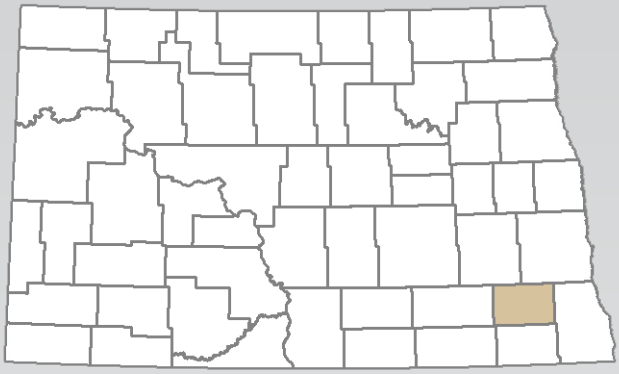
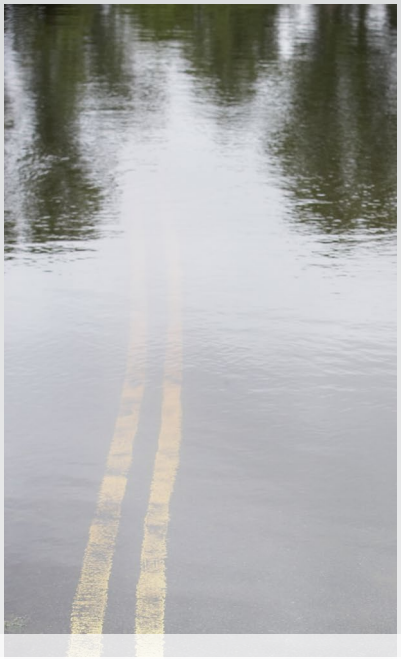
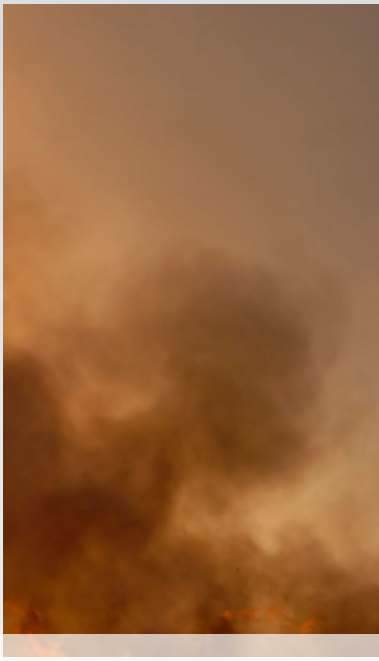


RANSOM COUNTY, ND



MULTI-HAZARD MITIGATION PLAN




SEPTEMBER 15, 2015

FEMA

NDDES Homeland Security State Radio

KLJ

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Multi-Hazard Mitigation Plan

Ransom County, ND

September 15, 2015

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Executive Summary

Hazard mitigation is defined as any sustained action taken to reduce or eliminate long-term risk to human life and property from hazards. Mitigation actions may be implemented before, during or after an event; however, they are most successful when based on a long-term plan developed before a disaster occurs.

Hazard mitigation planning involves two main elements:

- Hazard profiles that include an assessment of community risks and vulnerabilities
- A mitigation strategy that identifies actions to reduce or eliminate the impact of hazards on the community

A list of priority hazards was developed through historic data analysis and public input. A summary of hazard risk in Ransom County, as well as key issues for each priority hazard, can be found below.

Table 3.13 – Ransom County Risk Summary

	Rural County	Elliott	Enderlin	Fort Ransom	Lisbon	Sheldon
Drought	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate
Flood	Moderate	Low	Low	High	High	Low
Severe Summer Weather	High	High	High	High	High	High
Severe Winter Weather	High	High	High	High	High	High
Wildland Fire	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate
Communicable Disease	Low	Low	Low	Low	Low	Low
Dam Failure	Low	Low	Low	Low	Low	Low
Hazardous Materials Release	Moderate	Moderate	Moderate	Low	Moderate	Moderate
Homeland Security Incident	Low	Low	Low	Low	Low	Low
Urban Fire	Low	Low	Low	Low	Low	Low

Drought Key Issues

- Agriculture is a key component of the county's economy. A significant drought has the potential to greatly affect the industry and the county as a whole.
- A significant and prolonged drought could affect municipal water supplies and personal wells throughout the county.

Flood Key Issues

- Ransom County experiences about two flood events per year. Flood events in the county include riverine flooding and flash flooding, both of which have a significant history in recent decades.
- Many roads and bridges in the county are commonly washed-out or inundated during flooding events.
- Ice jams have a history of damaging roads and structures in the county.

Severe Summer Weather Key Issues

- Ransom County averages approximately six days per year with a summer storm event. Severe wind and hail are the most common summer storm events in the county, and tornadoes are also a possibility in the region.

Severe Winter Weather Key Issues

- Ransom County averages approximately eight days per year with a winter storm event. Severe winter weather events in the county include winter storm, high wind, heavy snow, blizzard, extreme cold/wind chill and ice storm.
- A winter storm event that causes a power outage may make it difficult for residents to heat their homes. Elderly residents and residents in mobile homes are the most vulnerable to extreme cold temperatures. Approximately 1,500 residents in the county are elderly or live in a mobile home. Power loss occasionally occurs in the county during winter storm events.

Wildland and Rangeland Fire Key Issues

- Ransom County experiences a wildfire greater than 100 acres approximately once every three to four years. Most large wildfires are located in Sheyenne National Grassland and cause minimal property damage.

Communicable Disease Key Issues

- Human and agricultural disease have the potential to greatly impact the health and economy of the county. There are several concentrations of vulnerable populations in the area.

Dam Failure Key Issues

- Dead Colt Creek Dam would have a significant impact in the event of failure. A failure of Baldhill Dam, located in Barnes County, would impact Fort Ransom and Lisbon.

Hazardous Materials Incident Key Issues

- Many residents in the county, including all city residents, live in a potential hazard area for a hazardous materials incident. There were 17 reported hazardous materials incidents in the county between 2000 and 2014.

Homeland Security Incident Key Issues

- Terrorism and violence are an ongoing concern, but it is very unlikely a large-scale event will occur in the county.

Urban Fire Key Issues

- There is no history of large-scale urban fire in the county, but it is an ongoing concern.

The mitigation strategy was developed by identifying actions that will help to resolve key issues. The strategy is summarized in the following table. Also included in the table are several preparedness and response action items that were discussed during the planning process.

Table 4.1 - Action Items, 2015-2019					
Priority	**Action**	**Hazard**	**Jurisdiction**	**Cost**	**Time Frame**
High	**Conduct NFIP workshop to educate public about benefits of flood insurance**	**Flooding**	**Ransom County Enderlin Fort Ransom Lisbon Sheldon**	**Staff Time**	**2015**
High	**Install box culvert on County Road 136 to reduce local flooding**	**Flooding**	**Sheldon**	**$5,000+**	**2015**
Low	Consider enrolling in NFIP Community Rating System (CRS)	Flooding	Ransom County Enderlin Fort Ransom Lisbon Sheldon	Staff Time	2015
Low	Identify location of all hazardous materials facilities in county and distribute maps to first responders	Hazardous Materials Incident	Ransom County	$5,000	2015
Moderate	Install a warning siren at Dead Colt Creek Reservoir	Multiple Hazards	Ransom County	$10,000+	2016
Moderate	Conduct riverbank stabilization activities along the Sheyenne River	Flooding	Fort Ransom	Varies	2016
Moderate	Update emergency operations plan	Multiple Hazards	Ransom County	$15,000 - $25,000	2016
Low	Remove abandoned school to prevent risk of arson	Urban Fire Wildfire	Sheldon	Varies	2016
Low	Administer Firewise program and implement fuel reduction activities during wildfire season.	Wildfire	Elliott	Staff Time	2016
High	**Mitigate flooding hazard to sewer lagoons**	**Flooding**	**Enderlin**	**Varies**	**2017**
Low	Create living snow fences in strategic locations	Winter Storm	Ransom County	$750 - $1,500 per 100 feet of frontage	2018
High	**Elevate 5th Avenue bridge to reduce flooding risk**	**Flooding**	**Lisbon**	**High**	**2019**
Moderate	Remove dead trees along county road right-of-way	Wildfire	Ransom County	Varies	Ongoing
Moderate	Install permanent levees along the Sheyenne and Maple Rivers	Flooding	Lisbon Enderlin	High	Ongoing
Moderate	Construct or enlarge culverts to reduce flooding risk for rural roads	Flooding	Ransom County	$5,000 - $50,000	Ongoing
Moderate	Acquire and remove repetitive loss properties	Flooding	Ransom County	$30,000+	Ongoing
Low	Develop a public information campaign for agricultural producers.	Drought	Ransom County	Staff Time	Ongoing

Ransom County Action Items, 2015-2019					
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Low	Develop a public information campaign for agricultural producers.	Drought	Ransom County	Staff Time	Ongoing

Chapter 1: Introduction

Hazard Mitigation Planning

Natural and human-caused hazards have a direct impact on residents and property in Ransom County. While it is impossible to eliminate most hazards, it is possible to mitigate their negative effects. Hazard mitigation is defined as any sustained action taken to reduce or eliminate long-term risk to human life and property from hazards. Mitigation actions may be implemented before, during or after an event; however, they are most successful when based on a long-term plan developed before a disaster occurs. Successful mitigation actions must be practical, cost-effective, politically acceptable and supported by a sound planning process.

