal: Reduce deaths, injuries, property losses, loss of services, and economic disruption due to lightning.

Tornado Goal: Reduce deaths, injuries, property loss, and economic disruption due to tornadoes.

Drought Goal: Reduce economic loss and environmental impacts due to drought.

Extreme Heat Goal: Reduce deaths, injuries, and economic disruption due to extreme heat.

Extreme Cold Goal: Reduce deaths, injuries, and economic disruption due to extreme cold.

Dam/Levee Failure Goal: Reduce deaths, injuries, property loss, natural resource and economic disruption due to dam/levee failure.

Erosion/Landslide/Mudslide Goal: Reduce deaths, injuries, property loss, and economic disruption due to hillside, coastal, bluff: caused primarily by oversaturation of soil.

6.3 Mitigation Action and Project Strategies

The mitigation actions in this plan are summarized into four main strategy types, as described in the FEMA publications *Local Mitigation Planning Handbook* (2013) and *Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards* (2013). A fifth strategy type was determined by Minnesota HSEM for use within the state: Mitigation Preparedness and Response. The strategies and example actions are listed in Table 37.

Table 37. Mitigation strategies and action types

Mitigation Strategy	Description	Example Mitigation Actions
Local Plans and Regulations	These actions include government authorities, policies, or codes, that influence the way land and buildings are developed and built.	• Comprehensive plans • Land use ordinances • Planning and zoning • Building codes and enforcement • Floodplain ordinances • NFIP Community Rating System • Capital improvement programs • Open space preservation • Shoreline codes • Stormwater management regulations and master plans

Mitigation Strategy	Description	Example Mitigation Actions
Structure and Infrastructure Projects	These actions involve modifying existing structures and infrastructure to protect them from a hazard or remove them from a hazard area. This could apply to public or private structures as well as critical facilities and infrastructure. This type of action also involves projects to construct manmade structures to reduce the impact of hazards. Many of these types of actions are projects eligible for funding through the FEMA Hazard Mitigation Assistance program.	• Acquisitions and elevations of structures in flood prone areas • Utility undergrounding • Structural retrofits • Floodwalls and retaining walls • Detention and retention structures • Culverts • Safe rooms
Natural Systems Protection	These are actions that minimize damage and losses and also preserve or restore the functions of natural systems.	• Sediment and erosion control • Stream corridor restoration • Forest management • Conservation easements • Wetland restoration and preservation
Education and Awareness Programs	These are actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. These actions may also include participation in national programs, such as StormReady or Firewise Communities. Although this type of mitigation reduces risk less directly than structural projects or regulation, it is an important foundation. A greater understanding and awareness of hazards and risk among local officials, stakeholders, and the public is more likely to lead to direct actions.	• Radio or television spots • Websites with maps and information • Real estate disclosure • Presentations to school groups or neighborhood organizations • Mailings to residents in hazard-prone areas. • StormReady Certification • Firewise Communities
Mitigation Preparedness and Response	This is a State of Minnesota mitigation strategy with the intent of covering preparation and actions that protect life and property during a natural disaster.	• Emergency operations plan • Flood fight plans and preparedness • Dam emergency action plans • Warning • Backup power • Emergency capabilities

Local leaders work together with the Renville County emergency management director to assure that the hazards and mitigation actions included in this plan are accurate and addressed in their jurisdictions.

Development of mitigation actions for the county and each city was informed by a community's hazard and risk assessment; identification of local vulnerabilities, and review of capabilities in place to address mitigation. Planning team members, local elected officials and staff from Renville County and each city actively participated in the development and review of mitigation action charts for implementation through participation in planning team meetings (see Appendix F) and development of Local Mitigation Surveys (see Appendix C). Additional jurisdictional and public feedback was incorporated following news releases inviting public input to the planning process (see Appendix G).

The Renville County risks and mitigation activities identified also incorporate the concerns and needs of townships, school districts, and other entities participating in this plan. Appendix J contains the jurisdictional mitigation action charts for the cities of Bird Island, Buffalo Lake, Danube, Fairfax, Franklin, Hector, Morton, Olivia, Renville, and Sacred Heart.

Following is an overview the mitigation action charts and description of each element of the chart.

Number (#)
Each mitigation action is identified by a number.

Hazard
Each mitigation action is identified by the natural hazard that it relates to. Actions that fall under "All-Hazards" relate to both natural and non-natural hazards.

Mitigation Strategy
Each mitigation action is identified by one of the following five mitigation strategies.

- Local Planning and Regulations
- Structure and Infrastructure Projects
- Natural Systems Protection
- Education and Awareness Programs
- Mitigation Preparedness and Response Support

See Table 37 for a description of each mitigation strategy and related types of actions.

Mitigation Action
Each mitigation action provides a concise, action-oriented description of the action or project to be undertaken. If a mitigation reduces risk to new or existing buildings/infrastructure it is noted.

Status
The status of each mitigation action is indicated by one of the following categories:

- New – New actions that have been identified since the last plan.
- Existing – Actions that are carried over from the last plan or have been updated.
- In Progress – Actions from the last plan that are currently being acted upon.

Mitigation actions that have been completed or deleted from the 2014 Renville County Multi-Hazard Mitigation Plan are identified and reported on in Appendix H. Completed and deleted mitigation actions are not carried over into the updated mitigation action chart.

Priority

In the review and discussion of selected mitigation strategies and actions, the planning team ranked of mitigation actions by priority for implementation. Table 38 provides criteria that were taken into consideration in the process.

Table 38. Criteria for Mitigation Action Priority Ranking

Ranking	Criteria
High Priority	• Methods for reducing risk from the hazard are technically reliable. • The County has experience in implementing mitigation measures. • Mitigation measures are eligible under federal grant programs. • There are multiple mitigation measures for the hazard. • The mitigation measure(s) are known to be cost effective. • The mitigation measures protect lives and property for a long period of time, or are permanent risk reduction solutions.
Moderate Priority	• Mitigation methods are established. • The County has limited experience with the kinds of measures that may be appropriate to mitigate the hazard. • Some mitigation measures are eligible for federal grants. • There is a limited range of effective mitigation measures for the hazard. • Mitigation measures are cost-effective only in limited circumstances. • Mitigation measures are effective for a reasonable period of time.
Low Priority	• Methods for reducing risk from the hazard are not well-established, are not proven reliable, or are experimental. • The State or Counties have little or no experience in implementing mitigation measures, and/or no technical knowledge of them. • Mitigation measures are ineligible under federal grant programs. • There is a very limited range of mitigation measures for the hazard, usually only one feasible alternative. • The mitigation measure(s) have not been proven cost effective and are likely to be very expensive compared to the magnitude of the hazard. • The long-term effectiveness of the measure is not known or is known to be relatively poor.

Timeframe

Each mitigation action identifies the anticipated timeframe for implementation of the action within the next five-year planning cycle:

- Ongoing – Implementation of the action will require continued application.
- Defined (year) – Implementation of the action will occur within a defined time frame that is noted.
- TBD – The anticipated time frame for implementation of an action is to be determined.

Responsibility
Each mitigation action identifies what personnel, department or agency will be lead for the administration or implementation of the action.

Comments on Implementation & Integration
Each mitigation action provides a description of how the jurisdiction will work to implement the mitigation action and incorporate the activity into other existing planning mechanisms.

Possible Funding
Each mitigation action identifies where potential funding may come from to support implementation of the mitigation activity, such as existing county or city funding, state or federal funding. Projects that may be eligible for future FEMA Hazard Mitigation Assistance grant funding are noted.

The Renville County Mitigation Action Chart is provided in Table 39. Appendix J provides the mitigation action charts developed for each city participating in the MHMP update.

Table 39. Renville County Mitigation Action Chart (2021–2026)

#	Hazard	Mitigation Strategy	Mitigation Action	Status Priority Timeframe	Responsibility	Comments on Implementation & Integration	Possible Funding
1	All-Hazards	Education & Awareness Programs	Encourage all county residents to sign-up for the county's CodeRED emergency notification alert system.	Existing High Ongoing	Renville County Emergency Management (RCEM)	A link for the county's CodeRED emergency notification system is located on the Renville County website. We also utilize the Renville County, RCEM and RC Sheriff's Office Facebook pages to do this. Local jurisdictions are encouraged to promote sign up for local residents by directing them to the county website.	County
2	All-Hazards	Mitigation Preparedness & Response Support	Ensure the Renville County Emergency Operations Plan (EOP) is updated and addresses policies & procedures needed to support EM functions prior to, during, and following a disaster.	Existing Moderate Ongoing	RCEM	RCEM has an Emergency Operations Plan that is updated on a regular basis which helps the county be ready to respond to disasters across a range of EM functions. This includes plans in place for Sheltering and Pet Sheltering in the event that people are displaced from their homes following a disaster.	County
3	All-Hazards	Mitigation Preparedness & Response Support	Update the Renville County Comprehensive Plan to include considerations for hazard mitigation and future development.	New Moderate TBD	RC Envir. Services Dept. in coord with other county depts.	The Renville County Comprehensive Plan was last updated in 2010. When it is updated, we will work to incorporate considerations for natural hazards mitigation as we plan for future development and growth within the county.	County
4	All-Hazards	Mitigation Preparedness & Response Support	Ensure designated facilities are in place and prepared for providing mass care sheltering and county staff are trained in sheltering operations.	Existing Moderate Ongoing	RCEM, RC Public Health (RCPH)	RCEM and RCPH partner with the American Red Cross to establish MOU's with facilities in the county to serve as official shelter locations that meet ARC shelter requirements for space and accessibility. RCEM and RCPH work with the Red Cross on shelter management training. Renville County will continue to work to ensure that all designated shelters are prepared with backup generators where needed.	County

#	Hazard	Mitigation Strategy	Mitigation Action	Status Priority Timeframe	Responsibility	Comments on Implementation & Integration	Possible Funding
5	Severe Winter & Summer Storms	Education & Awareness Programs	Provide education and outreach to residents on personal preparedness for severe weather events, extreme cold, and extended power outages.	Existing High Ongoing	RCEM in coord with Local Gov't	RCEM utilizes our Emergency Management and county websites; Renville County, RCEM and RC Sheriff's Office Facebook pages; we attend area events; and we utilize the local news media to communicate with residents and visitors on emergency preparedness. RCEM participates in and promotes the NWS Severe Weather Awareness Weeks in spring and fall each year. We also promote residents to be prepared for emergencies, to have NOAA weather radios, and to sign up for the county's CodeRED system and social media to receive emergency notifications and other information. RCEM shares information with local governments and encourages them to use their communication platforms to keep residents informed.	County
6	Severe Winter & Summer Storms	Structure & Infrastructure Systems	Work with municipal & rural electric coops to encourage them to address burying powerlines or strengthening power poles to avoid power outages from high wind events and storms.	Existing High Ongoing	RCEM in coord with Local Gov't and Rural & Municipal Utility Coops	McLeod Cooperative Power Association and Renville-Sibley Cooperative Power continue to address where power lines can be strengthened or buried underground. RCEM will assist as needed with applications to FEMA for eligible project measures that help to eliminate or reduce risk of power outages by these coops.	Electric Coops, FEMA HMA grant
7	Severe Winter & Summer Storms	Mitigation Preparedness & Response Support	Purchase & install permanent backup generators for Renville County critical facilities where they are needed.	Existing High TBD	RCEM in coord with other county depts.	Generator back-up power is in place for the Renville County EOC, Public Works Building, Sheriff's Office-Dispatch-Jail, and Health & Human Services. Additional generators may be needed for other county facilities as well as our designated shelter facilities. RCEM will work with other county departments to identify what county facilities do not have backup generator power. Generators will be purchased as funding allows.	County

#	Hazard	Mitigation Strategy	Mitigation Action	Status Priority Timeframe	Responsibility	Comments on Implementation & Integration	Possible Funding
8	Severe Winter & Summer Storms	Mitigation Preparedness & Response Support	Work with local jurisdictions to acquire generator backup power to support critical infrastructure and delivery of essential services during an extended power outage due to storms.	Existing Moderate Ongoing	RCEM in coord with Local Gov't	RCEM continues to provide assistance to cities and townships that need to acquire portable generators to power infrastructure such as lift stations and other key facilities such as City Hall /community shelters in the event of a power outage. In some cases, this may include helping to identify where used portable generators may be obtained or helping to prepare a funding application.	County, Local Gov't
9	Severe Winter & Summer Storms	Natural Systems Protection	Conduct vegetation management along county-owned roads to reduce the risk of downed trees and branches resulting from severe storms.	Existing Moderate Ongoing	RC Public Works, Utility Providers & Local Gov'ts	RC Public Works and local utility providers actively maintain and clear their right of ways of trees, vegetation, and debris to prevent the creation of additional hazards or blocking road/site access. Townships & cities are encouraged to do the same for roads under their authority.	County, Utilities, Local Gov't
10	Severe Winter & Summer Storms	Mitigation Preparedness & Response Support	Encourage schools and long-term facilities that house senior citizens or other vulnerable populations to have emergency plans and generators in place to deal with severe weather, extreme temperatures, and power outages.	Existing High Ongoing	RCEM in coord with RCPH, Schools & Other Facilities, and Local Govt's	RCEM and RCPH continue to work with schools and other long-term care facilities across the county and will encourage them to have plans in place for when the need arises. RCEM encourages local jurisdictions to work directly with facilities in their community to be prepared. Schools are encouraged to practice tornado drills each year.	County, Local Facilities
11	Severe Summer Storms	Mitigation Preparedness & Response Support	Ensure there is a network of trained Storm Spotters throughout the county.	New Moderate Ongoing	RCEM in coord with NWS & Local Gov't	RCEM works with the NWS to provide SKYWARN storm spotter training on a semi-annual basis to local law enforcement, fire departments, and local residents who wish to participate. Storm Spotters help to support situational awareness of and public notification for dangerous storms such as severe thunderstorms and tornadoes.	County, NWS

#	Hazard	Mitigation Strategy	Mitigation Action	Status Priority Timeframe	Responsibility	Comments on Implementation & Integration	Possible Funding
12	Severe Summer Storms	Education & Awareness Programs	Post information regarding storm shelters and safety during strong summer storms at county parks.	Existing Moderate Ongoing	RC Public Works (Parks Dept.)	Renville County has 6 park facilities that offer overnight camping (Skalbekken, Vicksburg, Lake Allie, Mack Lake, Beaver Falls, and Birch Coulee). The county posts information for campers on storm awareness and if there is a shelter facility within the park to use if needed.	County, State/Local
13	Severe Summer Storms	Local Planning & Regulations	Work with owners of mobile home parks (MHP's) to ensure they are in compliance with the Minnesota Department of Health (MDH) requirements for evacuation plans and storm shelters.	Existing High Ongoing	RCPH in coord with Local Gov't and MHP's	RC Public Health works with the owners of manufactured home parks within the county and the municipalities where they are located to ensure that they are meeting MDH requirements for storm shelters and evacuation plans.	County, MHP Owners
14	Severe Summer Storms	Local Planning & Regulations / Structure & Infrastructure Projects	Provide assistance to local jurisdictions that require purchase & installation of new outdoor warning sirens and ensure they are connected to the county's remote activation system.	Existing High Ongoing	RCEM in coord with Local Gov't	The cities of Buffalo Lake and Oliva have identified a need for new warning sirens in their community. RCEM will assist, as needed, with the application process for grant funding with the USDA Community Facilities Grant Program which is a source for funding outdoor warning sirens. All new sirens in the county will be connected to the county's remote activation system.	County, Local Gov't, USDA CF Grant Program

#	Hazard	Mitigation Strategy	Mitigation Action	Status Priority Timeframe	Responsibility	Comments on Implementation & Integration	Possible Funding
15	Severe Summer Storms	Structure & Infrastructure Projects	Address the need for the construction of storm shelters or tornado safe rooms in communities, Renville County parks, or other locations in the county where people are vulnerable to high wind or tornadic events.	Existing Moderate Ongoing	RCEM in coord with Local Gov't	The cities of Buffalo Lake, Hector, Olivia, and Renville have each identified a need for either a storm shelter or tornado safe room to help protect residents/visitors that are vulnerable to high wind events (i.e., mobile home parks, campgrounds). RCEM will provide assistance as requested to these municipalities to help assess need, possible construction options, and assistance with applications for grant funding (i.e., FEMA HMA safe room grant) In addition, Renville County has 7 county parks, some of which may benefit from the construction of storm shelter or safe room structures to protection visitors who may at risk during severe storms and high wind events. The county will seek to construct these facilities where needed as park facilities are updated.	County, FEMA HMA, Other (TBD)
16	Drought	Local Planning & Education	Work in partnership with other agencies and local communities to implement measures identified in the Renville County Comprehensive Local Water Management Plan (2013-2023).	In-Progress Moderate Ongoing	RC Envir. Services Dept in coord with RC SWCD	The plan identifies goals and actions that improve water quality and quantity and related resource management and planning in Renville County.	County
17	Drought	Local Planning & Regulations	Encourage water conservation provisions and use restrictions during periods of severe drought (i.e.; watering lawns).	Existing Low Ongoing	RCEM, RC Envir. Services in coord with Local Gov'ts	During times of drought, Renville County will work to promote drought awareness and water conservation strategies. Local governments would be encouraged to do the same or to utilize local ordinances to enforce restrictions.	County, Local Gov't
18	Flooding	Local Planning & Regulations	Participate in the National Flood Insurance Program and enforce policies that address development in high-risk flood areas.	Existing Moderate Ongoing	RC Envir. Services Dept.	Renville County participates in the NFIP and has adopted and enforces Chapter 9 of the Renville County Land Use Ordinance, Flood Plain Regulations.	County

#	Hazard	Mitigation Strategy	Mitigation Action	Status Priority Timeframe	Responsibility	Comments on Implementation & Integration	Possible Funding
19	Flooding	Local Planning & Regulations / Structure & Infrastructure Projects	Address road improvements, ditch maintenance, and bank stabilization projects needed to mitigate against high rain events as identified by the RC Highway Engineer and feedback from townships.	Existing High Ongoing	RC Public Works in coord with Local Gov'ts	The Renville County Public Works Department is responsible for the roadway maintenance, which includes any maintenance activities associated with flooded roadways, (i.e. road closures, roadway detours, cleaning roadways after the flooding event) on county roads. The RC Public Works Dept. maintains an inventory of priority projects and schedules them for implementation.	County, State, Federal
20	Flooding	Local Planning & Regulations / Structure & Infrastructure Projects	Identify roads and bridges in the County that flood on a regular basis and prioritize these for improvements.	Existing High Ongoing	RC Public Works in coord with Twp Gov'ts	Improvements should be made to reduce the risk of flooding of township roads. Township officials should work closely with RCEM to obtain mitigation project funding.	Local Govt, State, Federal
21	Flooding	Local Planning & Regulations	Enforce county policies that regulate zoning for new development, setbacks in shoreline areas, and stormwater management.	Existing Moderate Ongoing	RC Envr. Services Dept. in coord with SWCD, Renville County Public Works, and Renville County Board	Chapter Six, Shoreland Management Regulations, of the Renville County Land Use Ordinance addresses storm-water management for the county. The county also has ordinance in place that states the setback for construction by bluff areas is 30 feet and an increased setback can be imposed if construction is near an actively eroding bluff. Renville County enforces Minnesota's Buffer Law, which requires perennial vegetative buffers of up to 50 feet along lakes, rivers, and streams and buffers of 16.5 feet along ditches.	County, SWCD
22	Flooding	Education & Awareness Programs	Provide planning support and technical assistance to cities to update stormwater management plans and implement projects that protect critical infrastructure from future flood events and improve drainage.	Existing Moderate Ongoing	RC Public Works in coord with Local Govt's	RC Public Works continues to work with our city and townships to plan for and implement local stormwater management improvements in order to better handle future high rain events. We also assist with issues related to ditch maintenance and drainage.	County, Local Gov't

#	Hazard	Mitigation Strategy	Mitigation Action	Status Priority Timeframe	Responsibility	Comments on Implementation & Integration	Possible Funding
23	Flooding	Mitigation Preparedness & Response Support	Be prepared for future flood events with flood fight plans, evacuation & sheltering plans, and access to water pumps and sandbags.	Existing High Ongoing	RCEM in coord with RC Public Works Dept.	This is an ongoing effort of RCEM emergency response planning for flood disasters in coordination with our local jurisdictions and our neighboring jurisdictions in HSEM Region 5.	County
24	Flooding	Local Planning & Regulations	Work in partnership with area watershed entities to coordinate planning and project efforts that address flooding and erosion concerns.	Existing Moderate Ongoing	RC Envr. Services Dept. in coord with RC SWCD & Watershed Entities	The Renville County SWCD, Buffalo Creek Watershed District, and Hawk Creek Watershed Project are located within Renville County and oversee regional planning and project efforts related to projects within the watershed that reduce the impacts of high rain events and resulting localized flooding and erosion. Renville County and the SWCD participate in the One Watershed, One Plan for the region (1W1P).	County, SWCD Cost Share Grant Program, & Watershed Entities
25	Flooding / Erosion	Natural Systems Protection	Work with agricultural land owners to implement soil health measures (i.e., planting of cover crops and reduction in tillage) to reduce runoff, downstream peak flows, and flooding by increasing field water retention and reducing erosion by holding soil in place.	Existing Moderate Ongoing	RC SWCD, HCWP	The Renville County SWCD and Hawk Creek Watershed Project have established cover crop and reduced tillage programs to increase the implementation of soil health practices in the watershed that contribute to reduced erosion and flooding	SWCD, HCWP
26	Flooding / Erosion	Local Planning & Regulations / Structure & Infrastructure Projects	Conduct property buyouts to acquire homes affected by repetitive flooding and physically relocate or remove those homes to eliminate future flood damages.	Existing Low Ongoing	RCEM, RC Envr. Services Dept.	There are currently no projects slated for conducting property buyouts by the county or local jurisdictions; however, RCEM and RC Environmental Services will continue to evaluate and assist municipalities with any future property acquisition projects and application to FEMA or MN DNR for grant funding to conduct buyouts.	County, MN DNR, FEMA HMA, Local Gov't

#	Hazard	Mitigation Strategy	Mitigation Action	Status Priority Timeframe	Responsibility	Comments on Implementation & Integration	Possible Funding
27	Landslides	Natural Systems Protection	Work with the Minnesota Regional Rail Authority, RC SWCD and MN DNR to address landslide concerns on county roads near the Minnesota River and on slopes that may fail near the rail line.	Existing Moderate Ongoing	RCEM, RC Envr. Services Dept. in coord with MN DNR	Chapter Two, Zoning Regulations, of the Renville County Land Use Ordinance addresses slope regulations/requirements. RCEM will assist the MN Valley Regional Railroad Authority in identifying potential grants.	County, MN DNR, MNRRA, SWCD, FEMA HMA, Other (TBD)

Section 7 – Plan Maintenance

7.1 Monitoring, Evaluation, and Updating the Plan

The Renville County Multi-Hazard Mitigation Plan should be considered a living document. The plan should be updated and approved by FEMA at a minimum of every five years. The guidance in this section will function as the primary tool when reviewing progress on the implementation of the Renville County MHMP.

The Renville County Emergency Management Director is the individual responsible for leading all efforts to monitor, evaluate, and update the hazard mitigation plan within the five-year window. Throughout the five-year planning cycle, the Renville County Emergency Management Department strives to offer in-person community outreach to the cities of Bird Island, Buffalo Lake, Danube, Fairfax, Franklin, Hector, Morton, Olivia, Renville, and Sacred Heart, as well as all of the townships within Renville County on a monthly basis. During this outreach time, the Emergency Management Department will work with city emergency managers, fire chiefs, city administration, and elected officials to help monitor, review, evaluate, and update the Multi-Hazard Mitigation Plan. Additional stakeholders can and will be added based on need, or in response to severe weather events. The community outreach time also provides time to converse and educate on topics regarding severe weather awareness, local preparedness, mitigation, and response & recovery as needed. Additionally, the Emergency Management Department creates and distributes quarterly newsletters to the cities, townships, and other county departments. An annual meeting with the county townships is held in the first quarter of each new year. If necessary, the Renville County Emergency Management Director will convene a local planning committee made up of affected stakeholders to meet on a more regular basis to monitor plan implementation progress and reassess needs and opportunities. This could be done in response to funding cycles of programs that provide resources for hazard mitigation activities. If there is a need for a special meeting due to new developments or a declared disaster occurring in the county, the committee will meet to update pertinent mitigation strategies. Depending on Renville County opportunities and fiscal resources, mitigation projects may be implemented independently by individual communities or through local partnerships.

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

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

Throughout the five-year window of the plan, Renville County Emergency Management Director will request updates from county departments and jurisdictions on that status of mitigation efforts so that progress notes may be maintained for the next plan update.

7.2 Implementation

Renville County and its included municipalities share a common Multi-Hazard Mitigation Plan and work together closely to develop, revise, and implement it. This MHMP provides a comprehensive chart of mitigation actions for Renville County and its jurisdictions (see Section 6.3). The cities of Bird Island, Buffalo Lake, Danube, Fairfax, Franklin, Hector, Morton, Olivia, Renville, and Sacred Heart participated in the MHMP planning process and identified the specific mitigation strategies that they would seek to implement in their communities during the five-year planning cycle. These mitigation actions are provided in Appendix J.

A number of implementation tools are available to address hazards. Many of these tools are below, however, in some cases additional discussion is needed in order to identify what strategies are most appropriate to use. This will be part of an ongoing discussion as Renville County looks for opportunities for plan implementation. The following tools will be considered:

Education: In many cases, education of residents has been identified as one of the most effective mitigation strategies.

Capital Investments: Capital investments such as fire and ambulance equipment, sprinkler systems and dry hydrants are tools that can limit risks and impacts of natural and man-made hazards.

Data Collection and Needs Assessments: Data collection and needs assessments can aid in gaining a better understanding of threats and allow planning for mitigation strategies accordingly. As resources are limited for this part of the planning process, additional data collection is likely to be an ongoing activity as resources become available.

Coordination: Responsibilities for mitigation strategies run across various county departments, local fire and ambulance departments, city and township governments, and a host of state and federal agencies. Ongoing coordination is an important tool to ensure resources are used efficiently. Coordination can also avoid duplication of efforts or prevent gaps that are created because of unclear roles and responsibilities. The mitigation plan review process can function as a tool to have an ongoing discussion of roles, responsibilities, and opportunities for coordination.

Regional Cooperation: Counties and public safety services providers throughout the region often share similar challenges and concerns. In some cases, a regional approach may be warranted as a mitigation strategy in order to save resources. Organizations such as FEMA Region V and the MN Department of HSEM through the Regional Program Coordinator can offer tools and resources to assist in these cooperative efforts.

Regulation: Regulation is an important mitigation tool for Renville County. Regulation plays a particularly important role for land use, access to structures and the protection of water resources and public health.

7.3 Continued Public Involvement

Continued public involvement is critical to the successful implementation of the Multi-Hazard Mitigation Plan. The Renville County Emergency Management Director and the MHMP planning team members will continue to engage new public stakeholders in planning discussions and project implementation during the five-year cycle of this plan.

In order to seek continued public participation after the plan has been approved and during the five-year window of implementation for this plan, Renville County will take the following measures:

- The plan will be posted on the Renville County Emergency Management website for the public to read and provide feedback. Collected feedback will be reviewed during the 5-year plan cycle and will be noted for future update of the plan or addressed as necessary.
- Following any major storms or natural disasters, Renville County Emergency Management will seek to gather concerns and new ideas for mitigation from local residents to include in the next update of the plan. This may be done through public meetings, outreach via social media (i.e., County Facebook Pages), or news releases via local media.
- Each community participating in the plan will be responsible to keep their local government, schools and community members updated and engaged in the implementation of their respective mitigation action charts (see Appendix J). Each respective jurisdiction will be required to report on the status of mitigation actions in their charts to the Renville County Emergency Management Director.
- Jurisdictions will use numerous means of public outreach to engage new public stakeholders in providing input on mitigation efforts or concerns on hazards by sharing information at city council / township board meetings, sharing information at special events, working with local schools and partner organizations, and posting information on relevant local or social media that their communities use to inform and engage the public. As mitigation projects are implemented, jurisdictions will work to keep the public updated and engaged in those local efforts.

APPENDICES

Appendix A – References

Appendix B – Adopting Resolutions

Appendix C – Local Mitigation Survey Report

Appendix E – Past Mitigation Action Review Status Report

Appendix F – Planning Team Meetings

Appendix G – Public Outreach & Engagement Documentation

Appendix H – Minnesota Department of Health Climate & Health Report

Appendix I – Critical Infrastructure

Appendix J – Mitigation Actions by Jurisdiction

Appendix A – References

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Appendix B – Adopting Resolutions

Appendix C – Local Mitigation Survey Report

Renville County
Local Mitigation Survey Report

Overview

As part of Renville County's Multi-Hazard Mitigation Plan update, participating jurisdictions and county personnel were asked to fill out a Local Mitigation Survey (LMS) form. The purpose of the survey was to gather jurisdictionally-specific information needed to support update of the plan and to help inform development of local-level mitigation actions for the next five-year planning cycle. Following are the responses from the county and jurisdictions that participated in the survey.

LMS Forms

Renville County	Page 2
City of Bird Island	Page 9
City of Buffalo Lake	Page 14
City of Danube	Page 18
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City of Olivia	Page 38
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RENVILLE COUNTY

PART A: HAZARD IDENTIFICATION, RISK ASSESSMENT & VULNERABILITY ANALYSIS

1. **Hazard Identification & Risk Prioritization: Please fill out the following chart, indicating the natural hazards that pose risk to your community, your priority level of those hazards and if the priority of those hazards has changed over the last 5 years or since the last plan.**

Natural Hazard	History Mark "X" for hazard events that have occurred within your jurisdiction.	Risk Prioritization Indicate the priority level of this hazard in your jurisdiction using **HIGH, MODERATE** or **LOW**. Consider the anticipated likelihood of future events and the potential impacts to life safety, structures, systems, vulnerable populations or other community assets.	Change in Risk Note if you feel the risk of this hazard is **INCREASING, DECREASING,** or has had **NO CHANGE** in your jurisdiction. You may add comments if needed.
Blizzards	X	High	No Change
Ice Storms	X	High	No Change
Tornadoes	X	High	No Change
Windstorms	X	High	No Change
Lightning	X	High	No Change
Hail	X	High	Increasing
Flooding	X	High	Increasing
Extreme Cold	X	High	No Change
Extreme Heat	X	High	No Change
Drought	X	High	No Change
Wildfire	X	Low	No Change
Landslides	X	Low to Moderate	Increasing
Dam Failure		Low	No Change

2. **Recent Hazard Events: Please describe any severe weather or disaster events that have occurred over the last 5 years that caused damages or loss of life in your community.**

   Over the last 5 years Renville County has had nine emergency declarations at an estimated value of $4.9 million dollars in damage. Disaster events due to heavy rains causing erosion and flooding have been most common. Higher intensity storms that cause flash flooding are happening more frequent. This causes major damage to our roads, road culverts, and county drainage ditches. Below is a breakdown of each event as it pertains to townships and county-owned railroad.

   - August 2016 – Heavy rain and flooding caused damage to roads in seven townships totaling $48,200.00. That same storm caused $50,000.00 damage to the county-owned regional railroad.

   - August 2017 – Heavy rain and flooding caused damage to roads in three townships totaling $13,000.00. That same storm caused $100,000.00 damage to the county-owned regional railroad.

   - October 2017 – Heavy rain and flooding caused $35,000.00 damage to the county-owned regional railroad.

- July 2018 – Heavy rain and flooding caused damage to roads in five townships totaling $96,000.00. That same storm caused $112,500.00 damage to the county-owned regional railroad and $57,500.00 damage to wildlife management areas.

- March-April 2019 – Rapid snow melt, heavy rain, and flooding caused damage to roads in six townships totaling $60,000.00. This storm caused $195,000.00 in power line damage to the two rural electric coops servicing Renville County.

- June 2019 – Heavy rain and flooding caused damage to roads in one township totaling $19,210.00. That same storm caused $80,000.00 damage to the county-owned regional railroad.

- December 2019 – Ice storm caused $90,200.00 in power line damage to the two rural electric coops servicing Renville County.

- June 2020 – Heavy rain and flooding caused damage to roads in one township totaling $24,281.00.

- July 2020 – Heavy rain and flooding caused damage to roads in one township totaling $15,000.00 That same storm caused $15,000.00 damage to the county-owned regional railroad.

Aside from the above noted disaster events, Renville County has annually experienced multiple blizzards, which often result in motorists being stranded and at risk, various wind storms resulting in property damage, as well as extreme heat and cold temperatures.

3. **Local Vulnerabilities: Please use the chart below to identify what specific critical infrastructure (i.e., structures or systems), populations, or other assets in your community are suspectable to damage and loss from specific hazard events.**

Natural Hazard (please list)	**Vulnerability Assessment** **List & describe what specific structures, systems, populations, or other community assets are suspectable to damage and loss from specific hazard events.**
All Storms (power outages)	All storm events can cause power outages that not only affect people, but could be an issue in the livestock industry.
Blizzards / Heavy Snow	Road closures occur until we can plow roads open; some roads will not receive same-day service. Road damage can occur in the spring due to large drifts of melting snow creating wet/soft road base soils. Power substations, power poles and power lines are subject to damage, and during a blizzard access to the damaged sites is limited. Equipment breakdowns and occurrences can occur during snow removal which can present a serious risk of safety to the operator & mechanic, particularly during extreme cold temperatures.
Ice Storms	Additional salt/sand is required to melt ice off of roads. Salt causes additional corrosion to steel used in bridge construction. Power substations, power poles and power lines are subject to damage due to ice formation creating additional weight.
Tornadoes	Tornadoes pose a risk of damage to our equipment and storage facilities. We have seven storage shops with limited backup storage.

Windstorms	Trees being blown down result in blocking roads. We can also experience damage to buildings used for equipment storage.
Lightning	Trees knocked down due to lightning & damage to buildings used for equipment storage.
Hail	Hail damage can occur to buildings used for equipment storage & damage to any equipment outside during the hail event.
Flooding	Erosion to roads due to water overtopping the road or excessive rain can cause weak base soils and erosion. Bridges are susceptible to erosion due to the high flow rates in the streams. Culverts experience erosion that sometimes cannot be identified for several years. During flood events immediate road closures & repairs are necessary for public safety. The county-owned rail line is located along the MN River and is often times vulnerable to mudslides. If the MN River floods due to heavy rain events, additional damage occurs to roads lying within the floodplain. Due to the southern townships being located within the MN River Valley, road washouts are common during heavy rain events.
Ice/Wind	A large majority of the rural electric coops' power lines are above ground and jeopardized by high winds and ice.

4. **Reduction in Vulnerability - Please describe any particular actions your community has taken to <u>reduce</u> vulnerability against future severe weather or disaster events. This can include examples of any work that has been completed or is underway that you would consider mitigation, such as developing plans or implementing projects to deal with future heavy rainfall.**

   The county has used riprap to repair slides and washouts in our drainage system to prevent future occurrences in that specific location.

   In 2021, we are planning to raise a 1,000-foot section of SCAH 15 where we experience frequent flooding.

   Many of the townships are using granite fines as a substitute for Class 5 gravel when repairing roads. This has slowed the erosions process and reduced repetitive claims.

   The Regional Rail Authority has purchased land to allow for redesign of water run-off, which has reduced land erosion in some areas.

5. **Increase in Vulnerability – Please describe any current conditions or changes that you feel has <u>increased</u> your community's vulnerability to future severe weather or disaster events. Please include anything related to population growth, zoning or development.**

   Increase in the use of drain tile in farm fields is directing more water in a shorter time to our ditch system. This leads to our ditch systems being at full capacity creating erosion to the streambanks and bridges.

   Weather patterns have changed in a way that we receive heavy rain in excess of six inches on a more frequent basis. This has led to more flash flood type events.

There have been a number of 1MW solar energy conversion systems (solar gardens) permitted and constructed over the past 3-4 years. If storms would destroy these sites and the solar owners walk away, the County could be liable for the cleanup. The county does require bond money to offset the cleanup cost in the event it would become county responsibility.

PART B: LOCAL MITIGATION CAPABILITIES ASSESSMENT

1. **Plans, Authorities & Policies: Please describe what specific plans, authorities or policies are in place to help accomplish mitigation in your community.**

   Renville County has a comprehensive plan in place and capital improvements plan that plan for future development within the county.

   Our public works department maintains an inventory of the condition of county roads and bridges and slates improvement projects as needed on an annual basis.

   RCEM has an Emergency Operations Plan that is updated on a regular basis, which helps the county be ready to respond to disasters across a range of EM functions. This includes plans in place for sheltering and pet sheltering in the event that people are displaced from their homes following a disaster.

   Renville County Public Health Department works with the owners of manufactured home parks (MHP's) within the county to ensure that they are meeting Minnesota Department of Health (MDH) requirements for storm shelters and evacuation plans.

   Renville County participates in the National Flood Insurance Program (NFIP). The county's planning & zoning department enforces the floodplain ordinance for the county.

   Renville County Zoning Ordinance Article #8 addresses storm-water management for the county.

   Renville County Public Works Department has a snow removal policy.

   Renville County Planning & Zoning Department has an ordinance in place that states the setback for construction by bluff areas is 30 feet and an increased setback can be imposed if construction is near an actively eroding bluff.

   The Renville County Water Plan describes both surface and groundwater quantities and quality. It also addresses the county's water needs and concerns.

2. **Organizational Capacity: Please describe what staff or partnerships are in place to help accomplish mitigation in your community.**

   Renville County staff related to mitigation efforts include the emergency management director and deputy director, public works director/highway engineer, assistant engineer, environmental services director, public health director, GIS dept., drainage systems manager and two drainage technicians.

We partner with the American Red Cross to establish MOU's with facilities in the county to serve as official shelter locations that meet ARC shelter requirements for space and accessibility.

The Renville County Soil and Water Conservation District, Buffalo Creek Watershed District, High Island Watershed Project, Crow River Organization of Water, and Hawk Creek Watershed Project are located within Renville County and oversee regional planning and project efforts related to projects within the watershed that reduce the impacts of high rain events and resulting localized flooding and erosion.

We have close working relationships with emergency managers in MN HSEM Region 5 and support each other in emergency mitigation and preparedness planning, exercises, and emergency response when needed.

3. **Programs: Please describe any programs in place that to help accomplish mitigation in your community.**

Renville County Emergency Management and Renville County Sheriff's Office promotes the county's CodeRED Emergency Alert System and a link to sign up is located on the Renville County website.

RCEM participates in and promotes the National Weather Service (NWS) Severe Weather Awareness Weeks in spring and fall each year and also works with the NWS to provide SKYWARN storm spotter training on a semi-annual basis.

Renville County Emergency Management utilizes our emergency management and county websites; Renville County Emergency Management, Renville County Sheriff, and Renville County Facebook pages; and local news media to communicate with residents and visitors on emergency preparedness.

4. **Funding: Please describe any agency partnerships, funding or other resources to help accomplish mitigation in your community.**

Transportation planning partnerships: SW Corridor Transportation Coalition & Central Community Transit Joint Powers Board & MN Transportation Alliance & MMDC Area Transportation Partnership & AMC.

The Renville County Environmental Services Office works closely with the MPCA not necessarily for funding, but for cleanup mitigation caused by storms. Depending on the situation, we may be able to help obtain funding.

Funding for our local roads is through the county property tax levy. State Aid roads are funded using funds generated through the MN Highway User Tax Distribution Fund. If a damage declaration is declared and approved, we may access funds from the State of MN, FEMA, and FHWA.

5. **Other Questions:**

   - **Does your jurisdiction have any plans or policies in place (or in development) related to resilience and adaptation for climate change?**

     No

   - **Who is your local municipal or rural electric coop provider?**

     McLeod Cooperative Power Association and Renville-Sibley Cooperative Power.

   - **How do you encourage residents to sign up for emergency notifications?**

     A link for the county's CodeRED emergency notification system is located on the Renville County website. We also utilize Facebook pages to do this.

   - **Do you have (or need) portable or permanent back-up generators for specific critical facilities?**

     Generator back-up power is in place for the county EOC, public works building, Sheriff's Office-dispatch-jail, and health & human services building. Additional generators may be needed for other county facilities as well as our designated shelter facilities.

PART C: LOCAL MITIGATION PROJECTS

1. **Local Mitigation Projects: Please describe any specific mitigation activities you think would help to address local vulnerabilities and reduce risk against future hazard events in your community.**

   Identify where generator back-up power is needed for Renville County critical facilities and facilities that are identified as emergency shelters. Determine where portable generators may be located for use.

   Continue to promote residents to be prepared for emergencies, to have NOAA weather radios, and to sign up for the county's CodeRED system and RCEM Facebook page to receive emergency notifications and other information.

   Work with municipalities / rural electric coops to encourage them to address burying power lines or strengthening power poles to avoid power outages from high wind events and storms.

   Address construction of storm shelters or tornado safe rooms in areas where there are vulnerable populations such as at campgrounds, municipal mobile home parks, and schools.

   Encourage the city of Franklin to participate in the NFIP, as well as individual homeowners in the county.

   Encourage long-term care facilities that house senior citizens or other vulnerable populations to have emergency plans in place for severe weather, power outages, and extreme temperatures.

Work with the Renville County SWCD and MN DNR to address landslide concerns on county roads near the Minnesota River.

Address road improvements, ditch maintenance, and bank stabilization projects needed to mitigate against high rain events as identified by the Renville County highway engineer and feedback from townships.

Provide support to cities to update stormwater management plans and identify where critical public infrastructure needs to be protected for future high rain events.

Be prepared for future flood events with flood fight plans, evacuation & sheltering plans, and access to water pumps and sandbags.

Provide support to communities to identify where storm shelters or tornado safe rooms are needed and assist in applying for grant funding (i.e., USDA, FEMA HMA)

Review list of Past Mitigation Actions from our last plan and update those actions deemed as "ongoing" for continued implementation.

2. **Gaps or Deficiencies: Please describe any specific gaps or deficiencies that are a barrier to implementing local mitigation measures.**

   We need to update our comprehensive plan to include future hazards. It was last updated in 2010.

   We have identified several methods and areas we feel would mitigate damage due to flooding, however, funding is the main barrier to implementing mitigation measures.

PART D: SURVEY PARTICIPANTS

Mike Hennen, Emergency Management Director
Samantha Best, Deputy Director
Jeff Marlowe, Public Works Director/Highway Engineer
Scott Refsland, Environmental Services Director
Scott Hable, Sheriff

CITY OF BIRD ISLAND

PART A: HAZARD IDENTIFICATION, RISK ASSESSMENT & VULNERABILITY ANALYSIS

1. **Hazard Identification & Risk Prioritization: Please fill out the following chart, indicating the natural hazards that pose risk to your community, your priority level of those hazards and if the priority of those hazards has changed over the last 5 years or since the last plan.**

Natural Hazard	**History** Mark "X" for hazard events that have occurred within your jurisdiction.	**Risk Prioritization** Indicate the priority level of this hazard in your jurisdiction using **HIGH, MODERATE** or **LOW**. Consider the anticipated likelihood of future events and the potential impacts to life safety, structures, systems, vulnerable populations or other community assets.	**Change in Risk** Note if you feel the risk of this hazard is **INCREASING, DECREASING,** or has had **NO CHANGE** in your jurisdiction. You may add comments if needed.
Blizzards	X	High	No Change
Ice Storms	X	High	No Change
Tornadoes	X	High	No Change
Windstorms	X	High	No Change
Lightning	X	High	No Change
Hail	X	High	No Change
Flooding	X	High	Increasing
Extreme Cold	X	Moderate	No Change
Extreme Heat	X	Moderate	No Change
Drought	X	Moderate	No Change
Wildfire		Low	No Change
Landslides		Low	No Change
Dam Failure		Low	No Change

2. **Recent Hazard Events: Please describe any severe weather or disaster events that have occurred over the last 5 years that caused damages or loss of life in your community.**

   On November 18, 2016, a severe thunderstorm caused a 24-hour power outage at the city's water treatment plant, causing the water tower to be almost completely drained.

   In the spring of 2019, flooding was caused by excessive snow fall and high spring rain falls.

   On March 19, 2019, large amounts of snow/ice melting made roads impassable. This spring flooding event created soft spots on the roadways causing deterioration of streets, and water main breaks, due to excessive moisture & freezing.

   On July 18, 2020, a severe thunder/rain/windstorm caused damage to private properties and left branches and other debris on the streets, and hazardous trees on the boulevard needed to be removed. The power was also out for several hours.

3. **Local Vulnerabilities: Please use the chart below to identify what specific critical infrastructure (i.e., structures or systems), populations, or other assets in your community are suspectable to damage and loss from specific hazard events.**

Natural Hazard (please list)	**Vulnerability Assessment** **List & describe what specific structures, systems, populations, or other community assets are suspectable to damage and loss from specific hazard events.**
Blizzards, Ice Storms, Lightning, Tornadoes, Windstorms	The city's wastewater lift station and water treatment plant are vulnerable if power goes down, as we do not have adequate generators to keep power going. As the City's Municipal Building also serves as a storm shelter, a generator is also needed to keep power on at this location. Xcel Energy has above-ground power lines and poles that have been affected by heavy snow, ice and wind.
Flooding	Flooding has caused damage to our roadways and water distribution system; and sometimes, back up into basements. If Ditch 66 becomes full, with the flow restrictor pipe in place, there is nowhere for the water to go. As a result, flooding and backups are inevitable.
Tornadoes, Windstorms	Roadways become impassable due to streets, brush and other debris on the streets. Public/private buildings/structures are vulnerable, especially those that are substandard or in disrepair.
Extreme Cold	Water lines can become frozen, leaving dwellings without water service, or the necessity to receive water service from an adjacent property.

4. **Reduction in Vulnerability - Please describe any particular actions your community has taken to <u>reduce</u> vulnerability against future severe weather or disaster events. This can include examples of any work that has been completed or is underway that you would consider mitigation, such as developing plans or implementing projects to deal with future heavy rainfall.**

   In October of 2017, the city installed additional PVC piping and another catch basin on 4th Street to help with flooding issues in the 4th Street/Hwy. 212 location.

   In October, 2017, the city purchased two 900 gpm submersible pumps to get rid of storm water quicker, to avoid flooding and back-up issues.

   In the summer of 2020, all paved roads in the city were seal coated, helping to avoid water infiltration and extending the life of the roads. Crack filling and asphalt patching/overlays were performed prior to seal coating. This process is done by the city every six years.

   In November of 2018, a new warning siren was purchase and installed. It was an AC/DC 2001-130 directional, rotating siren with three distinct warning signals.

   Developments involving more than one acre are required to provide their own storm water holding pond, as was done at Kibble Equipment.

5. **Increase in Vulnerability – Please describe any current conditions or changes that you feel has increased your community's vulnerability to future severe weather or disaster events. Please include anything related to population growth, zoning or development.**

   Over the last five years, Bird Island has seen a slow decline in population, with no zoning changes and little development. There has been little change in water usage and wastewater discharge flows. However, we have noticed there have been more high rain events in the last five years, causing an increase in storm water flow. In addition, a 15-unit assisted living facility is being planned for construction in 2021, where seniors may need assistance during a disaster event.

PART B: LOCAL MITIGATION CAPABILITIES ASSESSMENT

1. **Plans, Authorities & Policies: Please describe what specific plans, authorities or policies are in place to help accomplish mitigation in your community.**

   In 2002 the city completed a comprehensive plan that addresses current and possible future land uses, along with current and emerging issues.

   The city's zoning ordinance guides development and the official zoning map was updated in 2012.

   The city's current Infrastructure (street, water, sewer) capital improvement plan was initiated in 2014 and continues to be utilized.

   The city continues its policy to seal coat paved streets every six years.

   The city adopted the State Building Code in its entirety to ensure quality construction and maintenance projects. Hazardous buildings are ordered to be razed, following the procedures outlined in state law.

   In 2011 the city adopted its floodplain ordinance, establishing eligibility in the National Flood Insurance Program (NFIP).

   Bird Island contracts with the Renville County Sheriff's Department for law enforcement services, giving residents access to Renville County's CodeRed emergency notification program.

2. **Organizational Capacity: Please describe what staff or partnerships are in place to help accomplish mitigation in your community.**

   A retired firefighter currently serves as Bird Island's civil defense director. As stated above, Bird Island contracts with Renville County for law enforcement services. The city utilizes the services of Vision Systems & Consulting for IT jobs, and Bolton & Menk, Inc. for engineering work. The city contracts with 101 Development Resources for building inspection services. We have a public works/maintenance supervisor who is in charge of all streets, parks, water & sewer systems. Volunteer/On-Call firefighters and MRU personnel respond to fires, medical & other emergencies.

3. **Programs: Please describe any programs in place that to help accomplish mitigation in your community.**

   Our volunteer on-call firefighters and MRU first responders meet regularly and are trained in emergency response. The city belongs to a Regional Safety training group which meets quarterly, addressing safety, emergency response and loss control recommendations. All residents have access to the county's CodeRed Notification program via the Sheriff's Department website. We participate in siren testing on the first Wednesday of each month.

4. **Funding: Please describe any agency partnerships, funding or other resources to help accomplish mitigation in your community.**

   The city primarily uses its own budget to address local mitigation measures. Financial assistance was recently received from FEMA to upgrade part of a city water main. USDA RD, MN DEED, MN DOT, Renville County, and County Ditch 66 assisted with a citywide sewer separation project, 2006-2008, during which an additional holding pond was constructed.

5. **Other Questions:**

   - **Does your jurisdiction have any plans or policies in place (or in development) related to resilience and adaptation for climate change?**

     No

   - **Who is your local municipal or rural electric coop provider?**

     Xcel Energy within city limits. McLeod Coop Power services the water treatment plant in Melville Township.

   - **How do you encourage residents to sign up for emergency notifications?**

     On the city website there is a link to the Renville County Sheriff's Department which has a link to the CodeRed Notification program.

   - **Do you have (or need) portable or permanent back-up generators for specific critical facilities?**

     The city has one portable generator that is not adaptable to sites without significant expense. We need three generators for our water treatment plant, lift station and municipal building.

PART C: LOCAL MITIGATION PROJECTS

1. **Local Mitigation Projects: Please describe any specific mitigation activities you think would help to address local vulnerabilities and reduce risk against future hazard events in your community.**

   We need adequate portable generators for our water treatment plant, lift station and municipal building (which is now designated as a storm shelter).

   Further discussion is needed with Xcel Energy to upgrade power poles in town and/or put power lines under the ground.

   Conversations are needed with the County Ditch 66 Authority to hopefully allow the flow restrictor pipe in the ditch to be removed when the ditch is full.

   Further encouragement is needed for residents to sign up for the county's CodeRed emergency notification program. Residents should also be educated on emergency preparedness.

   A 15-unit assisted living facility is being planned for construction in 2021, where seniors may need assistance during a disaster event. The facility owners should be encouraged to have an emergency plan in place and backup generators.

2. **Gaps or Deficiencies: Please describe any specific gaps or deficiencies that are a barrier to implementing local mitigation measures.**

   Not all of our residents are signed up for the county's CodeRed Notification program. The city lacks funds to purchase adequate generators needed for the water treatment plant, lift station and municipal building. The city's comprehensive plan should be updated. The city has no authority to demand light poles be replaced by Xcel Energy, or a flow restrictor pipe be removed by the Ditch 66 authority. We can only state our case, and encourage the change. Better marketing tools to educate the public on emergency preparedness are needed.

PART D: SURVEY PARTICIPANTS

Deb Lingl, City Administrator

CITY OF BUFFALO LAKE

PART A: HAZARD IDENTIFICATION, RISK ASSESSMENT & VULNERABILITY ANALYSIS

1. **Hazard Identification & Risk Prioritization: Please fill out the following chart, indicating the natural hazards that pose risk to your community, your priority level of those hazards and if the priority of those hazards has changed over the last 5 years or since the last plan.**

Natural Hazard	History Mark "X" for hazard events that have occurred within your jurisdiction.	Risk Prioritization Indicate the priority level of this hazard in your jurisdiction using **HIGH, MODERATE** or **LOW**. Consider the anticipated likelihood of future events and the potential impacts to life safety, structures, systems, vulnerable populations or other community assets.	Change in Risk Note if you feel the risk of this hazard is **INCREASING, DECREASING,** or has had **NO CHANGE** in your jurisdiction. You may add comments if needed.
Blizzards	X	High	No Change
Ice Storms	X	Moderate	Increasing
Tornadoes	X	Moderate	No Change
Windstorms	X	Moderate	Increasing
Lightning	X	High	Increasing
Hail	X	High	Increasing
Flooding	X	High	No Change
Extreme Cold	X	Moderate	Increasing
Extreme Heat	X	Moderate	Increasing
Drought	X	Moderate	No Change
Wildfire			
Landslides			
Dam Failure			

2. **Recent Hazard Events: Please describe any severe weather or disaster events that have occurred over the last 5 years that caused damages or loss of life in your community.**

   In November, 2016 the city experienced a windstorm that caused damage to trees and branches, and the city water pump quit working.

   In January, 2017 the city experienced a windstorm that blew shingles off of our pump house.

   In October, 2017 the city experienced a heavy rainstorm that resulted in street flooding, residential basements flooded, and sanitary sewer backups.

   In March, 2019 the city experienced a storm with heavy snow and ice, resulting in branches down and streets covered in ice.

   In July, 2020 the city experienced a thunderstorm with wind and hail that damaged many roofs and blew down branches.

   In August, 2020 the city experienced another thunderstorm with wind and hail damage again.

3. **Local Vulnerabilities: Please use the chart below to identify what specific critical infrastructure (i.e., structures or systems), populations, or other assets in your community are suspectable to damage and loss from specific hazard events.**

Natural Hazard (please list)	**Vulnerability Assessment** **List & describe what specific structures, systems, populations, or other community assets are suspectable to damage and loss from specific hazard events.**
Flooding	City lift stations could fail during storms if power goes out and alert system does not activate. We have several homes that may experience sewer backup.
Windstorms/Tornadoes	We have a trailer park without storm shelter. Residents have to get to the community center for protection. In addition, the city's warning siren sometimes cannot be heard on the edges of town depending on the direction of the wind.
Extreme cold	We have residents that are vulnerable to extreme cold weather episodes, especially if power goes out.
Snowstorms/Blizzards	We have residents who are vulnerable if snowed in to be able to get to medical appointments, etc.

4. **Reduction in Vulnerability - Please describe any particular actions your community has taken to <u>reduce</u> vulnerability against future severe weather or disaster events. This can include examples of any work that has been completed or is underway that you would consider mitigation, such as developing plans or implementing projects to deal with future heavy rainfall.**

   In 2014 the city implemented a street/utility Improvement project which added a storm sewer pond, additional storm sewer lines, and catch basins.

   In 2015 the city joined county's CodeRed system.

   In 2018 the city implemented a street/utility improvement project which added storm sewer lines and catch basins.

   In 2020 the city updated its SCADA system for our lift stations and water treatment plant.

   The city has prepared our community center to act as a shelter with pillows, blankets, and water in case residents or travelers need a place to shelter during a snowstorm or heat is out for a long period of time. We are in need of several cots to have on hand for overnight sleeping provisions.

5. **Increase in Vulnerability – Please describe any current conditions or changes that you feel has <u>increased</u> your community's vulnerability to future severe weather or disaster events. Please include anything related to population growth, zoning or development.**

   In the last decade we have seen more damaging weather events such as severe cold days, snow/ice storms. Heavy snowstorms, thunderstorms with wind and hail.

PART B: LOCAL MITIGATION CAPABILITIES ASSESSMENT

1. **Plans, Authorities & Policies: Please describe what specific plans, authorities or policies are in place to help accomplish mitigation in your community.**

   Over the last 10 years the city has implemented several street/utility improvement projects. We are working with trailer court to have them supply a permanent storm shelter on the property.

2. **Organizational Capacity: Please describe what staff or partnerships are in place to help accomplish mitigation in your community.**

   Our public works director maintains streets and conducts necessary upkeep. He is also in charge of the maintenance of lift stations, water treatment plant and water tower. Our fire department and police department participate in SkyWarn training for spotting of tornados during watches/warnings in area.

3. **Programs: Please describe any programs in place that to help accomplish mitigation in your community.**

   The city participates in monthly testing of our civil defense/tornado warning system. We also participate in the Renville County CodeRed emergency notification system. Local schools participate in annual tornado drills as well as several fire drills during the school year.

4. **Funding: Please describe any agency partnerships, funding or other resources to help accomplish mitigation in your community.**

   The city usually covers maintenance needs as part of the annual budget. The Fire Department has applied for FEMA funds to cover needs for the department. The city has also worked with the MN DNR to get equipment that will assist the city.

5. **Other Questions:**

   - **Does your jurisdiction have any plans or policies in place (or in development) related to resilience and adaptation for climate change?**

     No

   - **Who is your local municipal or rural electric coop provider?**

     Excel Energy

   - **How do you encourage residents to sign up for emergency notifications?**

     We use our city website to provide a link to the county's CodeRed system. We also have a quarterly newsletter that includes information to the residents to help keep them informed. We have a movable sign on Main Street to provide residents of upcoming meetings, events to keep them up to date.

- **Do you have (or need) portable or permanent back-up generators for specific critical facilities?**

  We have several, but could use more if need for each lift station and city buildings.

PART C: LOCAL MITIGATION PROJECTS

1. **Local Mitigation Projects: Please describe any specific mitigation activities you think would help to address local vulnerabilities and reduce risk against future hazard events in your community.**

   Need to update pumps in city's lift stations. Need to update the water treatment plant.

   Obtain additional portable generators to power our lift station and city buildings in the event of a power outage.

   Continue working with the trailer court to have them supply a permanent storm shelter on the property. Currently these residents have to get to the community center for protection.

   Continue to prepare the city's community center with emergency sheltering resources. We are in need of several cots to have on hand for overnight sleeping provisions.

   Assess need for an additional outdoor warning siren and purchase/install if needed. The city's warning siren sometimes cannot be heard on the edges of town depending on the direction of the wind.

   Promote residents to sign up for the county's CodeRed system and to be prepared for severe weather events and power outages.

2. **Gaps or Deficiencies: Please describe any specific gaps or deficiencies that are a barrier to implementing local mitigation measures.**

   The city's warning siren sometimes cannot be heard on the edges of town depending on the direction of the wind. Not all of the residents are signed up for the CodeRed notification system.

PART D: SURVEY PARTICIPANTS

Jean Thielke, City Clerk
David Kienitz, Public Works Director

CITY OF DANUBE

PART A: HAZARD IDENTIFICATION, RISK ASSESSMENT & VULNERABILITY ANALYSIS

1. **Hazard Identification & Risk Prioritization: Please fill out the following chart, indicating the natural hazards that pose risk to your community, your priority level of those hazards and if the priority of those hazards has changed over the last 5 years or since the last plan.**

Natural Hazard	**History** Mark "X" for hazard events that have occurred within your jurisdiction.	**Risk Prioritization** Indicate the priority level of this hazard in your jurisdiction using **HIGH, MODERATE** or **LOW**. Consider the anticipated likelihood of future events and the potential impacts to life safety, structures, systems, vulnerable populations or other community assets.	**Change in Risk** Note if you feel the risk of this hazard is **INCREASING, DECREASING,** or has had **NO CHANGE** in your jurisdiction. You may add comments if needed.
Blizzards	X	High	No Change
Ice Storms	X	High	No Change
Tornadoes	X	Moderate	No Change
Windstorms	X	High	Increasing
Lightning	X	High	Increasing
Hail	X	Moderate	Increasing
Flooding	X	High	Increasing
Extreme Cold	X	Low	No Change
Extreme Heat	X	Low	No Change
Drought	X	Low	No Change
Wildfire			
Landslides			
Dam Failure			

2. **Recent Hazard Events: Please describe any severe weather or disaster events that have occurred over the last 5 years that caused damages or loss of life in your community.**

   During the spring of 2019 and 2020 the city experienced heavy rains that caused multiple streets to flood.

   During the summer of 2020 we had hail damage to houses and vehicles.

   Over the past five years the city has had multiple storms that have caused power outages and wind damage.

3. **Local Vulnerabilities: Please use the chart below to identify what specific critical infrastructure (i.e., structures or systems), populations, or other assets in your community are suspectable to damage and loss from specific hazard events.**

Natural Hazard (please list)	Vulnerability Assessment List & describe what specific structures, systems, populations, or other community assets are suspectable to damage and loss from specific hazard events.
Flooding	Our city sewer lift station is vulnerable to failure during flood events if the power goes down or the lift station is flooded. We also have basements in homes and streets that continue to be flooded.
Windstorms	We have had power lines and power poles that were knocked down.
Extreme Cold	Extreme cold temperature changes have created frost heaves to occur on many city streets in Danube.

4. **Reduction in Vulnerability - Please describe any particular actions your community has taken to reduce vulnerability against future severe weather or disaster events. This can include examples of any work that has been completed or is underway that you would consider mitigation, such as developing plans or implementing projects to deal with future heavy rainfall.**

   The city of Danube replaced one older outdoor warning siren and put in new control boxes on both sirens recently for warning the public.

   The city of Danube is currently working on a major infrastructure project for the entire town including the streets, water lines, sewer lines, storm sewers, etc.

5. **Increase in Vulnerability – Please describe any current conditions or changes that you feel has increased your community's vulnerability to future severe weather or disaster events. Please include anything related to population growth, zoning or development.**

   The continuous wear and tear on the system (streets, water lines, sewer lines, storm sewers, etc.) has caused failure over the years.

PART B: LOCAL MITIGATION CAPABILITIES ASSESSMENT

1. **Plans, Authorities & Policies: Please describe what specific plans, authorities or policies are in place to help accomplish mitigation in your community.**

   The city of Danube is in the process of doing a complete overhaul on the water, sewer, storm sewer systems.

2. **Organizational Capacity: Please describe what staff or partnerships are in place to help accomplish mitigation in your community**

   The city of Danube has hired Moore Engineering to come up with a master infrastructure plan for the entire city.

3. **Programs: Please describe any programs in place that to help accomplish mitigation in your community.**

   The residents of Danube have the ability to sign up for the CodeRed alert system that is through Renville County. The city of Danube does monthly tests of our warning sirens and does training for severe weather.

4. **Funding: Please describe any agency partnerships, funding or other resources to help accomplish mitigation in your community.**

   The city of Danube has put in for funding for the infrastructure project through Moore Engineering working on various grants available for this project. The city has also worked with FEMA on the street damages that have occurred over the past couple of years.

5. **Other Questions:**

   - **Does your jurisdiction have any plans or policies in place (or in development) related to resilience and adaptation for climate change?**

     No

   - **Who is your local municipal or rural electric coop provider?**

     Excel Energy

   - **How do you encourage residents to sign up for emergency notifications?**

     We use our city website.

   - **Do you have (or need) portable or permanent back-up generators for specific critical facilities?**

     Yes, we have both portable and permanent generators.

PART C: LOCAL MITIGATION PROJECTS

1. **Local Mitigation Projects: Please describe any specific mitigation activities you think would help to address local vulnerabilities and reduce risk against future hazard events in your community.**

   Implement the city's planned project to improve our water, sewer, storm sewer systems. Proceeding with the infrastructure project would greatly reduce Danube's vulnerabilities.

   Encourage residents to sign up for the county's CodeRed system and to be prepared for severe weather and power outages.

2. **Gaps or Deficiencies: Please describe any specific gaps or deficiencies that are a barrier to implementing local mitigation measures.**

   Not knowing if all the residents are signed up for CodeRed.

PART D: SURVEY PARTICIPANTS

Les Schneider, Police Chief
Dotty Schnobrich, City Clerk-Treasurer

CITY OF FAIRFAX

PART A: HAZARD IDENTIFICATION, RISK ASSESSMENT & VULNERABILITY ANALYSIS

1. **Hazard Identification & Risk Prioritization: Please fill out the following chart, indicating the natural hazards that pose risk to your community, your priority level of those hazards and if the priority of those hazards has changed over the last 5 years or since the last plan.**

Natural Hazard	History Mark "X" for hazard events that have occurred within your jurisdiction.	Risk Prioritization Indicate the priority level of this hazard in your jurisdiction using **HIGH, MODERATE** or **LOW**. Consider the anticipated likelihood of future events and the potential impacts to life safety, structures, systems, vulnerable populations or other community assets.	Change in Risk Note if you feel the risk of this hazard is **INCREASING, DECREASING,** or has had **NO CHANGE** in your jurisdiction. You may add comments if needed.
Blizzards	X	High	Increasing
Ice Storms	X	Moderate	No Change
Tornadoes	X	Low	No Change
Windstorms	X	Moderate	No Change
Lightning	X	High	No Change
Hail	X	Moderate	No Change
Flooding	X	Low	Increasing
Extreme Cold	X	Moderate	No Change
Extreme Heat	X	Moderate	No Change
Drought	X	Low	No Change
Wildfire			
Landslides			
Dam Failure			

2. **Recent Hazard Events: Please describe any severe weather or disaster events that have occurred over the last 5 years that caused damages or loss of life in your community.**

   In July, 2014 the city experienced storm damage from severe storms & straight-line winds that resulted in a federal disaster declaration.

   In February, 2019 the city received a record snowfall.

   In July, 2020 the city was part of 10" mega-rain event that occurred in the SE corner of the county.

   In July, 2020 the city experienced a windstorm that resulted in damage of trees.

3. **Local Vulnerabilities: Please use the chart below to identify what specific critical infrastructure (i.e., structures or systems), populations, or other assets in your community are suspectable to damage and loss from specific hazard events.**

Natural Hazard (please list)	Vulnerability Assessment List & describe what specific structures, systems, populations, or other community assets are suspectable to damage and loss from specific hazard events.
Flooding from Extreme Rainfall Events	Extreme rainfall events can cause localized flooding. Risks include flooding of basements, overwhelming the storm sewer system requiring bypass, and overwhelming the sewer system due to I&I requiring bypass.
Extreme Cold	Some of the city's infrastructure is built at a shallower level than current standards. Extreme cold has the potential of freezing these lines causing sewer backups and water line breaks.

4. **Reduction in Vulnerability - Please describe any particular actions your community has taken to reduce vulnerability against future severe weather or disaster events. This can include examples of any work that has been completed or is underway that you would consider mitigation, such as developing plans or implementing projects to deal with future heavy rainfall.**

   The city of Fairfax municipal utility has buried power lines. We have also installed a generator at the power plant to provide power in case of transmission line outage. In 2012, 2015, 2017, and 2018 the city completed street projects. We have done an upgrade to our main lift station bypass system and purchased large trash pumps.

5. **Increase in Vulnerability – Please describe any current conditions or changes that you feel has increased your community's vulnerability to future severe weather or disaster events. Please include anything related to population growth, zoning or development.**

   None.

PART B: LOCAL MITIGATION CAPABILITIES ASSESSMENT

1. **Plans, Authorities & Policies: Please describe what specific plans, authorities or policies are in place to help accomplish mitigation in your community.**

   The city council, city staff, and consulting engineers work together to identify potential hazards and develop strategies as needed. The city participates in the National Flood Insurance Program (NFIP).

2. **Organizational Capacity: Please describe what staff or partnerships are in place to help accomplish mitigation in your community.**

   Given the very limited staff, mitigation efforts are handled by the city administrator, superintendent of streets and utilities, and consulting engineers.

3. **Programs: Please describe any programs in place that to help accomplish mitigation in your community.**

   None beyond long term infrastructure replacement and maintenance.

4. **Funding: Please describe any agency partnerships, funding or other resources to help accomplish mitigation in your community.**

   The city has the options to utilize PFA, USDA, and internal bond sales to fund projects.

5. **Other Questions:**

   - **Does your jurisdiction have any plans or policies in place (or in development) related to resilience and adaptation for climate change?**

     No.

   - **Who is your local municipal or rural electric coop provider?**

     City of Fairfax.

   - **How do you encourage residents to sign up for emergency notifications?**

     On our city website we provide a general link to the Renville County website.

   - **Do you have (or need) portable or permanent back-up generators for specific critical facilities?**

     The city of Fairfax operates a power plant with backup generators capable of powering the entire city in the event of a supply-side outage.

PART C: LOCAL MITIGATION PROJECTS

1. **Local Mitigation Projects: Please describe any specific mitigation activities you think would help to address local vulnerabilities and reduce risk against future hazard events in your community.**

   We don't have many mitigation projects because we've completed a lot of them. All of our power lines are buried. We have a permanent generation system which powers the entire city in the event of an external power source loss, and we've purchased large trash pumps to complement our smaller trash pumps to bypass the main lift station and storm sewer system in case of extreme rain events. Anything left as a hazard risk is so catastrophic that there really isn't anything we can do to mitigate. We have not identified any specific mitigation activities outside of long-term maintenance and replacement of infrastructure as the condition dictates.

   Other activities we can work to implement are to utilize the city's website and Facebook page to promote residents to sign up for the county's CodeRed emergency notification system and to be prepared for severe weather events & power outages. We can also send out an annual

reminder for residents on sump pumps at the same time we do our reminder to have sump pumps redirected into the storm system after the winter season.

2. **Gaps or Deficiencies: Please describe any specific gaps or deficiencies that are a barrier to implementing local mitigation measures.**

   Funding. Always funding.

PART D: SURVEY PARTICIPANTS

Nicholas Johnson, City Administrator

CITY OF FRANKLIN

PART A: HAZARD IDENTIFICATION, RISK ASSESSMENT & VULNERABILITY ANALYSIS

1. **Hazard Identification & Risk Prioritization: Please fill out the following chart, indicating the natural hazards that pose risk to your community, your priority level of those hazards and if the priority of those hazards has changed over the last 5 years or since the last plan.**

Natural Hazard	History Mark "X" for hazard events that have occurred within your jurisdiction.	Risk Prioritization Indicate the priority level of this hazard in your jurisdiction using **HIGH, MODERATE** or **LOW**. Consider the anticipated likelihood of future events and the potential impacts to life safety, structures, systems, vulnerable populations or other community assets.	Change in Risk Note if you feel the risk of this hazard is **INCREASING, DECREASING,** or has had **NO CHANGE** in your jurisdiction. You may add comments if needed.
Blizzards	X	Low	No Change
Ice Storms	X	Moderate	No Change
Tornadoes			
Windstorms	X	Moderate	No Change
Lightning	X	Moderate	No Change
Hail	X	High	No Change
Flooding	X	High	Increasing
Extreme Cold	X	Low	No Change
Extreme Heat	X	Low	No Change
Drought	X	Low	No Change
Wildfire	X	Low	No Change
Landslides	X	Low	No Change
Dam Failure			

2. **Recent Hazard Events: Please describe any severe weather or disaster events that have occurred over the last 5 years that caused damages or loss of life in your community.**

   Over the last 5 years there has been flooding each spring and throughout the summer months that has been causing erosion of the banks of the boat landing as well as deposits of silt and sand in areas where it shouldn't be. The huge rain events have also caused other issues including flooding in basements and burning out of pumps at the wastewater ponds. In 2019, there were extreme temperature variations that caused the road substrate to erupt and become impassable.

3. **Local Vulnerabilities: Please use the chart below to identify what specific critical infrastructure (i.e., structures or systems), populations, or other assets in your community are suspectable to damage and loss from specific hazard events.**

Natural Hazard (please list)	Vulnerability Assessment **List & describe what specific structures, systems, populations, or other community assets are suspectable to damage and loss from specific hazard events.**
Flooding	We have homes that continue to have water in the basements due to extreme rain events. The boat landing is also in need of continual repairs due to flooding.

Ice Storms, Blizzards	We have power lines and power poles that have failed or may fail due to heavy snow and ice storms.
Landslide	The bluff of the MN River is deteriorating due to heavy rain events, runoffs, and excess tiling. However, this has not posed a risk to the city or any structures. It is general deterioration.
Extreme Cold	Extreme cold temperatures have caused water lines to freeze and recently caused the road substrate to erupt.
Hail	We have homes, buildings, etc. that have been damaged by hail.

4. **Reduction in Vulnerability - Please describe any particular actions your community has taken to reduce vulnerability against future severe weather or disaster events. This can include examples of any work that has been completed or is underway that you would consider mitigation, such as developing plans or implementing projects to deal with future heavy rainfall.**

   In 2019, the city installed drain tile along 3rd St. S. to mitigate against future damage due to extreme temperature variations.

   The city also upgraded the sanitary sewer system and greatly reduced the I & I going to the wastewater ponds which saved on pumping and treatment costs.

5. **Increase in Vulnerability – Please describe any current conditions or changes that you feel has increased your community's vulnerability to future severe weather or disaster events. Please include anything related to population growth, zoning or development.**

   Due to increased growth of vegetation in the MN River Valley, there could greater potential for wildfires, however this has not been an issue to date.

PART B: LOCAL MITIGATION CAPABILITIES ASSESSMENT

1. **Plans, Authorities & Policies: Please describe what specific plans, authorities or policies are in place to help accomplish mitigation in your community.**

   Currently the city is working with the MN DNR to mitigate the flood issues at the boat landing.

   The city has a policy on the Prevention of Frozen Water Service Lines. When there are extreme frost conditions and the risk of freezing water lines occurs, a general notification on "how to protect water lines from freezing" is placed on the public access channel, in the city newsletter, and on the city website.

2. **Organizational Capacity: Please describe what staff or partnerships are in place to help accomplish mitigation in your community.**

   The city has a designated emergency manager, a planning & zoning commission, and a public works director. Renville County has implemented CodeRed to warn people of pending risks.

3. **Programs: Please describe any programs in place that to help accomplish mitigation in your community.**

   The city participates in the county's CodeRed emergency notification system. We also have an outdoor warning siren that the county tests on a monthly basis.

4. **Funding: Please describe any agency partnerships, funding or other resources to help accomplish mitigation in your community.**

   In 2015 the city successfully applied for grant funds from the USDA Community Development Grant Program to install a new warning siren to replace our old one. In 2019 the city worked with FEMA to fund the tiling project and road repairs.

5. **Other Questions:**

   - **Does your jurisdiction have any plans or policies in place (or in development) related to resilience and adaptation for climate change?**

     No

   - **Who is your local municipal or rural electric coop provider?**

     Xcel Energy and Renville Sibley Cooperative Power (only at the boat landing)

   - **How do you encourage residents to sign up for emergency notifications?**

     City website and Facebook page

   - **Do you have (or need) portable or permanent back-up generators for specific critical facilities?**

     We have 3 permanent generators but could use a portable one.

PART C: LOCAL MITIGATION PROJECTS

1. **Local Mitigation Projects: Please describe any specific mitigation activities you think would help to address local vulnerabilities and reduce risk against future hazard events in your community.**

   Get assistance for the erosion of the storm sewer drains and outfall. We have in the past procured FEMA funds, but it only temporarily fixed the problem.

   Obtain a portable generator for backup power.

   Promote residents to sign up for the county's CodeRed system and to be prepared for severe weather and power outages by posting information on our city website, Facebook Page, and monthly city newsletter and sharing information at special events (i.e., Catfish Days).

2. **Gaps or Deficiencies: Please describe any specific gaps or deficiencies that are a barrier to implementing local mitigation measures.**

   The lack of funding is preventing mitigation of the storm sewer outfall.

PART D: SURVEY PARTICIPANTS

Wendy Pederson, City Clerk/Treasurer
Kevin Kokesch, Public Works Director

CITY OF HECTOR

PART A: HAZARD IDENTIFICATION, RISK ASSESSMENT & VULNERABILITY ANALYSIS

1. **Hazard Identification & Risk Prioritization: Please fill out the following chart, indicating the natural hazards that pose risk to your community, your priority level of those hazards and if the priority of those hazards has changed over the last 5 years or since the last plan.**

Natural Hazard	History Mark "X" for hazard events that have occurred within your jurisdiction.	Risk Prioritization Indicate the priority level of this hazard in your jurisdiction using **HIGH, MODERATE** or **LOW**. Consider the anticipated likelihood of future events and the potential impacts to life safety, structures, systems, vulnerable populations or other community assets.	Change in Risk Note if you feel the risk of this hazard is **INCREASING, DECREASING,** or has had **NO CHANGE** in your jurisdiction. You may add comments if needed.
Blizzards	X	High	No Change
Ice Storms	X	High	No Change
Tornadoes	X	High	No Change
Windstorms	X	High	No Change
Lightning	X	High	Increasing
Hail	X	Low	No Change
Flooding	X	Moderate	No Change
Extreme Cold	X	High	No Change
Extreme Heat	X	High	No Change
Drought	X	Low	No Change
Wildfire		Low	No Change
Landslides		Low	No Change
Dam Failure		Low	No Change

2. **Recent Hazard Events: Please describe any severe weather or disaster events that have occurred over the last 5 years that caused damages or loss of life in your community.**

   Over the last 5 years the city has annually experienced high winds, hail, ice, blizzards, extreme cold, extreme heat, lightning strikes, and flooding damage. The city has had surface flooding after high rain events, which overwhelms our storm sewer and causes property damage for our residents.

3. **Local Vulnerabilities: Please use the chart below to identify what specific critical infrastructure (i.e., structures or systems), populations, or other assets in your community are susceptible to damage and loss from specific hazard events.**

Natural Hazard (please list)	Vulnerability Assessment **List & describe what specific structures, systems, populations, or other community assets are suspectable to damage and loss from specific hazard events.**
Flooding	Our city sewer lift station will become over whelmed during flood events. We also have basements in homes that continue to be flooded.
Ice Storms, Blizzards	We have power lines and power poles that have failed or may fail due to heavy snow and ice storms. During blizzard conditions our public safety units are unable to respond to emergency situations due to snow-blocked roads.

Windstorms and Tornadoes	We have a mobile home park without a storm shelter where residents are vulnerable to high wind events.
Extreme Cold/Heat	We have seniors & children are vulnerable to extreme cold/heat especially if the power goes down during storm events.
Lightning	Lightning strikes can cause power outages and ignite structure fires.

4. **Reduction in Vulnerability - Please describe any particular actions your community has taken to reduce vulnerability against future severe weather or disaster events. This can include examples of any work that has been completed or is underway that you would consider mitigation, such as developing plans or implementing projects to deal with future heavy rainfall.**

   The city has fuel-operated stand-by generators at the water plant and the wastewater treatment plant.

   We have encouraged business and residents to enroll in the county's CodeRed system so they will be aware when heavy rain may cause flooding impacts. The city has also recently increased use of our website and Facebook page to communicate with residents on emergency preparedness.

5. **Increase in Vulnerability – Please describe any current conditions or changes that you feel has increased your community's vulnerability to future severe weather or disaster events. Please include anything related to population growth, zoning or development.**

   Due to climate change we have noticed an increase in rainfall, severity and frequency of severe storms, lightning strikes, and severe winds.

PART B: LOCAL MITIGATION CAPABILITIES ASSESSMENT

1. **Plans, Authorities & Policies: Please describe what specific plans, authorities or policies are in place to help accomplish mitigation in your community.**

   The city has an outdated emergency preparedness plan.

2. **Organizational Capacity: Please describe what staff or partnerships are in place to help accomplish mitigation in your community.**

   Our chief of police is the city's designated emergency manager who works in conjunction with our ambulance director and fire chief. Our emergency management team is made up of two city council members, the city administrator, chief of police and the ambulance director. We have a public works director that addresses road maintenance issues for flooding (culverts, repetitive flooding). Law enforcement helps do outreach to the older residents in our community. We have our own municipal utility that is responsible for mitigating water/sewer issues. We also provide mutual aid to surrounding communities.

3. **Programs: Please describe any programs in place that to help accomplish mitigation in your community.**

   The city participates in the county's emergency alert system and we promote residents to sign up for it by having a link on our website and Facebook page to the registration site. The city participates in monthly severe weather siren testing and activates the siren two times in the winter and spring during weather awareness week. We provide two storm shelters in our community.

4. **Funding: Please describe any agency partnerships, funding or other resources to help accomplish mitigation in your community.**

   The city primarily uses its own budget and small grants to address local mitigation measures, such as replacement of culverts.

5. **Other Questions:**

   - **Does your jurisdiction have any plans or policies in place (or in development) related to resilience and adaptation for climate change?**

     Yes, we support solar power and have a solar farm in our jurisdiction.

   - **Who is your local municipal or rural electric coop provider?**

     Xcel Energy, solar power, and Mcleod Coop Power

   - **How do you encourage residents to sign up for emergency notifications?**

     The Renville County link to sign up is posted on our city's website, Facebook page, Access TV, as well as on flyers posted at City Hall, city library, and the community center.

   - **Do you have (or need) portable or permanent back-up generators for specific critical facilities?**

     We presently have a back-up generator at our water plant, wastewater plant, and well #4. We would like to add a back-up generator at our one of our severe weather shelters.

PART C: LOCAL MITIGATION PROJECTS

1. **Local Mitigation Projects: Please describe any specific mitigation activities you think would help to address local vulnerabilities and reduce risk against future hazard events in your community.**

   We would like to upgrade the city's storm shelter or tornado safe room at the local downtown city park/ball field.

The city has a need for additional storm sewer upgrades because of the severe inflow and infiltration problems to reduce the amount of water flow to the waste water treatment plant after a heavy rain event so sewage does not back up into residents' homes.

We need a portable generator for our community center, which is our designated community mass care shelter.

We have a mobile home park without a storm shelter where residents are vulnerable to high wind events.

2. **Gaps or Deficiencies: Please describe any specific gaps or deficiencies that are a barrier to implementing local mitigation measures**.

   Not all residents are signed up for the CodeRed notification system. The city needs significant funding assistance to update our city's long-range comprehensive plan (2020-2040) to address considerations for future hazard events. The city needs funds to construct a storm shelter/bathroom at out downtown city park/ballfield and a generator for our community center that serves as our emergency mass care shelter.

PART D: SURVEY PARTICIPANTS

Andrea Aukrust, City Administrator
Zach Pierce, Chief of Police
Ken Rodmyre, Ambulance and Public Works Director
Gina Schellenberg, Airport Manager and Public Works
Gayle Deal, Public Works and EMT
Jen Beckler, Deputy City Clerk

CITY OF MORTON

PART A: HAZARD IDENTIFICATION, RISK ASSESSMENT & VULNERABILITY ANALYSIS

1. **Hazard Identification & Risk Prioritization: Please fill out the following chart, indicating the natural hazards that pose risk to your community, your priority level of those hazards and if the priority of those hazards has changed over the last 5 years or since the last plan.**

Natural Hazard	History Mark "X" for hazard events that have occurred within your jurisdiction.	Risk Prioritization Indicate the priority level of this hazard in your jurisdiction using **HIGH, MODERATE** or **LOW**. Consider the anticipated likelihood of future events and the potential impacts to life safety, structures, systems, vulnerable populations or other community assets.	Change in Risk Note if you feel the risk of this hazard is **INCREASING, DECREASING,** or has had **NO CHANGE** in your jurisdiction. You may add comments if needed.
Blizzards	X	Moderate	No Change
Ice Storms	X	Moderate	No Change
Tornadoes	X	Moderate	No Change
Windstorms	X	Moderate	No Change
Lightning	X	Low	No Change
Hail	X	Moderate	No Change
Flooding	X	High	Increasing
Extreme Cold	X	Low	No Change
Extreme Heat	X	Low	No Change
Drought	X	Low	No Change
Wildfire		Low	No Change
Landslides	X	Moderate	No Change
Dam Failure		Low	No Change

2. **Recent Hazard Events: Please describe any severe weather or disaster events that have occurred over the last 5 years that caused damages or loss of life in your community.**

   In the fall of 2017 the city experienced flooding, which caused damage to a few homes.

   In the spring of 2018 and 2019 and also early July 2019 the city had flooding due to heavy rainfall which damaged streets, alleys, stormwater structures, downed trees, caused mudslides, and damaged homes and business structures, as well as city park equipment & structures. We also had flooding of city wastewater buildings.

3. **Local Vulnerabilities: Please use the chart below to identify what specific critical infrastructure (i.e., structures or systems), populations, or other assets in your community are suspectable to damage and loss from specific hazard events.**

Natural Hazard (please list)	Vulnerability Assessment **List & describe what specific structures, systems, populations, or other community assets are suspectable to damage and loss from specific hazard events.**
Flooding	We have a fair number of homes that are susceptible to flooding during heavy rain events. Also, our city park is in the same watershed and has had flooding damages in the past.

4. **Reduction in Vulnerability - Please describe any particular actions your community has taken to reduce vulnerability against future severe weather or disaster events. This can include examples of any work that has been completed or is underway that you would consider mitigation, such as developing plans or implementing projects to deal with future heavy rainfall.**

   Our city council has appointed a 'Flood Task Force' and hired an engineering firm to investigate problem areas and come up with some solutions to hopefully curb potential hazards. The city has also hired a contractor to clean silt out of the creek bed that runs through the center of town to hopefully get rid of the floodwater at a faster rate before it can reach some of the homes. Geographically our town is located in the valley at the bottom of the bowl and it's going to be a struggle due to the landscape we live within.

5. **Increase in Vulnerability – Please describe any current conditions or changes that you feel has increased your community's vulnerability to future severe weather or disaster events. Please include anything related to population growth, zoning or development.**

   With the recent weather events increasing in intensity, having a hundred-year flood occurs almost annually. It's been a struggle for most people in town.

PART B: LOCAL MITIGATION CAPABILITIES ASSESSMENT

1. **Plans, Authorities & Policies: Please describe what specific plans, authorities or policies are in place to help accomplish mitigation in your community.**

   We are devising a plan for floodwater to try to move it out of town faster, divert it and maintain existing holding ponds to slow the water from dumping in town.

2. **Organizational Capacity: Please describe what staff or partnerships are in place to help accomplish mitigation in your community.**

   We have a flood task force and have hired an engineering firm to devise plans for flood mitigation. We also have a maintenance superintendent and a volunteer fire department.

3. **Programs: Please describe any programs in place that to help accomplish mitigation in your community.**

   Our city has been involved with the Renville County Sheriff's Department to be included in their CodeRed emergency alert system.

4. **Funding: Please describe any agency partnerships, funding or other resources to help accomplish mitigation in your community.**

   The city is currently trying to define and devise our plans for flood mitigation in order to come up with cost numbers to try to secure grant funds.

5. **Other Questions:**

   - **Does your jurisdiction have any plans or policies in place (or in development) related to resilience and adaptation for climate change?**

     No

   - **Who is your local municipal or rural electric coop provider?**

     Xcel Energy

   - **How do you encourage residents to sign up for emergency notifications?**

     To date we have not done anything directly. If people are interested in signing up for the CodeRed alert system they can either contact the Sheriff's Dept. or City Hall.

   - **Do you have (or need) portable or permanent back-up generators for specific critical facilities?**

     Our city has a permanent generator for our lift station in case of an outage.

PART C: LOCAL MITIGATION PROJECTS

1. **Local Mitigation Projects: Please describe any specific mitigation activities you think would help to address local vulnerabilities and reduce risk against future hazard events in your community.**

   The city has a need to repair and update existing storm sewers and streets.

   The city is also in need of a larger trash pump to bypass our sanitary lift station in the event of flooding.

   The city has a website, Facebook page, and monthly newsletter we can use to encourage residents to sign up for the county's CodeRed system and to be prepared for severe weather and power outages.

   Retention Ponds – The City's four existing retention ponds have accumulated a significant amount of sediment over the years and the outlet control structures appear to be in need of repair. Cleaning the ponds will improve their storage capacity.

   Diversion Channel – Construct a diversion channel to safely convey water away from the City.

   Curb & Gutter – Install curb and gutter in existing and new neighborhoods to increase flow rates downstream.

2. **Gaps or Deficiencies: Please describe any specific gaps or deficiencies that are a barrier to implementing local mitigation measures.**

   We are a small community with limited funds and large flooding potentials.

PART D: SURVEY PARTICIPANTS

Jason Nelson, Maintenance Superintendent
Pam Hopkins, City Clerk

CITY OF OLIVIA

PART A: HAZARD IDENTIFICATION, RISK ASSESSMENT & VULNERABILITY ANALYSIS

1. **Hazard Identification & Risk Prioritization: Please fill out the following chart, indicating the natural hazards that pose risk to your community, your priority level of those hazards and if the priority of those hazards has changed over the last 5 years or since the last plan.**

Natural Hazard	History Mark "X" for hazard events that have occurred within your jurisdiction.	Risk Prioritization Indicate the priority level of this hazard in your jurisdiction using **HIGH, MODERATE** or **LOW**. Consider the anticipated likelihood of future events and the potential impacts to life safety, structures, systems, vulnerable populations or other community assets.	Change in Risk Note if you feel the risk of this hazard is **INCREASING, DECREASING,** or has had **NO CHANGE** in your jurisdiction. You may add comments if needed.
Blizzards	X	Moderate	No Change
Ice Storms	X	Low	No Change
Tornadoes	X	Low	No Change
Windstorms	X	Moderate	No Change
Lightning	X	Low	No Change
Hail	X	Low	No Change
Flooding	X	Moderate	Increasing
Extreme Cold	X	Low	No Change
Extreme Heat			
Drought			
Wildfire			
Landslides			
Dam Failure			

2. **Recent Hazard Events: Please describe any severe weather or disaster events that have occurred over the last 5 years that caused damages or loss of life in your community.**

   In the fall of 2020, the city experienced a hail storm which caused damage to multiple homes and property within the community.