The plan is organized into five chapters:

Chapter 1: Introduction

- General plan overview

Chapter 2: Study Area Background

- Background information about each participating jurisdiction and identification of key facilities

Chapter 3: Hazard Risks and Vulnerabilities

- Hazard profiles, assessment of risks and vulnerabilities, identification of key issues and potential action items

Chapter 4: Mitigation Strategy

- Identification of goals and action items to mitigate risks of hazards in the community

Chapter 5: Plan Maintenance

- Procedures for monitoring, evaluating and updating the plan

Purpose

The purpose of the plan is to promote sound public policy designed to protect citizens, critical facilities, infrastructure, private property and the environment from natural and human-caused hazards. The Federal Emergency Management Agency (FEMA) identifies the primary benefits of hazard mitigation planning as:

- Identifying actions for risk reduction that are agreed upon by stakeholders and the public.
- Focusing resources on the greatest risks and vulnerabilities.
- Building partnerships by involving citizens, organizations and businesses.
- Increasing education and awareness of threats and hazards, as well as their risks.
- Communication priorities to state and federal officials.
- Aligning risk reduction with other community objectives.

The plan includes a risk and vulnerability assessment that residents, organizations, local governments and other interested participants can utilize when planning for hazards. The plan also includes an evaluation of mitigation projects that will assist each adopting jurisdiction in reducing risk and preventing loss from future hazard events.

Additionally, all participating jurisdictions are eligible to apply for funds through FEMA's Hazard Mitigation Grant Program (HMGP), Pre-Disaster Mitigation (PDM) program and Flood Mitigation Assistance (FMA) program to help fund the implementation of mitigation projects.

Authority

The Robert T. Stafford Disaster Relief and Emergency Assistance Act (Public Law 93-288), as amended by the Disaster Mitigation Act of 2000, provides legal basis for state, local and Tribal governments to reduce risks from natural hazards through mitigation planning. All state, local and Tribal governments are required to have an approved Multi-Hazard Mitigation Plan to receive funding for certain types of non-emergency disaster assistance, including mitigation projects.

This plan is an update of Ransom County's 2008 Multi-Hazard Mitigation Plan. Hazard mitigation plans are required by FEMA to be updated every five years to maintain the jurisdiction's eligibility for grant funding.

Jurisdictions that participated in the planning process and are adopting the plan by the official method of approval based on legal authority are listed in Table 1.1. To be eligible for future funds through the Hazard Mitigation Grant Program, Pre-Disaster Mitigation program and Flood Mitigation Assistance program, jurisdictions must either adopt the plan and participate in the planning process or be sponsored by a jurisdiction that has done so. Approval and adoption documentation can be found in Appendix A.

Table 1.1 – Adopting Jurisdictions

Jurisdiction	Adoption Date
Ransom County	6/16/2015
City of Elliott	8/31/2015
City of Enderlin	7/6/2015
City of Fort Ransom	7/6/2015
City of Lisbon	7/6/2015
City of Sheldon	7/30/2015

The Planning Process

FEMA identifies four essential steps to the hazard mitigation planning process:

- **Resource organization**: Involving interested community members, and reaching out to critical stakeholders and those with technical expertise required during the planning process.
- **Risk assessment**: Identifying hazard characteristics and potential consequences, including effects on key facilities.
- **Development of mitigation strategies**: Determining priorities and ways to minimize effects of identified hazards.
- **Plan implementation and progress monitoring**: Implementing the plan brings it to life and periodic monitoring ensures the plan remains relevant as conditions change.

The success of the plan and implementation of action items is dependent on public participation during all four steps of the planning process. Public involvement for the plan included Planning Team meetings, two public meetings, and a public survey. Local planning documents were also reviewed and incorporated into the document when applicable. Detailed information about the planning process can be found in Appendix B.

Acknowledgements

Numerous elected officials, City and County staff, and members of the public participated in the planning process. The project would not have been possible without the assistance of Planning Team members (identified in Appendix B) and members of the public who participated in public meetings, completed the survey or submitted comments through the project website.

The project was primarily funded with a grant awarded through the FEMA Hazard Mitigation Grant Program, administered by the North Dakota Department of Emergency Services (DES). Guidance from state and FEMA staff was instrumental in completing the project.

Chapter 2: Study Area Background

Jurisdictional Information

Ransom County is located in southeast North Dakota. Its total area is 552,960 acres, making it smaller than state's median county size of 739,000 acres. The county includes five incorporated communities: City of Elliott, City of Enderlin, City of Fort Ransom, City of Lisbon and City of Sheldon. Lisbon is the county seat and has the largest population. Englevale and McLeod are Census Designated Places. The Sundale Huttertarian Association is a Hutterite community. The Hutterites practice a communal lifestyle rooted in agricultural traditions and small-scale manufacturing. The unincorporated community of Anselm does not have a significant population and is primarily included as a reference point.

A general map of the county, including major features and neighboring jurisdictions, is shown in Figure 2.1. The county is bisected by state highways 32 and 27, and state highway 46 runs along its northern border. The Red River Valley and Canadian Pacific railroads pass through the county, with all incorporated cities except Fort Ransom having direct rail service.

Sheyenne National Grassland is managed by the United States Forest Service and includes a mix of private and public land. The grassland provides habitat for a variety of endangered or threatened animal and plant species. Fort Ransom State Park is owned and operated by the North Dakota Parks and Recreation Department. The park provides camping, hiking, canoeing and other recreational activities. It is home to the annual Sodbuster Days celebration, which includes demonstrations and exhibits of life for early homesteaders.

Ransom County Courthouse in Lisbon.