   In approximately 2017, the city experienced heavy rains which caused flooding in areas of the community. This caused residential home sewers to back-up and city roadways and parks to be flooded.

   Over the past 5 years, two of the three city's emergency outdoor sirens have been struck by lightning during storms, causing severe damage to the equipment.

3. **Local Vulnerabilities: Please use the chart below to identify what specific critical infrastructure (i.e., structures or systems), populations, or other assets in your community are suspectable to damage and loss from specific hazard events.**

Natural Hazard (please list)	**Vulnerability Assessment** **List & describe what specific structures, systems, populations, or other community assets are suspectable to damage and loss from specific hazard events.**
Extreme Cold	Dry (snowless) starts to a winter season combined with unseasonably cold conditions can cause ground frost levels to go to depths where it impacts underground water utility pipes. If the ground was particularly moist in the fall, these cold conditions can also cause paved and graveled streets and roads to deteriorate, crack, or buckle.
Flooding	We have some areas of the city where stormwater pipes are not large enough to keep up with the larger rain events we have witnessed in recent years. Even when the pipes are adequate to accommodate larger volumes of water, much of the water collected is conveyed to drainage ditches which are also struggling to accommodate larger water volumes coming from an increasing number of tile lines and drainage connections. If the ditch backs up, some neighborhoods will remain flooded until ditch water levels drop. Also, the city's wastewater treatment plant has flooded a few times in recent years due to the adjacent drainage ditch backing up and overflowing. This has resulted in having to cut power to the facility and forcing the city to work with the State Duty Officer regarding such emergency events.
Windstorms / Tornadoes	We have one mobile home park within city limits without a suitable storm shelter available to the residents of the park, so these individuals are especially vulnerable to high wind and tornadic events. In addition, approximately 2/3 of the city's electric utility grid is above ground and in certain locations can be vulnerable in high wind conditions if falling trees or branches make contact with existing electric lines.
Ice Storms	With 2/3 of the city's electric grid above ground, ice conditions can cause considerable damage to electric lines due to added weight breaking the wires directly or else creating a "galloping" situation with the added weight combined with high winds which can break cables or pull wires loose. Additionally, falling trees or tree limbs due to ice buildup can also create added hazards for city electric lines.
Lightning	The city maintains storm warning sirens located in various areas of the community. In order to achieve maximum reach of those sirens, they are placed on very tall poles which also makes them vulnerable to lightning strikes. While grounded and protected to meet or exceed industry specifications, the city's water and wastewater treatment facility operations are monitored and maintained by very high-tech electronic controls and monitors. Lightning has damaged elements of these systems previously.
Blizzards	Given the terrain in and around the city of Olivia, white-out and blizzard conditions happen a few times most winters. With Highways 212 and 71 both running through the city, when these winter emergencies strike it can occasionally create a significant strain on local and regional resources in terms of law enforcement and public works personnel. Furthermore, if the State closes access to highways there may be dozens of stranded motorists in need of temporary parking and/or shelter.

4. **Reduction in Vulnerability - Please describe any particular actions your community has taken to reduce vulnerability against future severe weather or disaster events. This can include examples of any work that has been completed or is underway that you would consider mitigation, such as developing plans or implementing projects to deal with future heavy rainfall.**

   Olivia has been working on its long-term plan of undergrounding key electric lines. Our public utilities commission adopts 5-year plans based on our consultant electrical engineer's recommendations on what undergrounding and facility hardening projects should be undertaken each year.

   Similarly, the city engineer has helped put together a long-term street and utility plan which looks out 30+ years into the future in regards to anticipated street and utility upgrades. This plan allows the city to determine the most cost-effective timelines for upgrading drainage and stormwater utility elements by including those upgrades in with planned infrastructure projects.

5. **Increase in Vulnerability – Please describe any current conditions or changes that you feel has increased your community's vulnerability to future severe weather or disaster events. Please include anything related to population growth, zoning or development.**

   The single greatest threat for increasing vulnerability to our community related to severe weather & disasters comes from ongoing tile installation in farm fields throughout the region. Access to existing drainage ditches by agricultural land owners is largely unregulated, so adding many more miles of drainage tile to fields and dumping the collected water into existing ditches is a regular occurrence in this region. The carrying capacity of existing ditches are fixed and finite while the amount of water being added to the system continues to increase. This situation, combined with the larger rainfall events experienced in recent years, is leading to more instances of high water & overflow conditions along the ditches. As mentioned in the hazard identification section, much of our stormwater system directly or indirectly connects to area ditches and if the ditches are full, low lying neighborhoods can flood and remain in that state until ditch water levels recede. Similarly, our wastewater plant has experienced flooding due to the ditch backing up and overflowing its normal banks. Wetter conditions are motivating more farmers to put in more pattern tile in their fields, which in turn will compound an already growing problem.

PART B: LOCAL MITIGATION CAPABILITIES ASSESSMENT

1. **Plans, Authorities & Policies: Please describe what specific plans, authorities or policies are in place to help accomplish mitigation in your community.**

   The city council and public utilities commission, in tandem with our consultant engineers, have tried to put in place both plans and best practice guidelines which take into account the need to improve and harden our key infrastructure elements from damage by bad weather or other disasters.

2. **Organizational Capacity: Please describe what staff or partnerships are in place to help accomplish mitigation in your community.**

   The city has a number of in-house and a few key outside consultant staff who all play a part in creating and maintaining mitigation plans. Those positions include city administrator, planning and zoning administrator, water & wastewater superintendent, public works superintendent, electric utility superintendent, building inspector, electric systems engineer, and civil engineers (including one specifically focused on surface water management planning).

3. **Programs: Please describe any programs in place that to help accomplish mitigation in your community.**

   Beyond the long-term planning for making improvements to our utility systems over time and our building inspector's dedication to making sure facilities being built meet or exceed building code standards, there are no specific programs in place that focus on hazard mitigation.

4. **Funding: Please describe any agency partnerships, funding or other resources to help accomplish mitigation in your community.**

   In the past the city has worked with the USDA, PFA and MN Rural Water to secure outside funding and assistance to aid in projects which had mitigation components to them.

5. **Other Questions:**

   - **Does your jurisdiction have any plans or policies in place (or in development) related to resilience and adaptation for climate change?**

     Beyond adjusting our stormwater calculations to use data that reflects recent upticks in precipitation amounts and frequency, we do not have any other plans or policies in place that specifically focuses on long-term weather variability.

   - **Who is your local municipal or rural electric coop provider?**

     The city of Olivia owns its own electric utility. Of the electricity sold and consumed in the Olivia service area, approximately 29% of the electric power is provided by Minnesota Municipal Power Agency (MMPA) and 71% is provided by Western Area Power Administration. Over 87% of our electric power sold comes from renewable energy sources.

   - **How do you encourage residents to sign up for emergency notifications?**

     We have a city website with a link for residents to sign up for CodeRed. This service is regularly mentioned at city council meetings as something that the public should consider signing up for because it is used not only for weather & disaster situations but also for local emergency situation such as neighborhood gas leaks, water main breaks, etc. The Olivia Police Department also encourages new residents to sign up for the emergency notifications when they come to town.

- **Do you have (or need) portable or permanent back-up generators for specific critical facilities?**

  Some facilities do have permanent back-up generators, but not all. Additional need in this area is a concern.

PART C: LOCAL MITIGATION PROJECTS

1. **Local Mitigation Projects: Please describe any specific mitigation activities you think would help to address local vulnerabilities and reduce risk against future hazard events in your community.**

   We would like to continue upgrading the city's warning sirens.

   Educating the public is an ongoing need for the community. The community would benefit from receiving more information concerning the preparation for severe weather and power outages.

   With the ditch water level issue previously mentioned becoming a greater concern, the potential need for some sort of dike or flood wall installation to protect the city's wastewater plant from flooding becomes a greater issue to consider.

   Assess where the city may still need permanent or portable backup generators and obtain them for future use during power outages.

2. **Gaps or Deficiencies: Please describe any specific gaps or deficiencies that are a barrier to implementing local mitigation measures.**

   The biggest challenges in this realm are limited funding, macro-scale logistics issues, and having so many incidents hit us in such a relatively short period of time that we can barely keep up with the challenges.

PART D: SURVEY PARTICIPANTS

Dan Coughlin, City Administrator
Brian Stenholm, Emergency Manager
Wayne Olson, Public Works Director
Dave Ervin, Water & Wastewater Director
Troy Fuoss, Electric Utility Superintendent
Justin Black, City Engineer
Kendra Lyngaas, City Engineer

CITY OF RENVILLE

PART A: HAZARD IDENTIFICATION, RISK ASSESSMENT & VULNERABILITY ANALYSIS

1. **Hazard Identification & Risk Prioritization: Please fill out the following chart, indicating the natural hazards that pose risk to your community, your priority level of those hazards and if the priority of those hazards has changed over the last 5 years or since the last plan.**

Natural Hazard	History Mark "X" for hazard events that have occurred within your jurisdiction.	Risk Prioritization Indicate the priority level of this hazard in your jurisdiction using **HIGH, MODERATE** or **LOW**. Consider the anticipated likelihood of future events and the potential impacts to life safety, structures, systems, vulnerable populations or other community assets.	Change in Risk Note if you feel the risk of this hazard is **INCREASING, DECREASING,** or has had **NO CHANGE** in your jurisdiction. You may add comments if needed.
Blizzards	X	High	No Change
Ice Storms	X	High	Increasing
Tornadoes			
Windstorms	X	High	Increasing
Lightning	X	Low	No Change
Hail	X	Low	No Change
Flooding	X	High	Increasing
Extreme Cold	X	High	No Change
Extreme Heat			
Drought			
Wildfire			
Landslides			
Dam Failure			

2. **Recent Hazard Events: Please describe any severe weather or disaster events that have occurred over the last 5 years that caused damages or loss of life in your community.**

   In August of 2016, the city experienced a massive rain event. There was about 10"-12" of rain in a short period of time that created lots of street flooding, along with private property flooding. The flooding was so bad the water went over a dike at the city water treatment plant and contaminated the clear drinking water pit.

   There was not much relief in the summer of 2017. Again, lots of rain that caused street and private property flooding.

   The winter of 2018-2019 created 22 different soft spots on public streets. The asphalt areas broke up as the frost was coming out of the ground.

3. **Local Vulnerabilities: Please use the chart below to identify what specific critical infrastructure (i.e., structures or systems), populations, or other assets in your community are suspectable to damage and loss from specific hazard events.**

Natural Hazard (please list)	Vulnerability Assessment List & describe what specific structures, systems, populations, or other community assets are suspectable to damage and loss from specific hazard events.
Ice Storms, Blizzards	Power lines and power poles that have failed or may fail due to heavy snow and ice storms.
Windstorms, Lightning	Power lines and power poles that have failed or may fail due to high winds and lightning strikes. We also have 2 mobile home parks without storm shelters where residents are vulnerable to high wind events.
Flooding	Our city is very susceptible to street flooding when we have lots of rain or saturated soil conditions. The city's storm drains flow into a nearby ditch that is prone to flooding due to increased demand on the ditch system with additional field tile lines being continually added. If the power goes down, our wastewater plant and lift stations are vulnerable due to undersized back-up generators.
Extreme Cold	Our population consists of a higher number of seniors and children that can be affected if the power goes out.

4. **Reduction in Vulnerability - Please describe any particular actions your community has taken to reduce vulnerability against future severe weather or disaster events. This can include examples of any work that has been completed or is underway that you would consider mitigation, such as developing plans or implementing projects to deal with future heavy rainfall.**

   The city has started a Facebook page and revamped the current website to be able to better communicate with citizens. We are also enrolled and promote the county's CodeRed system, but it is tough to get citizens to sign up. This has been promoted on our Facebook and website along with open house events, such as National Night Out.

5. **Increase in Vulnerability – Please describe any current conditions or changes that you feel has increased your community's vulnerability to future severe weather or disaster events. Please include anything related to population growth, zoning or development.**

   We have noticed an increase in more frequent high-rain events. This, along with additional tiling into County Ditch 45, has increased street flooding events within the city. This also leads to other issues such as I&I, basement flooding, and sewer backup.

PART B: LOCAL MITIGATION CAPABILITIES ASSESSMENT

1. **Plans, Authorities & Policies: Please describe what specific plans, authorities or policies are in place to help accomplish mitigation in your community.**

   The city has a 5-year comprehensive plan that addresses some of the city's aging street and infrastructure. We also provide information to new residents for signing up for emergency notifications.

2. **Organizational Capacity: Please describe what staff or partnerships are in place to help accomplish mitigation in your community.**

   The police chief is the designated emergency manager. We have a public safety committee that meets quarterly. Our city engineer and public works director put plans together to mitigate street issues and carry those plans out as the budget allows.

3. **Programs: Please describe any programs in place that to help accomplish mitigation in your community.**

   The city participates in the county's CodeRed emergency alert system. We promote and encourage residents to sign up. Our local school practices tornado drills and educates students on severe weather awareness.

4. **Funding: Please describe any agency partnerships, funding or other resources to help accomplish mitigation in your community.**

   The city uses its own budget to address local mitigation measures. Unfortunately, this has been a slow process due to financial hardship over the last 20 years. In the spring of 2020, we signed up as part of the MnWARN program to assist in preparation of events for water and wastewater utilities.

5. **Other Questions:**

   - **Does your jurisdiction have any plans or policies in place (or in development) related to resilience and adaptation for climate change?**

     No

   - **Who is your local municipal or rural electric coop provider?**

     Xcel Energy

   - **How do you encourage residents to sign up for emergency notifications?**

     We promote a link for CodeRed on the city's website and Facebook page. Sign up for CodeRed has also been promoted at city council meetings, open houses. City Hall staff have assisted citizens with signing up.

   - **Do you have (or need) portable or permanent back-up generators for specific critical facilities?**

     The community center is our emergency location and has a back-up generator. The wastewater treatment plant has a generator, although it is undersized and can only run half of the plant. We do have one portable generator that can be used to run a lift station.

     The fire department does not have a back-up generator to use if the power is out to aid with starting trucks, opening garage doors, etc.

PART C: LOCAL MITIGATION PROJECTS

1. **Local Mitigation Projects: Please describe any specific mitigation activities you think would help to address local vulnerabilities and reduce risk against future hazard events in your community.**

   The city has a need for additional storm sewer upgrades in the event of flooding.

   Installation of a large holding pond area could possibly aid with drainage until the ditch lowers when the water in the ditch is high.

   Public education material would be beneficial for extended power outages, flooding, sewer back-ups, etc. for homeowners. Also continue to promote residents to sign up for CodeRed emergency notifications from Renville County.

   Purchase a generator for the fire department in order to aid with starting trucks, opening garage doors, etc. when there is a power outage.

   It seems that power outages last longer and are more frequent than in the past, so maybe upgraded electrical equipment or burying overhead power lines might aid with this. (This would be by Xcel Energy).

   Update the city's long-range Comprehensive Plan to identify and address mitigation of future hazard events.

2. **Gaps or Deficiencies: Please describe any specific gaps or deficiencies that are a barrier to implementing local mitigation measures.**

   Money. Everything costs money and unfortunately that is what it comes down to. The city's fund balance is finally starting to grow and hopefully some of these projects can be addressed in the future with possible assistance. The city does need to adopt a long-range comprehensive plan to identify and address mitigation of future hazard events. We also need to continue to encourage residents to sign-up for emergency notifications.

PART D: SURVEY PARTICIPANTS

Shane Wohlman, City Administrator/Clerk
Aaron Slagter, Police Chief/Emergency Manager
Nathan Sunvold, Public Works Director

CITY OF SACRED HEART

PART A: HAZARD IDENTIFICATION, RISK ASSESSMENT & VULNERABILITY ANALYSIS

1. **Hazard Identification & Risk Prioritization: Please fill out the following chart, indicating the natural hazards that pose risk to your community, your priority level of those hazards and if the priority of those hazards has changed over the last 5 years or since the last plan.**

Natural Hazard	History Mark "X" for hazard events that have occurred within your jurisdiction.	Risk Prioritization Indicate the priority level of this hazard in your jurisdiction using **HIGH, MODERATE** or **LOW**. Consider the anticipated likelihood of future events and the potential impacts to life safety, structures, systems, vulnerable populations or other community assets.	Change in Risk Note if you feel the risk of this hazard is **INCREASING, DECREASING,** or has had **NO CHANGE** in your jurisdiction. You may add comments if needed.
Blizzards	X	Moderate	No Change
Ice Storms	X	High	No Change
Tornadoes	X	Moderate	No Change
Windstorms	X	Moderate	No Change
Lightning	X	Low	No Change
Hail	X	Low	No Change
Flooding	X	Low	No Change
Extreme Cold	X	Moderate	No Change
Extreme Heat	X	Low	No Change
Drought	X	Low	No Change
Wildfire			
Landslides			
Dam Failure			

2. **Recent Hazard Events: Please describe any severe weather or disaster events that have occurred over the last 5 years that caused damages or loss of life in your community.**

   We have had wind storms come through knocking down tree branches on streets and knocking down power lines. 9 years ago, a storm on July 1, 2011 knocked down trees and caused a power outage for 3 days.

   In February of 2019, we had a brown out due to cold. We couldn't even open the overhead doors at the city shop and town was shut down for a few hours. The generators at the wastewater facility and fire hall worked and kept the wastewater facility running. The water plant was down since there is no generator there but the tower had plenty of water, however there was concern about the tower freezing.

   On August 8, 2020 a storm knocked down trees and blew a fan cover off the community center roof.

   We have had other rain storms where the wastewater lift station couldn't keep up, so we had to do an emergency by pass.

3. **Local Vulnerabilities: Please use the chart below to identify what specific critical infrastructure (i.e., structures or systems), populations, or other assets in your community are suspectable to damage and loss from specific hazard events.**

Natural Hazard (please list)	Vulnerability Assessment List & describe what specific structures, systems, populations, or other community assets are suspectable to damage and loss from specific hazard events.
Flooding	It seems like the city lift station can handle up to 4-5 inches of rain, but any more and we have to do by pass. There is concern that the County Drainage Ditch #104 that we discharge into could flood into parts of the wastewater facility.
Windstorms/Tornadoes	In the past, the bleachers and scoreboard at the ballpark have been damaged or blown over during strong wind events. Both have been rebuilt and have handled high winds since. Power line failure is still a concern in storms, due to trees falling and there are still a lot of old poles in town. Xcel Energy did inspect poles during the summer of 2020 and replaced some and anchored others.
Ice Storms & Blizzards	There have been incidents where our town has lost power for a few hours but Xcel Energy usually has power back up in a few hours.
Extreme Cold	The water tower may be susceptible to freezing during extreme cold if the power goes down. The water plant does not have a generator.

4. **Reduction in Vulnerability - Please describe any particular actions your community has taken to reduce vulnerability against future severe weather or disaster events. This can include examples of any work that has been completed or is underway that you would consider mitigation, such as developing plans or implementing projects to deal with future heavy rainfall.**

   From 2015 – 2019 the city redid the lift station and all city sewer lines to cut down on I&I. It seems to work better. We had a 5-inch rain in September 2019 and we got bypass pumps set up but didn't turn them on, since water in man holes was dropping. During the construction the city installed larger storm drain pipes and areas that used to flood don't now, but a couple of storm drains were not replaced but still handle last few rain events pretty well. We will keep monitoring this issue. The city installed an update alarm system at sewer.

5. **Increase in Vulnerability – Please describe any current conditions or changes that you feel has increased your community's vulnerability to future severe weather or disaster events. Please include anything related to population growth, zoning or development.**

   Since all the storm and sewer water drains into the same drainage ditch, there are concerns that if the town expands in the future that the drainage ditch might not handle a 5-inch event.

PART B: LOCAL MITIGATION CAPABILITIES ASSESSMENT

1. **Plans, Authorities & Policies: Please describe what specific plans, authorities or policies are in place to help accomplish mitigation in your community.**

   None related.

2. **Organizational Capacity: Please describe what staff or partnerships are in place to help accomplish mitigation in your community.**

   In times of severe storms or blizzards, the city public works and fire department have worked together to open streets or to use a pumper to bypass sewer overflows. The city also contacts farmers and some resident to help if snow fall amount is too much for public works to remove.

3. **Programs: Please describe any programs in place that to help accomplish mitigation in your community.**

   The city participates in the county's CodeRed system. If the city has a problem with a severe storm or water being shot off or other emergencies, the county will contact affected households and business phones (cell & land line) and instruct the affected what to do.

4. **Funding: Please describe any agency partnerships, funding or other resources to help accomplish mitigation in your community.**

   The city used funds from USDA Rural Development to upgrade our wastewater facility, sewer lines, and storm drains. Rural Development also helped with fixing a leaky roof on the fire hall. The city used CARES grant funding to upgrade alarm systems and add WIFI at our wastewater facility so we can check on our phones to make sure the wastewater plant is running effectively.

5. **Other Questions:**

   - **Does your jurisdiction have any plans or policies in place (or in development) related to resilience and adaptation for climate change?**

     No

   - **Who is your local municipal or rural electric coop provider?**

     Xcel Energy

   - **How do you encourage residents to sign up for emergency notifications?**

     We have a link to sign up for the Renville County CodeRed system on the front page of the city website.

   - **Do you have (or need) portable or permanent back-up generators for specific critical facilities?**

     We do have some existing generators, but it would be beneficial to have additional ones to provide emergency backup power for the city's water plant, city shop, and community center.

PART C: LOCAL MITIGATION PROJECTS

1. **Local Mitigation Projects: Please describe any specific mitigation activities you think would help to address local vulnerabilities and reduce risk against future hazard events in your community.**

   Acquire generators to provide emergency backup power for the city's water Plant, city shop, and community center.

   Continue to promote residents to sign up for the county's CodeRed system and to be prepared for severe weather and power outages.

   See if Renville County or the SWCD can help address improvements to County Drainage Ditch #104 or find ways to slow down water from area runoff from surrounding agricultural land. Maybe a pond system would be helpful.

2. **Gaps or Deficiencies: Please describe any specific gaps or deficiencies that are a barrier to implementing local mitigation measures.**

   None noted.

PART D: SURVEY PARTICIPANTS

Scott Agre, Public Works Supervisor

Appendix D – Plans & Programs in Place

Renville County

MHMP Plans in Place Form

Planning & Regulatory

Plans/Programs	Yes/No	Comments
Comprehensive/Master Plan	Yes	
Capital Improvements Plan	Yes	
Economic Development Plan	Yes	
Emergency Operations Plan	Yes	
Climate Adaptation Plan	No	
Continuity of Operations Plan	Yes	
Transportation Plan	Yes	SW Corridor Transportation Coalition & Central Community Transit Joint Powers Board & MN Transportation Alliance & MMDC Area Transportation Partnership & AMC
Stormwater Management Plan	Yes	At the city level
Community Wildfire Protection Plan	No	
FireWise Program	No	
Water Conservation/Emergency Preparedness Plan	Yes	Renville County Water Planning Advisory Committee
Wellhead Protection Plan	Yes*	At the city-level
Database of dry hydrants/well access	Yes	MN DNR is the source for this data. There is a dry well permitted for Lake Allie (2009). Permits for dry hydrants are available from MN DNR for public waters only.
Burning permits/restrictions	Yes/No	An “Open Burn” ordinance is in place; burn permits are not required
Water Management Plan	Yes	Comp. Watershed Management Plan Policy Committee
Zoning ordinance	Yes	
Subdivision ordinance	Yes	

Floodplain ordinance	Yes	
Natural hazard specific ordinance (stormwater, steep slope, wildfire)	No	
Flood insurance rate maps	Yes	
Acquisition of land for open space and public recreation uses	No	
School closing policy/communications plan in event of inclement weather/temperatures	Yes	
Mass Care Sheltering Plan	Yes	
Designated Mass Care Sheltering Facilities (list available)	Yes*	Identified in coordination with American Red Cross
Tornado Safe Rooms/Outdoor Storm Shelters (list available)	Yes	**Fairfax:** Prairie Lutheran School, GFW School **Bird Island:** St. Mary's School **Renville:** RCW High School, Community Center **Sacred Heart:** Community Center **Olivia:** BOLD School, National Guard Armory **Danube:** School building, Community Center **Hector:** BLHS High School, Community Center, City Office/Palace Theater **Buffalo Lake:** BLHS Elementary School **Franklin:** Cedar Mtn. Elementary, Community Center **Morton:** Fire Hall
Warning sirens (list all locations)	Yes	Lake Allie Campground and the Cities of: Sacred Heart, Renville, Danube, Olivia, Bird Island, Hector, Buffalo Lake, Fairfax, Franklin, and Morton
SKYWARN Program	Yes	
CodeRED Mass Notification System	Yes	
Severe Weather Awareness Week	Yes	

Winter Weather Awareness Week	Yes	
NOAA Weather Radios	Yes	
THIRA	Yes	
*Other *please describe*		

Administrative & Technical

Administration	Yes/No	*Comments*
Planning Commission	Yes	
Mitigation Planning Committee	Yes	
Maintenance programs to reduce risk (e.g., tree trimming, clearing drainage systems)	Yes	
Mutual aid agreements	Yes	
Staff	Yes/No	*Comments*
Chief Building Official	Yes	
Floodplain Administrator	No	
Emergency Manager	Yes	
Community Planner	No	
Civil Engineer	Yes	
GIS Coordinator	Yes	
Technical	Yes/No	*Comments*
Warning systems/services (Reverse 911, outdoor warning signals)	Yes	
Hazard data and information	Yes	
Hazus analysis	No	

Education & Outreach

Program/Organization	Yes/No	*Comments*
Local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.	Yes	
Ongoing public education or information program (e.g., responsible water use, fire safety, household preparedness, environmental education)	Yes	
Natural disaster or safety related school programs	Yes	
StormReady certification	Yes	
Firewise Communities certification	No	
Public-private partnership initiatives addressing disaster-related issues	Yes	
*Other *please list & describe*		

Appendix E – Past Mitigation Action Review Status Report

Renville County

Past Mitigation Action Review Status Report

Following is a report on the status of mitigation actions related to natural hazards listed in *Section 5: Mitigation Strategy* of the Renville County 2014 Hazard Mitigation Plan. This report identifies those actions that have been completed, are being deleted, or are ongoing. Mitigation actions that are noted as "ongoing" will be reviewed & revised as necessary based on the updated risk assessment and local input. This report covers the mitigation actions that were listed for implementation by the county and by city jurisdictions, as applicable.

#	Hazard	Mitigation Action	Jurisdiction	Status	Comments
1	All Hazards	To ensure command and control capabilities during an incident, guarantee cities, townships, and volunteers receive training requirements using the National Incident Management Systems (NIMS).	County and Bird Island, Buffalo Lake, Danube, Fairfax, Franklin, Hector, Morton, Olivia, Renville	Delete	Not relevant for MHMP update. This is more related to emergency response planning.
2	All Hazards	Redundant Communication System: need to have a radio back-up system to be used for coordination and an alert system when phone lines and cell phones are down.	County	Delete	Not relevant for MHMP update. This is more related to emergency response planning.
3	All Hazards	Identify a control center in each jurisdiction. Evaluate the readiness of buildings for preventing damage. Inventory and assess whether buildings have back-up power systems.	Bird Island, Buffalo Lake, Danube, Fairfax, Franklin, Hector, Morton, Olivia, Renville	Delete	Not relevant for MHMP update. This is more related to emergency response planning.
4	All Hazards	Protect the County's critical infrastructure by increasing security at government and law enforcement facilities, increasing cyber-security to safeguard sensitive and private information.	County	Delete	Not relevant for MHMP update. This is more related to emergency response planning.

#	Hazard	Mitigation Action	Jurisdiction	Status	Comments
5	All Hazards	Work with State agencies to assess County's ability to provide an interoperability baseline by adding channels for trunking in order to include public works, schools, electrical cooperatives, and transportation systems. Build a tower in the south part of the County to provide an overlay tower system throughout the State. Secure State and Federal funding so our jurisdiction is attached to the Allied Radio Matrix for Emergency Response (ARMER) statewide communication system.	County	Delete	Not relevant for MHMP update. This is more related to emergency response planning.
6	Tornados, Thunderstorms	Encourage public and private outdoor recreation sites to provide shelter, where feasible, or advice on where to find shelter from violent storms. Examples of such sites include parks, campgrounds, golf courses, and public landings at area lakes and rivers.	County	Ongoing	Identifying and addressing where storm shelters or tornado safe rooms are needed is an ongoing effort of RCEM in coordination with local communities.
7	Tornados, Thunderstorms, Windstorms	Encourage or require that events with large gatherings of people, such as outdoor festivals or concerts, sporting events such as football games, and parades have a plan to protect and/or evacuate people during violent storms or provide relief from extreme temperatures.	County	Ongoing	This falls under EOP evacuation planning but may be included as a mitigation action under the strategy of mitigation preparedness & response support for severe storms.

#	Hazard	Mitigation Action	Jurisdiction	Status	Comments
8	Tornadoes, Thunderstorms	Inventory and assess the adequacy and condition of various County warning systems, including weather monitoring stations, the NOAA alert system, civil defense sirens, weather radio signal coverage and reverse 911 calling systems.	Bird Island, Buffalo Lake, Danube, Fairfax, Franklin, Hector, Morton, Olivia, Renville	Ongoing	This is an ongoing effort of RCEM in coordination with local communities.
9	Tornadoes, Thunderstorms	Secure funding from the Department of Homeland Security or other agencies to maintain and upgrade County warning systems.	County	Ongoing	Warning sirens are located in Lake Allie Campground and the Cities of: Sacred Heart, Renville, Danube, Olivia, Bird Island, Hector, Buffalo Lake, Fairfax, Franklin, and Morton. All sirens are maintained and will be upgraded if necessary.
10	Tornadoes	Ensure that severe storm spotter volunteers and emergency service personnel are adequately trained.	County	Ongoing	RCEM works with the NWS on an annual basis to hold a SkyWarn training for First Responders and local residents who wish to be trained.
11	All Hazards	Review response plans as part of emergency operations plan and staff and equipment needs to implement.	County	Delete	Not relevant for MHMP update. This is more related to emergency response planning.
12	Extreme Cold, Severe Winter Storm	Inventory and assess whether public buildings, schools and other critical facilities have backup electric generators. Wire critical facilities to be pre-disaster ready for the generators.	County, Bird Island, Buffalo Lake, Danube, Fairfax, Franklin, Hector, Morton, Olivia, Renville	Ongoing	RCEM and local governments will continue to identify where there are critical facilities that should have backup power in place.

#	Hazard	Mitigation Action	Jurisdiction	Status	Comments
13	Lightning, Extreme Heat, Extreme Cold	Provide educational information and "best practices" for protecting life and property during violent storms or extreme temperatures on the website.	County, Bird Island, Buffalo Lake, Danube, Fairfax, Franklin, Hector, Morton, Olivia, Renville	Ongoing	This is a standing effort of the RCEM program in coordination with local communities. We participate in the NWS severe weather awareness weeks in April and November each year and use our FB and local media for regular outreach & education during the year during severe weather periods. Renville County is also a NWS designated "StormReady" community.
14	Flooding	Identify any areas where life or property are threatened by flood events, but are not located within the 100-year flood protection elevation.	County	Ongoing	This is a standing effort of the RCEM program in coordination with local communities for flood mitigation.
15	Flooding	Explore finding funds to assist with the buyout or relocation for structures that have been damaged during past flood protection elevation.	County	Ongoing	Buyout of homes that experience repetitive flooding is an effort that RCEM and local communities will evaluate for flood mitigation.
16	Flooding	Identify roads and bridges in the County that flood on a regular basis and prioritize these for improvements.	County	Ongoing	This is a standing effort of the Renville County Highway Dept. and local city public works depts.
17	Flooding	Continue to implement the County's Water Plan action steps.	County	Ongoing	The last update of the Renville County Comprehensive Local Water Plan was in 2013. Efforts related to flood mitigation will be evaluated for incorporation into the MHMP update.
18	Flooding	Provide educational information and "best practices" for flood damage prevention on the Renville County website.	County	Ongoing	Revise as needed for plan update.

#	Hazard	Mitigation Action	Jurisdiction	Status	Comments
19	Flooding	Enforce and maintain local floodplain ordinances to ensure that new construction is built above the regulatory flood protection elevation. Consider additional regulations needed to protect life and property where appropriate.	County	Ongoing	Renville County and local governments will continue to enforce local floodplain management and shoreland management ordinances.
20	Drought	Develop plans to limit water use for nonessential purposes, such as lawn watering, car washing, etc., during drought periods as necessary. This is commonly referred to as a Drought Contingency Plan.	Bird Island, Buffalo Lake, Danube, Fairfax, Franklin, Hector, Morton, Olivia, Renville	Ongoing	Drought mitigation actions will be addressed in the MHMP update.
21	Wildfire	Explore the creation of a Community Wildfire Protection Plan.	Bird Island, Buffalo Lake, Danube, Fairfax, Franklin, Hector, Morton, Olivia, Renville	Ongoing / Delete	This will be evaluated for the MHMP update. If kept it would be under the directive of RCEM in coordination with the MN DNR Firewise Coordinator for our region and local fire depts.
22	Wildfire	Work with local fire chiefs, fire wardens, and others to continue and expand fire safety education outreach with school children and the public.	Bird Island, Buffalo Lake, Danube, Fairfax, Franklin, Hector, Morton, Olivia, Renville	Ongoing	Fire safety education is a standing effort of local fire depts. RCEM and the MN DNR also work to raise awareness of wildfire danger during dry conditions.
46	All Hazards	Work with Rural Electric Coops to bury the current overhead transmission lines.	County	Ongoing	This will be an ongoing effort of local governments in coordination with municipal or rural electric cooperatives.

#	Hazard	Mitigation Action	Jurisdiction	Status	Comments
47	All Hazards	Bird Island, Buffalo Lake, Danube, Fairfax, Franklin, Hector, Morton, Olivia, Renville develop Safe Room Plans. Citizens need clear idea of where to go in the event of a disaster.	Bird Island, Buffalo Lake, Danube, Fairfax, Franklin, Hector, Morton, Olivia, Renville	Ongoing	Revise as needed for plan update. RCEM and RC Public Health continue to work together to have mass care sheltering plans in place and will work with communities if they are activated following a disaster.
48	All Hazards	Create list of where to go for shelters and whether or not accessible for all residents.	County, Bird Island, Buffalo Lake, Danube, Fairfax, Franklin, Hector, Morton, Olivia, Renville	Ongoing	RCEM maintains a list of designated mass care shelters with the American Red Cross. Accessibility is one of the evaluation requirements for designating shelters.
50	All Hazards	Create and enforce county building code.	County	Ongoing	Revise as needed for plan update to address specific hazards such as flooding or high winds.
51	Lightning	Need to have public education about lightning safety and hazards.	Bird Island, Buffalo Lake, Danube, Fairfax, Franklin, Hector, Morton, Olivia, Renville, County	Ongoing	This falls under RCEM's public education & awareness during spring and summer storm season.

Appendix F – Planning Team Meetings

Renville County MHMP Update

Appendix F - Kickoff Meeting Documentation

Overview:

On April 22, 2020, U-Spatial@UMD hosted a kickoff meeting online that was attended by the Renville County Emergency Manager. The webinar included a project overview, U-Spatial@UMD's background, the roles and responsibilities of the Emergency Manager, the contents of the Multi-Hazard Mitigation Plan, the planning process, and the projected timeline of the project.

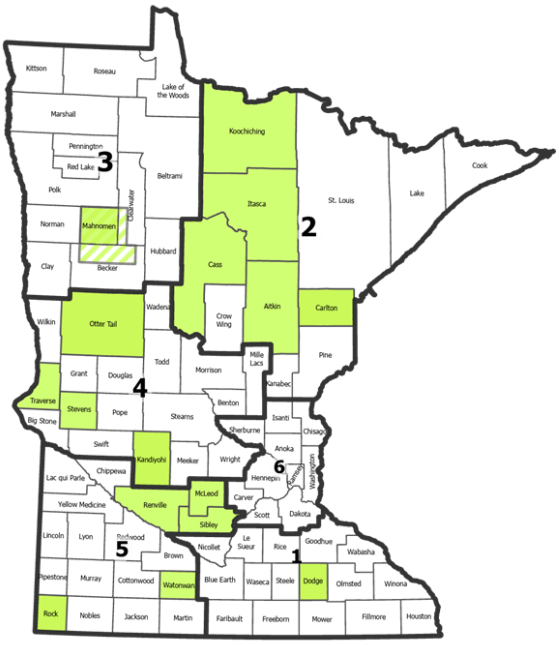
Attached Documentation:

- **Project Handout**: "Minnesota 2020-2021 Multi-Hazard Mitigation Plan Update Project Overview".

- **Webinar Slides**: "Minnesota 2020-2021 Multi-Hazard Mitigation Plan Update Project Kickoff Orientation Webinar"

Minnesota 2020-2021
Multi-Hazard Mitigation Plan Update Project Overview

During 2020-2021, U-Spatial from the University of Minnesota Duluth (U-Spatial@UMD) will be working to update Multi-Hazard Mitigation Plans (MHMPs) for 17 counties and 1 tribe. Our team consists of UMD staff who specialize in GIS applications and research and Hundrieser Consulting LLC, who specializes in stakeholder engagement and mitigation strategies.



Participating Jurisdictions

Aitkin, Carlton, Cass, Dodge, Itasca, Kandiyohi, Koochiching, LeSueur, Mahnomen, McLeod, Otter Tail, Renville, Rock, Sibley, Stevens, Traverse, Watonwan, White Earth Reservation.

Overview of Update Process

The U-Spatial@UMD team will coordinate with each Emergency Manager throughout the plan update process to engage participating jurisdictions and other stakeholders in the planning process. Following is an overview of key tasks that the U-Spatial@UMD team will facilitate to meet FEMA requirements in the update of each plan:

- Conduct 2 planning team meetings
- Conduct 2 periods of public outreach & engagement
- Assess Plans & Programs in Place to address natural hazards
- Conduct a Past Mitigation Action Review from past plan
- Update prioritization of natural hazards that pose risk
- Complete jurisdictional Local Mitigation Surveys (hazards, vulnerabilities & capabilities)
- Conduct hazard risk assessment for 1% annual chance floods using the Hazus GIS tool
- Inventory critical infrastructure
- Develop hazard profiles for each natural hazard (description, incident history, geographic variability, future probability, relationship to changing climate trends and local vulnerabilities)
- Develop 5-year jurisdictional Mitigation Action Charts

The planning process generally occurs over the course of 14-18 months from start to finish.

Contact

Stacey Stark, U-Spatial@UMD Director (MHMP Project Manager)
Phone: (218) 726-7438 / Email: slstark@d.umn.edu

HUNDRIESER CONSULTING LLC

U-SPATIAL
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Overview of the MHMP Update Process

The U-Spatial@UMD team will coordinate with each Emergency Manager (EM), participating jurisdictions, and other stakeholders throughout the planning process. The plan update generally occurs over the course of 12-18 months from start to finish. Following is an overview of key tasks that will occur and the approximate timeline for completion. This list not represent a complete list of what the plan update entails.

Stage 1 Tasks (4-5 months)

- HMP kickoff meeting/webinar with U-Spatial@UMD
- Develop jurisdictional contact list for MHMP planning team
- Disseminate & document News Release #1 (plan update announcement)
- Complete Plans & Programs in Place Checklist
- Conduct a Past Mitigation Action Review from prior plan
- Complete Capabilities Assessment to address natural hazards
- Hold & document Planning Team Meeting #1
- Complete Local Mitigation Surveys (hazards, vulnerabilities & capabilities)
- Revisit prioritization of natural hazards that pose risk
- Assist U-Spatial@UMD with provision of key data
- Complete inventory of Critical Infrastructure

Stage 2 Tasks (4-6 months)

- Develop 5-year Jurisdictional Mitigation Action Charts
- Conduct hazard risk assessment for 1% annual chance floods using the Hazus GIS tool
- Develop hazard profiles for each natural hazard (description, incident history, geographic variability, future probability)
- Complete county profile sections and maps
- Complete hazard profiles for each natural hazard
- Complete Plan Maintenance section of draft plan

Stage 3 Tasks (2-3 months)

- EM review of Draft Plan
- Hold & document Planning Team Meeting #2
- Finalize Mitigation Action Charts
- Disseminate & document News Release #2 (Public Review & Comment Period)
- EM coordination of plan review by local government(s) & other stakeholders

Stage 4 Tasks (2-3 months)

- Post-public review revisions made to plan (as necessary)
- Draft Plan sent to HSEM for review & approval
- Draft Plan sent to FEMA for review & approval
- Post FEMA review revisions made to plan (as necessary)
- FEMA to send letter stating “Approval Pending Adoption” to EM
- EM to facilitate MHMP jurisdictional adoptions (County/Tribe and cities)

Ongoing - Quarterly 25% Local Match Tracking Quarterly to HSEM

As part of the MHMP plan update, EM’s are required to submit quarterly reports to HSEM on their local 25% match accrued through MHMP activities during that quarter.

Minnesota 2020-2021 Multi-Hazard Mitigation Plan Update Project
Kick-off Orientation Webinar

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Webinar Purpose & Goals

The purpose of this webinar is to provide an orientation for Emergency Managers participating in 2020-2021 Multi-Hazard Mitigation Plan Updates.

- Introduce the U-Spatial@UMD Team and county contacts.
- Provide an overview of the project.
- Clarify roles and responsibilities.
- Outline the planning process, discuss key tasks and timelines.
- Discuss next steps and answer your questions.

Introductions

U-Spatial@UMD Project Team

Stacey Stark
Project Manager
U-Spatial@UMD

Bonnie Hundrieser
Emergency Management Planning Consultant
Hundrieser Consulting LLC

Zach Vavra
GIS Specialist and Researcher
U-Spatial@UMD

Steve Graham
Research Associate, Flood Modeling Specialist
U-Spatial@UMD

Emergency Managers:

- Name, Title, and Jurisdiction
- Past Experience with MHMP?

Minnesota HSEM:

Jennifer Davis, MN HSEM
State Hazard Mitigation Officer

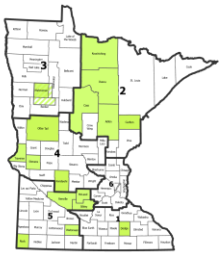
Project Overview

17 Counties:

Aitkin, Carlton, Cass, Dodge, Itasca, Kandiyohi, Koochiching, Le Sueur, Mahnomen, McLeod, Otter Tail, Renville, Rock, Sibley, Stevens, Traverse, Watonwan

1 Tribal Nation:

White Earth Band of Chippewa



Purpose

The Federal Disaster Mitigation Act of 2000 (DMA 2000) established programs and funding:

*"to reduce the loss of life and property, human suffering, economic disruption, and disaster assistance costs resulting from **natural disasters**"*

A local government plan is required in order to maintain eligibility for FEMA hazard mitigation grant programs.

MHMP's must be updated every 5 years

Flooding	Hail	Drought
Dam/Levee Failure	Lightning	Extreme Heat
Wildfire	Winter Storms	Extreme Cold
Windstorms	Landslides	Earthquakes
Tornadoes	Sinkholes & Karst	Coastal Erosion

Natural hazard categories for Minnesota MHMPs. Hazards may be omitted if low risk is demonstrated.

Why U-Spatial@UMD?

- **Proven experience**
  Our updates of 30+ MHMPs, as well as the State MHMP, have been quickly approved by FEMA and adopted by counties.
- **Advanced Capabilities**
  Expertise in the application of GIS, HAZUS, and research supports plan development and meeting all FEMA requirements.
- **Ability to Expedite**
  A consistent and proven approach for multiple counties supports State & FEMA review of draft plans.
- **Planning Team**
  Our project team includes advanced GIS students and Hundrieser Consulting.

Overview of MHMP Update Process

U-Spatial@UMD Team Roles & Responsibilities

- Keep you informed about the progress of your plan.
- Facilitate Planning Team meetings.
- Provide guidance to EM to conduct & document effective public outreach.
- Guide EM and planning team to complete key tasks for plan update.
- Keep up-to-date on FEMA requirements and Minnesota guidance.
- Produce a quality plan that FEMA will approve.
- Answer questions in a timely fashion.
- Provide quarterly reports to HSEM on your plan progress

EM Roles & Responsibilities

- Act as main Point of Contact.
- Track required local 25% match.
- Coordinate engagement of MHMP Planning Team.
- Conduct & document effective public outreach.
- Participate in completion of key assignments for plan update.
- Coordinate with other county/tribal staff to obtain information.
- Assist in timely review of draft document.
- Facilitate completion of local adoptions.

MHMP Planning Team

The MHMP planning team must include representation from local government, related stakeholders and neighboring jurisdictions.

- County/Tribal Government key officials and staff
- Cities – required; Townships – optional
- Other Related Stakeholders (i.e., Schools, Coops, MN DNR, etc.)
- Neighboring county/tribal jurisdictions

Key Tasks:

- Develop Jurisdictional Contact List.
- Hold & document Planning Team Meeting #1.
- Hold & document Planning Team Meeting #2.

Public Outreach

The plan update must document how the public was given the opportunity to be involved in the planning process and how their feedback was incorporated into the plan.

- Collect feedback on local-level concerns & mitigation actions.
- Use of local/social media, websites & community bulletin boards.
- Other outreach (i.e., attendance at City Council mtgs)

Key Tasks:

- Distribute & document News Release #1.
- Distribute & document News Release #2.
- Conduct other public outreach (optional).

Hazard Risk Assessment and Vulnerability Analysis

The U-Spatial@UMD Team will work closely with each EM and key departments to provide information as needed.

Key Tasks

- Review and contribute to critical infrastructure inventory.
- Identify specific, local-level impacts and vulnerabilities.
- Identify if and how risk priorities have changed since the last plan.
- Identify any factors (i.e., new development) that may increase the community's vulnerability to natural hazard events.
- Review social vulnerability factors.

Key Task Assignments

Hundrieser Consulting will coordinate with each EM and participating cities on key task assignments that will provide information required for the plan update.

Key Tasks

- Complete Plans in Place Checklist.
- Complete Capabilities Assessment for Mitigation.
- Conduct Past Mitigation Action Review.
- Coordinate Local Mitigation Survey (LMS) Forms.

Mitigation Action Charts

Hundrieser Consulting will coordinate development of draft 5-year jurisdictional Mitigation Action Charts (MACs) for the county/tribe and each participating city jurisdiction.

Key Tasks

- Complete Planning Team Mtg. #1 & Key Task Assignments.
- Conduct local-level development of MACs.
- Hold Planning Team Mtg. #2 for MAC review.
- Complete final MAC revisions.

Draft Plan Review

The U-Spatial@UMD Team will work with each EM to conduct a review of the draft MHMP and provide an opportunity for public review & comment on the plan.

Key Tasks

- EM review of initial draft plan > Revisions made as needed.
- Distribute News Release #2 - public review & comment period.
- EM coordination of review by key stakeholders.
- Posting of draft plan online with comment form.
- Documentation and incorporation of public feedback.

Plan Submission

The draft MHMP will be submitted to HSEM and FEMA for review & approval. Timing for review & approval is generally within 1-2 months.

Key Steps

- U-Spatial@UMD will submit the draft plan & Plan Review Tool (PRT) to HSEM.
- HSEM will submit the draft plan & PRT to FEMA reviewer.
- FEMA may respond with requests for revisions > U-Spatial@UMD to address revisions and resubmit plan.
- FEMA will send a letter of Approval Pending Adoption (APA status)

Plan Adoption

After FEMA has provided APA status, the county/tribe and all participating jurisdictions must formally adopt the plan.

Notes

- Good jurisdictional participation will facilitate local adoptions.
- Adoption of the plan is required for HMA grant program eligibility.
- Example adoption resolutions are provided for county/tribal adoption and local city adoption. Townships may elect to adopt (not required).
- Resolutions are incorporated into the final MHMP (PDF) by the Emergency Manager or included as hard copies.

Timeline Overview

- 22-Month total timeline (March 2020 – December 2021)
- Most plans take 14-18 months.
- Staggering of plans will be required to complete update of risk assessments, research of hazard histories, etc. for each jurisdiction.
- Many tasks occur concurrently, others must be done in succession.

Due to the COVID-19 Pandemic, we recognize that timing for completing the update of all 18 plans may be affected. If necessary, HSEM will work to extend our project contracts with FEMA to accommodate an extended timeline.

Possible timeline for your plan		Red includes county action items
Stage 1 Tasks (4-5 months)	April – August 2020	HMP kickoff meeting/webinar with U-Spatial@UMD Develop jurisdictional contact list for MHMP planning team Disseminate & document News Release #1 Hold & document Planning Team Meeting #1 Complete Plans & Programs in Place Checklist Complete Capabilities Assessment to address natural hazards Conduct a Past Mitigation Action Review from prior plan Complete Local Mitigation Surveys Revisit prioritization of natural hazards that pose risk Assist U-Spatial@UMD with provision of key data Complete inventory of Critical Infrastructure
Stage 2 Tasks (4-6 months)	August – November 2020	Develop 5-year Jurisdictional Mitigation Action Charts Hazus hazard risk assessment for flooding Develop hazard profiles for each natural hazard Complete county profile sections and maps Complete Draft Plan
Stage 3 Tasks (2-3 months)	December – February 2021	EM review of Draft Plan Hold & document Planning Team Meeting #2 Finalize Mitigation Action Charts Disseminate & document News Release #2 EM coordination of plan review by stakeholders
Stage 4 Tasks (2-3 months)	March – May 2021	Post-public review revisions made to plan (as necessary) Draft Plan sent to HSEM for review & approval Draft Plan sent to FEMA for review & approval

Local 25% Match

Each quarter EM's will be responsible to track and submit local match documentation to HSEM.

Notes:

- EM's are provided with a "Master Match Tracking" Excel Workbook to document match MHMP activities, participants, and amount accrued.
- Regular reminders & guidance will be provided on tracking match.

Next Steps

U-Spatial@UMD Team members will coordinate each EM to commence work on several tasks that will take place over the next several months.

Notes:

- We are sensitive to the workloads of EM's, particularly during COVID-19.
- All information requests or assignments are in prepared form.
- Please communicate your availability to complete/not complete work.
- Plans most expired are priority; however, EM's with completed tasks move up in the que for plan development.

Questions?

What questions do you have for U-Spatial@UMD or HSEM about the MHMP update process?

Contact Information

Stacey Stark, MS, GISP

U-Spatial@UMD

slstark@d.umn.edu

218-726-7438

Example Plans:

https://z.umn.edu/hazardmitigation

Renville County MHMP Update
JURISDICTIONAL CONTACT LIST

County Contacts

Name	Title	Phone	Email
Mike Hennen	EM Director	320-523-3838	mikehe@renvillecountymn.com
Samantha Best	Deputy EM Director	320-523-3838	samb@renvillecountymn.com
Bob Fox	Board Chair	320-894-2022	bobf@renvillecountymn.com
Lisa Herges	County Administrator	320-523-3754	lisah@renvillecountymn.com
Doug Bruns	Assessor	320-523-3644	dougb@renvillecountymn.com
Marc Iverson	Auditor/Treasurer	320-523-3621	marci@renvillecountymn.com
Scott Refsland	Environmental Svcs Dir.	320-523-3664	scottr@renvillecountymn.com
Diane Mitchell	Water & Household Hazardous Waste Mgmt.	320-523-3760	dianem@renvillecountymn.com
Heidi Rauenhorst	Hawk Creek Watershed Coordinator	320-523-3672	heidi@hawkcreekwatershed.org
Nick Kuntz	GIS Specialist	320-523-3811	nickk@renvillecountymn.com
Jill Bruns	Public Health Director	320-523-3723	jillb@renvillecountymn.com
Jeff Marlowe	Public Works Director/Hwy. Engineer	320-523-3591	jeffma@renvillecountymn.com
Nathan Johnson	Drainage Technician	320-523-3814	nathanj@renvillecountymn.com
Seth Sparks	Public Works - Drainage Systems Manager	320-523-3746	seths@renvillecountymn.com
Wayne Stomberg	Asst. County Engineer	320-523-3750	waynes@renvillecountymn.com
Scott Hable	Sheriff	320-523-3771	scotth@renvillecountymn.com
Jon Mitchell	Redwood/Renville Solid Waste Authority	320-523-8002	jonm@rrrswa.com

City Contacts

CITY OF BIRD ISLAND

Name	Title	Phone	Email
Deb Lingl	City Administrator	320-365-3371	deb.birdisland@mchsi.com
Dave Woelfel	Public Works Supervisor	320-522-1760	dave.birdisland@mchsi.com

CITY OF BUFFALO LAKE

Name	Title	Phone	Email
Jean Thielke	City Clerk	320-833-2272	cityofbuffalolake@gmail.com
Jessie Duenow	Chief of Police, EM Contact	320-833-2101	buffalolakepolice@gmail.com

CITY OF DANUBE

Name	Title	Phone	Email
Les Schneider, Jr.	Chief of Police, EM Contact	320-826-2256	danubepd@cityofdanube.com
Dotty Schnobrich	City Clerk	320-826-2563	cityclerk@cityofdanube.com

CITY OF FAIRFAX

Name	Title	Phone	Email
Nicholas Johnson	City Administrator	507-426-7255 ext 1	admin@fairfax-mn.gov
Scott Froehlich	Chief of Police, EM Contact	507-426-8240	sfroehlich@fairfax-mn.gov

CITY OF FRANKLIN

Name	Title	Phone	Email
Trista Radermacher	City Clerk	507-557-2259	franklin@mchsi.com
Kevin Kokesch	Public Works Director	507-829-4631	franklinutilities@mchsi.com

CITY OF HECTOR

Name	Title	Phone	Email
Andrea Aukrust	City Administrator	320-848-2122	administrator@hectormn.us
Jen Beckler	Deputy Clerk	320-848-2122	deputyclerk@hectormn.us
Zach Pierce	Chief of Police, EM Contact	320-848-2500	zach@hectormn.us

CITY OF MORTON

Name	Title	Phone	Email
Jason Nelson	Maintenance Supt.	507-829-7765	jnelson7765@gmail.com (& cc Pam)
Pam Ring	City Clerk	507-697-6912	mortoncityhall@mchsi.com

CITY OF OLIVIA

Name	Title	Phone	Email
Dan Coughlin	City Administrator	320-523-2361	danc@olivia.mn.us
Wayne Olson	Public Works Supt.	320-522-0345	oliviapw@olivia.mn.us
Jason Krumheuer	Chief of Police	320-523-3704	jkrumheuer@olivia.mn.us
Brian Stenholm	EM Contact	320-523-3742	bstenholm@olivia.mn.us
Tim Seehusen	Fire Chief	320-522-0191	oliviafire@gmail.com

CITY OF RENVILLE

Name	Title	Phone	Email
Shane Wohlman	City Administrator	320-329-8366	shanewohlman@ci.renville.mn.us
Angi Wulf	Deputy Clerk	320-329-8366	angi.wulf@ci.renville.mn.us
Aaron Slagter	Chief of Police, EM Contact	320-894-7123	aaron@ci.renville.mn.us

CITY OF SACRED HEART

Name	Title	Phone	Email
Amy Hubbard	City Administrator	320-765-2559	shcityclerk@hcinet.net
Dan Agre	Mayor	320-765-2288	danagre06@hotmail.com

Township Contacts

Name of Township	Name & Title	Phone	Email
Bandon Township	Paul Simonsen, Clerk	507-557-8357	paulsim32@gmail.com
Beaver Falls Township	Gary Simondet, Clerk	507-430-4689	bibman51@yahoo.com & madfrog64@gmail.com
Birch Cooley Township	Bill Radermacher, Clerk	507-430-0105	*Send e-mails to Tom Robinson
Birch Cooley Township	Tom Robinson, Chairman	507-557-2941	tomr@renvillecountymn.com
Bird Island Township	Chuck Amberg, Supervisor	320-212-2300	aai@mvtvwireless.com
Bird Island Township	Jason Rouse	320-520-0950	littlerockstransfer@gmail.com
Boon Lake Township	Randy Pederson, Clerk	320-510-1263	randy.pederson@fbfs.com
Boon Lake Township	Paul Rettmann, Chairman	320-979-7936	rettmann1@gmail.com
Brookfield Township	Pat Grams, Chairman	320-522-0015	pgrams@mertecllc.com
Cairo Township	David Rieke, Clerk	507-426-7549 or 507-276-5582	djrieke@hotmail.com
Camp Township	Thomas Olson, Chairman	507-426-7893	camptwp@gmail.com
Crooks Township	Bradley Link, Chairman	320-329-3101	Vss44@hotmail.com
Emmet Township	Wayne Hansen, Chairman	320-329-3670	hansenw@redred.com
Emmet Township	Dave Worden, Clerk	320-522-1551	*Send emails to Scott Refsland
Emmet Township	Scott Refsland, Treasurer	320-894-6873	scottr@renvillecountymn.com
Ericson Township	Jolene Groen, Treasurer	320-329-8249	redjo71@hotmail.com
Ericson Township	Jerry Sunvold, Supervisor	320-329-3721	jsunvold@rswb.coop
Flora Township	Tom Breitkreutz, Chairman	320-329-3628	bltjcar@yahoo.com
Hawk Creek Township	Bradley Froland, Supervisor	320-905-3596	bradleyf@mvtvwireless.com
Hawk Creek Township	Myron Peterson, Chairman	352-237-9809	micjan@mvtvwireless.com
Hector Township	Matt Melberg, Chairman	320-848-2784	mattmelberg@yahoo.com
Henryville Township	Gerry Kodet	320-894-8798	gkodet@coopcountry.com
Kingman Township	David Pastoors, Chairman	320-522-4851	drpastoors12@yahoo.com
Martinsburg Township	Steve Bruns, President	320-583-1278	sjbruns78@gmail.com
Martinsburg Township	Jana Schafer, Clerk	320-905-0530	janaschafer1967@gmail.com
Melville Township	Dorothy Elfering, Clerk	320-848-6393	jelfering@wildbluecoop.com
Norfolk Township	David Scheibel, Board Chair/Supervisor	320-579-0442	david@mnwestag.com
Norfolk Township	Karen Roker, Clerk	320-365-3705	jroker@rswb.coop
Osceola Township	Lyle Lundstrum, Chairman	320-365-4174	116osc@gmail.com (goes to all board members)
Osceola Township	Nick Frank, Supervisor	320-212-0408	nickfrank79@yahoo.com
Palmyra Township	Carlton Gustafson, Supervisor (Rita Berg)	320-894-4042	gustafsonc@imail.mvtvwireless.com
Palmyra Township	Amy Thompson, Clerk	763-498-3237	palmyra.mn@gmail.com
Palmyra Township	Karyn Lamb, Supervisor	320-522-1213	annabelledill@gmail.com
Palmyra Township	Rita Berg, Chairman	320-848-2618	ritab@renvillecountymn.com
Preston Lake Township	Dayna Schmalz, Clerk/Treas.	320-296-6334	daynaschmalz@hotmail.com
Preston Lake Township	Jon Maiers, Supervisor	320-583-4721	jkmaiers81@gmail.com

Preston Lake Township	Paul Bleck, Chairman	320-583-6000	*Send e-mails to Dayna Schmalz & Jon Maiers
Sacred Heart Township	Christy Hoff, Supervisor	320-894-6626	choff@arnoldsinc.com
Troy Township	Craig Kubesh, Chairman	320-212-0836	ckubesh@coopcountry.com
Wang Township	Chris Giese, Chairman	320-905-9427	cgiese_18@yahoo.com
Wang Township	Scott Thompson, Supervisor	507-430-7506	lovesnow00@gmail.com
Wellington Township	Bradley Freyholtz, Clerk	507-829-7544	freyholtz.brad@yahoo.com
Winfield Township	Jim Nyquist, Supervisor	320-979-0252	nyquist@westtechwb.com

Other Stakeholder Contacts

Name of Agency/Org.	Name & Title	Phone	Email
Southern MN Beet Sugar Cooperative	Brandy Fischer, Safety Director	320-329-8305	brandy.fischer@smbsc.com
Renville-Sibley Cooperative Power	Cindy Mertens, Admin. Services Manager	320-826-2593	cmertens@renville-sibley.coop
Renville-Sibley Cooperative Power	DeeAnne Newville, CEO	320-826-2593	dnewville@renville-sibley.coop
Renville-Sibley Cooperative Power	Gene Allex	320-826-2593	gallex@renville-sibley.coop
McLeod Cooperative Power	Daniel Schade, Operations Manager	320-864-7338	dschade@mcleodcoop.com
McLeod Cooperative Power	Gregg Nistler, Asst Engineering Manager	320-864-7338	gnistler@mcleodcoop.com
McLeod Cooperative Power	Teresa Martin, Accountant	320-864-7338	tmartin@mcleodcoop.com
MN Valley Regional Rail Authority	Julie Rath, Administrator	320-329-3514	mvrraa19@gmail.com
MN Valley Regional Rail Authority	Tim Jeske, Rail Maintenance	320-510-0407	tjeske@tcwr.net
Natural Resources Conservation Service	Jeff Kjorness, Soil Conservationist	320-523-1559	jeff.kjorness@usda.gov
USDA Community Facilities Program	Doug Grindberg, Area Specialist	651-602-7794	douglas.grindberg@usda.gov
Renville County West School District	Doug Froke, Superintendent	320-329-8368 x 1302	dfroke@rcw.k12.mn.us
BOLD School District	Dale Brandsoy, Superintendent	320-523-1031 x 2108	dale.brandsoy@bold.k12.mn.us
Buffalo Lake-Hector-Stewart School District	Dr. Michelle Mortensen, Superintendent	320-833-5311 x 218	mmortensen@blh.k12.mn.us
Gibbon-Fairfax-Winthrop School District	Jeff Horton, Superintendent	507-647-5382	Jeff.horton@gfwschools.org
Cedar Mountain Elementary School	Rob Brandl, Superintendent	507-249-5990	rbrandle@cedarmt.org
St. Mary's School (K-8)	Tracy Bertrand Sigurdson, Principal	320-365-3693 x 215	tbertrand@stmarysbi.com
Prairie Lutheran School (K-6)	Macord Johnson, Administration Randy Ristow – Director	507-426-7755	prairielutheranschool@gmail.com randy.ristow@prairielutheran.us

Neighboring Jurisdiction Contacts

Name of Jurisdiction	Name & Title	Phone	Email
Kandiyohi County	Kim Lindahl, EM Director	320-235-5133 x 3801	kim.lindahl@kcmn.us
Meeker County	Sheriff Brian Cruze, EM Director	320-693-5420	brian.cruze@co.meeker.mn.us
Meeker County	Stephanie Johnson, Assistant	320-693-5420	stephanie.johnson@co.meeker.mn.us
McLeod County	Kevin Mathews, EM Dir.	320-864-1339	kevin.mathews@co.mcleod.mn.us
Sibley County	Andrew Hayden, EM Dir.	507-227-2306	andrewh@co.sibley.mn.us
Nicollet County	Justin Block, EM Director	507-934-7874	justin.block@co.nicollet.mn.us
Brown County	Laine Sletta, EM Director	507-233-6644	laine.sletta@co.brown.mn.us
Redwood County	Jim Sandgren, EM Dir.	507-637-4035	jim_s@co.redwood.mn.us
Yellow Medicine County	Casey Namken, EM Dir.	320-313-3093	casey.namken@co.ym.mn.gov
Chippewa County	Stephanie Weick, EM Dir.	320-269-2121	sweick@co.chippewa.mn.us
Lower Sioux Tribal Community	Deb Dirlam, EM Contact	507-697-8643	deb.dirlam@lowersioux.com
Lower Sioux Tribal Community	Mike Aude, EM Contact (Assistant)	507-430-8611	mike.aude@jackpotjunction.com
Upper Sioux Tribal Community	Chris Lee, EM Contact	320-564-6359	chrisl@uppersiouxcommunity-nsn.gov
Upper Sioux Tribal Community	Dan DeSmet, EM Contact	320-564-6359	dand@uppersiouxpolice-nsn.gov

Renville County MHMP Planning Team Meeting #1
August 13, 2020 - Meeting Summary & Documentation

Summary: On Thursday, August 13, 2020, Renville County Emergency Management convened key county, city, and township representatives, as well as neighboring jurisdictions and other stakeholders to participate in the 1st Planning Team Meeting for the update of the Renville County Multi-Hazard Mitigation Plan (MHMP). The purpose of the meeting was to formally present information about the Renville County MHMP update and to discuss key items that would inform plan development. The meeting was held via Zoom webinar video conference and was facilitated by Stacey Stark and Bonnie Hundrieser of the U-Spatial@UMD project team.

Stakeholder Invitations: Renville County Emergency Management invited all stakeholders included on the county's MHMP Update Jurisdictional Contact List (JCL), which includes the key County Contacts, City Contacts, Township Contacts, Other Stakeholder Contacts, and Neighboring Jurisdiction Contacts identified to be invited to participate in the plan update process. Contacts were encouraged to engage additional staff or to send someone in their stead if they could not attend. A copy of the county's Jurisdictional Contact List is provided in *Appendix F Steering Committee Meetings*.

Meeting Participants: A total of 32 people attended the meeting. Representation included elected officials and departmental staff from Renville County and the cities of Bird Island, Buffalo Lake, Franklin, Olivia, and Renville. The cities of Danube, Fairfax, Hector, Morton, and Sacred Heart were not in attendance. Other stakeholders, including neighboring jurisdictions, participated in the meeting. A participant list is included with this meeting summary.

Presentation Overview: The Power Point presentation covered the following items. A PDF of the presentation slides is included with this meeting summary.

- Overview of Hazard Mitigation & the MHMP Update
- Who the Plan Covers & Role of the Planning Team
- Review of Hazards + Overview of Risk Assessment and Vulnerability Analysis
- Update of Risk Priorities
- Review of Mitigation Strategies & Example Actions
- Overview of FEMA HMA grant program
- Discussion of local mitigation ideas
- Discussion of next steps & answer your questions.

Discussion Notes: Following is an overview of key discussion points or questions during the presentation and how they will be incorporated into the plan update.

Prioritization of Natural Hazards – The planning team was presented with an overview of each of the natural hazards that were covered in the county's last plan and the risk prioritization at that time. Considerations for the current risk prioritization since the last plan was presented for each hazard, such as events recorded since the last plan, NCEI Storm Data, or known existing local vulnerabilities (i.e., number of mobile home parks). It was noted to participants that:

- Hazards deemed to be of high or moderate risk must result in mitigation actions to address them for the jurisdictions that are affected.
- Hazard prioritization may vary for jurisdictions or may not differ countywide.

- Hazards deemed to be low risk and without significant mitigation actions may be dropped from the plan. This excludes the hazard of Dam/Levee failure, which must be addressed per new FEMA guidelines, even if risk is deemed low.

Following is a chart reflecting the 2014 risk priorities for Renville County and any changes to the current risk prioritization for the plan update. This discussion served as an introduction to updating the risk prioritization and will be followed up with further information gathered from the county and local jurisdictions during the planning process. Any comments or suggested changes to the risk prioritizations are noted under "2020 Current Priority" and are supported by the following discussion notes.

Natural Hazards Addressed in the Last Plan	2014 Priority	2020 Current Priority
Thunderstorm/High Wind	High	High
Tornado	High	High
Lighting	High	High
Extreme Heat	High	High
Winter Storm	High	High
Hail	Moderate	High
Drought	Moderate	High
Extreme Cold	Moderate	High
Flood	Moderate	Suggested to move from Moderate to High*
Landslide	Low – not addressed	Low to Moderate Landslides were noted to be more of a concern**
Land Subsidence	Low – not addressed	Low
Wildfire	Low	Low City of Franklin noted higher concern
Dam & Levee Failure	Low – not addressed	Low

During the presentation on natural hazards, polls were taken for landslide and wildfire hazards and whether or not the hazard should be included in the plan (as low risk). Results leaned towards "no" for wildfire and "yes" for landslides.

Comments, Questions or Mitigation Ideas – Following are the questions, comments or mitigation ideas that were shared by participants and how they will be addressed for the plan update.

Meeting Participant (by representation)	Comment, Question or Mitigation Idea Submitted	Facilitator Feedback / How to be Addressed in Plan Update
Renville County Public Health	*Regarding flood: "My sense is that we are having more flood events. Move from moderate to high?"	This was the only comment made suggesting a change in risk for flooding. UMD will continue to seek additional feedback and gather data for the risk assessment.
Renville County Public Health	Regarding tornadoes: "None of the MHPs have onsite shelters. Unmet need."	The county and all municipalities with MHPS will be encouraged to address storm shelters or tornado safe rooms for MHPs or other areas where there are people vulnerable to severe storm or tornado events.

Meeting Participant (by representation)	Comment, Question or Mitigation Idea Submitted	Facilitator Feedback / How to be Addressed in Plan Update
Renville County Public Health	Regarding hazards addressed in the plan: "To clarify, pandemics are not considered a natural disaster?"	For the purposes of this plan pandemics are not considered a natural disaster as it is a "human event" and does not result in damages to the built environment. It is also not one of the natural hazards addressed by the State of MN hazard mitigation plan. Public Health Departments generally have plans on how to deal with pandemics and other public health events so trying to address them under the MHMP typically does not happen. If Renville Public Health does not have any plans in place we can see how to address it here, but it is outside the scope of work for conducting risk assessments and developing mitigation actions to reduce risk.
Southern MN Beet Sugar Coop	Regarding drought and flood: "Are we thinking about economic impacts? If our beet operation doesn't run it will have an impact on the local economy and those we employ."	Yes, economic impacts are an important consideration for a drought or flood event. The flood models we use are the only ones that look into the future to look at financial impacts, we do not have that for drought. UMD will follow up with the Southern MN Beet Sugar Coop representative for more information.
City of Franklin	Regarding wildfire & landslides: "The City of Franklin has a higher risk of landslides and wildfires on the bluff side of the Minnesota River."	Noted. Further information will be gathered to assess a jurisdictional variation in risk for wildfire and landslides for the City of Franklin along with any resulting mitigation actions to address these hazards.
Minnesota Regional Rail Authority	**Regarding landslides: For the MN Valley Regional Rail Authority landslides are a huge issue for us. We were shut down for a month last year dealing with erosion on the Franklin hill.	Noted. Further information will be gathered to consider a change in risk prioritization for landslides, as well as any resulting mitigation actions to address landslides that affect critical infrastructure, such as affected rail corridors.
Renville County Engineer	Regarding mitigation strategies and FEMA HMA Grant Programs: "We talked about generators…what about water pumps to help when a city's storm/sanitary sewer is overwhelmed? (is this eligible for FEMA grant funding?) The City of Fairfax just bought a pump, and others could use them too."	Purchase of generators or water pumps are not considered to be eligible projects for FEMA HMA grant funding, but all such projects should be identified where they are important to reduce risk whether they may be eligible for future FEMA grant funding or not. We will follow up for any additional

Meeting Participant (by representation)	Comment, Question or Mitigation Idea Submitted	Facilitator Feedback / How to be Addressed in Plan Update
		feedback you may have on what local jurisdictions have this need and can be addressed in a local mitigation action chart.
Renville County Public Health	Regarding windstorms, lightning, and hail: "I've stated before: storm shelters for manufactured home parks and perhaps even some lower income apartments."	The county and municipalities where there are such facilities (MHPs or low-income apartments) that are at risk to high wind & tornado events will be encouraged to develop mitigation actions to address these needs.
Renville County Public Health	Regarding mitigation strategies for extreme temperatures: "What has been done for heat events? We see it during home visiting with elderly in particular. Probably more impact than cold."	The mitigation strategy of Public Awareness & Education is used to address senior citizens (living independently) as well as long-term facilities for seniors to be prepared for periods of extreme temperatures or storm events. Under the strategy of Mitigation Preparedness & Response Support the County often includes a mitigation action addressing the readiness of cooling or warming centers to care for the public, particularly the elderly, if displaced during an extreme temp event coupled with a loss of power.

Following the discussion, participants were encouraged to fill out and return the "Mitigation Ideas" worksheet that they were provided with to Renville County Emergency Management to submit any specific local concerns and related mitigation ideas. The meeting concluded with an overview of next steps and estimated timeline for completion.

Attached are the following documentation items for the Renville County MHMP Meeting #1:

- 8-13-20 Mtg. #1 Email Invitation
- 8-13-20 Mtg. #1 List of Participants
- 8-13-20 Mtg. #1 Power Point Slides
- 8-13-20 Mtg. #1 Handouts

Meeting Summary Prepared By: Bonnie Hundrieser, U-Spatial@UMD Project Team

From:	Samantha Best
To:	Aaron Slagter Renville PD; Alex Lange; Amy Thompson (Palmyra Twp) (palmyra.mn@gmail.com); Andrea Aukrust (administrator@hectormn.us); Andrew Hayden (Sibley Co EM); Angi Wulf (Renville City) (angi.wulf@ci.renville.mn.us); Bandon; Beaver Falls; Beaver Falls Twp (madfrog64@gmail.com); Bird Island Twp; BL City Clerk; bltjcar; Bob Fox; Bonnie K Hundrieser; Brad Froland; Bradley Freyholtz (Wellington Twp); Bradley Link (Crooks); Brandy Fischer (SMBSC); Brian Cruze (Meeker Co SO); Brian Stenholm-OPD; Carlton Gustafson (Palmyra Twp) (gustafsonc@mvtvwireless.com); Casey Namken (YMC-EM); Chippewa Co EM; Chris Giese (Wang Twp) (cgiese_18@yahoo.com); Chris Lee (US-EM); Christy Hoff (SH Twp); Cindy Mertens - Renville Sibley (cmertens@renville-sibley.coop); Colette Santjer; Craig Kubesh (Troy Twp); Dan Agre (SH City) ; Dan Coughlin (Olivia City); Danube Police Dept; Dave Woelfel (BI City) ; David Pastoors (Kingman); David Rieke (Cairo); daynaschmalz@hotmail.com; Deb Dirlam (LS-EM); Deb Lingl (BI City); DeeAnne Newville (Renville-Sibley); Deputy Clerk - Hector (deputyclerk@hectormn.us); Diane Mitchell; Dorothy Elfering (Melville Clerk); Dotty Schnobrich (cityclerk@cityofdanube.com); Doug Bruns; Doug Erickson; Gene Allex (Renville-Sibley); Gerry Kodet (Henryville); Greg Snow; Heidi Rauenhorst (Hawk Creek Watershed Project); Henryville Twp Group; Jana Schafer (Martinsburg Twp); Jason Krumheuer-OPD; Jason Nelson (Morton); Jeff Kjorness (Soil Conservation); Jeff Marlowe; Jerry Sunvold (Ericson Twp) (jsunvold@rswb.coop); Jessie Duenow (BL); Jill Bruns; Jim Nyquist (Winfield Twp); Jim Sandgren (Redwood Co EM); Jon Mitchell; Julie Rath (mvrraa19@gmail.com); Justin Block (Nicollet Co EM); Karen Roker (Norfolk Twp); Kevin Kokesch (Franklin City); Kevin Mathews (McLeod Co EM); Kim Lindahl (KC-EM); Laine Sletta (Brown Co EM); Lisa Herges; Marc Iverson; Martinsburg; Matt Melberg (Hector Twp 20); McLeod Coop Power - Dan; Mike Hennen; Myron Peterson (Hawk Ck Twp); Nathan Johnson; Nicholas Johnson (Fairfax City Admin); Nick Frank, Osceola; Norfolk Township (david@mnwestag.com); Osceola; Pam Hopkins; Pat Grams (Brookfield); Paul Rettmann (Boon Lake Twp); Preston Lake Twp; Randy Kramer; Randy Pederson (Boon Lake Twp); redjo71@hotmail.com; Rick Deinken (BI Twp); Rick Schmidt; Samantha Best; Scott Froehlich_PD; Scott Hable; Scott Refsland; Scott Thompson (Wang Twp); Seth Sparks; Shane Wohlman; Stephanie Johnson (Meeker Co EM); TCW-Tim Jeske (tjeske@tcwr.net); Thomas Olson (Camp Twp); Tom Robinson; Wayne Hansen (Emmet Twp); Wayne Olson (Olivia City PW); Wayne Stomberg; Wendy Pederson (Franklin City); Zach Pierce Hector PD
Cc:	Bonnie K Hundrieser
Subject:	MULTI-HAZARD MITIGATION PLAN UPDATE – MEETING INVITATION
Date:	Tuesday, June 30, 2020 3:23:03 PM
Attachments:	image001.png

RENVILLE COUNTY

MULTI-HAZARD MITIGATION PLAN UPDATE – MEETING INVITATION

Greetings,

Your presence is requested at a Planning Team Meeting for the update of the **Renville County Multi-Hazard Mitigation Plan**. You are requested to participate in this vital meeting because you have a position of administrative or departmental responsibility within either the County, a municipal government, or are a key stakeholder related to the planning process. Emergency Managers from neighboring jurisdictions are also encouraged to attend so we may strengthen our shared mitigation efforts.

We will be holding the meeting virtually using Zoom video/phone conferencing:

Date: Thursday, August 13, 2020
Time: 9:00 a.m. – 11:00 a.m.
Zoom Link: https://umn-private.zoom.us/j/2501571657
Call in for audio if necessary: 651-372-8299 / Meeting ID: 250 157 1657

About the Plan

The update of the Renville County Multi-Hazard Mitigation Plan (MHMP) is a requirement by the State of Minnesota Department of Homeland Security & Emergency Management (HSEM) as well as the Federal Emergency Management Agency (FEMA) every 5 years. Our last plan is due for an update and our planning is currently underway. The plan addresses the natural hazards that face

Renville County and will result in the identification of mitigation actions that will help to reduce or eliminate the impact of future hazard events, such as flooding and severe winter or summer storms.

Your participation in this plan update is important for several reasons:

1. You will help to identify critical mitigation projects to implement at the county / municipal level, and how they can be integrated with existing plans, policies, or project efforts.

2. Participating jurisdictions will be eligible to apply for FEMA hazard mitigation grant funding.

3. Mitigation planning is necessary to keep our communities resilient against future disasters and reduce the costs of recovery.

4. FEMA requires documentation of how local government and key stakeholders participated in the planning process.

During this meeting we will review and prioritize the natural hazards that pose risk Renville County and individual communities and discuss a range of mitigation measures for local implementation. The meeting will be facilitated by personnel from U-Spatial at the University of MN Duluth who are working closely with us on this project.

RSVP: Please RSVP the **name, title and representation** (jurisdiction/agency) for all persons planning to attend this meeting.

Thank you,

Samantha Best, CEM
RCEM Deputy Director
RCSO Admin Tech/TAC

Renville County Emergency Management
Renville County Sheriff's Office
105 5th St. S, Ste 210
Olivia, MN 56277

Direct: 320-523-3769 | Cell: 320-522-2802
Email: samb@renvillecountymn.com
Web: www.renvillecountymn.com

From:	Samantha Best
To:	Aaron Slagter Renville PD; Alex Lange; Amy Thompson (Palmyra Twp) (palmyra.mn@gmail.com); Andrea Aukrust (administrator@hectormn.us); Andrew Hayden (Sibley Co EM); Angi Wulf (Renville City) (angi.wulf@ci.renville.mn.us); Bandon; Beaver Falls; Beaver Falls Twp (madfrog64@gmail.com); Bird Island Twp; BL City Clerk; Bob Fox; Bonnie K Hundrieser; Brad Froland; Bradley Freyholtz (Wellington Twp); Bradley Link (Crooks); Brandy Fischer (SMBSC); Brian Cruze (Meeker Co SO); Brian Stenholm-OPD; Carlton Gustafson (Palmyra Twp) (gustafsonc@mvtvwireless.com); Casey Namken (YMC-EM); Chippewa Co EM; Chris Giese (Wang Twp) (cgiese_18@yahoo.com); Chris Lee (US-EM); Christy Hoff (SH Twp); Cindy Mertens - Renville Sibley (cmertens@renville-sibley.coop); Colette Santjer; Craig Kubesh (Troy Twp); Dan Agre (SH City) ; Dan Coughlin (Olivia City); Danube Police Dept; Dave Woelfel (BI City) ; David Pastoors (Kingman); David Rieke (Cairo); daynaschmalz@hotmail.com; Deb Dirlam (LS-EM); Deb Lingl (BI City); DeeAnne Newville (Renville-Sibley); Deputy Clerk - Hector (deputyclerk@hectormn.us); Diane Mitchell; Dorothy Elfering (Melville Clerk); Dotty Schnobrich (cityclerk@cityofdanube.com); Doug Bruns; Doug Erickson; Gene Allex (Renville-Sibley); Gerry Kodet (Henryville); Greg Snow; Heidi Rauenhorst (Hawk Creek Watershed Project); Henryville Twp Group; Jana Schafer (Martinsburg Twp); Jason Krumheuer-OPD; Jason Nelson (Morton); Jason Rouse (BI Twp); Jeff Kjorness (Soil Conservation); Jeff Marlowe; Jerry Sunvold (Ericson Twp) (jsunvold@rswb.coop); Jessie Duenow (BL); Jill Bruns; Jim Nyquist (Winfield Twp); Jim Sandgren (Redwood Co EM); Jon Mitchell; Julie Rath (mvrraa19@gmail.com); Justin Block (Nicollet Co EM); Karen Roker (Norfolk Twp); Kevin Kokesch (Franklin City); Kevin Mathews (McLeod Co EM); Kim Lindahl (KC-EM); Laine Sletta (Brown Co EM); Lisa Herges; Marc Iverson; Martinsburg; Matt Melberg (Hector Twp 20); McLeod Coop Power - Dan; Mike Aude, LSEM; Mike Hennen; Myron Peterson (Hawk Ck Twp); Nathan Johnson; Nicholas Johnson (Fairfax City Admin); Nick Frank, Osceola; Norfolk Township (david@mnwestag.com); Osceola; Pam Hopkins; Pat Grams (Brookfield); Paul Rettmann (Boon Lake Twp); Preston Lake Twp; Randy Kramer; Randy Pederson (Boon Lake Twp); redjo71@hotmail.com; Rick Schmidt; Samantha Best; Scott Froehlich_PD; Scott Hable; Scott Refsland; Scott Thompson (Wang Twp); Seth Sparks; Shane Wohlman; Stephanie Johnson (Meeker Co EM); TCW-Tim Jeske (tjeske@tcwr.net); Thomas Olson (Camp Twp); Tom Breitkreutz (Flora Twp); Tom Robinson; Wayne Hansen (Emmet Twp); Wayne Olson (Olivia City PW); Wayne Stomberg; Wendy Pederson (Franklin City); Zach Pierce Hector PD
Cc:	Bonnie K Hundrieser
Subject:	FW: Preparations for MHMP Meeting
Date:	Wednesday, August 5, 2020 9:17:38 AM
Attachments:	image002.png Mitigation Strategies & Action Types.pdf HSEM_HMA Grants Program Overview.pdf Mitigation Ideas Worksheet.docx

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Greetings,

This is a reminder of the upcoming Renville County Multi-Hazard Mitigation Planning Team Meeting:

Date: Thursday, August 13, 2020
Time: 9:00 a.m. – 11:00 a.m.
Zoom Link: https://umn-private.zoom.us/j/2501571657
Call in for audio if necessary: 651-372-8299 / Meeting ID: 250 157 1657

Attached are 3 handouts that we will be referencing during the meeting for your information. If you have not RSVP'd please make sure to do so.

We look forward to having you join us for this important meeting.

Thank you,

Samantha Best, CEM
RCEM Deputy Director
RCSO Admin Tech/TAC

Renville County Emergency Management
Renville County Sheriff's Office
105 5th St. S, Ste 210
Olivia, MN 56277

Direct: 320-523-3769 | Cell: 320-522-2802
Email: samb@renvillecountymn.com

Renville County
8/13/20 MHMP Planning Team Meeting #1
List of Participants (32)

Renville County MHMP Update - Planning Team Meeting #1 Thursday, August 13, 2020 - 9:00 a.m. - 11:00 a.m. Participant Sign-in List			
Name	**Agency/Organization**	**Title**	**Email**
Mike Hennen	Renville County Emergency Mgmt.	Director	mikehe@renvillecountymn.com
Samantha Best	Renville County Emergency Mgmt.	Deputy Director, Project Lead	samb@renvillecountymn.com
Alex Lange	Renville County	GIS Specialist	alexl@renvillecountymn.com
Jeff Marlowe	Renville County	County Engineer	jeffma@renvillecountymn.com
Scott Refsland	Renville Co Environmental Services & Emmet Twp	RCES Director & Emmet Twp Treasurer	scottr@renvillecountymn.com
Jill Bruns, RCPH	Renville County Public Health	Director	jillb@renvillecountymn.com
Deb Lingl	City of Bird Island	City Administrator	deb.birdisland@mchsi.com
Jean Thielke	City of Buffalo Lake	City Clerk	cityofbuffalolake@gmail.com
Kevin Kokesch	City of Franklin	City Maintenance	franklinutilities@mchsi.com
Wendy Pederson	City of Franklin	City Administrator	franklin@mchsi.com
Brian Stenholm	City of Olivia	City EM	brians@olivia.mn.us
Dan Coughlin	City of Olivia	City Administrator	danc@olivia.mn.us
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Dan DeSmet	Upper Sioux Tribal Community	EM Contact	dand@uppersiouxpolice-nsn.gov
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RENVILLE COUNTY
Multi-Hazard Mitigation Plan Update 2020
Planning Team Meeting #1

August 13, 2020

Renville COUNTY
Service - Stewardship - Shared Responsibility

U-SPATIAL
UNIVERSITY OF MINNESOTA DULUTH
Driven to Discover

Welcome & Introductions

U-Spatial@UMD Project Leads

Stacey Stark
Project Manager
U-Spatial@UMD

Bonnie Hundrieser
HM Planning Specialist
Hundrieser Consulting LLC

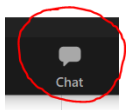
Renville County Project Lead

- Samantha Best, Renville County Deputy Emergency Management Director

Renville County EMERGENCY MANAGEMENT

PRESENTER: STACEY STARK

Zoom Logistics



If you haven't yet, please type your name and jurisdiction or department in the Chat window

PLEASE REMAIN MUTED AND VIDEO OFF SO EVERYONE CAN HAVE THE BEST EXPERIENCE.

USE CHAT:

- Send a message to everyone
- Send a message to individuals (select their name in the drop down)
- Send a message to host to ask for help or ask a question that isn't for the whole group. The host is Stacey Stark

PRESENTER: STACEY STARK

Why U-Spatial?

U-SPATIAL
UNIVERSITY OF MINNESOTA DULUTH
Driven to Discover

- **Proven experience**
  Our updates of 30+ MHMPs, as well as the State MHMP, have been quickly approved by FEMA and adopted by counties.
- **Advanced Capabilities**
  Expertise in the application of GIS, HAZUS, and research supports plan development and meeting all FEMA requirements.
- **Ability to Expedite**
  A consistent and proven approach for multiple counties supports State & FEMA review of draft plans.
- **Planning Team**
  Our project team includes advanced GIS students and Hundrieser Consulting.

PRESENTER : STACEY STARK

Meeting Purpose & Agenda

2019 Morton area flooding

The purpose of this meeting is to formally convene the Renville County MHMP Planning Team for a presentation of the plan update and discussion of key items.

Agenda:

- Overview of Hazard Mitigation & the MHMP Update
- Who the Plan Covers & Role of the Planning Team
- Review of Hazards + Overview of Risk Assessment and Vulnerability Analysis
- Update of Risk Priorities
- Review of Mitigation Strategies & Example Actions
- Overview of FEMA HMA grant program
- Discuss local mitigation ideas & public engagement.
- Discuss next steps & answer your questions.

PRESENTER : STACEY STARK

What is Hazard Mitigation?

Hazard Mitigation is any action taken to reduce or eliminate long term risk to people and property from natural disasters.

- HM planning **identifies** risks and vulnerabilities, **develops** a plan of action, and **builds** partnerships to implement efforts.
- HM breaks the **cycle** of disaster and reconstruction.
- HM builds stronger & more **resilient** communities.