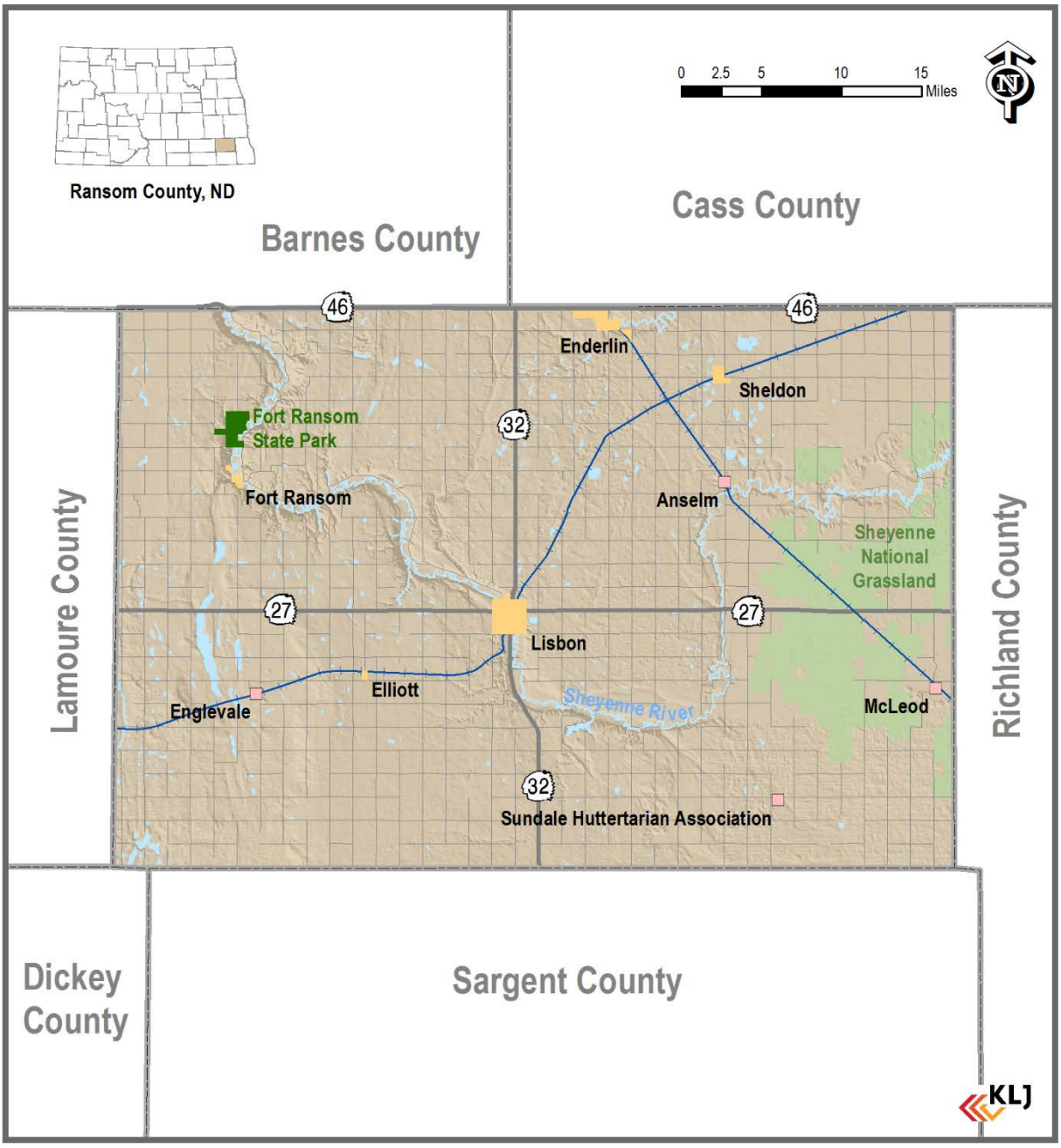


Figure 2.1
Study Area

Incorporated Cities
Unincorporated Communities

Source:
ND GIS Hub

For Planning Purposes Only

Population and Demographics

General demographic information for Ransom County and North Dakota is shown in Table 2.1. The county is generally older than the state overall, with a median age of 42.2 and 20.4 percent of residents at least 65 years of age. The county's population density of 6.4 persons per square mile is lower than the statewide rate. Nearly all residents identify themselves as White not Hispanic.

Table 2.1 – Ransom County Demographics

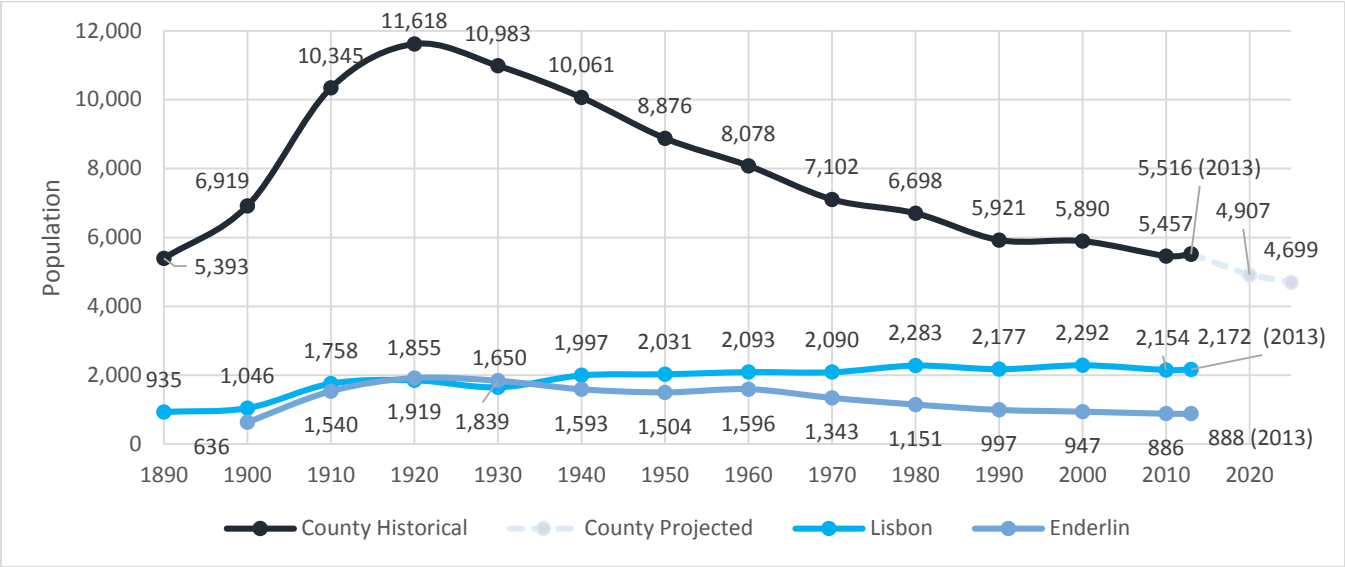
	Ransom County	North Dakota
Population	5,516	723,393
Persons under 5 years	5.7%	6.7%
Persons under 18 years	23.2%	22.5%
Persons 65 years and over	20.4%	14.2%
Median Age	42.2	36.4
Persons per square mile	6.4	10.5
White not Hispanic	95.8%	87.3%
Hispanic or Latino	1.5%	2.9%
American Indian or Alaska Native	0.7%	5.4%
Black or African American	0.6%	1.8%
Asian	0.4%	1.2%
Two or More Races	1.2%	1.9%
Foreign born	0.6%	2.7%
Language other than English spoken at home	3.5%	5.3%
High school graduates, age 25+	87.9%	90.9%
Median household income	$49,788	$53,741
Persons below poverty level	9.5%	11.9%
Average household size (persons)	2.32	2.31

Source: US Census Bureau; 2013 Annual Estimate used for population, age and race/ethnicity; 2009-2013 American Community Survey used for other demographic information

Population trends for the county and each jurisdiction are shown in Figures 2.2 and 2.3. The county's overall population declined between 1920 and 2010; however, recent estimates from the Census Bureau's Population Estimates Program indicate that the county's population grew slightly from 2010 to 2013. Population projections from North Dakota State University were produced in 2012. These projections suggest that the county's population will steadily decline through 2025; however, it should be noted that these projections were developed prior to the 2013 Census Bureau estimates.

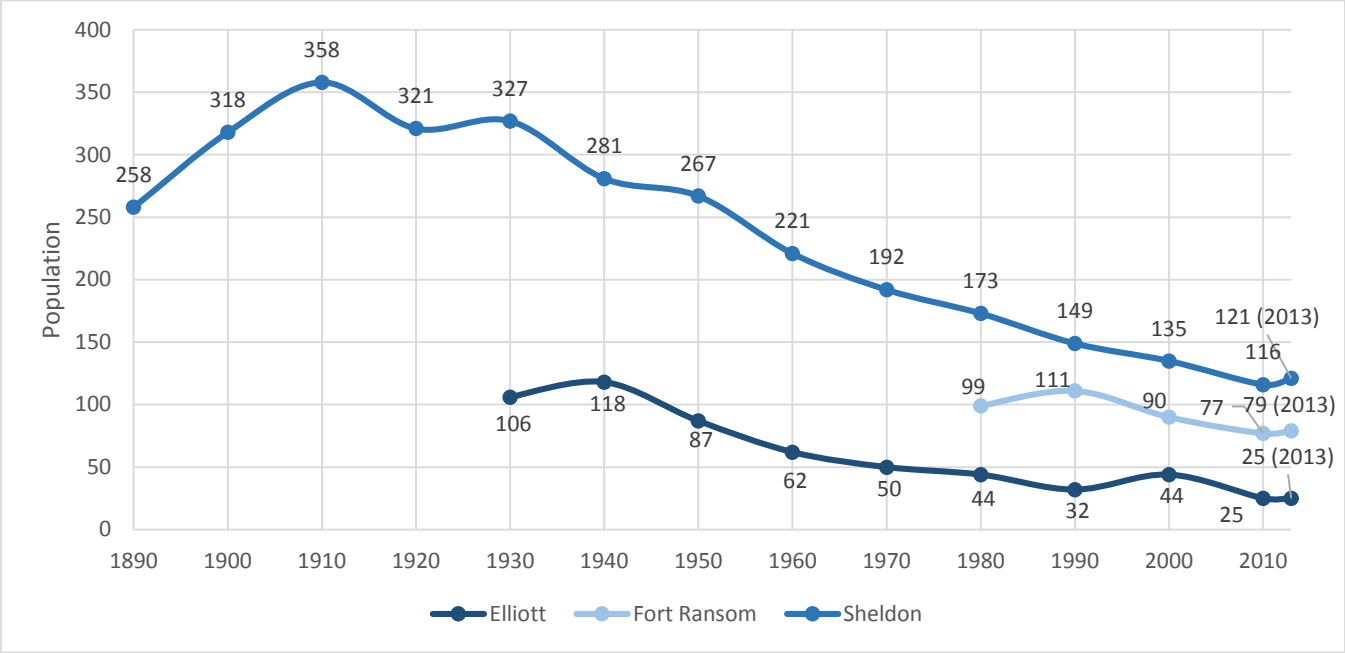
Englevale and McLeod are Census Designated Places. Their 2013 populations from the American Community Survey were 64 and 10, respectively. The Sundale Huttertarian Asssociation has an estimated population of 130 persons.

Figure 2.2 – Ransom County, Enderlin and Lisbon, Historical and Projected Population, 1890-2025



Source: US Census Bureau (Historical); North Dakota Statewide Housing Needs Assessment, NDSU, released September 2012 (Projected)

Figure 2.3 – Ransom County Jurisdictions below 500 Persons, Historical Population, 1890-2013



Source: US Census Bureau

Population density is shown in Figure 2.4. A majority of the county's population is located in and around the cities of Lisbon and Enderlin. Most of the county is very low density, with one or less persons per square kilometer.

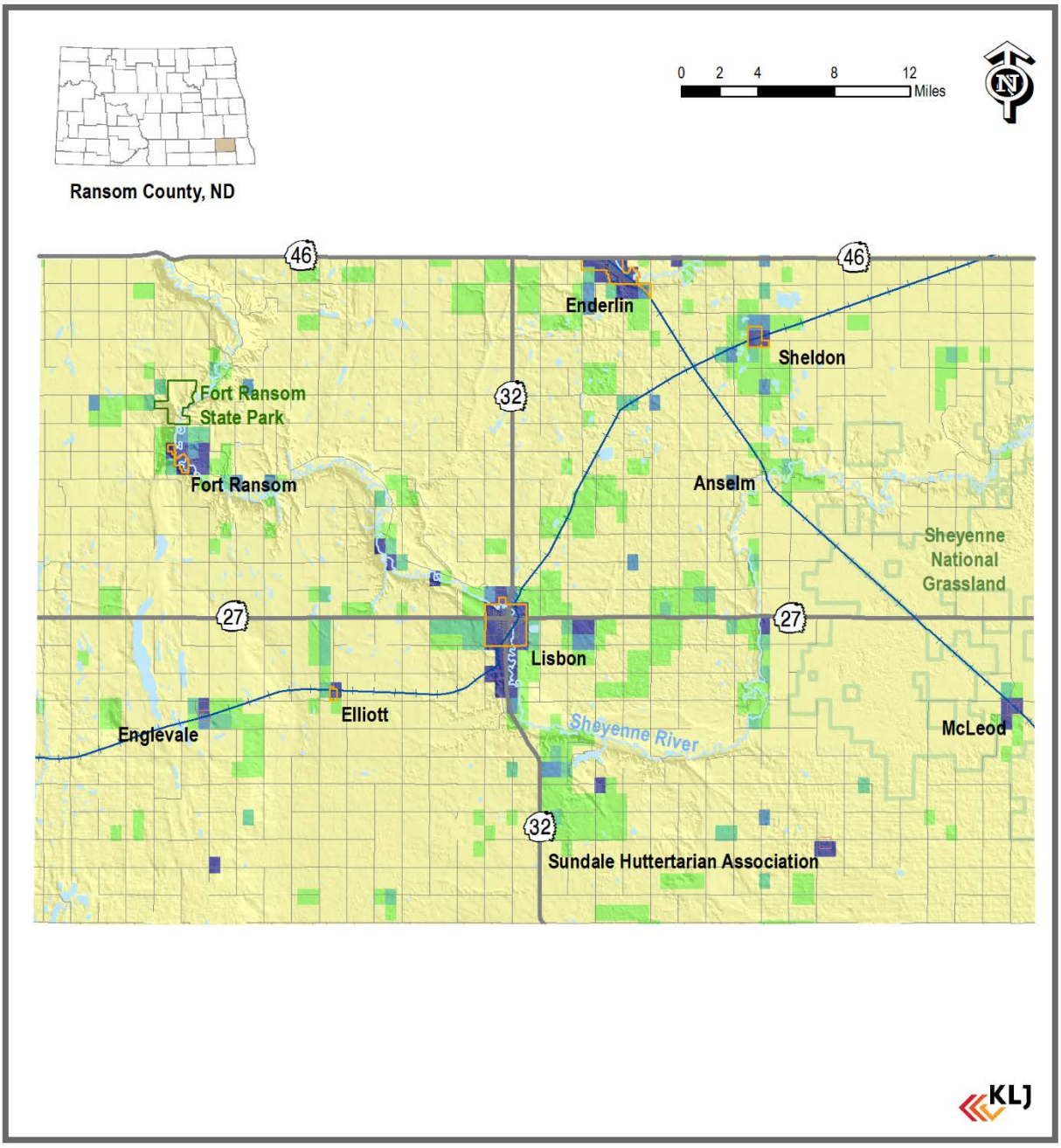


Figure 2.4
Population Density

Source:
US Census Bureau
ND GIS Hub

For Planning Purposes Only

Persons per sq km (2010)

- 0 - 2
- 2.1 - 4
- 4.1 - 6
- 6.1 - 8
- 8.1 - 10

Climate and Weather

Aggregated weather statistics for the county are shown in Table 2.2. Weather extremes in the county are shown in Table 2.3. The NWS Cooperative Network Weather Station in Lisbon is used for aggregate data because it has the longest available period of record in the county. Additional weather statistics can be found in Appendix C.

Table 2.2 – Ransom County Aggregated Weather Statistics

	Lisbon			
	Temperature (°F)		**Precipitation (In.)**	**Snow Fall (In.)**
	Avg Daily Max	*Avg Daily Min*	*Avg Monthly*	*Avg Monthly*
Jan	18.7	-2.6	0.55	7.2
Feb	24.4	2.5	0.51	5.6
Mar	37.9	16.6	0.86	5.7
Apr	55.3	30.5	1.83	2.8
May	68.7	41.8	2.74	0.3
Jun	77.6	51.8	3.66	0.1
Jul	84.1	57.0	2.95	0.4
Aug	82.7	54.3	2.60	0.2
Sep	72.4	44.0	2.04	0.1
Oct	58.9	32.7	1.47	0.6
Nov	39.0	18.5	0.67	5.2
Dec	25.0	4.6	0.75	5.8
Ann	*53.7*	*29.3*	*20.63*	*34.0*

Note: Aggregated Monthly Statistics 4/1/1903-2/11/2013
Source: NWS Cooperative Network Weather Station, Lisbon 325220 (High Plains Regional Climate Center)

Table 2.3 – Ransom County Weather Extremes

Highest Max Temperature	111° F	7/11/1936
Lowest Min Temperature	-41° F	1/15/1942
Highest Daily Precipitation	12.0"	12/15/1927
Greatest Snowfall	21.0”	2/15/1915

Note: 4/1/1901-2/11/2013
Source: NWS Cooperative Network Weather Station, Lisbon 325220 (High Plains Regional Climate Center)

Economy

The agriculture industry in Ransom County is tracked by annual survey through the National Agricultural Statistics Service. Corn is the most common crop, with 123,600 acres harvested in 2013. Cattle and calves make up a majority of the county's livestock industry, with 37,500 head reported in 2013. According to the USDA Census of Agriculture, the market value of crops sold in the county was $153,108,000 in 2012, and the market value of all livestock was $26,158,000.

County-wide workforce data is compiled by the Job Service North Dakota Labor Market Information Center. The county's largest employers are shown in Table 2.4.

Table 2.4 – Ransom County Largest Employers, 2013

Rank	Employer	Industry
1	ND Veterans Home	Nursing and Residential Care Facilities
2	(Nondisclosable)*	(Nondisclosable)*
3	Lisbon Public School District	Educational Services
4	Archer Daniels Midland	Food Manufacturing
5	Lisbon Area Health Services	Hospitals
6	Maryhill Manor	Nursing and Residential Care Facilities
7	Parkside Lutheran Home	Nursing and Residential Care Facilities
8	Enderlin Public School District	Educational Services
9	Ransom County	Government
10	Plains Grain and Agronomy	Merchant Wholesalers, Nondurable Goods

**Information for some industries and employers is not publicly available*
Source: 2013 Quarterly Census of Employment and Wages, Job Service ND, Labor Market Information Center

Key Facilities

An important element to hazard mitigation planning is to determine key facilities that may need special consideration during the preparation of mitigation action items and the risk assessment. Key facilities fall into several categories:

- Facilities that are essential to the health and welfare of the entire population, and may become especially important following hazard events. Examples include hospitals, emergency operations centers, police and fire stations, and community shelters.
- Utility systems whose disruption would have a significant impact.
- Facilities containing a high density of population, especially those containing vulnerable populations. Examples include schools, retirement homes and large employers.
- Facilities that are a key element to the local economy, and could cause significant economic damage if their function was disrupted.
- Historic, cultural and natural resource areas that are important to the community.