PRESENTER : BONNIE HUNDRIESER

MHMP Overview & Timeline

2019 Spring Flood

The Multi-Hazard Mitigation Plan (MHMP) is a requirement of the Federal Disaster Mitigation Act of 2000 (DMA 2000).

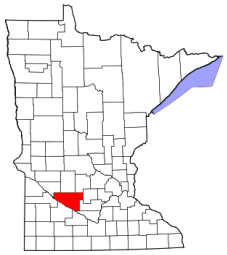
- ✓ **The development of a local government plan is required in order to maintain eligibility for FEMA hazard mitigation grant programs.**
- ✓ **Plans must be updated every 5 years.**
- ✓ **Must address all jurisdictions and engage key stakeholders.**
- ✓ **Planning process must give an opportunity to the public to provide feedback.**

Renville County MHMP Update 2020

- Last plan adopted in 2015.
- The updated plan will cover a 5-year window (2021-2026).
- County and local-level government participation is required.

Who the Plan Covers

The Renville County MHMP is a multi-jurisdictional plan that covers the county as well as all city & townships within the county.



- ✓ County and city governments are required to adopt the plan.
- ✓ Townships are covered under the umbrella of the county, but may elect to adopt.
- ✓ City-level participation in the plan update must be documented for local adoptions to be approved.

MHMP Planning Team

Renville County Planning Team

- **Renville County Emergency Management**
- **Key County Officials & Staff**
- **City and Township Officials & Staff**
- **Neighboring Jurisdictions**
- **Other Related Agency or Organizational Stakeholders**

- ➢ Assist with public outreach & documentation for news releases (use of websites, social media & community bulletin boards).
- ➢ Participate in 2 planning team meetings.
- ➢ Assist with provision of county/local information
- ➢ Help develop & review local mitigation action charts.
- ➢ Review of the draft plan.
- ➢ Facilitate local-level adoptions.

What Hazards are Addressed in the Plan?

- ➢ **Natural hazards** that pose risk to the county and its jurisdictions.
- ➢ Manmade hazards are not required to be addressed (per the DMA 2000).
- ➢ Hazards may be omitted from the plan if **low risk** is demonstrated.
- ➢ Hazard Risk may differ in cities and the county overall.

Flooding	Hail	Drought
Dam/Levee Failure	Lightning	Extreme Heat
Wildfire	Winter Storms	Extreme Cold
Windstorms	Landslides	Earthquakes
Tornadoes	Sinkholes & Karst	Coastal Erosion

Natural hazard categories for Minnesota MHMPs.

Hazard Risk Assessment and Vulnerability Analysis

The U-Spatial@UMD Team will work closely with the county and each city to provide information as needed.

- ➢ Inventory of critical infrastructure.
- ➢ Identify specific, local-level impacts and vulnerabilities.
- ➢ Identify any factors (i.e., new development) that may increase the community's vulnerability.
- ➢ Review social vulnerability factors.
- ➢ Identify if and how risk priorities have changed since the last plan. (Increased / Decreased)

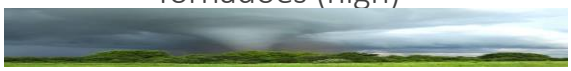
Olivia, 2019 flooding

County Road 15, July 2018 flood

Hazard Prioritization

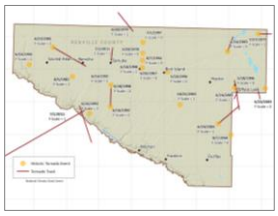
MN Natural Hazards	2014 priority
Thunderstorm/High Wind	High
Tornado	High
Lightning	High
Extreme Heat	High
Winter Storm	High
Hail	Moderate
Drought	Moderate
Extreme Cold	Moderate
Flood	Moderate
Landslide	Low - not addressed
Land Subsidence	Low - not addressed
Wildfire	Low
Dam and Levee Failure	Low - not addressed

Tornadoes (high)

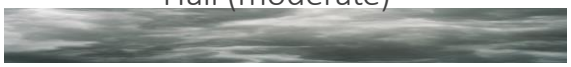


- Based NCEI Storm Events Database through February 2020, the relative frequency of tornados in Renville County is .4 per year
- A costly tornado in 2003 occurred in Buffalo Lake (EF2, $14 million)
- Four mobile home park locations:
  Buffalo Lake, Olivia
  Renville, Hector

Danube Tornado 2011 (EF1)



Windstorm (high) Lightning (high) Hail (moderate)



- The relative frequency of all wind-related events since January of 1996 is 4.1 per year.
- No lightning-related injuries or deaths reported in Renville County through 2017
- Probability of lightning events is high, site-specific incidence of lightning damage is low.
- There were nine hailstorms with hail greater or equal to 1-inch since 2014. The relative frequency of all hail events in the period of record is 2.4 per year.
- Climate models suggest an increase in the frequency and intensity of severe thunderstorms as the climate changes

Extreme Heat (high)

- From 2014 - 2020, the Brownton weather station reported daily high temperatures ≥ 90 °F 20 times (3 days/year).
- An excessive heat event occurred on July 20, 2016, when heat indices across Renville County rose over 105°F for several hours on two days.
- Since January 1996, 6 heat events (heat index 100 °F) and 3 excessive heat events (heat index 105 °F) occurred. The relative frequency of heat-related events in the county is .4 per year.

Winter Storms (high)

- 31 winter weather related events (blizzards, heavy snows, ice storms, winter storms, and winter weather) have occurred since January 2014 (4.4 year)
- Based on all records in the NCEI Storm Events Database, the relative frequency of winter-related storm events is 4.1 per year.

2019, West Central Tribune

Extreme Cold (moderate)

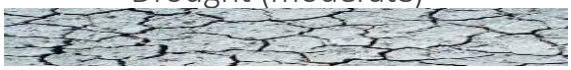
- From 2014 - 2020, daily low temperatures ≤ -18 °F were recorded 25 times at the Brownton weather station. Renville County experiences an average of 3-4 extreme cold days each year.
- -32°F recorded by the St. Peter station on January 31, 2019
- 13 cold-related events (NWS Warning issued due to wind chill of -35 °F or colder) occurred in Le Sueur County from 2014 – 2020.
- Based on all records, the relative frequency of cold-related events in Renville County is 1.1 per year

Flooding (moderate)

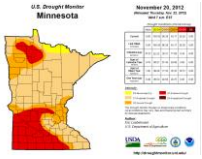
- A potential economic loss model is run for 1% annual chance flood
- Use of FEMA Flood Insurance Rate Map (FIRM)
- Use of property values from county assessor
- Critical Infrastructure locations from GIS and EM input
- 2014 HMP states flooding of roadside ditches is common

Distribution of Estimated Economic Loss: 1% annual chance flood, from 2014 HMP.

Drought (moderate)



- The county was part of a 2003 USDA designation as a primary agricultural disaster area due to drought.
- From 2000 – 2018, Renville County was in at least Moderate (D1) Drought 22-25% of the time.



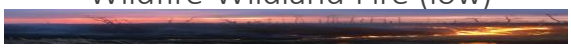
Example data from U.S. drought monitor

PRESENTER : STACEY STARK

Landslides (low)

- Hazards deemed low risk and without significant mitigation actions, can be dropped from the plan.

Wildfire-Wildland Fire (low)



Dam/Levee Failure (low)

- This hazard must be addressed per new FEMA guidelines (even if risk is deemed low)
- No high hazard dams identified in Renville County

PRESENTER : STACEY STARK

Review of Mitigation Strategies & Example Actions

See Handout: Mitigation Strategies & Action Types

PRESENTER : BONNIE HUNDRIESER

#1 - Local Planning & Regulations

These actions include government authorities, policies, or codes that influence the way land and buildings are developed and built.

EXAMPLES:

- Establishing & enforcing floodplain & shoreland ordinances
- Participating in the NFIP
- Developing stormwater management plans
- Long-term planning for infrastructure improvements
- Working with MHP operators to be in compliance with State statutes for storm shelters & evacuation plans.

NATIONAL FLOOD INSURANCE PROGRAM

PRESENTER : BONNIE HUNDRIESER

#2 – Structure and Infrastructure Projects

These actions involve modifying existing structures to protect them from a hazard or remove them from a hazard area. This type of action also involves projects to construct manmade structures to reduce the impact of hazards.

EXAMPLES:

- Property acquisitions (repetitive flooding/erosion risk)
- Structural elevations (flooding)
- Utility undergrounding
- Constructing floodwalls & retaining walls
- Improving culverts, roads & bridges
- Green infrastructure projects
- Safe room construction or retrofit

PRESENTER : BONNIE HUNDRIESER

Community Safe Rooms

Wadena-Deer Creek School, June 17 2010

PRESENTER : BONNIE HUNDRIESER

August, 2012 – 1st school based tornado safe room (Wadena)

Power Line retrofit/burial

#3 – Natural Systems Protection

These are actions that minimize damage and losses and also preserve or restore the functions of natural systems.

EXAMPLES:

- Slope management for soil stabilization
- Shoreland restoration
- "Living Fences" for wind/erosion reduction or snow buffer
- Forest management for wildfire mitigation (fuels reduction)
- Flood diversion and storage

#4 – Education & Awareness Programs

These are actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them.

CodeRED®

Ready

SKYWARN WEATHER.GOV

EXAMPLES:

- Promoting sign-up for emergency notifications
- Educate on use of outdoor warning sirens and response
- Participation in the NWS Severe Weather Awareness Weeks
- SKYWARN Storm Spotter Training
- Turn Around Don't Drown
- Promoting personal & family emergency preparedness (i.e. Ready.gov)

#5 – Mitigation Preparedness & Response Support

These are actions that help to protect life and property prior to, during, and immediately after a disaster or hazard event.

These activities are typically not considered mitigation, but support reduction of the effects of damaging events.

EXAMPLES:

- Emergency Notification Systems
- Emergency Operations Plans
- Outdoor warning sirens
- Shelter Planning
- Flood fight plans & equipment
- Training local elected officials in EM responsibilities
- Emergency backup generators for critical facilities

FEMA HMA Grant Program

See Handout: HSEM HMA Grants Program Overview

- ✓ All applicants must have or be covered under an approved MHMP.
- ✓ Eligible applicants: State & local governments, Tribal Communities, and certain private non-profit organizations or institutions.
- ✓ Cost Share: Federal 75%/ Applicant 25%
- ✓ Eligible projects must be identified in the local MHMP.

Examples of Eligible Activities

- Property Acquisition/Relocation
- Safe Room Construction
- Minor Localized Flood Risk Reduction
- Green Infrastructure
- Infrastructure Retrofits
- Soil Stabilization
- Wildfire Mitigation
- 5% Initiative Projects

Mitigation Ideas

Do you have questions or ideas to share about local hazards & vulnerabilities and proposed mitigation actions?

See Handout: Mitigation Ideas Worksheet

Next Steps — Fall 2020

Completion of Local Mitigation Survey (LMS) Forms

- Local hazard identification & risk prioritization.
- Local vulnerabilities (critical infrastructure, populations or assets)
- Local capabilities (programs, polices, staff, funding)
- Local mitigation projects.

Next Steps — Winter 2020

Development of Local Mitigation Action Charts

- County and City-Specific MACs
- 5-year window (2021-2026)
- Mitigation actions must address high and moderate risk hazards.
- Seek to include actions eligible for FEMA HMA grant funding.
- Mitigation actions must be informed by hazards of risk, as well as local capabilities & existing planning mechanisms.

Next Steps — Winter 2020-Spring 2021

Draft Plan Development & Initial Review

- Updated risk assessment & vulnerability analysis
- Development of hazard profiles (history, probability, impacts of climate change)
- GIS mapping
- HAZUS analysis
- EM initial review of draft plan

Next Steps — Spring-Summer 2021

Planning Team Meeting #2 and Public Review & Comment Period

- Hold Planning Team Mtg. #2 – presentation of draft plan and final review of Mitigation Action Charts.
- Disseminate & document news release by county and jurisdictions.
- Conduct draft plan review.
- Document local outreach and feedback.

Next Steps — Fall-Winter 2021

Draft Plan Submission to HSEM & FEMA for Approval

- Draft plan will be submitted first to HSEM and then to FEMA for approval for meeting all Federal requirements.
- Typically requires 1-2 months.
- APA letter
- EM coordination of adopting resolutions

Questions?

What questions do you have for U-Spatial@UMD about the MHMP update process?

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Mitigation Strategies & Action Types

Following are the five types of mitigation strategies that will be used in the update of the Multi-Hazard Mitigation Plan with examples of related mitigation actions. Minnesota HSEM recommends the use of these mitigation strategies to be in alignment with the State plan and those recommended by FEMA. The first four strategies listed are taken from the FEMA publications *Local Mitigation Planning Handbook* (2013) and *Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards* (2013). The fifth strategy type was determined by Minnesota HSEM for use within the state.

These strategies will provide the framework for identification of new jurisdictional-level mitigation actions for implementation over the next 5-year planning cycle.

Mitigation Strategy	Description	Example Mitigation Actions
Local Planning and Regulations	These actions include government authorities, policies, or codes that influence the way land and buildings are developed and built.	• Comprehensive plans • Land use ordinances • Planning and zoning • Building codes and enforcement • Floodplain ordinances • NFIP Community Rating System • Capital improvement programs • Open space preservation • Shoreline codes • Stormwater management regulations and master plans • Mobile home park compliance for storm shelters
Structure and Infrastructure Projects	These actions involve modifying existing structures and infrastructure to protect them from a hazard or remove them from a hazard area. This could apply to public or private structures as well as critical facilities and infrastructure. This type of action also involves projects to construct manmade structures to reduce the impact of hazards.	• Property Acquisitions and elevations of structures in flood prone areas • Utility undergrounding • Structural retrofits (i.e., metal roofs) • Floodwalls and retaining walls • Detention and retention structures • Culvert Installation/Modification • Roads & Bridge risk reduction • Safe Room (New construction or facility retrofit) • Green Infrastructure Methods *Many of these types of actions are projects eligible for funding through FEMA HMA grant programs.*

Mitigation Strategy	Description	Example Mitigation Actions
Natural Systems Protection	These are actions that minimize damage and losses and also preserve or restore the functions of natural systems.	• Soil stabilization for sediment and erosion control • Floodplain and Stream corridor restoration • Slope management • Forest management (defensible space, fuels reduction, sprinkler systems) • Conservation easements • Wetland restoration and preservation • Aquifer Storage & Recovery • Flood Diversion and Storage *Many of these types of actions are projects eligible for funding through FEMA HMA grant programs.*
Education and Awareness Programs	These are actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. These actions may also include participation in national programs, such as StormReady or Firewise Communities. Although this type of mitigation reduces risk less directly than structural projects or regulation, it is an important foundation. A greater understanding and awareness of hazards and risk among local officials, stakeholders, and the public is more likely to lead to direct actions that support life safety and lessen property damage.	• Radio or television spots • Websites with maps and information • Social media outreach • Promotion of sign-up for emergency warnings • Real estate disclosure • Promotion of NFIP insurance to property owners • Presentations to school groups or neighborhood organizations • Mailings to residents in hazard-prone areas. • NWS StormReady Program • Firewise Communities *Some of these types of actions may be projects eligible for funding through the FEMA HMA "5 Percent Initiative Program".*
Mitigation Preparedness and Response Support	This is a State of Minnesota mitigation strategy with the intent of covering emergency preparedness actions that protect life and property prior to, during, and immediately after a disaster or hazard event. These activities are typically not considered mitigation, but support reduction of the effects of damaging events.	• Emergency Operations Plan • Flood fight plans and preparedness measures • Dam emergency action plans • Emergency Warning Systems (i.e., CodeRed, warning sirens) • Generator backup power • NWS Storm Spotter Training • Training and education for local elected officials and key partners.

State of Minnesota
Department of Public Safety
Division of Homeland Security and Emergency Management
445 Minnesota Street, Suite 223
St. Paul, MN 55101-6223

HAZARD MITIGATION ASSISTANCE

Hazard Mitigation Assistance (HMA) grant programs provide funding with the aim to reduce or eliminate risk to property and loss of life from future natural disasters. HMA programs are typically a 75%/25% cost share program. The federal share is 75% of total eligible project reimbursement costs. The local applicant is responsible for 25% of the project costs. The amount of HMGP funds availability is based on a percent of Public Assistance provided by Federal Emergency Management Agency (FEMA).

- Hazard Mitigation Grant Program (HMGP) funds assists in implementing long-term hazard mitigation measures following a Presidential major disaster declaration.
- Pre-Disaster Mitigation (PDM) provides funds for hazard mitigation planning and projects on an annual basis.
- Flood Mitigation Assistance (FMA) provides funds on an annual basis to reduce or eliminate risk of flood damage to buildings that are insured under the National Flood Insurance Program (NFIP).

Who is eligible for grant funding?
All applicants must have or be covered under an approved Hazard Mitigation Plan. Eligible applicants include: State and local governments; certain private non-profit organizations or institutions; and Tribal Communities

What types of projects can be funded?
All projects must be eligible, technically feasible, and cost-effective. All projects are subject to environmental and cultural resource review. Examples of projects include:

- **Advance Assistance** may be used to develop mitigation strategies and obtain data, including for environmental and historic preservation compliance considerations, and develop complete project applications in a timely manner.

- **Aquifer Storage and Recovery** (ASR) projects serve primarily as a drought management tool, but can also be used to reduce flood risk and restore aquifers that have been subject to overdraft. The concept is to capture water when there is an abundant supply, store the water in subsurface aquifers, and recover water from the storage aquifer when needed. Storing water underground can help protect it from pollutants, evaporation, and weather events.

- **Floodplain and stream restoration** (FSR) projects are used primarily to reduce flood risk and erosion by providing stable reaches, and may also mitigate drought impacts. FSR projects restore and enhance the floodplain, stream channel and riparian ecosystem's natural function. They provide base flow recharge, water supply augmentation, floodwater storage, terrestrial and aquatic wildlife habitat, and recreation opportunities by restoring the site's soil, hydrology and vegetation conditions that mimic pre-development channel flow and floodplain connectivity.

- **Flood Diversion and Storage** (FDS) projects often are used to reduce flood risk, but also can be used to mitigate drought and improve ecosystem services. These projects involve diverting floodwaters from a stream, river, or other body of water into a conduit such as a canal, pipe, or wetland and storing them in an above-ground storage facility. Water is then slowly released, reducing flood risk.

- **Green Infrastructure Methods** are a sustainable approach to natural landscape preservation and storm water management. Include in *eligible hazard mitigation activities* as well as provide additional ecosystem benefits**.** Ecosystem-based approach to replicate a site's pre-development, natural hydrologic function. Benefits include: Increase water supply, improved water quality, can be scaled to size and designed to fit site conditions.

- **Property Acquisition and Structure Demolition or Relocation –** The voluntary acquisition of an existing at-risk structure and the underlying land, and conversion of the land to open space through the demolition or relocation of the structure. The property must be deed-restricted in perpetuity to open space uses to restore and/or conserve the natural floodplain functions.

- **Retrofit Flood-Prone Residential Structures** are changes made to an existing structure to reduce or eliminate the possibility of damage to that structure from flooding, erosion, or other hazards. Examples of this mitigation are primarily elevation of structures above flood levels and floodwalls.

- **Safe Room Construction** - Safe room construction projects are designed to provide immediate life-safety protection for people in public and private structures from tornado and severe wind events. Includes retrofits of existing facilities or new safe room construction projects, and applies to both single and dual-use facilities

- **Minor Localized Flood Reduction Projects** - Projects to lessen the frequency or severity of flooding and decrease predicted flood damages, such as the installation or up-sizing of culverts, and stormwater management activities, such as creating retention and detention basins. These projects must not duplicate the flood prevention activities of other Federal agencies and may not constitute a section of a larger flood control system.

- **Infrastructure Retrofit** - Measures to reduce risk to existing utility systems, roads, and bridges.

- **Soil Stabilization -** Projects to reduce risk to structures or infrastructure from erosion and landslides, including installing geotextiles, stabilizing sod, installing vegetative buffer strips, preserving mature vegetation, decreasing slope angles, and stabilizing with rip rap and other means of slope anchoring. These projects must not duplicate the activities of other Federal agencies. *New tools for Bioengineered Shoreline Stabilization, Bioengineered Streambank Stabilization.*

- **Wildfire Mitigation** - Projects to mitigate at-risk structures and associated loss of life from the threat of future wildfire through: Defensible Space for Wildfire, Application of Ignition-resistant Construction and Hazardous Fuels Reduction. *New tool for Bioengineered Wildfire Mitigation.*

- **HMGP only - 5 Percent Initiative Projects** – These projects, which are only available pursuant to an HMGP disaster, provide an opportunity to fund mitigation actions that are consistent with the goals and objectives of approved mitigation plans and meet all HMGP program requirements, but for which it may be difficult to conduct a standard Benefit-Cost Analysis (BCA) to prove cost-effectiveness.

How do I apply?
Start by submitting a Notice of Interest, available on HSEMs website at:
https://dps.mn.gov/divisions/hsem

Where can I obtain further information?
For additional information about the HMA grant program, you can refer to the FEMA website:
http://www.fema.gov/hazard-mitigation-assistance

MITIGATION IDEAS WORKSHEET

Please use the following worksheet to list your ideas for mitigation actions that you feel will help reduce the impact of future natural hazard events to the county or to your jurisdiction. Following the MHMP planning team meeting, please return this form via email to your county Emergency Manager to submit your feedback.

NAME OF JURISDICTION:

CONTACT INFORMATION
Name:
Phone:
Email:

Hazard	Description of Concern or Proposed Mitigation Action

Renville County MHMP Planning Team Meeting #2
September 30, 2021 - Meeting Summary & Documentation

Summary: On Thursday, September 30, 2021, Renville County Emergency Management convened key county, city, and township representatives, as well as neighboring jurisdictions and other stakeholders to participate in the 2nd and final Planning Team Meeting for the update of the Renville County Multi-Hazard Mitigation Plan (MHMP). The purpose of the meeting was to formally convene the Renville County MHMP Planning Team for a presentation on the draft plan and discussion of key items prior to public review and submission of the plan to HSEM and FEMA. The meeting was held via Zoom webinar video conference and was facilitated by Stacey Stark and Bonnie Hundrieser of the U-Spatial@UMD project team.

Stakeholder Invitations: Renville County Emergency Management invited all stakeholders included on the county's MHMP Update Jurisdictional Contact List (JCL), which includes the key County Contacts, City Contacts, Township Contacts, Other Stakeholder Contacts, and Neighboring Jurisdiction Contacts identified to be invited to participate in the plan update process. Contacts were encouraged to engage additional staff or to send someone in their stead if they could not attend. A copy of the county's Jurisdictional Contact List is provided in *Appendix F Steering Committee Meetings*.

Meeting Participants: A total of 28 people attended the meeting. Representation included departmental staff from Renville County and the cities of Bird Island, Danube, Franklin, Morton, Olivia, Renville, and Sacred Heart. The cities of Buffalo Lake, Fairfax, and Hector were not in attendance. Other stakeholders, including neighboring jurisdictions, participated in the meeting. A participant list is included with this meeting summary.

Presentation Overview: The PowerPoint presentation covered the following items about the process and content of the plan update. A PDF of the presentation slides is included with this meeting summary.

- Meeting Purpose and Agenda
- About the Project Team
- Overview of Plan Update
- Who the Plan Covers
- Who Needs to Participate
- Prioritization of Hazards
- Hazards Risk Assessment (Critical Infrastructure, Population Vulnerability Factors, and Review of High/Moderate Priority Natural Hazards)
- Development of Mitigation Actions
- FEMA HMA Grant Funding
- Overview of Mitigation Action Charts and Discussion
- Discussion of Next Steps & answer your questions

The opening PowerPoint presentation covered a re-cap of key points about the plan update, a review of the Risk Assessment & Vulnerability Analysis, an overview of FEMA Hazard Mitigation Assistance (HMA) grant funding; an overview of how mitigation actions are developed and an overview of the jurisdictional Mitigation Action Charts (MACs). Following the presentation, participants were provided with an opportunity to review and discuss the county and local mitigation action charts. This discussion period offered a facilitated opportunity for participants to consider any changes or new additions to the MACs prior to completion of the draft plan for public review.

Discussion Notes: Following is an overview of key discussion points, questions, or mitigation ideas that were shared during the presentation and how they will be incorporated into the plan update.

- There were no questions or comments from participants during the meeting to document.

Meeting Conclusion: The meeting concluded with an overview and timeline of the upcoming next steps of posting the plan for public review and input and submitting the draft plan to HSEM and FEMA for final review and approval.

Exit Survey: Following the Zoom meeting, participants were provided with a short survey they were invited to fill out before upon their departure in order to gather some final feedback.

1. **Thank you for attending! Did this webinar meet your expectations?**

   Yes (10), No (0), Not sure (0)

2. **Please share any comments you have about the content of the Hazard Mitigation Plan**

   - Great Job!
   - I think the job you are doing is very good. It captures the span of natural hazards that we can / do face in a way that is understandable and can be practically interacted with. Nice job.

Attached are the following documentation items for the Renville County MHMP Meeting #2:

- 9-30-21 Mtg. #2 Email Invitation
- 9-30-21 Mtg. #2 List of Participants
- 9-30-21 Mtg. #2 Power Point Slides
- 9-30-21 Mtg. #2 Handouts

Meeting Summary Prepared By: Bonnie Hundrieser, U-Spatial@UMD Project Team

From:	Mike Hennen
To:	Aaron Slagter Renville PD; Amy Thompson (Palmyra Twp) (palmyra.mn@gmail.com); Andrea Aukrust (administrator@hectormn.us); Andrew Hayden (Sibley Co EM); Angi Wulf (Renville City) (angi.wulf@ci.renville.mn.us); Bandon; Beaver Falls; Beaver Falls Twp (madfrog64@gmail.com); Bird Island Twp; BL City Clerk; bltjcar; Bob Fox; Bonnie K Hundrieser; Brad Froland; Bradley Freyholtz (Wellington Twp); Bradley Link (Crooks); Brandy Fischer (SMBSC); Brian Cruze (Meeker Co SO); Brian Stenholm-OPD; Carlton Gustafson (Palmyra Twp) (gustafsonc@mvtvwireless.com); Casey Namken (YMC-EM); Chippewa Co EM; Chris Giese (Wang Twp) (cgiese_18@yahoo.com); Chris Lee (US-EM); Christy Hoff (SH Twp); Cindy Mertens - Renville Sibley (cmertens@renville-sibley.coop); Colette Santjer; Craig Kubesh (Troy Twp); Dan Agre (SH City) ; Dan Coughlin (Olivia City); Danube Police Dept; Dave Woelfel (BI City) ; David Pastoors (Kingman); David Rieke (Cairo); daynaschmalz@hotmail.com; Deb Dirlam (LS-EM); Deb Lingl (BI City); DeeAnne Newville (Renville-Sibley); Deputy Clerk - Hector (deputyclerk@hectormn.us); Diane Mitchell; Dorothy Elfering (Melville Clerk); Dotty Schnobrich (cityclerk@cityofdanube.com); Doug Bruns; Doug Erickson; Gene Allex (Renville-Sibley); Gerry Kodet (Henryville); Greg Snow; Heidi Rauenhorst (Hawk Creek Watershed Project); Henryville Twp Group; Jana Schafer (Martinsburg Twp); Jason Krumheuer-OPD; Jason Nelson (Morton); Jeff Kjorness (Soil Conservation); Jeff Marlowe; Jerry Sunvold (Ericson Twp) (jsunvold@rswb.coop); Jessie Duenow (BL); Jim Nyquist (Winfield Twp); Jim Sandgren (Redwood Co EM); Jon Mitchell; Julie Rath (mvrraa19@gmail.com); Justin Block (Nicollet Co EM); Karen Roker (Norfolk Twp); Kevin Kokesch (Franklin City); Kevin Mathews (McLeod Co EM); Kim Lindahl (KC-EM); Laine Sletta (Brown Co EM); Lisa Herges; Marc Iverson; Martinsburg; Matt Melberg (Hector Twp 20); McLeod Coop Power - Dan; Mike Hennen; Myron Peterson (Hawk Ck Twp); Nathan Johnson; Nicholas Johnson (Fairfax City Admin); Nick Frank, Osceola; Norfolk Township (david@mnwestag.com); Osceola; Pam Hopkins; Pat Grams (Brookfield); Paul Rettmann (Boon Lake Twp); Preston Lake Twp; Randy Kramer; Randy Pederson (Boon Lake Twp); redjo71@hotmail.com; Rick Deinken (BI Twp); Scott Froehlich_PD; Scott Hable; Scott Refsland; Scott Thompson (Wang Twp); Seth Sparks; Shane Wohlman; Stephanie Johnson (Meeker Co EM); TCW-Tim Jeske (tjeske@tcwr.net); Thomas Olson (Camp Twp); Tom Robinson; Wayne Hansen (Emmet Twp); Wayne Olson (Olivia City PW); Wayne Stomberg; Sara Benson; Wendy Pederson (Franklin City); Zach Pierce Hector PD
Cc:	Samantha Best; "Bonnie K Hundrieser"
Subject:	Hazard Mitigation Plan Meeting #2
Date:	Wednesday, September 15, 2021 10:03:09 AM
Attachments:	image003.png

RENVILLE COUNTY

MULTI-HAZARD MITIGATION PLAN UPDATE – MEETING INVITATION

Greetings,

Your presence is requested at the **2nd Planning Team Meeting** for the update of the **Renville County Multi-Hazard Mitigation Plan (MHMP).** This meeting will be the final planning meeting for the hazard mitigation planning process for the county, city jurisdictions, and other stakeholders.

You are requested to participate in this vital meeting because you have a position of administrative or departmental responsibility within either the county, a municipal government, or are a key stakeholder related to the planning process. Emergency Managers from neighboring jurisdictions are also encouraged to attend so we may strengthen our shared mitigation efforts.

We will be holding the meeting virtually using Zoom video/phone conferencing:

Date: Thursday, September 30, 2021
Time: 9:00 a.m. – 11:00 a.m.
Zoom Link: **https://umn-private.zoom.us/webinar/register/WN_qSjrUh2xRJawwt17tFYl1A**

You must click on the link above to register. (Ctrl + click to follow link)

The purpose of this meeting is to provide a final overview of the plan, including a review of the updated risk assessment for natural hazards that affect the county (history, local vulnerabilities, and

future trends). We will also discuss the Mitigation Action Charts that have been developed for Renville County and each city, as well as funding opportunities for eligible projects under the FEMA Hazard Mitigation Assistance grant program. Your participation in this meeting and feedback on the draft plan is important to us. The draft Renville County MHMP is underway and will be ready for review by planning team members and the public following this meeting.

When you register, you will automatically be placed on an RSVP list. Please be sure to include the name, title and representation (jurisdiction/agency) for all persons planning to attend the meeting.

Thank you,

Mike Hennen, CEM
Director

Emergency Management
105 South 5th Street, Suite #210
Olivia, MN 56277

Direct: 320-523-3838 | Cell: 320-522-1481
Email: mikehe@renvillecountymn.com
Web: www.renvillecountymn.com

Renville County
9/30/21 MHMP Planning Team Meeting #2
List of Participants *(28)*

	First Name	Last Name	Organization	Job Title
1	Mike	Hennen	Renville County Emergency Management	Director
2	Samantha	Best	Renville County Emergency Management	Deputy Director
3	Seth	Sparks	Renville County Public Works	Drainage Manager
4	Nathan	Johnson	Renville County Public Works	Drainage Technician
5	Jeff	Marlowe	Renville County Highway Dept.	County Engineer
6	Bob	Fox	Renville County	Commissioner
7	Scott	Refsland	Renville County Environmental Services Dept.	Environmental Services Director
8	Sara	Benson	Renville County Public Health	Director
9	Marc	Iverson	Renville County	County Auditor-Treasurer
10	Deb	Lingl	City of Bird Island	Administrator-Treasurer
11	Dave	Woelfel	City of Bird Island	Public Works
12	Les	Schneider	City of Danube	Chief of Police
13	Trista	Radermacher	City of Franklin	City Clerk/Treasurer
14	Kevin	Kokesch	City of Franklin	Public Works Director
15	Pam	Ring	City of Morton	Clerk
16	Jason	Nelson	City of Morton	Maintenance Sup't
17	Dan	Coughlin	City of Olivia	City Administrator
18	Shane	Wohlman	City of Renville	City Administrator/Clerk
19	Amy	Hubbard	City of Sacred Heart	City Administrator
20	Dan	Agre	City of Sacred Heart	Mayor
21	Scott	Agre	City of Sacred Heart	Public Works Director, Maintenance
22	Gary	Simondet	Beaver Falls Twsp	Clerk
23	Cindy	Mertens	Renville-Sibley Cooperative	Administrative Services Manager
24	Jon	Mitchell	Redwood-Renville Regional Material Recovery & Transfer Facility	Executive Director/Solid Waste Administrator
25	Gregg	Nistler	McLeod Coop Power	Asst. Engineering Manager
26	Heidi	Rauenhorst	Hawk Creek Watershed Project	Coordinator
27	Kevin	Mathews	McLeod County Emergency Management	EM Director
28	Stephanie	Johnson	Meeker County Sheriff's Office	EM Director

RENVILLE COUNTY
Multi-Hazard Mitigation Plan Update 2021
Planning Team Meeting #2

SEPTEMBER 30, 2021

Renville COUNTY
Service · Stewardship · Shared Responsibility

U-SPATIAL
University of Minnesota Duluth
Driven to Discover℠

Welcome & Introductions

U-Spatial@UMD Project Leads

Stacey Stark
Project Manager
U-Spatial@UMD

Bonnie Hundrieser
HM Planning Specialist
Hundrieser Consulting LLC

Renville County Project Leads

- Mike Hennen, RCEM, Director
- Samantha Best, RCEM, Deputy Director

Renville County EMERGENCY MANAGEMENT

Please type your name and jurisdiction in the CHAT – so others know who is here

PRESENTER: STACEY STARK

Zoom Logistics

If you haven't yet, please type your name and jurisdiction or department in the Chat window

PLEASE REMAIN MUTED AND VIDEO OFF SO EVERYONE CAN HAVE THE BEST EXPERIENCE.

USE CHAT:

- Send a message to everyone
- Send a message to individuals or the presenters
- Send a message to host to ask for help or ask a question that isn't for the whole group. The host is Stacey Stark

ASK TO SPEAK:

PRESENTER: STACEY STARK

Meeting Purpose & Agenda

2019 Spring Flood

The purpose of this meeting is to formally convene the Renville County MHMP Planning Team for a presentation on the draft plan and discussion of key items prior to public review and submission of the plan to HSEM and FEMA.

Hazard Mitigation Planning Meeting #2 Agenda

- Welcome & Introductions
- Recap of Key MHMP Points
- Review of Risk Assessment & Vulnerability Analysis
- Overview of FEMA HMA Funding and Mitigation Action Charts (MAC)
- MAC Review & Feedback
- Next Steps

PRESENTER: STACEY STARK

About your Project Team

U-SPATIAL
University of Minnesota Duluth
Driven to Discover℠

U-Spatial at the University of Minnesota Duluth was contracted by MN HSEM to facilitate the development of this plan and to conduct spatial analysis, mapping and research for the plan.

This Hazard Mitigation Plan is one of many we are working on this year.

Working with U-Spatial@UMD is **Bonnie Hundrieser**, who specializes in Emergency Management planning.

PRESENTER: STACEY STARK

Overview of Plan Update

Renville County is updating its **Multi-Hazard Mitigation Plan (MHMP)** to fulfill a state & federal requirement. The plan must be updated every 5 years. The last plan was adopted in 2015.

The purpose of the plan is to identify & assess natural hazards that pose risk to the county and it's jurisdictions and **develop long-term strategies and mitigation actions** that will help to reduce or eliminate the impact of future hazard or disaster events.

Hazard Mitigation is any action taken to reduce or eliminate long term risk to people and property from natural disasters.

PRESENTER: BONNIE HUNDRIESER

Who the Plan Covers

This is a **multi-jurisdictional plan** that covers Renville County, including the cities of Bird Island, Buffalo Lake, Danube, Fairfax, Franklin, Hector, Morton, Olivia, Renville, and Sacred Heart.

The county and cities are required to adopt the final plan. Townships are covered under the umbrella of the county but may also elect to adopt the plan.

PRESENTER: BONNIE HUNDRIESER

Who Needs to Participate

Key Stakeholders

It is required to provide an opportunity for local county & municipal government, related agency stakeholders and neighboring jurisdictions to participate in the plan update.

- 2 Planning Team Meetings
- Local Mitigation Survey
- Provision of key data
- MAC Review & Feedback
- Review of Draft Plan

The Public

It is required to provide an opportunity for the public to learn about the plan update, ask questions and provide input that may be incorporated into the plan update.

- 2 News Releases
- Outreach conducted via websites, social media and local media
- Online public review & comment period for draft plan

PRESENTER: BONNIE HUNDRIESER

Prioritization of Hazards for Renville County

Prioritization of hazards by the Renville County planning team included consideration of:

- Probability and Severity of natural hazard events (risk)
- Observed increase or decrease in risk since 2015
- Jurisdictional variations in risk (i.e., local vulnerabilities, changes in development)

Hazard	2020 Priority
Thunderstorm/High Wind	High
Tornado	High
Lighting	High
Extreme Heat	High
Winter Storm	High
Hail	High
Drought	High
Extreme Cold	High
Flood	High
Landslide	Low to Moderate
Wildfire	Low
Dam & Levee Failure	Low
Land Subsidence	Low

PRESENTER: BONNIE HUNDRIESER

Hazards Risk Assessment

- Validate prioritization
- Provide probability and severity of future events as possible
- Identify vulnerable populations and structures at risk as possible
- Consider variable jurisdictional vulnerability
- Inform Mitigation Actions in the HMP

July, 2019, Morton area flood

PRESENTER: STACEY STARK

U-Spatial@UMD – County Coordination

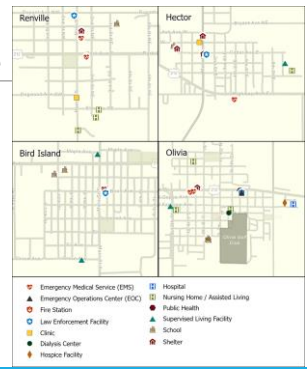
U-Spatial@UMD Team has worked closely with personnel from the county to collect key information for the plan update.

- County Emergency Management Director
- County GIS Specialist
- County Assessor
- County Departments (i.e. Highway, Planning & Zoning, others).
- Others (SWCD, USFS)

PRESENTER: STACEY STARK

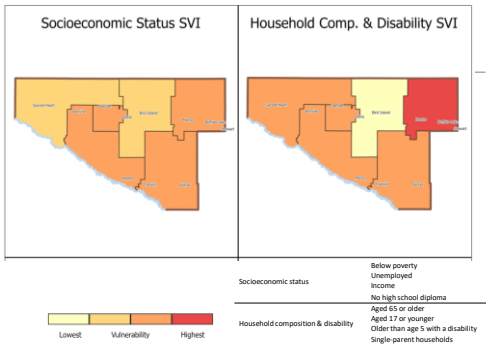
All Hazards – Critical Infrastructure

- Healthcare Facilities
- Emergency Services
- Schools and Shelters
- Transportation
- Utilities
- Dams and Levees
- Hazardous Materials Facilities
- Major Employers
- Government Buildings
- Cultural Resources

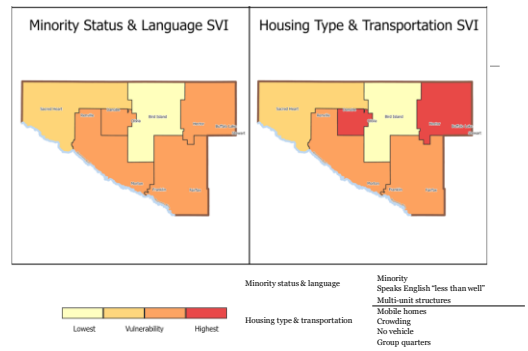


PRESENTER: STACEY STARK

All Hazards – Population Vulnerability



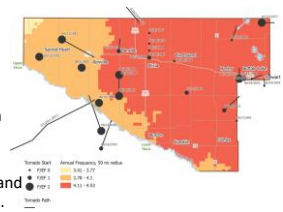
All Hazards – Population Vulnerability



RENVILLE COUNTY: Tornadoes (high)

Danube Tornado 2011 (EF1)

- Based NCEI Storm Events Database through August 2021, the relative frequency of tornadoes in Renville County is **.4** per year
- 4 mobile home park locations within the county (cities of Buffalo Lake, Olivia, Renville, and Hector)
- High wind events are also of high priority (**4.1 per year**)
- Current concerns about the availability of tornado safe rooms and upgrade of outdoor warning sirens.



RENVILLE COUNTY: Flooding (high)

County Road 15, July 2018 flood

RENVILLE COUNTY: Flooding (high)

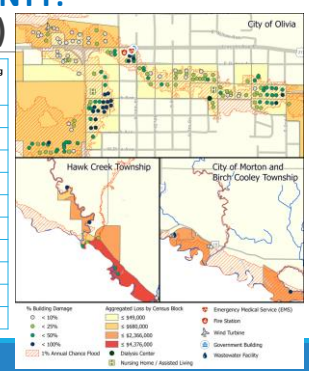
Olivia, 2019 flooding

- Obtained building and parcel values from County
- Used statewide building footprint data
- Obtained FEMA Flood Insurance Rate Maps
- Ran flood model to estimate economic loss
- Identified Critical Infrastructure in flood zone

Morton, July 2019 flooding

RENVILLE COUNTY: Flooding (high)

Jurisdiction (county subdivision)	Count of Buildings in Floodplain	Estimated Building and Contents Loss*
Beaver Falls Township	4	$2,458
Birch Cooley Township	3	$408,427
Camp Township	2	$81,097
Flora Township	3	$82,345
Hawk Creek Township	10	$88,262
Morton City	2	$150,322
Olivia City	168	$8,034,731
Sacred Heart Township	1	$8,087
Troy Township	3	$16,308
Wang Township	2	$66,542



RENVILLE COUNTY:
Extreme Heat (high)

A **heat advisory** is issued when the maximum heat index is around 100 °F or higher. (3 days/year)

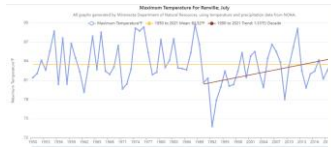
An **excessive heat warning** occurs when the maximum heat index is around 105 °F and the minimum heat index is around 75 °F or higher (3 x since 1996)

Heat-related events in the county is **.4** per year.

RENVILLE COUNTY:
Extreme Heat (high)

Average Summer Maximum Temperature for HSEM Region 5		
1981-2010	2050-2075	Change
82.1 °F	89.6 °F	+7.5 °F

Average Winter Minimum Temperature for HSEM Region 5		
1981-2010	2050-2075	Change
7.9 °F	16.9 °F	+9.0 °F



https://arcgis.dnr.state.mn.us/ewr/climateexplorer/main/historical

RENVILLE COUNTY:
Extreme Cold (high)

The county experiences an average **of 3-4 extreme cold days each year** (daily minimum temperature reached −18 °F).

The frequency of cold-related **events** in Renville County is 1.1 per year. (−25 °F and colder with wind chill)

Program Gaps and Deficiencies:
Obtaining generators for backup power to healthcare facilities and designated shelter facilities.

Plans and Programs in Place
Emergency Notifications – NWS & Renville County Emergency Management
School Closings – policy and communication plans
NWS Winter Hazard Awareness Week – public education & awareness

RENVILLE COUNTY:
Winter Storms (high)

Associated Press

4.1 winter-related storm events per year in Renville County

Vulnerability - Program Gaps & Deficiencies:
- *Aboveground Powerlines*
- *Backup Power for critical facilities*
- *Public sign-up for emergency notifications*

2019, West Central Tribune

Development of Mitigation Actions

- Must address hazards of high to moderate risk
- Must be jurisdictionally-specific
- Should address local vulnerabilities & reduce risk
- Should incorporate existing planning mechanisms and capabilities

Important

Eligible FEMA HMA project activities must be identified to support a future grant application.

FEMA HMA Grant Funding

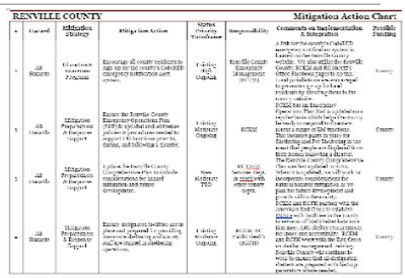
- All applicants must be covered by an approved MHMP
- Cost share: Federal 75%, Applicant 25%
- Projects must address risk reduction.
- Eligible projects must be identified in the plan of action.

Example Eligible Activities:

- Property Acquisition (flooding/erosion)
- Tornado Safe Rooms (new/retrofit)
- Infrastructure Retrofits (utility systems, roads & bridges)
- Wildfire Mitigation
- Soil Stabilization
- Flood Risk Reduction
- Green Infrastructure
- Other projects difficult to conduct a standard BCA

Mitigation Action Charts Overview

- County MAC (includes townships)
- City MACs
- 5-year window
- Please consider any additional mitigation actions you would like to add to your local MAC.


RENVILLE COUNTY — Mitigation Action Chart

Local Planning & Regulations

RENVILLE COUNTY EXAMPLES:

- Participating in the NFIP
- Update of comprehensive plans to better address mitigation for flooding.
- Collaborating with SWCD and watershed districts to address flooding and erosion.
- Working with MHP operators to be in compliance with Minnesota State statutes for storm shelters & evacuation plans.
- Providing grant writing assistance to jurisdictions for mitigation activities.

Structure & Infrastructure Projects

RENVILLE COUNTY EXAMPLES:

- Installation of new outdoor warning sirens.
- Construction of safe rooms / storm shelters at MHPs, campgrounds, city parks, fairgrounds.
- Burying powerlines to reduce power failure
- Implementing stormwater improvement projects for high rain and snow melt (i.e. drainage, culvert upsizing).
- Flood protection for critical infrastructure (i.e., dike / floodwall / flood diversion / floodwater retention area projects).
- Conducting property buyouts of homes at risk from repetitive flooding or erosion and convert to open space.

Natural Systems Protection

RENVILLE COUNTY EXAMPLES:

- Address landslide concerns on county roads near the Minnesota River and on slopes that may fail near the MN Regonal Rail Authority rail line.
- Work with agricultural land owners to implement soil health measures to reduce runoff and hold soil in place.
- Conduct vegetation management along roads to reduce downed limbs and trees from severe storms.

Education & Awareness Programs

RENVILLE COUNTY EXAMPLES:

- Promoting sign-up for the County's CodeRED emergency notification system.
- Promoting residents to be aware of and prepared for severe weather and extended power outages.
- Encouraging residents to maintain sump pumps and to clear street drains of debris.
- Participation in the NWS Severe Weather Awareness Weeks
- SKYWARN Storm Spotter Training

Mitigation Preparedness & Response Support

RENVILLE COUNTY EXAMPLES:

- Purchasing generators for critical services or facilities (i.e., sewer, city well, City Hall, fire hall, community centers).
- Updating EOP's
- Shelter Planning
- Working with long-term care facilities to be prepared for power outages or evacuation.
- Training local elected officials in EM responsibilities

Comments and Questions?

Next Steps — Fall 2021

Planning Team Meeting #2 and Public Review & Comment Period

- Following Planning Team Mtg. #2, disseminate & document news release by county and jurisdictions.
- Conduct public review & comment period (stakeholder & public review of draft plan).
- Document and incorporate feedback into the plan as appropriate.

Next Steps — Fall-Winter 2021

Draft Plan Submission to HSEM & FEMA, Plan Approval, and Collection of Adopting Resolutions

- Draft plan will be submitted first to HSEM and then to FEMA for approval for meeting all Federal requirements.
- Typically requires 1-2 months.
- APA letter
- EM coordination of adopting resolutions

Questions?

What questions do you have for U-Spatial@UMD about the draft MHMP or next steps ?

Contact Information

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Mitigation Strategies & Action Types

Following are the five types of mitigation strategies that will be used in the update of the Multi-Hazard Mitigation Plan with examples of related mitigation actions. Minnesota HSEM recommends the use of these mitigation strategies to be in alignment with the State plan and those recommended by FEMA. The first four strategies listed are taken from the FEMA publications *Local Mitigation Planning Handbook* (2013) and *Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards* (2013). The fifth strategy type was determined by Minnesota HSEM for use within the state.

These strategies will provide the framework for identification of new jurisdictional-level mitigation actions for implementation over the next 5-year planning cycle.

Mitigation Strategy	Description	Example Mitigation Actions
Local Planning and Regulations	These actions include government authorities, policies, or codes that influence the way land and buildings are developed and built.	• Comprehensive plans • Land use ordinances • Planning and zoning • Building codes and enforcement • Floodplain ordinances • NFIP Community Rating System • Capital improvement programs • Open space preservation • Shoreline codes • Stormwater management regulations and master plans • Mobile home park compliance for storm shelters
Structure and Infrastructure Projects	These actions involve modifying existing structures and infrastructure to protect them from a hazard or remove them from a hazard area. This could apply to public or private structures as well as critical facilities and infrastructure. This type of action also involves projects to construct manmade structures to reduce the impact of hazards.	• Property Acquisitions and elevations of structures in flood prone areas • Utility undergrounding • Structural retrofits (i.e., metal roofs) • Floodwalls and retaining walls • Detention and retention structures • Culvert Installation/Modification • Roads & Bridge risk reduction • Safe Room (New construction or facility retrofit) • Green Infrastructure Methods *Many of these types of actions are projects eligible for funding through FEMA HMA grant programs.*

Mitigation Strategy	Description	Example Mitigation Actions
Natural Systems Protection	These are actions that minimize damage and losses and also preserve or restore the functions of natural systems.	• Soil stabilization for sediment and erosion control • Floodplain and Stream corridor restoration • Slope management • Forest management (defensible space, fuels reduction, sprinkler systems) • Conservation easements • Wetland restoration and preservation • Aquifer Storage & Recovery • Flood Diversion and Storage *Many of these types of actions are projects eligible for funding through FEMA HMA grant programs.*
Education and Awareness Programs	These are actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. These actions may also include participation in national programs, such as StormReady or Firewise Communities. Although this type of mitigation reduces risk less directly than structural projects or regulation, it is an important foundation. A greater understanding and awareness of hazards and risk among local officials, stakeholders, and the public is more likely to lead to direct actions that support life safety and lessen property damage.	• Radio or television spots • Websites with maps and information • Social media outreach • Promotion of sign-up for emergency warnings • Real estate disclosure • Promotion of NFIP insurance to property owners • Presentations to school groups or neighborhood organizations • Mailings to residents in hazard-prone areas. • NWS StormReady Program • Firewise Communities *Some of these types of actions may be projects eligible for funding through the FEMA HMA "5 Percent Initiative Program".*
Mitigation Preparedness and Response Support	This is a State of Minnesota mitigation strategy with the intent of covering emergency preparedness actions that protect life and property prior to, during, and immediately after a disaster or hazard event. These activities are typically not considered mitigation, but support reduction of the effects of damaging events.	• Emergency Operations Plan • Flood fight plans and preparedness measures • Dam emergency action plans • Emergency Warning Systems (i.e., CodeRed, warning sirens) • Generator backup power • NWS Storm Spotter Training • Training and education for local elected officials and key partners.

Appendix G – Public Outreach & Engagement Documentation

Renville County MHMP News Release #1
Record of Public Input & Incorporation

Overview: On May 18, 2020, Renville County Emergency Management put out a news release titled "**Public Input Wanted as County Updates Multi-Hazard Mitigation Plan"** to announce the start of the county's Multi-Hazard Mitigation Plan. The news release provided information on the purpose and content of the plan, who the plan covers, stakeholders involved in the plan update and examples of hazard mitigation activities. Renville County used the news release to gather feedback from residents and businesses from across the County to incorporate into the plan, inviting feedback to the following:

- What are the natural hazards you feel pose the greatest risk to your community?
- Have you experienced a previous disaster event?
- What concerns do you have, and what sorts of mitigation actions or projects do you feel would help to reduce the damages of potential future events for your personal property, your community, or the County as a whole?

The public was strongly encouraged contact Renville County Emergency Management to submit comments, concerns, or questions regarding natural disasters and potential mitigation actions to be included into the plan update process. The public was also able to post comments electronically on county or city Facebook sites where the news release was posted.

Distribution: The following news release was sent via email to the county's MHMP Jurisdictional Contact List, which includes the names, titles, phone numbers, and email addresses of key stakeholders to be engaged in the MHMP update **(County Contacts, City Contacts, Township Contacts, Other Stakeholder Contacts, and Neighboring Jurisdiction Contacts).** The news release was additionally sent to local media contacts such as area newspapers, radio and television channels with a request to carry the news release.

Postings: The news release was shared via numerous channels to reach the public, including the Renville County website, LinkedIn page and Facebook page, Renville County Emergency Management Facebook page, local cities' public access television, and local media (newspapers/radio). Cities and townships were encouraged to help share the news release locally by posting it on their websites, social media, or community bulletin boards.

Public Input & Incorporation:
Following is a record of public responses to the news release and how their input will be incorporated into the plan update, and if not relevant to be addressed, why.

> **1 Public Comment:** In response to the invitation for public feedback in the news release, Renville County Emergency Management received one public comment via email from a Brookfield Township Resident sent via email 5/19/20:
>
> *"As we seem to get bigger rainfalls I believe our local road ditches should be addressed. There are a large number of farmers that are tilling up the road ditches. This causes dirt to fill culverts and even*

plugging some. This is difficult to deal with since our local boards are made up of the people that are causing the problems. The grass is meant to be a filter. I believe we need to have a penalty system for this just like the buffer system."

Incorporation: This local concern has been recorded for incorporation into the Renville County MHMP update and 5-year mitigation action chart under flooding/erosion.

Following is documentation of the means of public outreach for News Release #1.

From:	Samantha Best
To:	Commissioners; Lisa Herges; Doug Bruns; Marc Iverson; Scott Refsland; Diane Mitchell; Heidi Rauenhorst (Hawk Creek Watershed Project); Alex Lange; Jill Bruns; Jeff Marlowe; Nathan Johnson; Seth Sparks; Scott Hable; Deb Lingl (BI City); Dave Woelfel (BI City) ; Dawn Soukup (BI); BL City Clerk; Buffalo Lake Police Dept; Danube Police Dept; Dotty Schnobrich (cityclerk@cityofdanube.com); Gene Allex, Danube Mayor; Nicholas Johnson (Fairfax City Admin); Scott Froehlich_PD; franklin@mchsi.com; Kevin Kokesch (Franklin City); Andrea Aukrust (administrator@hectormn.us); Deputy Clerk - Hector (deputyclerk@hectormn.us); Zach Pierce Hector PD; "jnelson7765@gmail.com"; Pam Hopkins; "Dan Coughlin"; Wayne Stomberg; "oliviapw@olivia.mn.us"; "Jason Krumheuer"; "bstenholm@olivia.mn.us"; Shane Wohlman; Angi Wulf (Renville City) (angi.wulf@ci.renville.mn.us); Aaron Slagter Renville PD; Colette Santjer; Dan Agre (SH City) ; Bandon; Beaver Falls; Beaver Falls Twp (madfrog64@gmail.com); Tom Robinson; Bird Island Twp; "rdeinken@yahoo.com"; "randy.pederson@fbfs.com"; "rettmann1@gmail.com"; "Brookfield"; "Cairo"; "Camp Twsp"; "Crooks"; "hansenw@live.com"; "redjo71@hotmail.com"; Jerry Sunvold (Ericson Twp) (jsunvold@rswb.coop); bltjcar; Brad Froland; "micjan@mvtvwireless.com"; "mattmelberg@yahoo.com"; "Gerry Kodet"; "Kingman"; Martinsburg; Jana Schafer (Martinsburg Twp); "Melville Clerk"; "david@mnwestag.com"; Karen Roker (Norfolk Twp); "116osc@gmail.com"; "nickfrank79@yahoo.com"; Carlton Gustafson (Palmyra Twp) (gustafsonc@mvtvwireless.com); Amy Thompson (Palmyra Twp) (palmyra.mn@gmail.com); daynaschmalz@hotmail.com; "jkmaiers81@gmail.com"; "choff@arnoldsinc.com"; "ckubesh@coopcountry.com"; "lovesnow00@gmail.com"; "freyholtz.brad@yahoo.com"; "nyquist@westtechwb.com"; "brandy.fischer@smbsc.com"; Cindy Mertens - Renville Sibley (cmertens@renville-sibley.coop); DeeAnne Newville (Renville-Sibley); "Gene Allex"; McLeod Coop Power - Dan; Julie Rath (mvrraa19@gmail.com); "tjeske@tcwr.net"; "jeff.kjorness@usda.gov"; "kim.lindahl@kcmn.us"; "brian.cruze@co.meeker.mn.us"; "stephanie.johnson@co.meeker.mn.us"; "kevin.mathews@co.mcleod.mn.us"; "andrewh@co.sibley.mn.us"; "justin.block@co.nicollet.mn.us"; "laine.sletta@co.brown.mn.us"; "Jim Sandgren"; "casey.namken@co.ym.mn.gov"; "sweick@co.chippewa.mn.us"
Cc:	"Bonnie K Hundrieser"; Mike Hennen
Subject:	Hazard Mitigation Project
Date:	Tuesday, May 19, 2020 8:53:49 AM
Attachments:	image003.png Renville_MHMP News Release #1 final-SB.pdf

Greetings,

Renville County Emergency Management is commencing work on the update of the Renville County five-year Multi-Hazard Mitigation Plan (MHMP). Attached please find an official news release announcing the start of the plan update.

Over the next year we will be working with a planning team made up of representatives from the County and each city covered by the plan, as well as townships and other key stakeholders to gather feedback and document participation in the planning process. Key activities will include participation in two planning team meetings, providing requested information, and identifying local mitigation projects that will help to reduce or eliminate the impacts of future hazard events. Please watch for emails inviting your participation in the coming months.

Cities and townships are encouraged to help share this news release locally to strengthen our public outreach. Please notify me if you have posted the news release and provide documentation of the posting (i.e. email a link to your website or social media, or email a picture of the posting on a community bulletin board).

We look forward to your participation in the Renville County MHMP update.

If you have any questions, please let me know.

Thank you,

Samantha Best, CEM
RCEM Deputy Director
RCSO Admin Tech/TAC

Renville County Emergency Management
Renville County Sheriff's Office
105 5th St. S, Ste 210
Olivia, MN 56277

Direct: 320-523-3769 | Cell: 320-522-2802
Email: samb@renvillecountymn.com
Web: www.renvillecountymn.com

From:	Samantha Best
To:	Stefanie Ryan
Cc:	"Bonnie K Hundrieser"; Mike Hennen
Subject:	FW: Hazard Mitigation Project
Date:	Tuesday, May 19, 2020 9:23:05 AM
Attachments:	image003.png image002.png Renville_MHMP News Release #1 final-SB.pdf

---

Good morning,

Will you please post this on the County website and social media platforms? Will you also send this to the news media contacts utilized by the County? Thank you for your assistance!

Thank you,

Samantha Best, CEM
RCEM Deputy Director
RCSO Admin Tech/TAC

Renville County Emergency Management
Renville County Sheriff's Office
105 5th St. S, Ste 210
Olivia, MN 56277

Direct: 320-523-3769 | Cell: 320-522-2802
Email: samb@renvillecountymn.com
Web: www.renvillecountymn.com

From: Samantha Best
Sent: Tuesday, May 19, 2020 8:54 AM
To:
Cc:
Subject: Hazard Mitigation Project

Greetings,

Renville County Emergency Management is commencing work on the update of the Renville County five-year Multi-Hazard Mitigation Plan (MHMP). Attached please find an official news release announcing the start of the plan update.

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We look forward to your participation in the Renville County MHMP update.

If you have any questions, please let me know.

Thank you,

Samantha Best, CEM
RCEM Deputy Director
RCSO Admin Tech/TAC

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Renville County Sheriff's Office
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Direct: 320-523-3769 | Cell: 320-522-2802
Email: samb@renvillecountymn.com
Web: www.renvillecountymn.com

Emergency Management
Government Services Center
105 South 5th Street | Suite 210
Olivia, MN 56277
Office: 320-523-3838

RENVILLE COUNTY NEWS RELEASE

May 18, 2020

Public Input Wanted as County Updates Multi-Hazard Mitigation Plan

Tornadoes, straight-line winds, ice storms, blizzards, flooding, wildland fires and droughts are the kinds of natural disasters most likely to cause widespread economic loss and personal hardship in Renville County. Taking steps to minimize the damage from a natural disaster is key to the County's multi-hazard mitigation plan (MHMP); and as the County works to update the plan, it wants to hear from the public.

The Renville County Office of Emergency Management is currently working with U-Spatial at the University of Minnesota Duluth to update the County's plan. Also working on the update is a planning team of representatives from County departments, local municipalities, school districts and other key stakeholders such as utility providers.

The Renville County MHMP is a multi-jurisdictional plan that covers Renville County, including the cities of Bird Island, Buffalo Lake, Danube, Fairfax, Franklin, Hector, Morton, Olivia, Renville, and Sacred Heart. The Renville County MHMP also incorporates the concerns and needs of townships, school districts, and other stakeholders participating in the plan.

"Hazard mitigation planning is a central part of our emergency management program," said Mike Hennen, Renville County Emergency Management Director. "Understanding the natural hazards that can cause serious impact to our communities and taking action to reduce or eliminate the impact of future disasters makes us more resilient. Hazard mitigation helps us to break the cycle of damage and repair caused by things like flooding, ice storms, and severe wind events that can damage property, stress economies, and threaten life safety in our county."

Examples of hazard mitigation include improvement of roads and culverts that experience repetitive flooding; construction of safe rooms at campgrounds, public parks, mobile home parks or schools to protect lives in the event of tornadoes or severe wind events; burying power lines that may fail due to heavy snow, ice or wind storms; ensuring timely emergency communication to the public through warning sirens and mass notification systems, and conducting public awareness and education campaigns to help people to be prepared to take safe action before, during, or following a hazard event. Some mitigation activities may be eligible for future FEMA Hazard Mitigation Assistance grant funding.

As part of the planning process, Renville County is seeking feedback from residents and businesses from across the County to incorporate into the plan:

- What are the natural hazards you feel pose the greatest risk to your community?
- Have you experienced a previous disaster event?

- What concerns do you have, and what sorts of mitigation actions or projects do you feel would help to reduce the damages of potential future events for your personal property, your community, or the County as a whole?

Comments, concerns, or questions regarding natural disasters and potential mitigation actions to be included into the plan update process should be submitted to Renville County Emergency Management.

There will be additional opportunities for public feedback throughout the planning process. A draft of the plan will be posted on the County website for public review prior to submission of the plan to the State of Minnesota. Future news releases will be shared with the media to notify the public of these opportunities.

The Federal Disaster Mitigation Act of 2000 (DMA 2000) requires counties to update their plan every five years to maintain eligibility for FEMA's Hazard Mitigation Assistance (HMA) grant programs.

Contact
Samantha Best
Deputy Director, Mitigation Project Coordinator
Renville County Emergency Management
Phone: 320-523-3769
Email: samb@renvillecountymn.com

Renville County MHMP News Release #1
Documentation of News Release Postings

COUNTY POSTINGS

Renville County
County Website, May 20, 2020

HOME / MORE NEWS

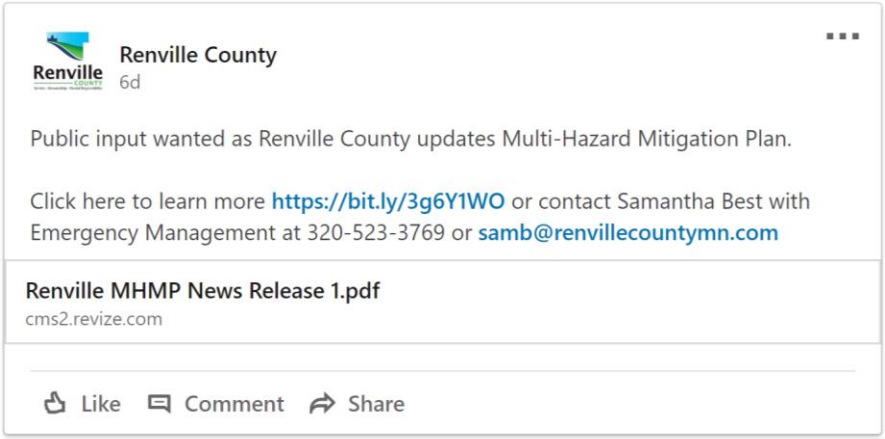
More News

MAY 20, 2020

Public Input Wanted As County Updates Multi-Hazard Mitigation Plan

Tornadoes, straight-line winds, ice storms, blizzards, flooding, wildland fires and droughts are the kinds of natural disasters most likely to cause widespread economic loss and personal hardship in Renville County. Taking steps to minimize the damage from a natural disaster is key to the County's multi-hazard mitigation plan (MHMP); and as the County works to update the plan, it wants to hear from the public. Click HERE to learn more.

Renville County
County LinkedIn Posting, May 20, 2020



Renville County
County Facebook Page, May 20, 2020

Renville County
Emergency Management Facebook, May 21, 2020

LOCAL MEDIA POSTINGS

WillmarRadio.com, May 25, 2020

64°
Fog

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Renville County seeking input for updated disaster plan

JP Cola May 25, 2020 Updated May 25, 2020

Renville County MINNESOTA

(Olivia MN-) Tornadoes, straight-line winds, ice storms, blizzards, flooding, wildland fires and droughts are the kinds of natural disasters most likely to cause widespread economic loss and personal hardship in Renville County. Taking steps to minimize the damage from a natural disaster is key to the County's multi-hazard mitigation plan (MHMP); and as the County works to update the plan, it wants to hear from the public.

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Examples of hazard mitigation include improvement of roads and culverts that experience repetitive flooding; construction of safe rooms at campgrounds, public parks, mobile home parks or schools to protect

KLGR.com, May 23, 2020

KLGR

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LOCAL NEWS

Renville County Asks Public Input For Updating Multi-Hazard Mitigation Plan

Tornadoes, straight-line winds, ice storms, blizzards, flooding, wildland fires, and droughts are natural disasters likely to cause widespread economic loss and personal hardship in Renville County. As the county works to update its multi-hazard mitigation plan, it wants to hear from the public.

The Renville County Office of Emergency Management is currently working with the University of Minnesota Duluth to update the County's plan. Also working on the update is a planning team of representatives from county departments, local municipalities, school districts and other key stakeholders such as utility providers.

The Renville County MHMP is a multi-jurisdictional plan that covers Renville County, including the cities of Bird Island, Buffalo Lake, Danube, Fairfax, Franklin, Hector, Morton, Olivia, Renville, and Sacred Heart.

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CITY POSTINGS

City of Bird Island
City Website, July 28, 2020

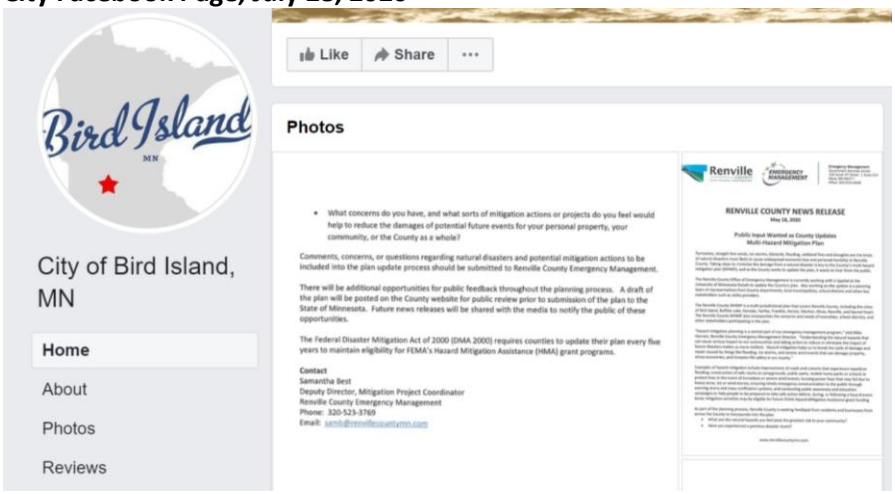
Notices

Public Input Wanted as County Updates Multi-Hazard Mitigation Plan

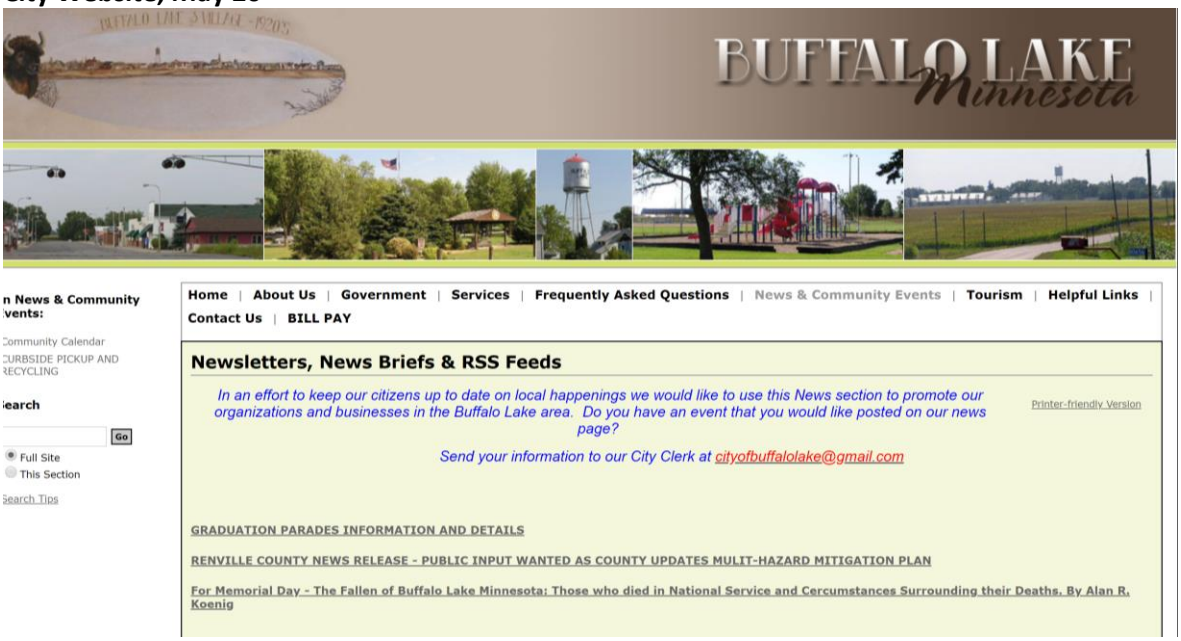
Improvement to Drinking Water System

Splash Pad Information

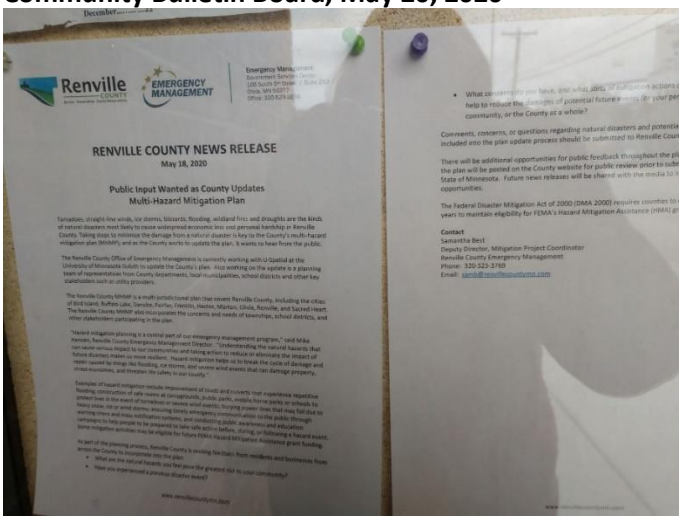
City of Bird Island
City Facebook Page, July 28, 2020



City of Buffalo Lake
City Website, May 20

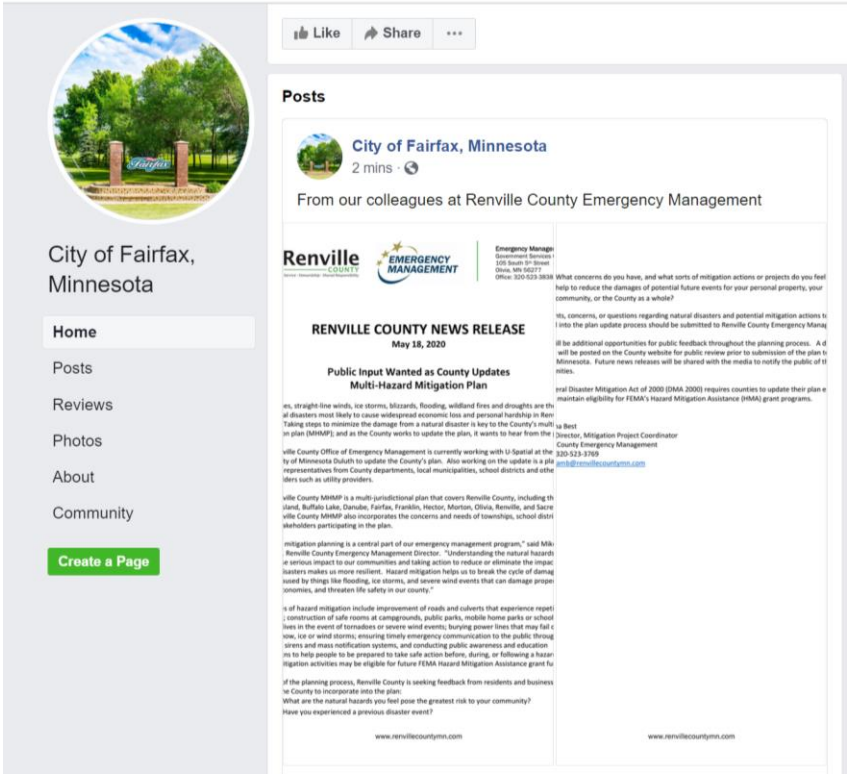


City of Buffalo Lake
Community Bulletin Board, May 20, 2020



City of Danube
City Website, July 29, 2020

City of Fairfax
City Facebook Page, September 11, 2020



City of Franklin
City Website, May 19, 2020

City of Franklin
Public Access Television Slide, May 19, 2020

City of Hector
City Website, August 10, 2020

- 5-18-20_Renville_County_MHMP_News_Release_1.pdf
- Re-Open-Covid_Measures.pdf
- RRRSWA_Press_Release_07.24.20_COVID.pdf
- FILING2(1).jpg
- 2020_Pool_Procedures-Rules.pdf
- Adult_Waiver_Pool.pdf
- Minor_Waiver_Pool.pdf
- 2019 DRINKING_REPORT.pdf

City of Hector
Public Access Television Slide, May 19, 2020

Renville County
Emergency Management
Announcement

Renville County EMERGENCY MANAGEMENT

Public Input Wanted as County Updates Multi-Hazard Mitigation Plan

Renville County Emergency Management is updating the county's 5-year Multi-Hazard Mitigation Plan. Local governments and all local residents are encouraged to provide input on their concerns and ideas of how to reduce future impacts from natural hazard events such as flooding, tornadoes, and ice storms.

Please visit the Renville County website for a news release about the plan update: **renvillecountymn.com**

For more information contact:
Samantha Best, RCEM Deputy Director
Phone: 320-523-3769 / Email: SamB@renvillecountymn.com

City of Morton
City Website, September 11, 2020

City of Morton
City Facebook Page, September 11, 2020

City of Olivia
City Website, July 29, 2020

City of Olivia
City Facebook Page, July 29, 2020

City of Olivia
Public Access Television Slide, May 19, 2020

Renville County Emergency Management Announcement

Public Input Wanted as County Updates Multi-Hazard Mitigation Plan

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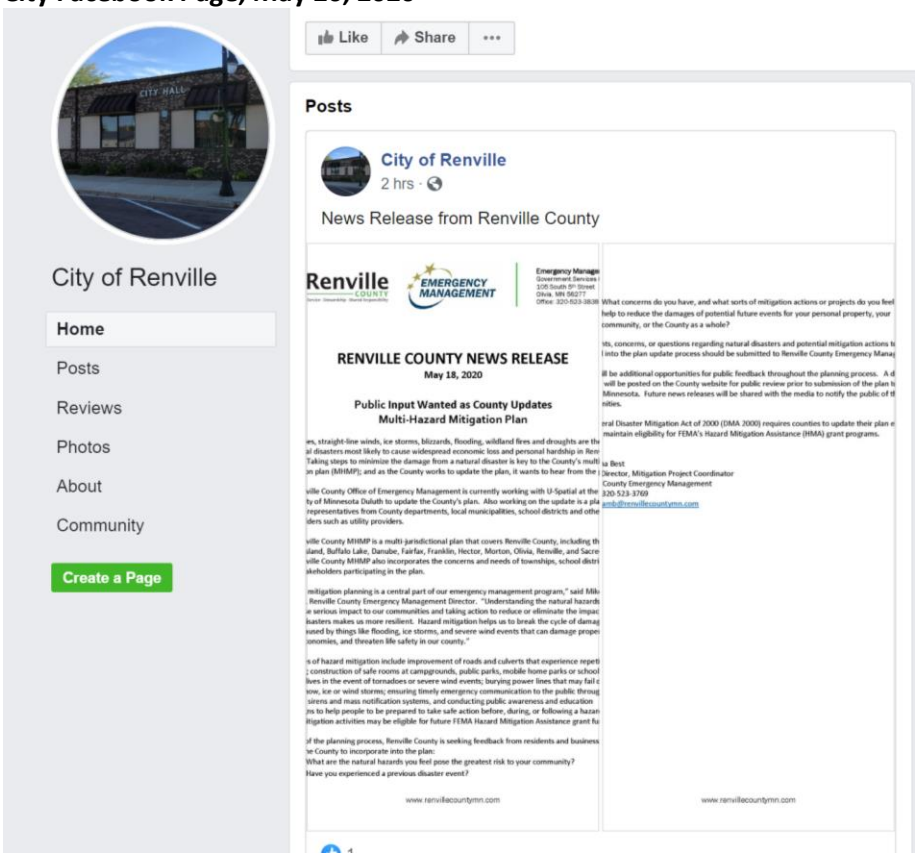
Samantha Best, RCEM Deputy Director
Phone: 320-523-3769 / Email: SamB@renvillecountymn.com

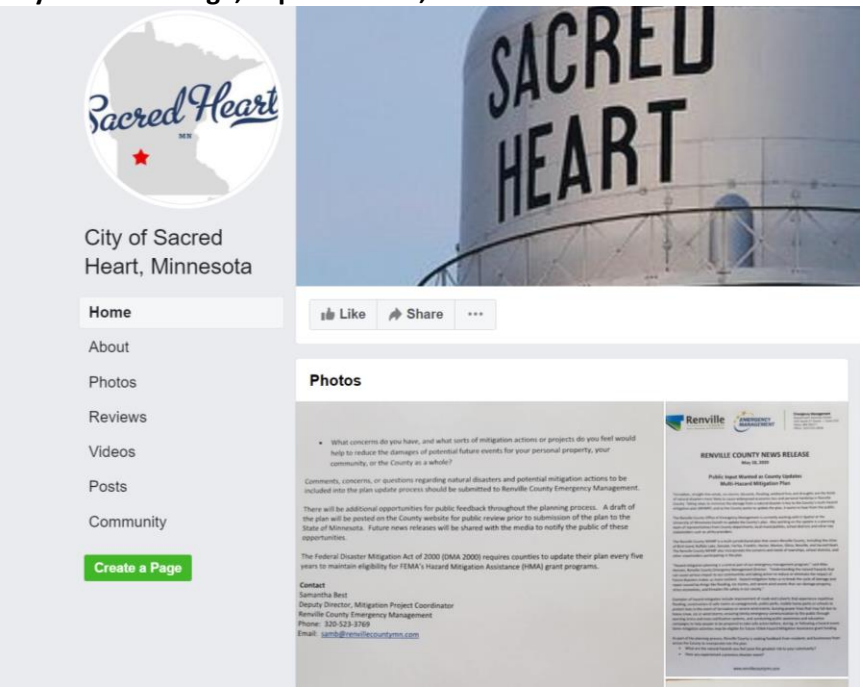
City of Renville
City Website, May 26, 2020

City of Renville
City Facebook Page, May 26, 2020



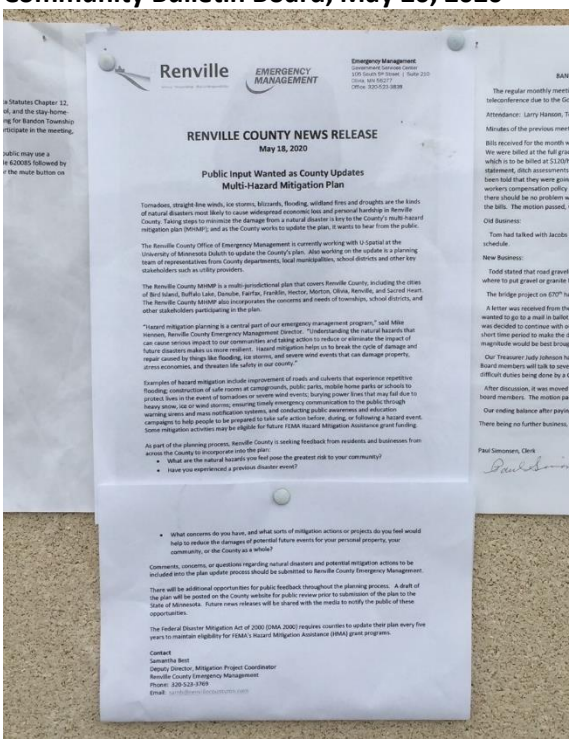
City of Sacred Heart
City Website, September 11, 2020

City of Sacred Heart
City Facebook Page, September 11, 2020



TOWNSHIP POSTINGS

Bandon Township
Community Bulletin Board, May 20, 2020



Renville EMERGENCY MANAGEMENT

Emergency Management
Government Services Center
105 South 5th Street | Suite 210
Olivia, MN 56277
Office: 320-523-3838

RENVILLE COUNTY NEWS RELEASE
May 18, 2020

Public Input Wanted as County Updates Multi-Hazard Mitigation Plan

Tornadoes, straight-line winds, ice storms, blizzards, flooding, wildland fires and droughts are the kinds of natural disasters most likely to cause widespread economic loss and personal hardship in Renville County. Taking steps to minimize the damage from a natural disaster is key to the County's multi-hazard mitigation plan (MHMP); and as the County works to update the plan, it wants to hear from the public.

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Contact
Samantha Best
Deputy Director, Mitigation Project Coordinator
Renville County Emergency Management
Phone: 320-523-3709
Email: [redacted]

Renville County MHMP News Release #2
Record of Public Input & Incorporation

Overview: On November 10, 2021 Renville County Emergency Management put out a news release titled **"Public Comment Sought for County's Multi-Hazard Mitigation Plan"** to announce the completion of the draft Renville County Multi-Hazard Mitigation Plan and invitation for public review and comment. The news release informed jurisdictional stakeholders and the public that a copy of the draft plan and a form for public feedback was available online with a website link. The public review period for the draft plan was open from November 10 to November 23, for a total of 14 days.

Distribution: The news release was sent via email to the county's MHMP Jurisdictional Contact List, which includes the names, titles, phone numbers, and email addresses of key stakeholders to be engaged in the MHMP update, including County Contacts, City Contacts, Township Contacts, Other Stakeholder Contacts, and Neighboring Jurisdiction Contacts. (A copy of the Jurisdictional Contact List can be found in Appendix F). The news release was additionally sent to local media contacts such as area newspapers, radio and television channels with a request to carry the news release.

Postings: Attached is documentation of the news release postings by Renville County, participating jurisdictions, and local media. Cities and townships were encouraged to help share the news release locally by posting it on their websites, social media, or community bulletin boards.

Public Input & Incorporation:
Following is a record of public responses to the Renville County news release and how the input will be incorporated into the plan update, and if not relevant to be addressed, why.

- No public input was received by Renville County Emergency Management, local jurisdictions, or via the online comment form.

From:	Samantha Best
To:	Aaron Slagter Renville PD; Amy Thompson (Palmyra Twp) (palmyra.mn@gmail.com); Andrea Aukrust (administrator@hectormn.us); Andrew Hayden (Sibley Co EM); Angi Wulf (Renville City) (angi.wulf@ci.renville.mn.us); Bandon; Beaver Falls; Beaver Falls Twp (madfrog64@gmail.com); Bird Island Twp; BL City Clerk; Bob Fox; Bonnie K Hundrieser; Brad Froland; Bradley Freyholtz (Wellington Twp); Bradley Link (Crooks); Brandy Fischer (SMBSC); Brian Cruze (Meeker Co SO); Brian Stenholm-OPD; Carlton Gustafson (Palmyra Twp) (gustafsonc@mvtvwireless.com); Casey Namken (YMC-EM); Chippewa Co EM; Chris Giese (Wang Twp) (cgiese_18@yahoo.com); Chris Lee (US-EM); Christy Hoff (SH Twp); Cindy Mertens - Renville Sibley (cmertens@renville-sibley.coop); Colette Santjer; Craig Kubesh (Troy Twp); Dan Agre (SH City) ; Dan Coughlin (Olivia City); Dan DeSmet (dand@uppersiouxpolice-nsn.gov); Danube Police Dept; Dave Woelfel (BI City) ; David Pastoors (Kingman); David Rieke (Cairo); daynaschmalz@hotmail.com; Deb Dirlam (LS-EM); Deb Lingl (BI City); DeeAnne Newville (Renville-Sibley); Deputy Clerk - Hector (deputyclerk@hectormn.us); Diane Mitchell; Dorothy Elfering (Melville Clerk); Dotty Schnobrich (cityclerk@cityofdanube.com); Doug Bruns; Doug Erickson; Gene Allex (Renville-Sibley); Gerry Kodet (Henryville); Greg Snow; Gregg Nistler; Heidi Rauenhorst; Henryville Twp Group; Jana Schafer (Martinsburg Twp); Jason Krumheuer-OPD; Jason Nelson (Morton); Jason Rouse (BI Twp); Jeff Kjorness (Soil Conservation); Jeff Marlowe; Jerry Sunvold (Ericson Twp) (jsunvold@rswb.coop); Jessie Duenow (BL); Jill Bruns; Jim Nyquist (Winfield Twp); Jim Sandgren (Redwood Co EM); Jon Mitchell; Julie Rath (mvrraa19@gmail.com); Justin Block (Nicollet Co EM); Karen Roker (Norfolk Twp); Karyn Lamb (Palmyra); Kevin Kokesch (Franklin City); Kevin Mathews (McLeod Co EM); Kim Lindahl (KC-EM); Laine Sletta (Brown Co EM); Lisa Herges; Marc Iverson; Martinsburg; Matt Melberg (Hector Twp 20); McLeod Coop Power - Dan; Mike Aude, LSEM; Mike Hennen; Myron Peterson (Hawk Ck Twp); Nathan Johnson; Nicholas Johnson (Fairfax City Admin); Nick Frank, Osceola; Nick Kuntz; Norfolk Township (david@mnwestag.com); Osceola; Pam Hopkins; Pat Grams (Brookfield); Paul Rettmann (Boon Lake Twp); Preston Lake Twp; Randy Kramer; Randy Pederson (Boon Lake Twp); redjo71@hotmail.com; Rick Schmidt; Rita Berg; Samantha Best; Scott Froehlich_PD; Scott Hable; Scott Refsland; Scott Thompson (Wang Twp); Seth Sparks; Shane Wohlman; Stephanie Johnson (Meeker Co EM); TCW-Tim Jeske (tjeske@tcwr.net); Teresa Martin; Thomas Olson (Camp Twp); Tim Seehusen OFD; Tom Breitkreutz (Flora Twp); Tom Robinson; Wayne Hansen (Emmet Twp); Wayne Olson (Olivia City PW); Wayne Stomberg; Wendy Pederson (Franklin City); Zach Pierce Hector PD
Cc:	"Bonnie K Hundrieser"
Subject:	Renville County News Release – Multi-Hazard Mitigation Plan Update Public Review
Date:	Wednesday, November 10, 2021 10:26:06 AM
Attachments:	Renville.MHMP News Release #2 final-SB.pdf image001.png
Importance:	High

Greetings,

The draft Renville County Multi-Hazard Mitigation Plan is ready for public review and comment from **November 10 – 23**. Please see the attached news release. All jurisdictional and other organizational stakeholders are encouraged to review the plan and provide any comments.