Key facilities in Ransom County can be found in Appendix D. The facilities found in the appendix are a revised version of the facilities list found in the 2009 plan. Key facilities are discussed in each hazard profile found in Chapter 3.

Chapter 3: Hazard Risks and Vulnerabilities

Hazards Overview

Ransom County is subject to numerous natural and human-caused hazards. Many hazards are capable of creating significant levels of damage and having a negative effect on the local economy. Figure 3.1 illustrates the total losses from natural hazard events by county in North Dakota, from 1960 to 2009. Ransom County is within the range of $95 million to $102 million, placing it in the median category for total losses.

Figure 3.1 – Economic Losses from Hazard Events, 1960-2009

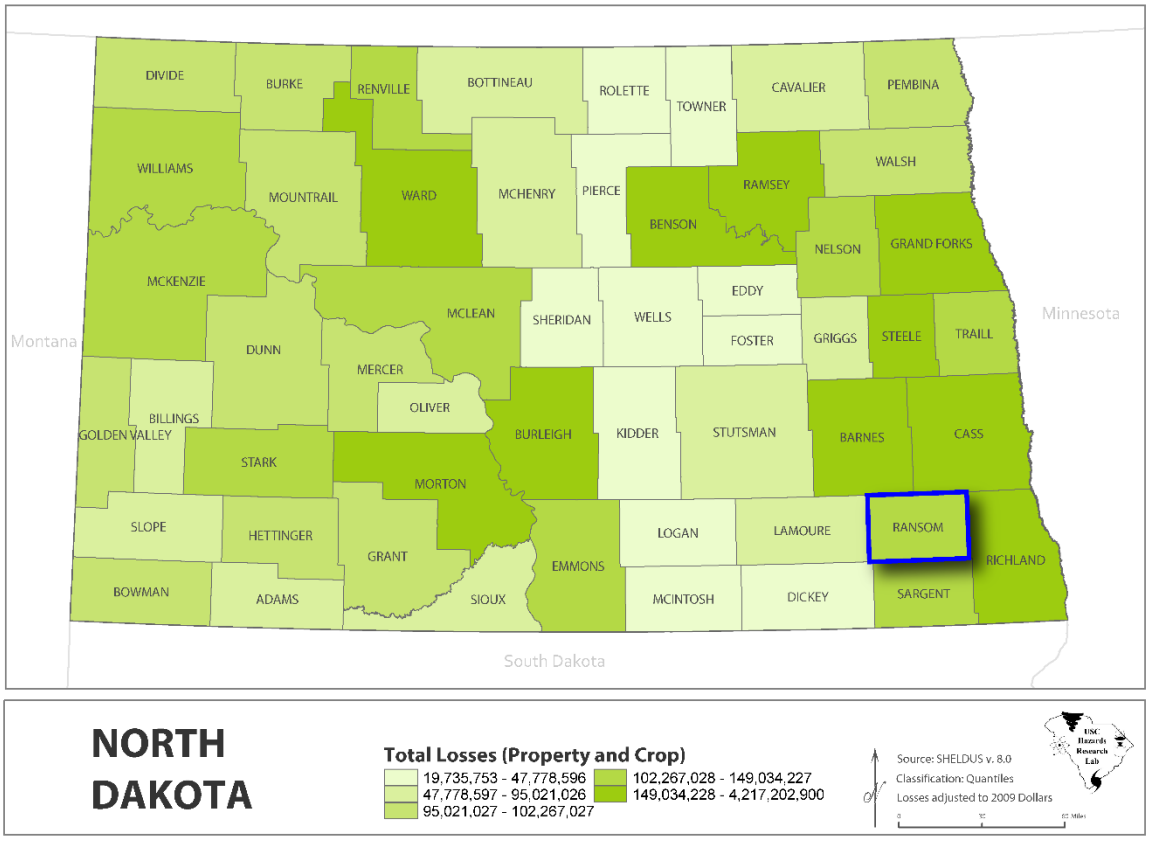


Table 3.1 lists Presidential Disaster Declarations for Ransom County from 1989 to 2014. There were 32 Presidential Disaster Declarations in North Dakota during the period, and Ransom County was designated for 17 of them. The most recent declared disaster is the flooding event of 2011.

Table 3.1 – Ransom County Presidential Disaster Declarations, 1989-2014		
Year	**Declaration**	**Hazard(s)**
2011	DR 1981	Flooding
2010	DR 1907	Flooding
2010	DR 1879	Severe Winter Storms
2009	DR 1829	Severe Storms, Flooding
2007	DR 1713	Severe Storms and Flooding
2006	DR 1645	Severe Storms, Flooding, Ground Saturation
2006	DR 1621	Severe Winter Storms
2005	DR 1597	Severe Storms, Flooding, Ground Saturation
2001	DR 1376	Flooding
2000	DR 1334	Severe Storms and Flooding
1999	DR 1279	Severe Storms, Tornadoes, Snow and Ice, Flooding, Ground Saturation, Landslides and Mudslides
1998	DR 1220	Flooding, Ground Saturation
1997	DR 1174	Severe Storms, Flooding
1997	DR 1157	Severe Winter Storms
1996	DR 1118	Flooding
1995	DR 1050	Severe Storms, Flooding, Ground Saturation
1993	DR 1001	Flooding, Severe Storms

Source: FEMA

The 2014 North Dakota Multi-Hazard Mitigation Plan served as the basis for selecting the hazards profiled in this chapter. Shortage or Outage of Critical Materials or Infrastructure, Structure Collapse, Transportation Accident and Windstorm are profiled as separate hazards in the statewide plan; however, in this plan the risks and impacts associated with those hazards are discussed in other applicable hazard profiles and do not receive individual recognition. Geologic hazards are not discussed in detail in this plan due to their low risk in the county. A brief summary of the hazard can be found in Appendix E.

Profiled natural hazards:

- Drought
- Flood
- Severe Summer Weather
- Severe Winter Weather
- Wildland Fire

Profiled human-caused/technological hazards:

- Communicable Disease
- Dam Failure
- Hazardous Materials Release
- Homeland Security Incident
- Urban Fire

Natural hazards are listed first, followed by human-caused/technological hazards.

Each profiled hazard includes the following information:

- Hazard Profile: Definition of the hazard and general overview.
- Local Risk: Previous occurrences and specific risk for the jurisdiction, including population, key facilities and property.
- Existing Capabilities: Current actions taken by the jurisdiction to address the hazard.
- Key Issues: The primary issues that affect the jurisdiction and the basis for determining action items.
- Potential Action Items: A preliminary list of action items to address key issues. These items are refined and prioritized in Chapter 4.

The profiles include an analysis of the probability and magnitude of each event to determine overall hazard risk. Probability is the chance that the hazard event will occur within the county in the next year. Magnitude is the percentage of residents and property that could be significantly affected by the hazard event in a worst-case scenario. Criteria used to determine probability, magnitude and overall risk class are shown below. Historical data from previous events was utilized to determine probability and magnitude when possible. Risk class is determined for the rural county (unincorporated areas) and each incorporated city.

Probability

Low: less than 10 percent probability in the next year
Moderate: 10-100 percent probability in the next year
High: more than 100 percent probability in the next year

Magnitude

Low: less than 5 percent of jurisdiction exposed
Moderate: 5-10 percent of jurisdiction exposed
High: more than 10 percent of jurisdiction exposed

Risk Class Determination Criteria

		Magnitude		
		Low	**Moderate**	**High**
Probability	**Low**	Low	Low	Moderate
	Moderate	Low	Moderate	High
	High	Moderate	High	High

Hazard statistics for recent years are provided from the National Oceanic and Atmospheric Administration (NOAA) National Climatic Data Center's Storm Data and Unusual Weather Phenomena database. The Storm Data and Unusual Weather Phenomenon database provides a comprehensive list of weather events along with vital information about each event. Information from the database is provided in the corresponding hazard profiles and Appendix C. For Ransom County, the database includes information about flooding, severe summer weather and severe winter weather. Statistics for other hazards are provided by a variety of sources, as noted in each corresponding profile.