Renville County Emergency Management requests that all cities post the news release to document local outreach which will be reviewed by FEMA. You can post the news release to your city website or Facebook page and provide a link to me, and/or post the news release in a visible public location (i.e., community bulletin board, City Hall window, Post Office) and email me a photograph noting the location of the posting. The link for the plan review website is https://z.umn.edu/renville_hmp . Townships and other agency stakeholders (such as SWCD and school districts) are also encouraged to post the news release with the public.

There is only a 14 day open review period, so your timeliness to post is important.

If you have any questions or comments, please let me know.

Thank you,

Samantha Best, CEM
Deputy Director

Emergency Management
105 5th St. S, Ste 119H

Olivia, MN 56277

Direct: 320-523-3839 | Cell: 320-522-2802
Email: samb@renvillecountymn.com
Web: www.renvillecountymn.com

Emergency Management
Government Services Center
105 South 5th Street | Suite 210
Olivia, MN 56277
Office: 320-523-3838

RENVILLE COUNTY NEWS RELEASE

November 10, 2021

Public Comment Sought for County's Multi-Hazard Mitigation Plan

Renville County has completed an updated draft of the of its Multi-Hazard Mitigation Plan (MHMP) and is now seeking public feedback on it. Citizens can find a link to review the plan and offer feedback by visiting https://z.umn.edu/renville_hmp. The review and comment period is open through Tuesday, November 23, 2021. After that, the county will submit the draft plan to the State of Minnesota and the Federal Emergency Management Agency (FEMA) for review.

The Renville County MHMP is a multi-jurisdictional plan that covers Renville County, including the cities of Bird Island, Buffalo Lake, Danube, Fairfax, Franklin, Hector, Morton, Olivia, Renville, and Sacred Heart. The Renville County MHMP also incorporates the concerns and needs of townships, school districts, and other stakeholders participating in the plan.

Renville County is vulnerable to a variety of potential natural disasters which threaten the loss of life and property in the county. The plan addresses how to mitigate against hazards such as tornadoes, flooding, wildland fires, blizzards, straight-line winds, ice storms, and droughts which have the potential for inflicting vast economic loss and personal hardship.

Update of the plan has been under direction of Renville County Emergency Management in cooperation with U-Spatial at the University of Minnesota Duluth and representatives from county departments, city and township governments, school districts, and other key stakeholders. Together, the planning team worked to identify cost-effective and sustainable actions to reduce or eliminate the long-term risk to human life or property from natural hazards. Some examples include improvement of roads and culverts that experience repetitive flooding; construction of safe rooms at campgrounds, public parks, mobile home parks or schools to protect lives in the event of tornados or severe wind events; burying powerlines that may fail due to heavy snow, ice or wind storms; ensuring timely emergency communication to the public through warning sirens and mass notification systems, and conducting public awareness and education campaigns to help people be prepared to take safe action before, during, or following a hazard event.

Hazard mitigation planning helps Renville County and other jurisdictions protect their residents. Working with local communities through the process helps identify vulnerabilities and develop strategies to reduce or eliminate the effects of a potential hazard. In addition, increasing public awareness of local hazards and disaster preparedness helps to create a community that is resilient to disaster, and breaks the cycle of response and recovery. Updating the plan further allows the County and its jurisdictions to apply for eligible projects under future Hazard Mitigation Assistance (HMA) grant funding from FEMA for projects that are cost-effective and will help to reduce or eliminate impacts of future natural disaster events.

Community feedback is vital to the success of the plan. Renville County invites public review and feedback of the draft plan prior to submitting it to the State of Minnesota and the Federal Emergency Management Agency (FEMA) for review. Feedback may be provided via the online comment form or directly to Renville County Emergency Management.

Contact:

Samantha Best
Deputy Director, Mitigation Project Coordinator
Renville County Emergency Management
Phone: 320-523-3839
Email: samb@renvillecountymn.com

Renville County MHMP News Release #2
Documentation of News Release Postings

COUNTY POSTINGS

Renville County Emergency Management, 11/10/21
RCEM Facebook Page

Renville County
November 10 at 11:49 AM ·

Public Comment Sought for County's Multi-Hazard Mitigation Plan

Renville COUNTY EMERGENCY MANAGEMENT

Emergency Manage
Government Services
105 South 5th Street
Olivia, MN 56277
Office: 320-523-3838

RENVILLE COUNTY NEWS RELEASE
November 10, 2021

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www.renvillecountymn.com

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a Best
Director, Mitigation Project Coordinator
County Emergency Management
320-523-3839
mb@renvillecountymn.com

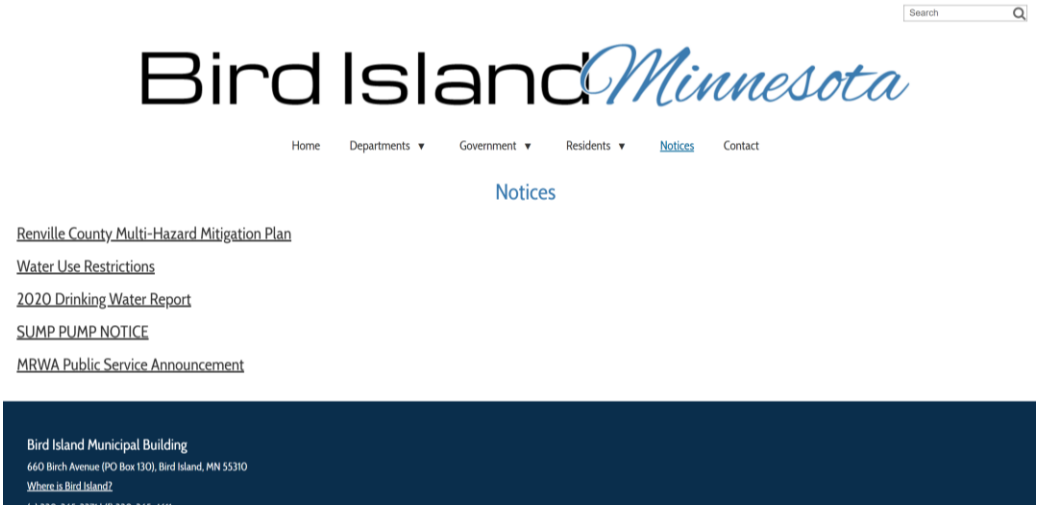
www.renvillecountymn.com

LOCAL MEDIA POSTINGS

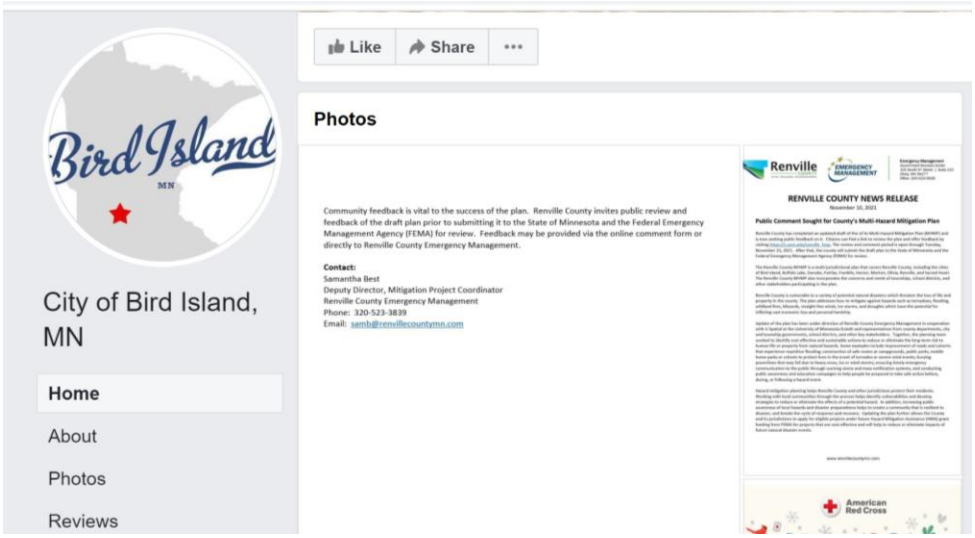
No local media carried the news release.

CITY POSTINGS

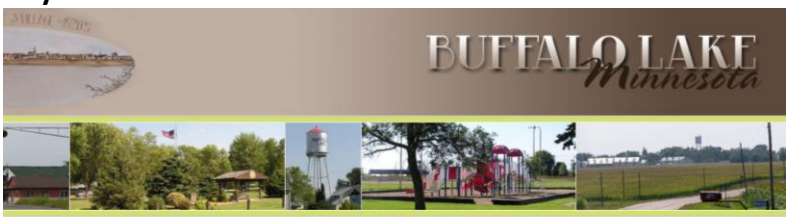
City of Bird Island, 11/19/21
City Website Posting



City of Bird Island
City Facebook page



City of Buffalo Lake, 11/10/21
City Website



Home | About Us | Government | Services | Frequently Asked Questions | News & Community Events | Tourism | Helpful Links | Contact Us | BILL PAY

Newsletters, News Briefs & RSS Feeds

In an effort to keep our citizens up to date on local happenings we would like to use this News section to promote our organizations and businesses in the Buffalo Lake area. Do you have an event that you would like posted on our news page?

Printer-friendly Version

Send your information to our City Clerk at cityofbuffalolake@gmail.com

PUBLIC COMMENT SOUGHT FOR COUNTYS MULIT-HAZARD MITIGATION PLAN

LIONS FRENCH TOAST BREAKFAST

MUNICIPAL LIQUOR STORE MANAGER

WINTER PARKING ORDINANCE

City of Danube

City of Fairfax, 11/16
City Facebook Page

City of Fairfax, Minnesota
Published by Nicholas Johnson · Just now ·

Renville County is seeking public feedback on the proposed Multi-Hazard Mitigation Plan. Please see the attached for additional information.

Renville COUNTY — EMERGENCY MANAGEMENT

Emergency Manager
Government Services C
105 South 5th Street
Olivia, MN 56277
Office: 320-523-3838

RENVILLE COUNTY NEWS RELEASE
November 10, 2021

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www.renvillecountymn.com

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a Best
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County Emergency Management
320-523-3839
amh@renvillecountymn.com

www.renvillecountymn.com

City of Franklin, 11/15/21
City Hall Posting

City of Hector, 11/16/21
City Website

City of Morton, 11/15/21
City Facebook Posting

City of Morton
Posted by Pam Ring
2m ·

Renville County NewsRelease for Multi-Hazardous mitigation plan. Open until November 23rd

Renville County Emergency Management
5d ·

Renville COUNTY
EMERGENCY MANAGEMENT

Emergency Management
Government Services Center
105 South 5th Street | Suite 210
Olivia, MN 56277
Office: 320-523-3838

RENVILLE COUNTY NEWS RELEASE
November 10, 2021

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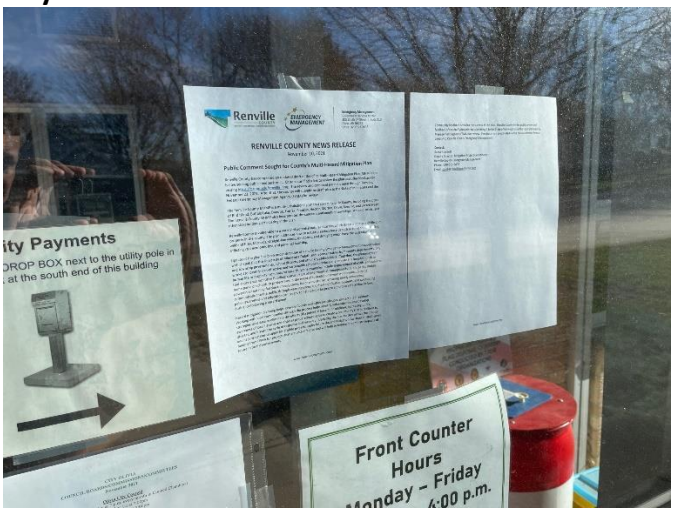
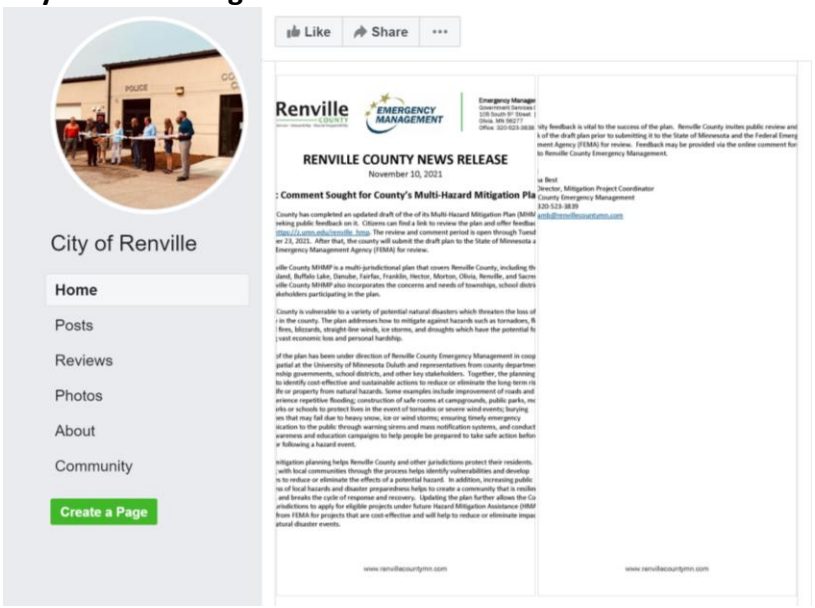
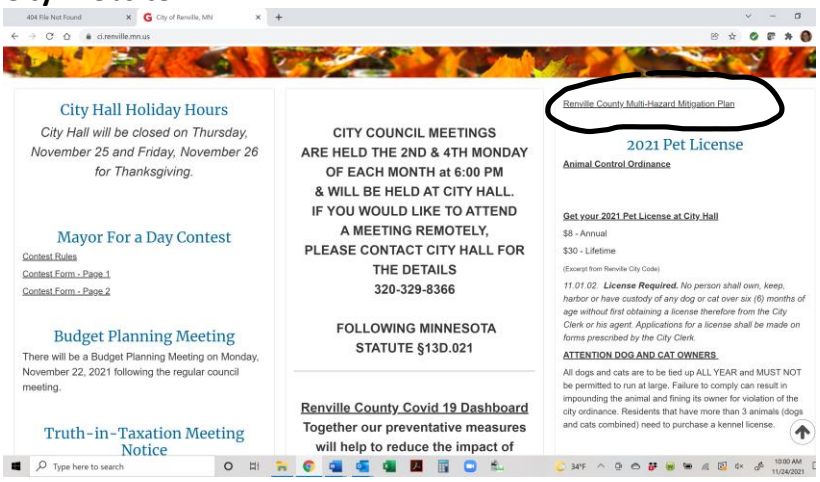
City of Olivia, 11/23/21
City Hall Front Entrance



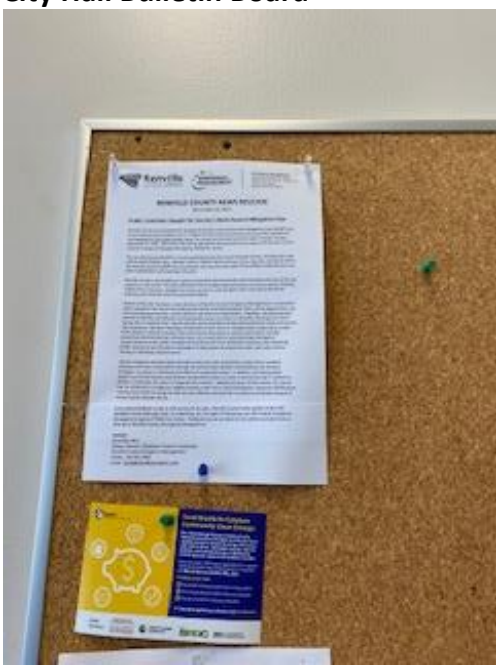
City of Renville, 11/19/21
City Facebook Page



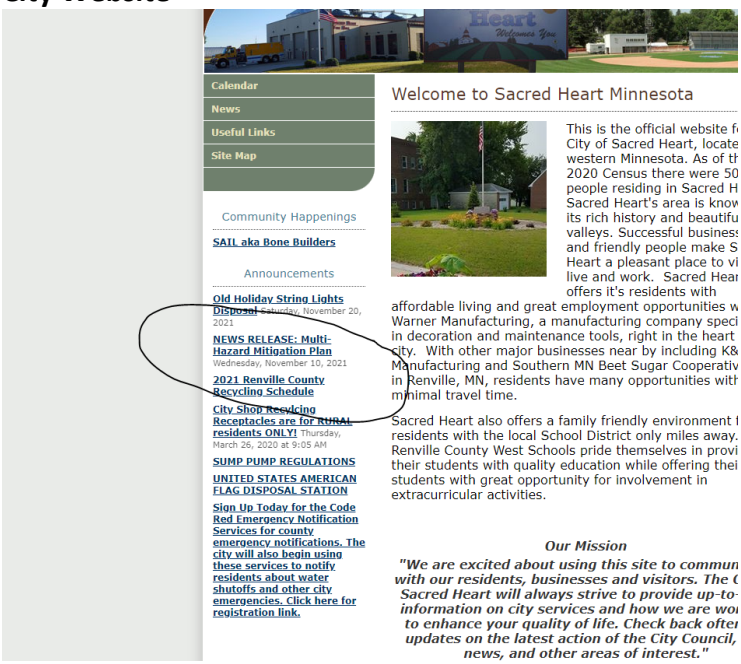
City of Renville, 11/19/21
City Website



City of Renville, 11/19/21
City Hall Bulletin Board



City of Sacred Heart, 11/19/21
City Website



TOWNSHIP POSTINGS

Hawk Creek Township, 11/11/21
Town Hall Posting

Renville County MHMP 2021
Online Public Review Website & Comment Form

Public Review Website

The Renville County 2021 MHMP Update was made available for public review online with a website hosted by U-Spatial@UMD. The website provided a full draft of the 2021 MHMP update and individual excerpts of the Mitigation Action Charts for the county and each city jurisdiction. An online comment form was also provided for the submission of public comments or questions.

Renville MHMP Feedback & Comments Form

The online comment form provided an opportunity for reviewers to submit feedback on the plan. Feedback submitted was collected by U-Spatial@UMD and reviewed for incorporation into the plan. The form included the following:

Instructions

Upon reviewing the draft Multi-Hazard Mitigation Plan update for Renville County, please answer the following questions to provide feedback and suggestions. Thank you!

Reviewer Information

- Name
- Email
- Job Title and Organization / Community Resident
- Jurisdiction you are representing

Questions

- After reviewing the mitigation actions for your jurisdiction, do you have any ideas for new ones to add? Please explain in as much detail as possible.

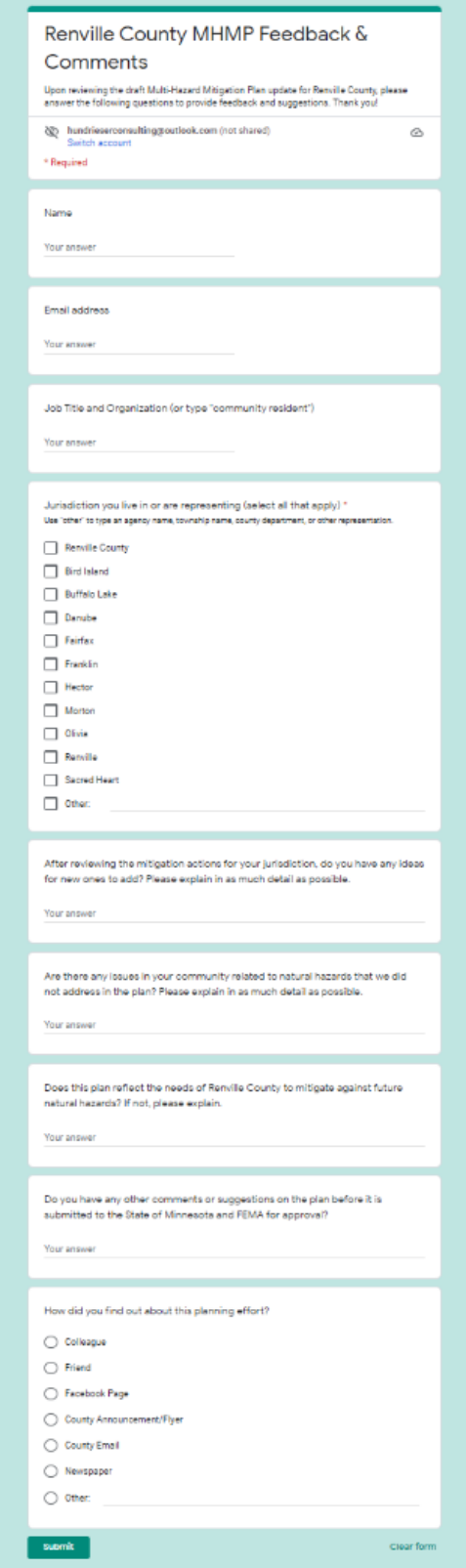
- Are there any issues in your community related to natural hazards that we did not address in the plan? Please explain in as much detail as possible.

- Does this plan reflect the needs of Renville County to mitigate against future natural hazards? If not, please explain.

- Do you have any other comments or suggestions on the plan before it is submitted to the State of Minnesota and FEMA for approval?

- How did you find out about this planning effort?

    - Colleague
    - Friend
    - Facebook Page
    - County Announcement/Flyer
    - County Email
    - Newspaper
    - Other



Appendix H – Minnesota Department of Health Climate & Health Report

Planning for Climate & Health Impacts in Southwest Minnesota

Emergency Management Considerations for HSEM Region 5

Published by the Minnesota Climate & Health Program in August 2018

ABOUT THE REGIONAL PROFILE

EXTREME WEATHER IS A FAMILIAR CONCERN FOR MINNESOTANS

While experience has helped Minnesotans adapt to historical weather patterns, climate change trends are pushing us to adapt even further to weather patterns and extreme events that pose major threats to our health, homes, environment, and livelihood. Over 50 years of storm data on record document that Minnesota has experienced an increase in the number and strength of weather-related natural disasters, particularly those related to rising temperatures and heavy downpours. These events cost our state millions in property loss, damaged infrastructure, disrupted business, medical care and support services, and put residents and responders at risk. Understanding how our weather is changing now and into the future will help planners and decision-makers in emergency management and supporting fields extend our progress in climate adaptation and lead to more resilient communities.

CLIMATE PROJECTION DATA AS A TOOL

Climate projections can help us prepare for the future. These data result from highly sophisticated global climate models and provide a general idea of trends in temperature and precipitation many decades into the future at ever-increasing time and spatial scales. Like every dataset, there are limitations to our understanding and application of the information to real-life decision-making. Yet despite limitations, climate projection data offer a crucial glimpse into our potential futures, and allow us to start considering the best way to allocate our preparedness dollars and management resources to reduce the severe impacts of extreme weather.

Ice storm (Mark Steil, 2013)

PUTTING CLIMATE CHANGE INTO CONTEXT

Sometimes, climate change and extreme weather events and the impact on our communities appear distant and abstract. That is why the Minnesota Department of Health's Minnesota Climate & Health Program teamed up with state and local emergency management and preparedness professionals as well as state climatologists to develop a custom climate profile for each of the six Homeland Security and Emergency Management (HSEM) regions across the state. Each regional profile includes a description of climate change trends along with a summary of climate projection data to illustrate these trends. Regional climate data are presented alongside population projection data, as it's important to consider both our climate future and population future as we plan to minimize risk and build resilience against climate impacts.

Additionally, each regional profile provides a local case study, a "focusing event," to illustrate the links between extreme weather and natural disasters and what climate projection data can (and cannot) signify for similar events in the future. Each case study features a recent natural disaster that impacted the HSEM region and provides a comparison between temperature and precipitation measures related to that event alongside historical baseline trends and future projection estimates. Taken together, the six HSEM regional profiles provide an extensive overview of climate change trends for Minnesota and describe the potential impact of these trends for emergency management and preparedness professionals and their partners.

FOR MORE INFORMATION

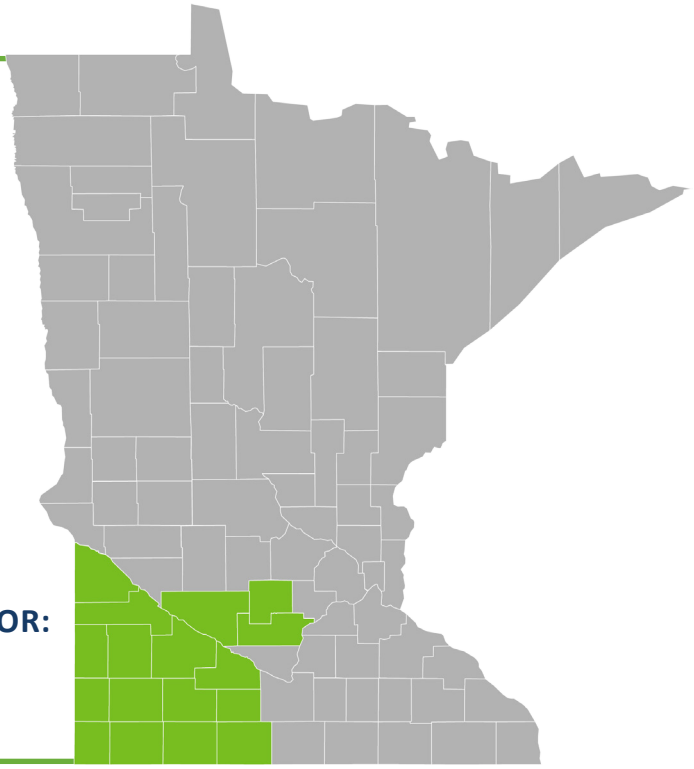
A long form report, including all six profiles, individual county data, and a more comprehensive description of climate change trends and supporting research will be available at:
Minnesota Climate & Health Planning Tools & Data
(www.health.state.mn.us/divs/climatechange/data.html)

REGION 5 OVERVIEW

REGION 5: Southwest Minnesota

COUNTIES

- Brown
- Chippewa
- Cottonwood
- Jackson
- Lac Qui Parle
- Lincoln
- Lyon
- Martin
- McLeod
- Murray
- Nobles
- Pipestone
- Redwood
- Renville
- Rock
- Sibley
- Watonwan
- Yellow Medicine



HSEM REGIONAL PROGRAM COORDINATOR:

Mark Marcy
651-619-6115
mark.marcy@state.mn.us

MINNESOTA CLIMATE & POPULATION TRENDS

OUR KNOWLEDGE OF CLIMATE CHANGE IS EXPANDING RAPIDLY

Climate records show that across the Midwest and here in Minnesota we are experiencing an increase in warmer, wetter conditions as well as an increase in extreme weather events and related natural disasters. Experts expect these conditions to continue well into the future. By mid-century, Minnesotans can expect much warmer winters, more severe summer heat waves, a higher frequency of very heavy rain events and a higher frequency of late growing season drought conditions.

Many communities in Minnesota rely on economies rooted in agriculture and outdoor recreation, such as wintertime tourism, including snowmobiling, ice fishing, and skiing. Future climate conditions may stress agricultural economies by delaying planting and fieldwork, increasing disease and pest pressure, and reducing crop yields due to cycles of flooding and dry spells. Rapidly warming winter temperatures will turn snowfall into rain and reduce the depth and timing of lake ice cover, affecting winter recreation.

Extreme rainfall events will increase flood risk, particularly in floodplain areas, disrupting transportation and utility service, and damaging property and infrastructure. In addition, surface runoff may lead to soil erosion, lake pollution, and reduced drinking water quality. Nutrient runoff in particular, along with warmer temperatures, are likely to contribute to a larger occurrence of harmful algal blooms on waters, many valued for recreation. Changing climate conditions are likely to strain the viability of native species, including popular recreational fish, invite encroachment by invasive species, and increase the geographic range and types of ticks and mosquitoes.

Some of these trends are evident in the current climate projection data that are available. However, because these data are often averaged or summarized for large areas over large time periods, they can mask the local peaks in temperature and precipitation that can trigger disasters. Until more finely-scaled climate projection data become available to Minnesota planners and decision-makers, the current data still remain useful for exploring the future ahead and establishing a baseline understanding of what our weather challenges may be moving forward.

REGION 5 CLIMATE PROFILE

Use the following information on temperature, precipitation, and vulnerable populations to help plan for future weather-related incidents.

TEMPERATURE

There has been an increase in winter and summer temperatures. Our average winter lows are rising rapidly, and our coldest days of winter are now warmer than we have ever recorded. In fact, Minnesota winters are warming nearly 13 times faster than our summers. The continued rise in winter temperatures will result in less snow pack, which will increase chances for grassland/wildfires as well as drought. The warmer winter temperatures will also have major consequences for our ecosystems, including native and invasive species, whose growth, migration, and reproduction are tied to climate cues. The increase in Lyme disease across Minnesota is also likely influenced in part by the loss of our historical winters, due to a longer life-cycle period for ticks. Freeze-thaw cycles are likely to increase as well, damaging roads, power lines, and causing hazardous travel conditions. By mid-century our average summer highs will also see a substantial rise, coupled with an increase in more severe, prolonged heat waves that can contribute to drought and wildfires and pose a serious health threat, particularly to children and seniors. Here are temperature trends for HSEM Region 5:

Average Summer Maximum Temperature for HSEM Region 5		
1981-2010	2050-2075	Change
82.1 °F	89.6 °F	+7.5 °F

Average Winter Minimum Temperature for HSEM Region 5		
1981-2010	2050-2075	Change
7.9 °F	16.9 °F	+9.0 °F

PRECIPITATION

There has been an increase in total average as well as heavy precipitation events, with longer periods of intervening dry spells. Our historical rainfall patterns have changed substantially, giving rise to larger, more frequent heavy downpours. Minnesota's high-density rain gauge network has captured a nearly four-fold increase in "mega-rain" events just since the year 2000, compared to the previous three decades. Extreme rainfall events increase the probability of disaster-level flooding. However, there is also an increased probability that by mid-century heavy downpours will be separated in time by longer dry spells, particularly during the late growing season. Over the past century, the Midwest hasn't experienced a significant change in drought duration. However, the average number of days without precipitation is projected to increase in the future, leading Minnesota climate experts to state with moderate-to-high confidence that drought severity, coverage, and duration are likely to increase in the state. Modeling future precipitation amounts and patterns is less straight-forward compared to temperature. Some climate models do a better job than others representing rainfall for the Midwest, and available data sources only provide average estimates on a monthly scale, masking the spikes in extremes that trigger flood and drought disasters. Trend data provided here for HSEM Region 5 are summarized for early summer, when historically Minnesota receives most of its rainfall, and for early fall when rainfall scarcity may threaten crop harvests and local agricultural economies:

Average Early Summer Precipitation for HSEM Region 5		
1981-2010	2050-2075	Change
3.8"	4.4"	+0.5"

Average Early Fall Precipitation for HSEM Region 5		
1981-2010	2050-2075	Change
2.5"	2.4"	-0.1"

VULNERABLE POPULATIONS

There has been an increase in the older adult population. Extreme weather events cause a range of health impacts and disruptions that vary across population groups. The vulnerability of a group is a function of its sensitivity to a hazard, exposure to risks, and capacity for responding or coping with the impacts. Children and older adults are often identified as groups vulnerable to climate change threats, including extreme weather and natural disasters. For example, physiologically these groups have a lower capacity to tolerate extreme heat and are often dependent on others for transportation to cooling centers. These groups are also often critically dependent on others during a disaster, such as needing help to evacuate during a flood or wildfire, or to find alternative housing if displaced. Planning for the specific needs of vulnerable populations strengthens local efforts to reduce the impact of extreme weather-related events. Population trend data provided here for HSEM Region 5 are intended to highlight the changes in two key demographic groups for the region, but planners and managers should also consider future changes in other populations of concern, such as those with low incomes, immigrant groups, indigenous peoples, persons with disabilities, or vulnerable occupational groups (such as outdoor workers):

Childhood Population (0-14) Projection Estimates for HSEM Region 5		
2015	2050	Change
51,634	42,313	-18.1%

Elder Population (65+) Projection Estimates for HSEM Region 5		
2015	2050	Change
53,580	59,580	+12.4%

REGION 5 CASE STUDY

The following case study is intended to illustrate the links between climate and weather and natural disasters. Acting as a "focusing event," the case study demonstrates how a previous weather-related event (i.e., ice) impacted important economic drivers, environmental resources, and population health. Then, the Climate Projection Data section compares weather data from the case study with baseline and projected weather data to show the possibilities of future disaster events. This case study highlights the relevancy of climate projection data for understanding future climate and weather risks in Minnesota.

EVENT: ICE STORM **DATE: APRIL 9-12, 2013**

A devastating ice storm hit southwestern Minnesota in the spring of 2013. Southwestern Minnesota is in a relatively high-frequency corridor of ice storms, partially due to the Buffalo Ridge where the higher elevation often cools the air just enough to turn rain into freezing rain. A combination of freezing rain and wet, heavy snow brought down trees and powerlines throughout the area leading to widespread power outages and extremely dangerous driving conditions. The heaviest coating of ice was around the cities of Worthington and Luverne with nearly an inch of ice reportedly coating these areas. Conditions required the city of Worthington to declare a state of emergency and resort to rolling blackouts to keep homes habitable and avoid having to open emergency shelters. To enable disaster relief support, the federal government declared five counties disaster areas in the aftermath of the storm: Cottonwood, Jackson, Murray, Nobles, and Rock.

REGION 5 CASE STUDY: KEY IMPACTS

It is nearly impossible to capture all the various impacts from a natural disaster. These impacts broadly include costly infrastructure damage, disrupted utility service, prolonged work and school absences, acute physical injury, and persistent strains on mental health, on scales ranging from the community to the household to the individual.

The extensive costs associated with the 2013 April ice storm event are difficult to capture in a single estimate. One report puts damage costs at about $71 million. However, this estimate does not take into account the loss to businesses that were forced to close or medical expenses for injuries linked to slips, falls, or car accidents.

The following are just a few examples of the adverse impacts on HSEM Region 5 communities and others from the 2013 April ice storm:

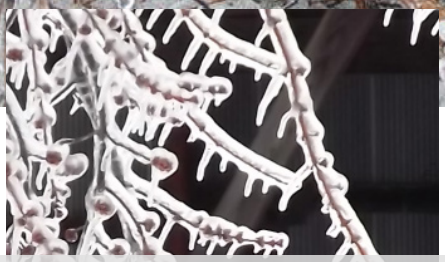
DISRUPTION OF ESSENTIAL SERVICES: Widespread power outages left many communities and farms without electricity or heat during a prolonged period of cold temperatures. More than 100,000 customers across southwest Minnesota were impacted by power disruptions. Some rural customers did not have power restored for multiple days. The widespread loss of power affected communications along with electric, heat, and water services to homes, schools, businesses, and fire stations.

BUDGET STRAINS: In several small communities, costs of responding to the disaster consumed their public works budget for the entire year. To assist with hazards and power loss, the Governor activated the National Guard.

DIRECT HEALTH THREAT: Snow- and ice-covered roads, coupled with downed trees and utility poles, made for extremely dangerous driving conditions. During a single 8-hour period on April 10th, State Patrol reported at least 736 crashes and spinouts, 39 involving serious injuries.

EVACUATIONS & CLOSURES: Due to power outages, one medical center was forced to run entirely on its own generators, while others, including a nursing home and a juvenile detention center, needed to evacuate residents and patients to other areas. In order to reduce demand on the fragile power grid and ensure public safety, a number of businesses, schools, and campgrounds were closed.

Powerlines down in Worthington, Minnesota (Mark Steil, 2013)



During a single 8-hour period on April 10th, State Patrol reported at least 763 crashes and spinouts, 39 involving serious injuries.

Top: Car covered in fallen branches in Worthington, Minnesota (Julie Buntjer, 2013)
Bottom left: Ice storm in Westbrook, Minnesota (Paul Jones, 2013)
Bottom right: Bus off the road in Elk River, Minnesota (Mandi Cline-Elken, 2013)

CLIMATE PROJECTION DATA

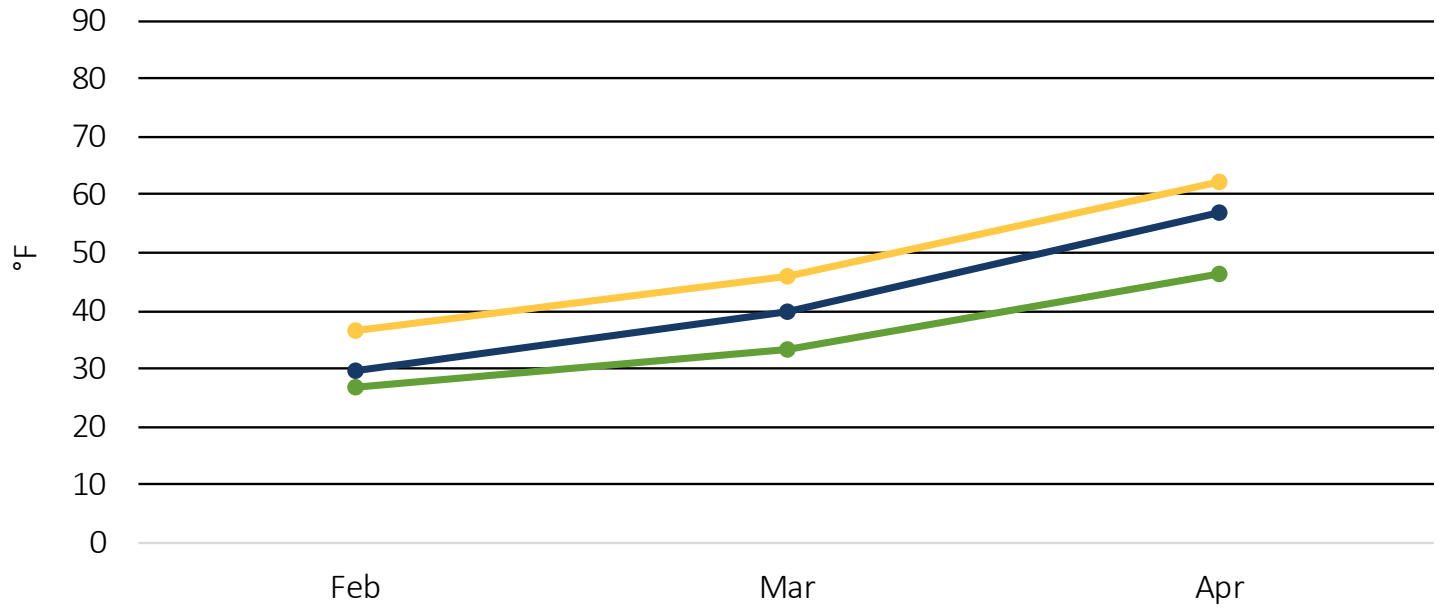
Following are visual representations of climate projection data for Region 5. Data for all counties included in Region 5 were averaged to derive regional estimates. (Data for individual counties are available in the long-form report.) The graphs below compare future temperature and precipitation projection data (in yellow) with a historical climate baseline (in blue) and climate measures from the regional case study event (in green). Because preceding conditions can influence a disaster event, data from February through April are provided to provide context.

LEGEND

- **Historical:** 1981- 2010
- **Case Study:** 2013 ice storm
- **Projected:** 2050- 2074

Maximum Temperature

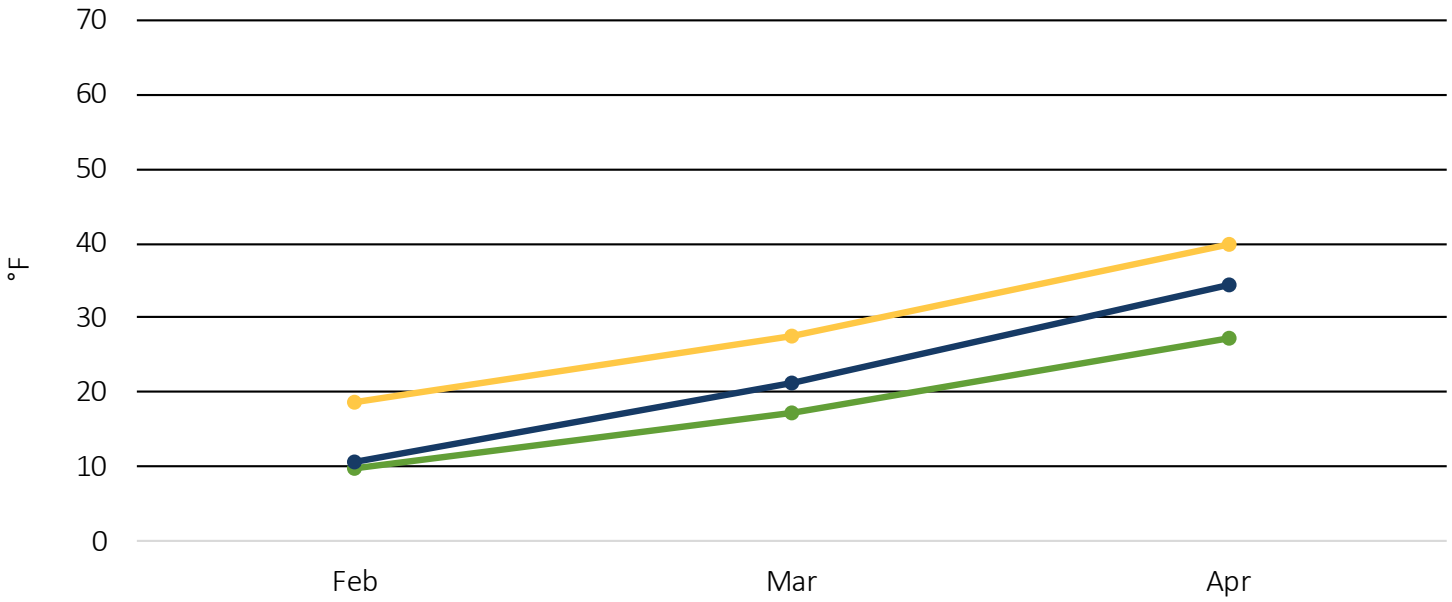
Trend comparison to 2013 ice storm data



	February	March	April
Historical: 1981- 2010	29.7	39.9	57.1
Case Study: 2013 ice storm	26.8	33.3	46.5
Projected: 2050- 2074	36.4	46.0	62.3

Minimum Temperature

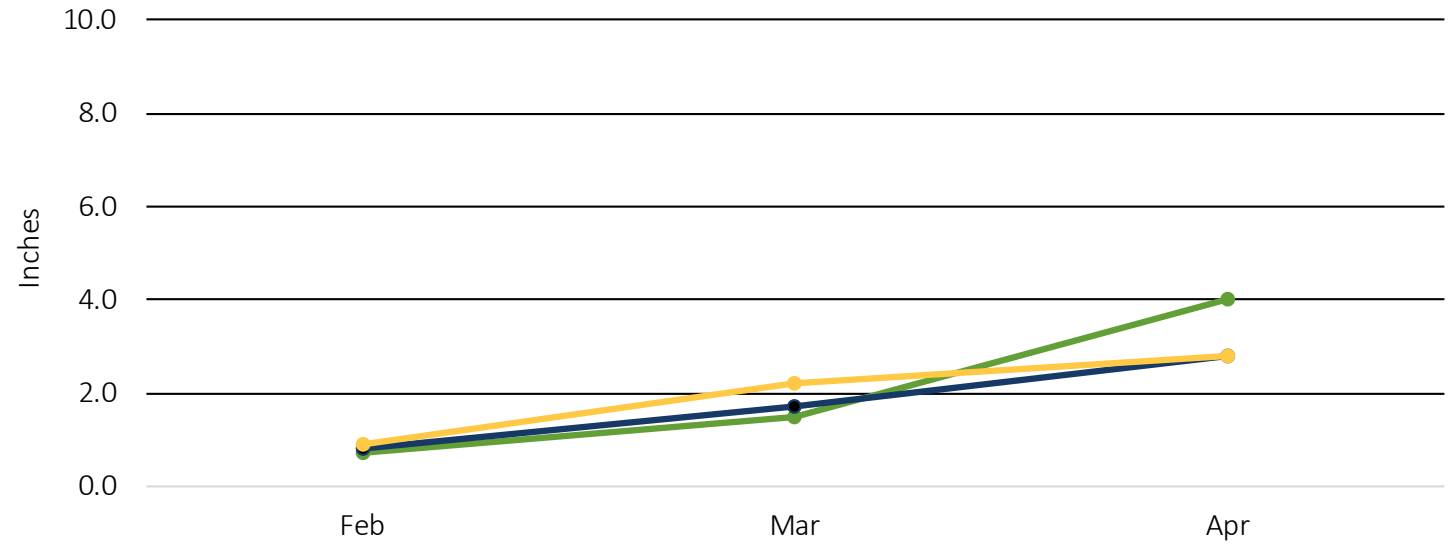
Trend comparison to 2013 ice storm data



	February	March	April
Historical: 1981- 2010	10.7	21.1	34.3
Case Study: 2013 ice storm	9.9	17.2	27.4
Projected: 2050- 2074	18.6	27.6	39.8

Total Precipitation

Trend comparison to 2013 ice storm data



	February	March	April
Historical: 1981- 2010	0.8	1.7	2.8
Case Study: 2013 ice storm	0.7	1.5	4.0
Projected: 2050- 2074	0.9	2.2	2.8

SUMMARY

CLIMATE DATA EXPERTS expect that future climate conditions across the Midwest will continue to change and affect our environment, economy, and public health. Such conditions are projected to lead to a higher frequency of late growing season drought conditions, elevated winter temperatures with reduced snowpack, prolonged high heat days, and extreme rainfall events. Climate experts also anticipate an increased frequency of severe storms, including heavy ice and snowstorms, like the April 2013 event. Yet, researchers are still working to understand the relationships between climate change and these diverse types of hazardous weather. A fair amount of uncertainty exists as to when, where, why, and how these storms will arise. Currently there is no straight-forward answer to the question, "Will Minnesota experience more extreme snow and ice storms in the future?" Although warmer and shorter winters will lead to more liquid-precipitation events, it is also probable that those same conditions will convert some systems that historically would have been snowstorms into ice storms. Additionally, the higher terrain of the Buffalo Ridge will always make freezing rain somewhat more likely than more topographically-even parts of the state, so the odds of additional ice storms in the future are naturally higher than in most other parts of Minnesota.

This is an area where the available climate projection data alone may not be enough to provide a clear picture of future weather events for planning efforts. In fact, a review of the data in the graphs above suggest that Region 5 counties may experience fewer extreme cold-related weather events since temperatures are increasing well above those associated with the 2013 ice storm. Thus, it is important to track climate research and expert consensus on future climate trends in order to critically assess and apply projection data.

CLIMATE DATA IS A CRITICAL TOOL in planning for resilient communities into the future. Assessing threats from climate change and planning effective mitigation and response strategies is a key element for emergency managers and other planners to reduce future risk. It is crucial to understand the potential impacts of climate change and the associated priorities and vulnerabilities of communities, including population, the environment, critical infrastructure, and more. However, vulnerability is a nuanced concept and most effective as an indicator of risk when planners seek to understand and address vulnerability as close to the individual level as possible and in association with a specific hazard.

> *"Climate data is a critical tool in planning for resilient communities into the future."*

Population projections for HSEM Region 5 show a decrease in children but an increase in elders. As older populations tend to have a greater need for health care services, disrupted access due to ice covered roads or power outages is a major concern. Additionally, older individuals are more susceptible to slips, falls, and injures and have a longer recovery period. Considering the impacts of climate change to vulnerable populations is just one example of how to prioritize mitigation and response planning.

CLIMATE PROJECTION DATA continues to improve and should be considered as a priority to advance for Minnesota. Currently, global climate models that produce climate projection data for the Midwest are more accurate at simulating future temperature changes than they are for precipitation. However, the accuracy and resolution of these models are advancing rapidly as are their ability to model the future prevalence in short-duration, high-intensity localized heavy rainfall events.

Minnesota would benefit from a statewide high-quality climate projection dataset that is derived using the climate and environment features unique to our state, similar to datasets developed for other states. Meanwhile, data from national resources, like the U.S. Geological Survey (USGS) and National Oceanic and Atmospheric Administration (NOAA), can still provide a powerful input to regional scenario-planning efforts by allowing planners, managers, and analysts a means of "unpacking" general climate change predictions for the Midwest by looking at potential monthly fluctuations in coarse precipitation and temperature measures for Minnesota and its counties.

NEXT STEPS: MINIMIZE RISK & BUILD RESILIENCE

Prepare today for tomorrow's climate hazards. Emergency managers, planners, elected officials, and the public play a critical role in creating safe and healthy communities, especially in the face of extreme weather events. There are steps you can take to minimize local risk and build more resilient communities:

BRING EVERYONE TO THE TABLE: Build an inclusive yet nimble team to collectively identify climate hazards and potential impacts. Be sure to include members of the community; local department professionals responsible for built, natural, and health resources; planning commissioners; faith-based and cultural organizations; research centers; and commercial organizations. Including diverse perspectives throughout your process will help support more equitable planning efforts that best leverage cross-functional resources.

INCORPORATE CLIMATE INTO PLANNING: Incorporate climate projection data into planning efforts, such as exercise scenarios and long-range planning, to comprehensively identify future climate hazards and potential cascading effects. Explore how these interact with non-climate hazards in the community, such as aging infrastructure, to understand potential exposure to multiple threats and prioritize actions that build the community's capacity to respond.

CHAMPION CLIMATE & HEALTH: Be a champion for climate and health data. Seek opportunities to learn about these data and incorporate it in your work on an iterative basis. Support its application in professional networks and articulate the need to fund dynamically downscaled climate projection datasets for Minnesota. Climate data is a critical multi-discipline tool in proactively planning for resilient communities.

RESOURCES & REFERENCES

TOOLS & DATA

- Climate at a Glance: National Climatic Data Center, National Oceanic and Atmospheric Administration
  Source for all historical and much of the case study data presented in this profile.
  www.ncdc.noaa.gov/cag/
- Minnesota Climate and Health Profile Report (PDF), Minnesota Department of Health
  Profiles historic climate trends, future projections, and likely climate change impacts on the health of Minnesotans.
  http://www.health.state.mn.us/divs/climatechange/docs/mnprofile2015.pdf
- Minnesota Climate Change Vulnerability Assessment (PDF), Minnesota Department of Health
  Assesses five climate hazards and the populations that are most vulnerable to the hazards in Minnesota.
  http://www.health.state.mn.us/divs/climatechange/docs/mnclimvulnreport.pdf
- Minnesota Population Projection Data, Minnesota State Demographic Center
  Source for all population projection data presented in this profile.
  https://mn.gov/admin/demography/data-by-topic/population-data/our-projections/
- National Climate Change Viewer, United States Geological Survey
  Source for all climate projection data presented in this profile.
  www2.usgs.gov/climate_landuse/clu_rd/nccv/viewer.asp

RESOURCES & REFERENCES

KNOWLEDGE & CAPACITY

- Climate Change and Minnesota, Minnesota Department of Natural Resources
  Source of information on climate change trends and impacts for Minnesota, with an emphasis on natural resources.
  https://www.dnr.state.mn.us/climate/climate_change_info/index.html
- Five Steps Toward Enhancing Climate Resilience, Emily Wasley, DomesticPreparedness.com
  Practical action steps to help emergency managers build a path to enhance their climate resilience.
  https://www.domesticpreparedness.com/resilience/five-steps-toward-enhancing-climate-resilience/
- Snowstorms and Extreme Cold, Department of Homeland Security
  Health and safety information aimed at individuals and households on responding to snow, ice, and extreme cold.
  https://www.ready.gov/winter-weather
- U.S. Climate Resilience Toolkit, United States Global Change Research Program
  Information and tools to help communities adapt to climate change, featuring real-world case studies.
  https://toolkit.climate.gov/
- Winter Weather, Centers for Disease Control and Prevention
  Health and safety information on preparing for and responding to winter weather, including power outages.
  https://www.cdc.gov/disasters/winter/index.html

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- Cohen et al., 2018. Warm Arctic Episodes Linked with Increased Frequency of Extreme Winter Wetather in the United States (PDF). Nature Communications.
  https://www.nature.com/articles/s41467-018-02992-9.pdf
- Minnesota Department of Natural Resources, 2013. Winter Storm: April 9-12, 2013.
  https://www.dnr.state.mn.us/climate/journal/130412_winter_storm.html
- Minnesota Department of Public Safety, 2013. 2013 Spring Ice Storm in Southwest Minnesota (PDF).
  https://www.ready.gov/winter-weather

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Front cover photo: Residential street during 2013 ice storm (Toronto Hydro Corporation, 2013)

Minnesota Department of Health
Climate & Health Program
health.climatechange@state.mn.us
651-201-4899
www.health.state.mn.us/divs/climatechange/

DEPARTMENT OF HEALTH

Appendix I – Critical Infrastructure

Appendix I
Renville County Critical Infrastructures

Healthcare Facilities

Name	Address	City	Zip	Type
Renville County Hospice	100 Healthy Way	Olivia	56277	Hospice Facilities
Centracare Kidney Olivia	600 East Park Avenue	Olivia	56277	Dialysis Centers
Renville County Comm Res	831 Grove Avenue	Bird Island	55310	Supervised Living Facilities
East Ridge Court (RHS)	219 Elm St SE	Renville	56284	Nursing Homes
Fairview Place (Bethesda)	603 Fairview Ave E	Olivia	56277	Nursing Homes
Meadows On Main (RHS)	611 Main St S	Renville	56284	Nursing Homes
Prairieview Of Hector (RHS)	1010 Elm Ave E	Hector	55342	Nursing Homes
REM-Hector	411 9th St E	Hector	55342	Supervised Living Facilities
REM-Olivia	1415 Fairview Ave W	Olivia	56277	Supervised Living Facilities
Fairfax Medical Center	300 Park St S	Fairfax	55332	Clinic
OHC-Renville Clinic	420 Main St S	Renville	56284	Clinic
OHC-Hector Clinic	131 Birch Ave	Hector	55342	Clinic
Renville Co Public Health	105 5th St S, Ste 119H	Olivia	56277	Public Health

Emergency Services

Name	Address	City	Zip	Type
Renville County Emergency Operations Center	105 South 5th Street	Olivia	56277	Emergency Operations Centers (EOC)
Buffalo Lake Fire Department	315 North Main Street	Buffalo Lake		Fire Stations
Sacred Heart Fire Department / First Responders	201 1st Avenue North	Sacred Heart		Fire Stations
Renville Fire Department	201 North Main Street	Renville		Fire Stations
Olivia Fire Department	1009 West Lincoln Avenue	Olivia		Fire Stations
Fairfax Fire and Rescue	200 Southeast 2nd Avenue	Fairfax		Fire Stations
Danube Fire Department / First Responders	400 Main Street	Danube		Fire Stations

Emergency Services

Name	Address	City	Zip	Type
Franklin Fire Department and Ambulance Service	291 Third Avenue	Franklin		Fire Stations
Morton Fire Department / First Responders	221 West 2nd Street	Morton		Fire Stations
Bird Island Fire Department / First Responders	660 Birch Avenue	Bird Island		Fire Stations
Hector Fire - EMS Station	340 Highway Avenue East	Hector		Fire Stations

Schools & Shelters

Name	Address	City	Zip	Type
Prairie Lutheran Schools	15 NE 2nd Street	Fairfax	55332	School
St Mary's School	140 S 10th St	Bird Island	55310	School
Renville County West Senior High	301 NE 3rd St	Renville	56284	School
Bold Senior High	701 S 9th St	Olivia	56277	School
Bold-Bird Island Elementary	110 S 9th St	Bird Island	55310	School
G.F.W. Middle School	300 3rd Ave SE	Fairfax	55332	School
Bold ALC	701 S 9th St	Olivia	56277	School
Renville County West Elementary	301 NE 3rd St	Renville	56284	School
Cedar Mountain Elementary	231 4th Ave E	Franklin	55333	School
Buffalo Lake-Hector Secondary	220 W 3rd St	Hector	55342	School
Buffalo Lake-Hector Elementary	211 3rd Street	Buffalo Lake	55314	School
Cedar Mountain Elementary	231 4th Ave E	Franklin	55333	Shelter
City Of Bird Island Municipal Building	660 Birch Ave	Bird Island	55310	Shelter
Danube School Building	100 Main St	Danube	56230	Shelter
Franklin Community Center	221 2nd Ave E	Franklin	55333	Shelter
Hector City Office/Palace Theater	301 Main St S	Hector	55342	Shelter
Hector Community Center	130 Main St S	Hector	55342	Shelter
Morton Fire Hall	256 Main Street North	Morton	56270	Shelter
Sacred Heart Community Center	309 1st Ave	Sacred Heart	56285	Shelter

Transportation

Name	Address	City	Zip	Type
Hector Muni	301 Main St	Hector	55342	Airport
Olivia Rgnl	1009 W Lincoln	Olivia	56277	Airport

Utilities

Name	Address	City	Zip	Type
Bird Island Water Treatment Plant	81232 405th St	Bird Island	55310	Water Treatment Plant
Franklin Water Treatment Plant	300 1st Ave E	Franklin	55333	Water Treatment Plant
Morton Pumphouse	111 Monument Dr	Morton	56270	Water Treatment Plant
Bird Island Wastewater Lift Station	1280 Grove Ave	Bird Island	55310	Water Treatment Plant
Hector Water Treatment Plant	831 3rd St Ne	Hector	55342	Water Treatment Plant
Buffalo Lake Water Treatment Plant	763 Yellowstone Trl W	Buffalo Lake	55314	Water Treatment Plant
Buffalo Lake Wastewater Pond System	52985 800th Ave	Buffalo Lake	55314	Water Treatment Plant
Fairfax Water Treatment Plant	400 1st Ave NE	Fairfax	55332	Water Treatment Plant
Morton Wastewater Building	700 W 1st St	Morton	56270	Water Treatment Plant
Hometown Windpower Olivia	None	None	None	Wind Turbine
Bird Island Wastewater Treatment Plant	1280 Grove Ave	Bird Island	55310	Wastewater Treatment Plant
Buffalo Lake Wastewater Treatment Plant	203 Main St N	Buffalo Lake	55314	Wastewater Treatment Plant
Franklin Wastewater Treatment Plant	951 1st St S	Franklin	55333	Wastewater Treatment Plant
Hector Wastewater Treatment Plant	1500 Bryant Ave NE	Hector	55342	Wastewater Treatment Plant
Olivia Wastewater Treatment Plant	2020 Bayberry Ave W	Olivia	56277	Wastewater Treatment Plant
Renville Wastewater Treatment Plant	401 SW Birch Ave	Renville	56284	Wastewater Treatment Plant
Sacred Heart Wastewater Treatment Plant	111 Jackson Ave	Sacred Heart	56285	Wastewater Treatment Plant
Danube Wastewater Treatment Plant	400 Main St	Danube	56230	Wastewater Treatment Plant

Utilities

Name	Address	City	Zip	Type
Lake Allie Essd Wastewater Treatment Plant	55106 County Road 38	Buffalo Lake	55314	Wastewater Treatment Plant
Morton Wastewater Treatment Plant	700 W 1st St NE	Morton	56270	Wastewater Treatment Plant
Fairfax		Fairfax	55332	Petroleum
Southern Minnesota Beet Sugar		Renville	56284	Coal
Kramer Solar CSG		Hector	55342	Solar
Krause CSG		Renville	56284	Solar
Grimm Community Solar		Buffalo Lake	55314	Solar
Novel Historical Society Solar CSG		Sacred Heart	56285	Solar
Cooks Sub	East River Electric Power Cooperative			Electrical Infrastructure
SMBSC Sub	East River Electric Power Cooperative			Electrical Infrastructure
Emmet Sub	East River Electric Power Cooperative			Electrical Infrastructure
Kingman Sub	East River Electric Power Cooperative			Electrical Infrastructure
Troy Sub	East River Electric Power Cooperative			Electrical Infrastructure
Henryville Sub	East River Electric Power Cooperative			Electrical Infrastructure
Cairo Sub	East River Electric Power Cooperative			Electrical Infrastructure
Birch Cooley Sub	East River Electric Power Cooperative			Electrical Infrastructure
Preston Lake	Great River Energy			Electrical Infrastructure
Hector	Great River Energy			Electrical Infrastructure
Brookfield	Great River Energy			Electrical Infrastructure
Melville	Great River Energy			Electrical Infrastructure
Yellowstone	Great River Energy			Electrical Infrastructure
Panther	Great River Energy			Electrical Infrastructure
Sacred Heart	Xcel Energy, Inc.			Electrical Infrastructure
Renville	Xcel Energy, Inc.			Electrical Infrastructure
Danube	Xcel Energy, Inc.			Electrical Infrastructure
Bird Island	Xcel Energy, Inc.			Electrical Infrastructure
Hector	Xcel Energy, Inc.			Electrical Infrastructure

Utilities

Name	Address	City	Zip	Type
Buffalo Lake	Xcel Energy, Inc.			Electrical Infrastructure
Franklin	Xcel Energy, Inc.			Electrical Infrastructure
Cedar Mountain Substation	Great River Energy			Electrical Infrastructure

Hazardous Materials Facilities

Hazardous Materials Facilities have been omitted from this document due to security considerations.

Major Employers

Name	Address	City	Zip
Christensen Family Farms	25154 840th Ave	Renville	56284
Farmward	340 Dupont Ave NE	Renville	56284
K & M Manufacturing	308 2nd St NW	Renville	56284
Olivia Hospital & Clinics	100 Healthy Way	Olivia	56277
Remington Seeds	2040 Rainbow Ln	Olivia	56277
Renville-Sibley Coop Power	103 Oak St	Danube	56230
Schweiss Bi-Fold Doors	72121 470th St	Hector	55342
Southern Mn Beet Sugar Coop	83550 Cr-21	Renville	56284
Altimate Medical	262 W 1st St	Morton	56270
Central Regional Coop	514 W Yellowstone Trl	Buffalo Lake	55314
Central Regional Coop	48153 Mn-19	Fairfax	55332
Central Regional Coop	251 Ash Ave E	Hector	55342
Countrywide Lumber	151 Birch Ave W	Hector	55342
Farmward	706 E Lincoln Ave	Olivia	56277
Farmward	708 Highway 212 W	Danube	56230
Farmward	417 Main St	Danube	56230
Farmward	320 W 1st St	Morton	56270
Farmward	425 2sd St NE	Renville	56284
Farmward	120 1st Ave	Sacred Heart	56285
K & M Manufacturing	3015 W Lincoln Ave	Olivia	56277
K & S Millwrights	217 Hall Ave W	Buffalo Lake	55314
Loftness Manufacturing	650 Main St N	Hector	55342
Renville County	105 S 5th St	Olivia	56277
Warner Manufacturing	200 5th Ave	Sacred Heart	56285

Government Buildings

Name	Address	City	Zip
Renville City Hall	221 Main St N	Renville	56284
Renville Community Center	221 Main St N	Renville	56284
Renville Library	221 Main St N	Renville	56284
Danube City Hall	400 Main St	Danube	56230
Fairfax Community Center	300 Park St S	Fairfax	55332
Franklin City Hall	320 2nd Ave E	Franklin	55333
Renville County Government Services Center	105 S 5th St	Olivia	56277
Renville County Courthouse	500 E Depue Ave	Olivia	56277
Sacred Heart City Hall	309 1st Ave	Sacred Heart	56285
Sacred Heart Community Center	309 1st Ave	Sacred Heart	56285
Danube Community Center	405 Main St	Danube	56230
Olivia City Hall	1009 Lincoln Ave W	Olivia	56277
Olivia Community Center	1009 Lincoln Ave W	Olivia	56277
Olivia Library	405 S 10th St	Olivia	56277
Bird Island City Hall	660 Birch Ave	Bird Island	55310
Hector City Hall	301 Main St S	Hector	55342
Hector Community Center	130 Main St S	Hector	55342
Hector Library	130 Main St S	Hector	55342
Buffalo Lake City Hall	203 Main St S	Buffalo Lake	55314
Buffalo Lake Community Center	203 Main St S	Buffalo Lake	55314
Fairfax City Hall	18 1st St SE	Fairfax	55332
Fairfax Library	101 1st St SE	Fairfax	55332
Franklin Community Center	221 2nd Ave E	Franklin	55333
Morton City Hall	221 W 2nd St	Morton	56270
Renville County Jail	104 S 4th St	Olivia	56277

Appendix J – Mitigation Actions by Jurisdiction

CITY OF BIRD ISLAND Mitigation Action Chart

#	Hazard	Mitigation Strategy	Mitigation Action	Status Priority Timeframe	Responsibility	Comments on Implementation & Integration	Possible Funding
1	All-Hazards	Education & Awareness Programs	Encourage all city residents to sign-up for the county's CodeRED emergency notification alert system.	Existing High Ongoing	City Admin, City EM	We provide a link on the city website to the Renville County Sheriff's Department which has a link to sign up for CodeRed.	City
2	Severe Winter & Summer Storms	Education & Awareness Programs	Provide education and outreach to residents on personal preparedness for severe weather events and extended power outages.	New High Ongoing	City Admin, City EM	We can use our city website and city Facebook page to share information we receive from RCEM about severe weather and preparedness.	City
3	Severe Winter & Summer Storms	Mitigation Preparedness & Response Support	Encourage the new assisted living facility to be prepared with emergency plans for evacuation and power outages during severe storms.	New High 2021-2022	City Admin, City EM	A 15-unit assisted living facility is being planned for construction in 2021, where seniors may need assistance during a disaster event. RCEM will encourage the facility owners to be prepared and will provide assistance if needed to support their planning.	City, Assisted Living Facility
4	Severe Winter & Summer Storms	Mitigation Preparedness & Response Support	Obtain portable generators for our water treatment plant, lift station and municipal building, which is designated as a storm shelter.	Existing High TBD	City Admin, City EM, City PW	The city lacks funds to purchase adequate generators and will work with Renville County Emergency Management to obtain funding or find used generators in good shape.	City, Other (TBD)
5	Severe Winter & Summer Storms	Structure & Infrastructure Projects	Encourage Xcel Energy to upgrade power poles in town and/or put power lines under the ground.	Existing Moderate TBD	City Admin, City PW	The city has no authority to demand light poles be replaced by Xcel Energy but will encourage our energy provider to take actions to reduce future power outages.	Xcel Energy
6	Flooding	Structure & Infrastructure Projects	Encourage the Renville County Ditch 66 Authority to allow the flow restrictor pipe in the ditch to be removed when the ditch is full.	Existing High TBD	City Admin, City PW	If Ditch 66 becomes full, with the flow restrictor pipe in place, there is nowhere for the water to go. As a result, flooding and backups are inevitable. As above, the city has no authority to take action on this matter. We can only state our case, and encourage the change.	County

CITY OF BUFFALO LAKE — Mitigation Action Chart

#	Hazard	Mitigation Strategy	Mitigation Action	Status Priority Timeframe	Responsibility	Comments on Implementation & Integration	Possible Funding
1	All-Hazards	Education & Awareness Programs	Encourage all city residents to sign-up for the county's CodeRED emergency notification alert system.	Existing High Ongoing	City Admin City EM	We use our city website to provide a link to the county's CodeRed system. We also have a quarterly newsletter that includes information to the residents to help keep them informed. We have a movable sign on Main Street to provide residents of upcoming meetings, events to keep them up to date.	City
2	Severe Winter & Summer Storms	Education & Awareness Programs	Provide education and outreach to residents on personal preparedness for severe weather events and extended power outages.	Existing High Ongoing	City Admin City EM	We use our city newsletter, social media, and announcements to the public. We can share information we receive from Renville County Emergency Management.	City
3	Severe Winter & Summer Storms	Mitigation Preparedness & Response Support	Obtain additional portable generators to power our lift station and city buildings in the event of a power outage.	New High TBD	City PW	The city will make purchase of generators as funding allows.	City
4	Severe Summer Storms	Structure & Infrastructure Projects	Work with the trailer court to have them supply a permanent storm shelter on the property.	In-Progress High Ongoing	City Admin, City EM	We are working with trailer court to have them supply a permanent storm shelter on the property. Currently these residents have to get to the community center for protection.	City, Trailer Court Owner
5	Severe Summer Storms	Structure & Infrastructure Projects	Assess need for an additional outdoor warning siren and purchase/install if needed.	New High TBD	City Admin, City EM, City PW	The city's warning siren sometimes cannot be heard on the edges of town depending on the direction of the wind. If we determine a need to purchase & install another warning siren we may look to apply to the USDA Community Facilities Grant Program for funding.	City, USDA CF Grant Program
6	Severe Summer Storms	Mitigation Preparedness & Response Support	Participate in the NWS SkyWarn training hosted by Renville County Emergency Management.	Existing High Ongoing	City EM City FD & PD	Our fire department and police department participate in SkyWarn training for spotting of tornados during watches/warnings in area.	City NWS

CITY OF BUFFALO LAKE — Mitigation Action Chart

#	Hazard	Mitigation Strategy	Mitigation Action	Status Priority Timeframe	Responsibility	Comments on Implementation & Integration	Possible Funding
7	Flooding	Local Planning & Regulations / Structure & Infrastructure Projects	Plan for and address necessary updates to city infrastructure in order to better handle high rain events.	Existing Moderate TBD	City PW	The city plans to update pumps in city's lift stations and needs to update the water treatment plant. Implementing infrastructure projects is limited by available funding.	City, Other (TBD)

CITY OF DANUBE Mitigation Action Chart

#	Hazard	Mitigation Strategy	Mitigation Action	Status Priority Timeframe	Responsibility	Comments on Implementation & Integration	Possible Funding
1	All-Hazards	Education & Awareness Programs	Encourage all city residents to sign-up for the county's CodeRED emergency notification alert system.	Existing High Ongoing	City Admin, City EM	We use our city website.	City
2	Severe Winter & Summer Storms	Education & Awareness Programs	Provide education and outreach to residents on personal preparedness for severe weather events and extended power outages.	Existing High Ongoing	City Admin, City EM	Same as above. Moving forward we can seek to share information from Renville County Emergency Management during severe weather awareness week or during storm events.	City
3	Severe Summer Storms	Mitigation Preparedness & Response Support	Participate in the NWS SkyWarn training hosted by Renville County Emergency Management.	Existing High Ongoing	City EM City FD & PD	Our fire department and police department participate in SkyWarn training for spotting of tornados during watches/warnings in area.	City NWS
4	Severe Winter & Summer Storms	Mitigation Preparedness & Response Support	Assess where the city may still need permanent or portable backup generators and obtain them for future use during power outages.	Existing High TBD	City Admin, City EM, City PW	The city lacks funds to purchase adequate generators and will work with Renville County Emergency Management to obtain funding or find used generators in good shape.	City, Other (TBD)
5	Severe Summer Storms	Structure & Infrastructure Projects	Continue upgrading the city's warning sirens.	Existing High Ongoing	City Admin, City EM, City PW	The city has some warning sirens that we wish to upgrade. We may seek supportive grant funding from the USDA Community Facilities Grant Program to assist with purchase of new sirens.	City, USDA CF Grant Program
6	Severe Summer Storms	Structure & Infrastructure Projects	Address the need for the construction of storm shelters or tornado safe rooms in communities, parks, or other locations in the county where people are vulnerable to high wind or tornadic events.	Existing Moderate Ongoing	City Admin, City EM	The city will work with Renville County Emergency Management and the MHP operator to discuss how to best address this need and secure funding to support construction.	City, County, FEMA HMA, Other (TBD)
7	Severe Winter & Summer Storms	Structure & Infrastructure Projects	Encourage Xcel Energy to upgrade power poles in town and/or put power lines under the ground.	Existing Moderate TBD	City Admin, City PW	The city has no authority to demand light poles be replaced by Xcel Energy but will encourage our energy provider to take actions to reduce future power outages.	Xcel Energy

CITY OF DANUBE — Mitigation Action Chart

#	Hazard	Mitigation Strategy	Mitigation Action	Status Priority Timeframe	Responsibility	Comments on Implementation & Integration	Possible Funding
8	Flooding	Education & Awareness Programs	Encourage residents to maintain sump pumps to avoid basement flooding during high rain events.	New High TBD	City Admin, City PW	We have homes that continue to have water in the basements due to extreme rain events. We can use our city website and Facebook to remind residents to conduct this maintenance.	City
9	Flooding	Structure & Infrastructure Projects	Implement the city's planned project to improve our water, sewer, storm sewer systems.	In-Progress High 2021-2024	City PW, City Maintenance	The city of Danube is in the process of doing a complete overhaul on the city streets, water lines, sewer lines, and storm sewer systems. We have put in for funding for the project through Moore Engineering working on various grants available for this project. Proceeding with the infrastructure project would greatly reduce the city's vulnerabilities.	City, Outside Grants

CITY OF FAIRFAX Mitigation Action Chart

#	Hazard	Mitigation Strategy	Mitigation Action	Status Priority Timeframe	Responsibility	Comments on Implementation & Integration	Possible Funding
1	All-Hazards	Education & Awareness Programs	Encourage all city residents to sign-up for the county's CodeRED emergency notification alert system.	Existing High Ongoing	City Admin, City EM	On our city website we provide a general link to the Renville County website.	City
2	Severe Winter & Summer Storms	Education & Awareness Programs	Provide education and outreach to residents on personal preparedness for severe weather events and extended power outages.	Existing High Ongoing	City Admin, City EM	We share information on our city Facebook page. We can seek to more actively share information from Renville County Emergency Management during Severe Weather Awareness week and during other periods of severe weather.	City
3	Flooding	Education & Awareness Programs	Encourage residents to practice sump pump maintenance to reduce the chances of basement flooding from high rain events.	New Moderate Ongoing	City Admin, City PW	We can send out an annual reminder for residents on sump pumps at the same time we do our reminder to have sump pumps redirected into the storm system after the winter season.	City
4	Flooding	Local Planning & Regulations	Continue to monitor and address flood mitigation measures for the city.	Existing High Ongoing	City Admin, City PW	In 2012, 2015, 2017, and 2018 the city completed street projects. We have done an upgrade to our main lift station bypass system and purchased large trash pumps.	City

CITY OF FRANKLIN Mitigation Action Chart

#	Hazard	Mitigation Strategy	Mitigation Action	Status Priority Timeframe	Responsibility	Comments on Implementation & Integration	Possible Funding
1	All-Hazards	Education & Awareness Programs	Encourage all city residents to sign-up for the county's CodeRED emergency notification alert system.	Existing High Ongoing	City Admin, City EM	We promote sign up on the city website and our Facebook page.	City
2	Severe Winter & Summer Storms	Education & Awareness Programs	Provide education and outreach to residents on personal preparedness for severe weather events and extended power outages.	Existing High Ongoing	City Admin, City EM	We post information on our city website, Facebook Page, use our monthly city newsletter and share information at special events (i.e., Catfish Days).	City
3	Severe Winter & Summer Storms	Mitigation Preparedness & Response Support	Obtain a portable generator for backup power.	New High TBD	City PW	The city will purchase a new generator as funding allows.	City
4	Flooding	Local Planning & Regulations	Obtain financial assistance for the erosion of the storm sewer drains and outfall.	New High TBD	City Admin	The city continues to seek funding to assist with this important project.	City, Other (TBD)
5	Flooding	Education & Awareness Programs	Encourage residents to maintain sump pumps to avoid basement flooding during high rain events.	New High TBD	City Admin	We have homes that continue to have water in the basements due to extreme rain events. We can use our city website and Facebook to remind residents to conduct this maintenance.	City
6	Flooding	Structure & Infrastructure Projects	Mitigate the flood issues at the boat landing.	In-Progress High 2021	City PW in coord with MN DNR	Currently the city is working with the MN DNR to mitigate the flood issues at the boat landing.	City, MN DNR
7	Extreme Cold	Local Planning & Regulations / Education & Awareness Programs	Enforce city policy and conduct outreach to homeowners during periods of extreme cold to reduce the chances of freezing & broken water lines.	Existing High Ongoing	City Admin, City PW	The city has a policy on the Prevention of Frozen Water Service Lines. When there are extreme frost conditions and the risk of freezing water lines occurs, a general notification on "how to protect water lines from freezing" is placed on the public access channel, in the city newsletter, and on the city website.	City

CITY OF HECTOR Mitigation Action Chart

#	Hazard	Mitigation Strategy	Mitigation Action	Status Priority Timeframe	Responsibility	Comments on Implementation & Integration	Possible Funding
1	All-Hazards	Education & Awareness Programs	Encourage all city residents to sign-up for the county's CodeRED emergency notification alert system.	Existing High Ongoing	City Admin, City EM	We post the Renville County link to sign up on our city's website, Facebook page, Access TV, as well as on flyers posted at City Hall, city library, and the community center.	City
2	Severe Winter & Summer Storms	Education & Awareness Programs	Provide education and outreach to residents on personal preparedness for severe weather events and extended power outages.	Existing High Ongoing	City Admin, City EM	We participate in Severe Weather Awareness Weeks and use our communication channels noted above to share information with the public.	City
3	Severe Winter & Summer Storms	Mitigation Preparedness & Response Support	Obtain a portable generator for our community center, which is our designated community mass care shelter.	New High Ongoing	City Admin, City EM, City PW	We will purchase a generator as funding allows.	City
4	Severe Summer Storms	Structure & Infrastructure Projects	Work with the mobile home park operator to construct a storm shelter.	Existing High Ongoing	City Admin, City EM, City PW	The city will work with Renville County Emergency Management and the MHP operator to discuss how to best address this need and secure funding to support construction.	City, Other (TBD)
5	Severe Summer Storms	Structure & Infrastructure Projects	Construct a storm shelter/bathroom at out downtown city park/ballfield	Existing High Ongoing	City Admin, City EM, City PW	The City will work with Renville County Emergency Management to discuss how to best address this need and secure funding to support construction.	City, Other (TBD)
6	Flooding	Structure & Infrastructure Projects	Plan for and address additional storm sewer upgrades to reduce the impacts to our I&I system after a heavy rain.	In-Progress High Ongoing	City PW	Public Works is working to address I&I improvements to reduce the amount of water flow to the waste water treatment plant after a heavy rain event so sewage does not back up into residents' homes.	City

CITY OF MORTON Mitigation Action Chart

#	Hazard	Mitigation Strategy	Mitigation Action	Status Priority Timeframe	Responsibility	Comments on Implementation & Integration	Possible Funding
1	All-Hazards	Education & Awareness Programs	Encourage all city residents to sign-up for the county's CodeRED emergency notification alert system.	New High Ongoing	City Admin, City EM	The city has a website, Facebook page, and monthly newsletter we can use to encourage residents to sign up for the county's CodeRed system and to be prepared for severe weather and power outages.	City
2	Severe Winter & Summer Storms	Education & Awareness Programs	Provide education and outreach to residents on personal preparedness for severe weather events and extended power outages.	New High Ongoing	City Admin, City EM	Same as above. We can use our existing communication channels and work to share information we receive from Renville County Emergency Management.	City
3	Flooding	Structure & Infrastructure Projects	Repair and update existing storm sewers and streets.	New High Ongoing	City PW	This is part of the city's Public Works department work plan over the next several years. Project implementation is based on available capital improvement funding and other potential funding sources.	City
4	Flooding	Structure & Infrastructure Projects	Install a larger trash pump to bypass our sanitary lift station in the event of flooding.	New High Ongoing	City PW	Same as above.	City
5	Flooding	Structure & Infrastructure Projects	Clean out sediment the city's retention ponds and repair the outlet control structures in order to improve their storage capacity and more effectively handle future high rain events.	Existing High Ongoing	City PW	Same as above.	City
6	Flooding	Structure & Infrastructure Projects	Install new curb and gutter in existing and new neighborhoods to increase flow rates downstream.	New High Ongoing	City PW	Same as above.	City
7	Flooding	Structure & Infrastructure Projects	Construct a diversion channel to safely convey water away from the City.	New High Ongoing	City PW	Same as above. Applying for a MN DNR or FEMA grant for localized flood risk reduction may be considered.	City, MN DNR, FEMA

CITY OF OLIVIA Mitigation Action Chart

#	Hazard	Mitigation Strategy	Mitigation Action	Status Priority Timeframe	Responsibility	Comments on Implementation & Integration	Possible Funding
1	All-Hazards	Education & Awareness Programs	Encourage all city residents to sign-up for the county's CodeRED emergency notification alert system.	Existing High Ongoing	City Admin, City EM	We have a city website with a link for residents to sign up for CodeRed. This service is regularly mentioned at city council meetings as something that the public should consider signing up for because it is used not only for weather & disaster situations but also for local emergency situation such as neighborhood gas leaks, water main breaks, etc. The Olivia Police Department also encourages new residents to sign up for the emergency notifications when they come to town.	City
2	Severe Winter & Summer Storms	Education & Awareness Programs	Provide education and outreach to residents on personal preparedness for severe weather events and extended power outages.	Existing High Ongoing	City Admin, City EM	We use the same communication channels noted above to share severe weather information with our residents and will continue to do so.	City
3	Severe Winter & Summer Storms	Mitigation Preparedness & Response Support	Assess where the city may still need permanent or portable backup generators and obtain them for future use during power outages.	Existing High TBD	City Admin, City EM, City PW	This is an ongoing effort of the city to be prepared to handle extended power outages. Purchase of generators will occur as funding allows.	City
4	Severe Winter & Summer Storms	Structure & Infrastructure Projects	Convert overhead power lines to underground where feasible in order reduce the risk of power outages due to severe storms.	Existing High Ongoing	City of Oliva Public Utilities Commission	Olivia has been working on its long-term plan of undergrounding key electric lines. Our public utilities commission adopts 5-year plans based on our consultant electrical engineer's recommendations on what undergrounding and facility hardening projects should be undertaken each year.	City of Oliva PUC

CITY OF OLIVIA — Mitigation Action Chart

#	Hazard	Mitigation Strategy	Mitigation Action	Status Priority Timeframe	Responsibility	Comments on Implementation & Integration	Possible Funding
5	Severe Summer Storms	Structure & Infrastructure Projects	Continue upgrading the city's warning sirens.	Existing High Ongoing	City Admin, City EM, City PW	The city has some warning sirens that we wish to upgrade. We may seek supportive grant funding from the USDA Community Facilities Grant Program to assist with purchase of new sirens.	City, USDA CF Grant Program
6	Severe Summer Storms	Structure & Infrastructure Projects	Work with the local mobile home park to construct a suitable storm shelter available to protect residents who are vulnerable to high wind and tornadic events.	Existing High Ongoing	City Admin, City EM, City PW	We will seek guidance from Renville County Emergency Management on this effort to determine what kind of shelter is best and funding options for construction.	City, Other (TBD)
7	Flooding	Structure & Infrastructure Projects	Plan for and address the need for some sort of dike or flood wall installation to protect the city's wastewater plant from flooding due to ditch overflow.	Existing High Ongoing	City PW, City Engineer	This is a current issue the city is working to assess and address. The city's WWTP has flooded a few times in recent years due to the adjacent drainage ditch backing up and overflowing. This has resulted in having to cut power to the facility and forcing the city to work with the State Duty Officer regarding such emergency events.	City, Other (TBD)
8	Flooding	Local Planning & Regulations / Structure & Infrastructure Projects	Continue to plan for and address ways to improve and harden our key infrastructure elements from damage by bad weather or other disasters.	Existing High Ongoing	City PW, City Engineer	The city engineer has helped put together a long-term street and utility plan which looks out 30+ years into the future in regards to anticipated street and utility upgrades. This plan allows the city to determine the most cost-effective timelines for upgrading drainage and stormwater utility elements by including those upgrades in with planned infrastructure projects. The city council and public utilities commission, in tandem with our consultant engineers, have tried to put in place both plans and best practice guidelines which take into account the need to improve and harden our key infrastructure.	City

CITY OF RENVILLE Mitigation Action Chart

#	Hazard	Mitigation Strategy	Mitigation Action	Status Priority Timeframe	Responsibility	Comments on Implementation & Integration	Possible Funding
1	All-Hazards	Education & Awareness Programs	Encourage all city residents to sign-up for the county's CodeRED emergency notification alert system.	Existing High Ongoing	City Admin, City EM	We promote a link for CodeRed on the city's website and Facebook page. Sign up for CodeRed has also been promoted at city council meetings, open houses. City Hall staff have assisted citizens with signing up.	City
2	All-Hazards	Local Planning & Regulations	Update the city's long-range Comprehensive Plan to identify and address mitigation of future hazard events.	Existing Moderate Ongoing	City Admin, Other depts.	The city has a 5-year comprehensive plan that addresses some of the city's aging street and infrastructure.	City
3	Severe Winter & Summer Storms	Education & Awareness Programs	Provide education and outreach to residents on personal preparedness for severe weather events and extended power outages.	Existing High Ongoing	City Admin, City EM	We have a city website and city Facebook page we can use to share information with residents. We will seek to share information from Renville County Emergency Management on severe weather awareness.	City
4	Severe Winter & Summer Storms	Mitigation Preparedness & Response Support	Obtain a generator for the fire department to aid with starting trucks, opening garage doors, etc. during a power outage.	New High TBD	City FD	Purchase of a generator will occur as funding is available.	City
5	Severe Winter & Summer Storms	Structure & Infrastructure Projects	Encourage our electric provider (Xcel Energy) to upgrade electrical equipment or bury overhead power lines to reduce the occurrences of power outages due to severe storms.	Existing Moderate Ongoing	Xcel Energy	The city will encourage Xcel Energy to take measures to reduce power outages for our area.	Xcel Energy
6	Severe Summer Storms	Structure & Infrastructure Projects	Work with our 2 mobile home parks to construct storm shelters to protect residents from high wind or tornadic events.	New High TBD	City Admin, City EM, City PW	We will seek assistance from Renville County Emergency Management as we work with the MHP operators to discuss possible options for storm shelters and funding for construction. If a tornado safe room is desired, we may seek funding from a future FEMA Hazard Mitigation Assistance grant.	City, FEMA HMA grant, Other (TBD)

CITY OF RENVILLE — Mitigation Action Chart

#	Hazard	Mitigation Strategy	Mitigation Action	Status Priority Timeframe	Responsibility	Comments on Implementation & Integration	Possible Funding
7	Flooding	Structure & Infrastructure Projects	Plan for and address the need for additional storm sewer upgrades in the event of flooding.	In-Progress High Ongoing	City PW	This falls under the planning & project work by our Public Works Dept.	City
8	Flooding	Structure & Infrastructure Projects	Install a large holding pond area to aid with drainage when the water level in the ditch is high.	New High TBD	City PW	This falls under the planning & project work by our Public Works Dept. The city's storm drains flow into a nearby ditch that is prone to flooding due to increased demand on the ditch system with additional field tile lines being continually added. We are looking at installing a large holding pond to handle water overflow. Funding may be sought from additional sources for implementation (i.e., FEMA, MN DNR grants)	City, FEMA HMA grant, MN DNR grant, Other (TBD)

CITY OF SACRED HEART Mitigation Action Chart

#	Hazard	Mitigation Strategy	Mitigation Action	Status Priority Timeframe	Responsibility	Comments on Implementation & Integration	Possible Funding
1	All-Hazards	Education & Awareness Programs	Encourage all city residents to sign-up for the county's CodeRED emergency notification alert system.	Existing High Ongoing	City Admin, City EM	We have a link to sign up for the Renville County CodeRED system on the front page of the city website.	City
2	Severe Winter & Summer Storms	Education & Awareness Programs	Provide education and outreach to residents on personal preparedness for severe weather events and extended power outages.	New High Ongoing	City Admin, City EM	Moving forward we can work to share information we receive from Renville County Emergency Management about severe weather awareness with our residents using our city website and Facebook page.	City
3	Severe Winter & Summer Storms	Mitigation Preparedness & Response Support	Acquire generators to provide emergency backup power for the city's water plant, water tower, city shop, and community center.	New High TBD	City Admin, City EM, City PW	The city will purchase generators as funding allows. We can work with Renville County Emergency Management on possibly obtaining used generators that we can utilize.	City
4	Flooding	Structure & Infrastructure Projects	Work with Renville County or the SWCD to help address improvements to County Drainage Ditch #104 or find ways to slow down water from area runoff from surrounding agricultural land.	New High TBD	City Admin, City EM, City PW	We will work with Renville County and the SWCD to try and assess what kind of measures would be helpful, such as creation of a pond system.	City, County, SWCD