Drought

All Jurisdictions:
Overall Risk: Moderate
Probability: Moderate (once per decade, approximately 10% annual probability)
Magnitude: Moderate (economic impact on entire county)

Seasonal Pattern: None, but impacts may be greater during spring and summer
Duration: Months/Years
Speed of Onset: Slow
Primary Impacts: Agricultural loss (crops, livestock)
Economic loss
Increased fire potential
Loss of potable water
Pest infestation

Hazard Profile

Drought is generally defined as a deficiency of precipitation over an extended period. If severe enough, this deficiency has potential to reduce soil moisture and water below the minimum necessary for sustaining plant, animal and human life systems. It is a normal, recurrent phenomenon that takes place in nearly all climate zones. Droughts appear gradually, and it is often difficult to pinpoint their beginning and end. Droughts can last multiple years, and even persist over decades. Significant droughts in North Dakota occur approximately once per decade. Previous droughts include the 1930s, 1950s, early 1960s, mid 1970s, early 1980s, 1988 through 1991, 2002 through 2004 and 2006.

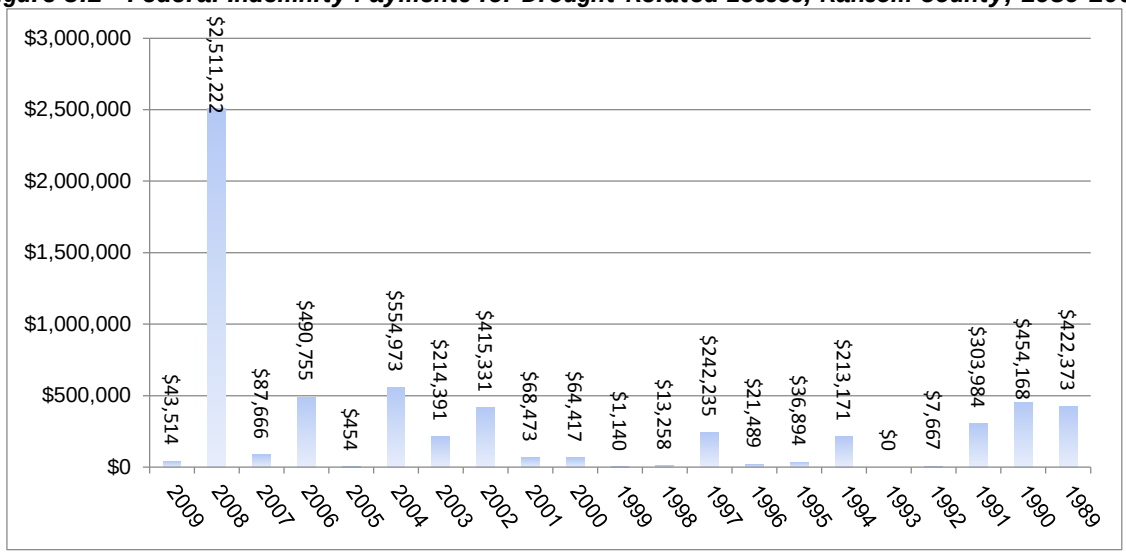
Droughts are often measured by impacts, most notably agricultural damage and municipal water supply shortage. The impacts are highly variable based on time of year, amount of stored water in the soil, and meteorological factors such as temperature, humidity and wind. Impacts are also greatly affected by human factors such as local water demand and water management practices.

Local Risk

- It is difficult to predict when a drought will appear. Historic trends show that wetter-than-normal periods tend to alternate with drier-than-normal periods. **The average annual precipitation in the county is 20.63 inches** as recorded by the National Weather Service Cooperative Network weather station in Lisbon. The county's **lowest annual precipitation is 9.15 inches**, which was recorded in 1936. It is important to note, however, that numerous factors beyond rainfall contribute to drought status, which can make it difficult to predict and classify droughts.

- Historical drought occurrences can be measured by looking at impacts. Federal indemnity programs provide financial assistance to help reduce the impact of drought-related agricultural losses. Figure 3.2 shows indemnity payments for Ransom County from 1989-2009. The figure shows that **2008 had the largest drought indemnity payments** during the time period. Drought losses occurred during the late 1980s and early 1990s, and were scattered throughout the 2000s. Based on previous trends, a severe drought can be expected approximately once per decade.

Figure 3.2 – Federal Indemnity Payments for Drought-Related Losses, Ransom County, 1989-2009



Source: National Drought Mitigation Center

Vulnerability

Population

- Drought has no direct impact on human life, but it **greatly increases the risk of wildfire**, which is a potentially life-threatening hazard. Drought accompanied by high temperatures can **increase the threat of heat-related illness** for persons who spend a significant amount of time outdoors or do not have adequately-cooled homes. The **highest recorded temperature at in the county (at the Lisbon monitoring station) is 111 degrees Fahrenheit in July 1936**. Elderly persons are at increased risk of heat-related illness. Approximately **1,125 residents in the county are 65 years of age or older.** According to the most recent American Community Survey estimates, approximately **1,125 residents in the county are 65 years of age or older.** Five residents age 65 or older live in Elliott, 245 in Enderlin, ten in Egeland, 30 in Fort Ransom, 420 in Lisbon and 20 in Sheldon; the remainder live in rural areas of the county.

- **Prolonged drought could affect water supplies**. Bottled water could be brought in as an emergency measure, but a lack of household water could create health and sanitation issues for residents. Water is supplied by a mix of municipal water systems, rural water systems and personal wells. Ransom County is part of three rural water districts: Southeast Water Users District, Barnes Rural Water District and Cass Rural Water Users District.

Key Facilities

- No key facility in the county is physically impacted by drought.

Property

- Drought can have a significant economic impact on agriculture and related industries. Federal indemnity payments, previously shown in Figure 3.2, are an indicator of drought-related agricultural losses. **Since 1989, the year with the greatest payments was 2008, with $2.5 million paid by the USDA to reduce the economic impact of drought.** Agriculture is the primary economic driver in the county, and the economic success of each city ultimately relies on a healthy agriculture industry.

- The statewide Multi-Hazard Mitigation Plan includes information about crop insurance payments from the USDA Risk Management Agency. Drought-related **crop insurance payments in Ransom County from 2003 to**

2012 totaled $4.1 million. Based on a statewide rate of 89 percent of crops being insured, **total estimated damages for the county were $4.6 million**.

- It is difficult to measure direct economic loss for livestock producers. Cattle and calves numbers regularly fluctuate based on a wide number of factors. Impacts on livestock producers include **reduced rangeland productivity, high cost/unavailability of water for livestock, disruption of reproductive cycles and the cost of finding supplemental feed or pasture**.

- Beyond agricultural impacts, there is also a greater threat of structure damage in drought-affected areas, as **drought increases the risk of wildfire and may create water shortages** that inhibit adequate fire response. Structure vulnerability from wildfire is discussed in more detail in the wildland fire section of this chapter.

Future Development

- The limited amount of projected development in the county is not expected to affect drought vulnerability. Public water systems are monitored by the North Dakota Department of Health, and water permit applications are maintained by the North Dakota State Water Commission and US Army Corps of Engineers. It is expected that county-wide water usage will remain consistent, as agriculture will continue to be the dominant land use and water user.

Existing Capabilities

- The USDA Farm Service Agency and North Dakota State University Extension both have field offices located in Lisbon. Both offices offer general education relating to drought management best practices. The USDA Farm Service Agency field office assists with the distribution of drought indemnity payments to agricultural producers.

- The county distributes information about water conservation during times of drought.

Key Issues and Potential Action Items

- *Key Issue*: Agriculture is a key component of the county's economy. A significant drought has the potential to greatly affect the industry and the county as a whole.
  - *Potential Action Item*: Encourage coordination among water suppliers, water managers and water users.
  - *Potential Action Item*: Continue supporting the USDA Farm Service Agency and North Dakota State University Extension and provide assistance as needed to local farmers and ranchers.
  - *Potential Action Item*: Develop emergency response plan that includes coordination with local livestock producers.

- *Key Issue*: A significant and prolonged drought could affect municipal water supplies and personal wells throughout the county.
  - *Potential Action Item*: Expand municipal water storage.
  - *Potential Action Item*: Educate residents in each community about water saving techniques to help preserve water supplies.
  - *Potential Action Item*: Conduct drought management training.
  - *Potential Action Item*: Conduct public information campaign for producers.

Flood

Rural County:
Overall Risk: Moderate
Probability: Moderate (approximately one event day per year in rural areas)
Magnitude: Moderate (5.1 percent of total population, 2 to 10 percent total structure value, four key facilities)

Elliott:
Overall Risk: Low
Probability: Low (two flood events from 1996 to 2013)
Magnitude: Low (not located in identified floodplain, impacts possible from flash flooding)

Enderlin:
Overall Risk: Low
Probability: Low (two flood events from 1996 to 2013)
Magnitude: Low (1.7 percent of total population, no properties within 100-year floodplain, two key facilities)

Fort Ransom:
Overall Risk: High
Probability: Moderate (eight flood events from 1996 to 2013)
Magnitude: High (44.3 percent population, 10 to 30 percent total structure value, one key facility)

Lisbon:
Overall Risk: High
Probability: Moderate (six flood events from 1996 to 2013)
Magnitude: High (30.4 percent of population, 10 to 30 percent of total structure value)

Sheldon:
Overall Risk: Low
Probability: Low (one flood events from 1996 to 2013)
Magnitude: Low (not located in identified floodplain, impacts possible from flash flooding)

Seasonal Pattern: March – October
Duration: One week
Speed of Onset: Varies depending on type of flood event
Primary Impacts:
Agricultural loss (crops, livestock)
Blocked roads
Economic loss
Human loss and injuries
Increased stress on medical services
Localized evacuation
Permanent loss of businesses
Power loss
Property damage or loss
Release of hazardous materials
School closure

Hazard Profile

Primary causes of flooding in North Dakota include heavy rain/flash flooding, rapid snowmelt/ice jams and increased seasonal moisture. Flooding can occur in riverine zones or flat areas that lack adequate drainage.

Typical insurance policies do not cover flood damages, so FEMA created the National Flood Insurance Program (NFIP) to provide flood insurance for property owners. The NFIP makes flood insurance available to residents in NFIP-participating communities that adopt and enforce floodplain management ordinances and follow other basic requirements.

A Flood Insurance Rate Map (FIRM) is created to determine flood insurance rates for each participating community. The FIRM identifies Special Flood Hazard Areas (SFHA) that have a one percent annual chance of flooding, commonly

referred to as the 100-year floodplain. Areas outside the SFHA are considered to be in the Non-Special Flood Hazard Area (NSFHA). Structures in the NSFHA may still be at risk from flooding; according to FEMA, one in every four floods occurs in an NSFHA. Flood insurance is required for all property owners who acquire a loan from a federally regulated, supervised or insured financial institution for the acquisition or improvement of land, facilities or structures located within an SFHA.

Local Risk

- NFIP participation is summarized in Table 3.2. Action items to strengthen the NFIP compliance of all participating jurisdictions is included in Chapter 4.

Table 3.2 - NFIP Participation in Ransom County

Jurisdiction	Total Participating Properties	Insured Value of Participating Properties	Insurance Claims Since 1978	Total Paid Since 1978	Floodplain Administrator	Enforced Floodplain Management Ordinances
Ransom County	15	$3,096,300	27	$160,118	Yes	Yes
City of Enderlin	0	$0	0	$0	Yes	Yes
City of Fort Ransom	4	$664,200	12	$58,002	Yes	Yes
City of Lisbon	84	$11,549,500	99	$457,163	Yes	Yes
City of Sheldon	1	$175,000	0	$0	Yes	Yes

Note: Policy and claim information as of 10/31/2014

- Ransom County was included in **14 flood-related Presidential Disaster Declarations** between 1989 and 2014.

- The most significant flooding in the county occurs as a result of spring snowmelt combined with rainfall. Rivers in the county that experience flooding include the Sheyenne River, Maple River and South Branch Maple River. Riverine flooding primarily affects Enderlin, Fort Ransom and Lisbon. Enderlin, Fort Ransom, Lisbon and Sheldon have also experienced overland flooding in the past.

- The Sheyenne River travels primarily southeasterly through Ransom County and passes near Lisbon and Fort Ransom. It has a total drainage area of approximately 8,190 square miles above Lisbon. **The flood of record on the Sheyenne River in Lisbon occurred in April 2009** as recorded by USGS gaging station **05058700.** The April 2009 flood had a peak discharge of 9,250 cubic feet per second (cfs); the average discharge for the Sheyenne River in Lisbon during April is 365 cfs. Other flood-stage peak flows occurred in April 2011, April 1997, April 1996, May 1979, July 1975, April 1969, April 1968, April 1958 and April 1947. Sheyenne River flows are regulated by the Baldhill Dam, which is located approximately 50 miles north of Lisbon. Despite the river's regulated flows through the county, several flooding events have occurred at Fort Ransom and Lisbon since the dam's construction in 1950. The dam's spillway was recently raised five feet to provide additional flood control capacity.

- The confluence of the Maple River and South Branch Maple River occurs at Enderlin near the northern border of the county. The drainage area of the Maple River at Enderlin is 843 square miles, of which 57 square miles are tributary to the South Branch Maple River. Both rivers are fast-rising, high velocity streams that can cause flooding in less than 10 hours. **The flood of record on the Maple River in Enderlin occurred in June 1975** as recorded by USGS gaging station 05059700. The June 1975 event had a peak discharge of 7,610 cfs; the average discharge on the Maple River in Enderlin during June is 89 cfs.

- Recent flood events in Ransom County are shown in Table 3.3. **The county averages nearly two flood events per year**. Flood event classification criteria and a detailed listing of events can be found in Appendix C.

Table 3.3 - Flood Events in Ransom County,1996-2013			
Flood Events	**Event Days***	**Annual Probability**	**Event Days per Year**
Total	*35*	*194.4%*	*1.9*
Flood	24	133.3%	1.3
Flash Flood	14	77.8%	0.8
Heavy Rain	1	5.6%	0.1

**Number of days with a reported event*
Source: National Climatic Data Center Storm Events Database

- The National Climatic Data Center Storm Events Database includes brief summaries of significant storm events. A selection of recent flood events within Ransom County are summarized below. **Localized road washouts are the most common identified impacts of flood events in the county,** although some events resulted in more significant impacts.
  - *July 9, 1998*. Excessive rainfall during the months of June and early July left the area around McLeod with a high water table. All 14 homes in McLeod suffered water damage.
  - *April 2006*. Water tables were high throughout Ransom County due to substantial rainfall the prior year. Approximately 48 road and bridge sites were closed, a majority of which were in the southeast quarter of the county. Total damages were estimated at $113,000.
  - *May 2007*. More than 90 roads throughout the county were covered with water following prolonged rains. The Ransom County Sheriff advised no travel in rural areas. Total impacts from the spring 2007 flood event was 34,000 acres of washed-out crops and $300,000 in road damages.
  - *June 20, 2013*. A pickup was swept off Highway 32 into Dead Colt Creek. The vehicle floated downstream and eventually submerged, resulting in one fatality.

- The National Climatic Data Center Storm Events Database categorizes storm events by location**. Between 1996 and 2013 there were 8 flood event days in Fort Ransom, 6 in Lisbon, 5 in McLeod, 2 in Elliott, 2 in Enderlin, and 15 in rural areas of the county.** Additional input from the Planning Team indicates that there was one flood event in Sheldon during the time period.

- Elliott, McLeod and Sheldon all had recorded flood events even though they are not located in a designated floodplain area. The impacts to these communities are resulting from overland flooding caused by field runoff and localized drainage issues.

- The US Army Corps of Engineers Cold Regions Research and Engineering Laboratory (CRREL) maintains river gauges throughout Ransom County to track ice jams. **CRREL has recorded 23 ice jams in the county since 1960**. Sixteen ice jams occurred near Lisbon, four near Enderlin, two near Fort Ransom and one at Owego Township. Ice jams with significant reported impacts include:
  - *March 21, 1995*. The Sheyenne River rose three feet, flooding several homes and a lift station in Fort Ransom. Fifty people needed to be evacuated from their homes.
  - *March 22, 2010*. A breakup ice jam on the Sheyenne River occurred at the Highway 32 bridge in Lisbon. The Highway 27 bridge was closed due to flooding. The river crested at 19.4 feet; the emergency levees in Lisbon are 21.0 feet at their top elevation.

- FEMA Digital Flood Insurance Rate Maps (DFIRMs) were completed for the county in 2011. The DFIRMs for the county are shown in Figures 3.3, 3.4, 3.5 and 3.6. The DFIRMs identify areas of enhanced flooding risk. Zones A and AE (also known as a 100-year floodplain or Special Flood Hazard Area) present a one percent annual chance of flooding. This equates to approximately a one in four chance of flooding during a 30-year mortgage. The Floodway is the channel of a drainage and any adjacent floodplain areas that must be preserved in order to prevent elevation of upstream floodplain areas. Zone X areas shown on the map (also known as a 500-year floodplain or Non-Special Flood Hazard Area) present a 0.2 percent annual chance of flooding. Approximately 20 percent of NFIP claims nationwide come from these areas.

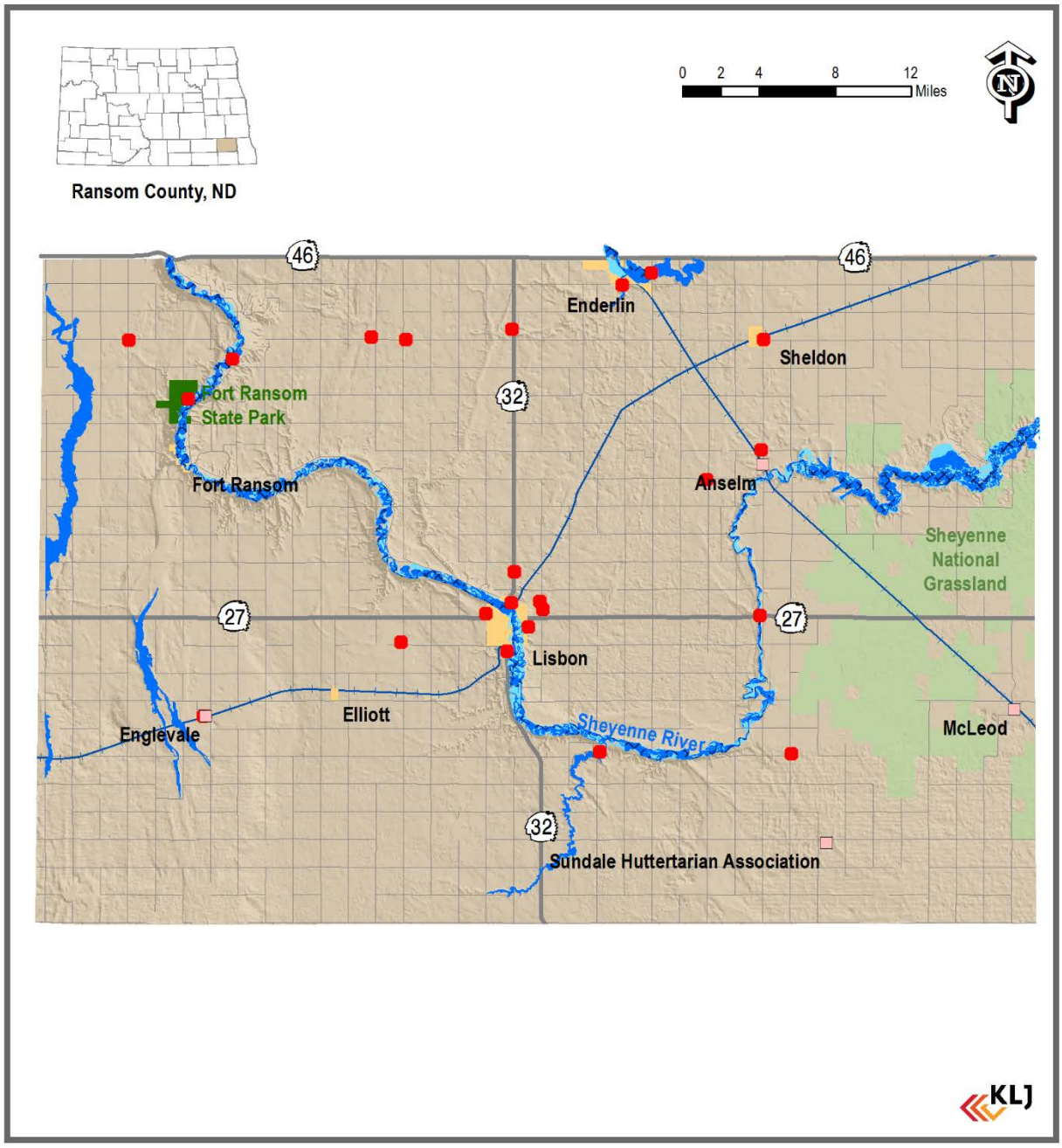


Figure 3.3
Flood Hazard Areas

Source:
FEMA DFIRM (effective date 1-19-2011)
ND GIS Hub

For Planning Purposes Only

FEMA Flood Zones
- Floodway
- Zones A & AE (1% Annual Chance)
- Zone X (0.2% Annual Chance)

Key Facilities

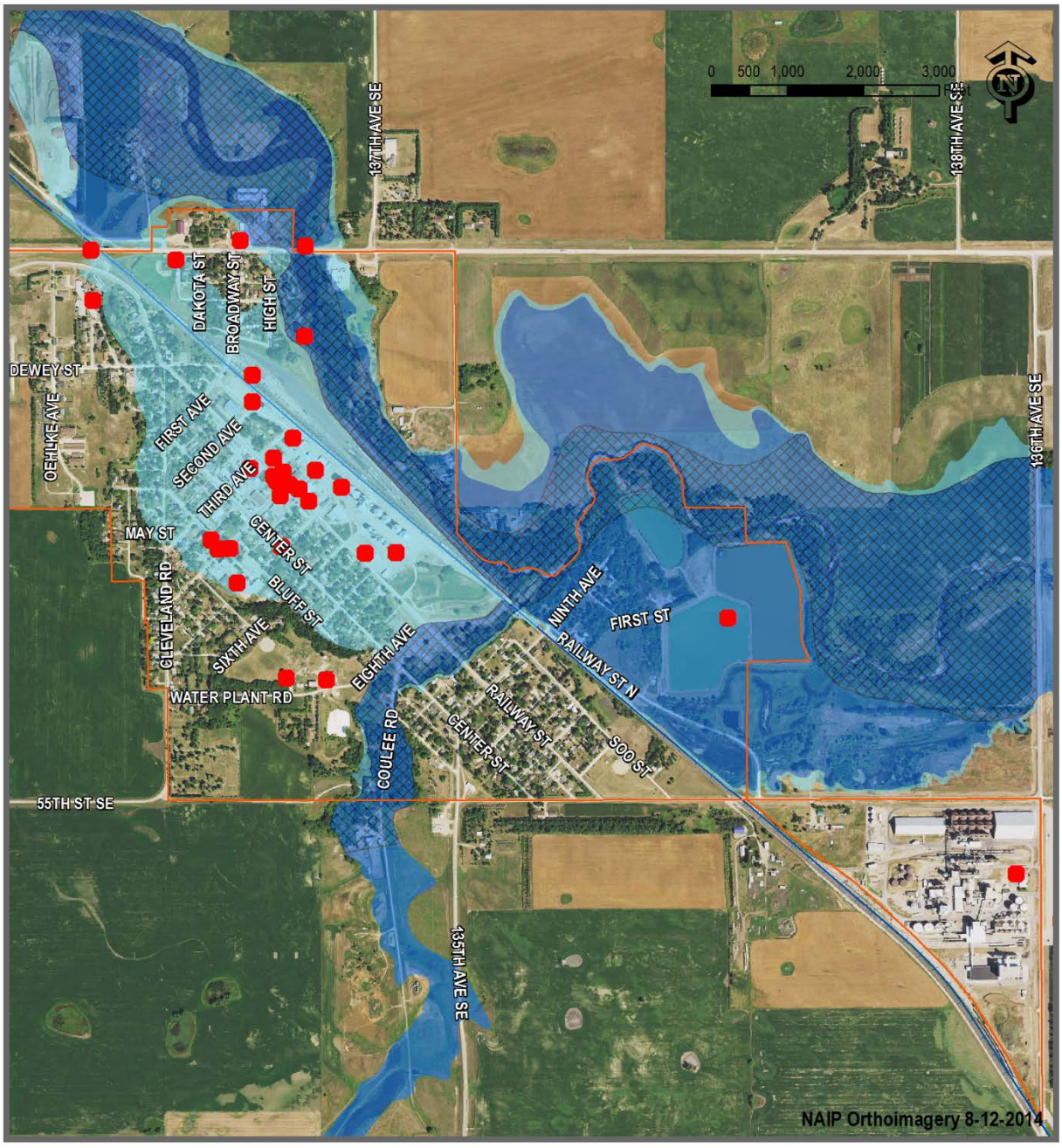


Figure 3.4
Flood Hazard Areas
Enderlin

Source:
FEMA DFIRM (effective date 1-19-2011)
ND GIS Hub

For Planning Purposes Only

FEMA Flood Zones
- Floodway
- Zones A & AE (1% Annual Chance)
- Zone X (0.2% Annual Chance)

- City Limits
- Key Facilities

KLJ

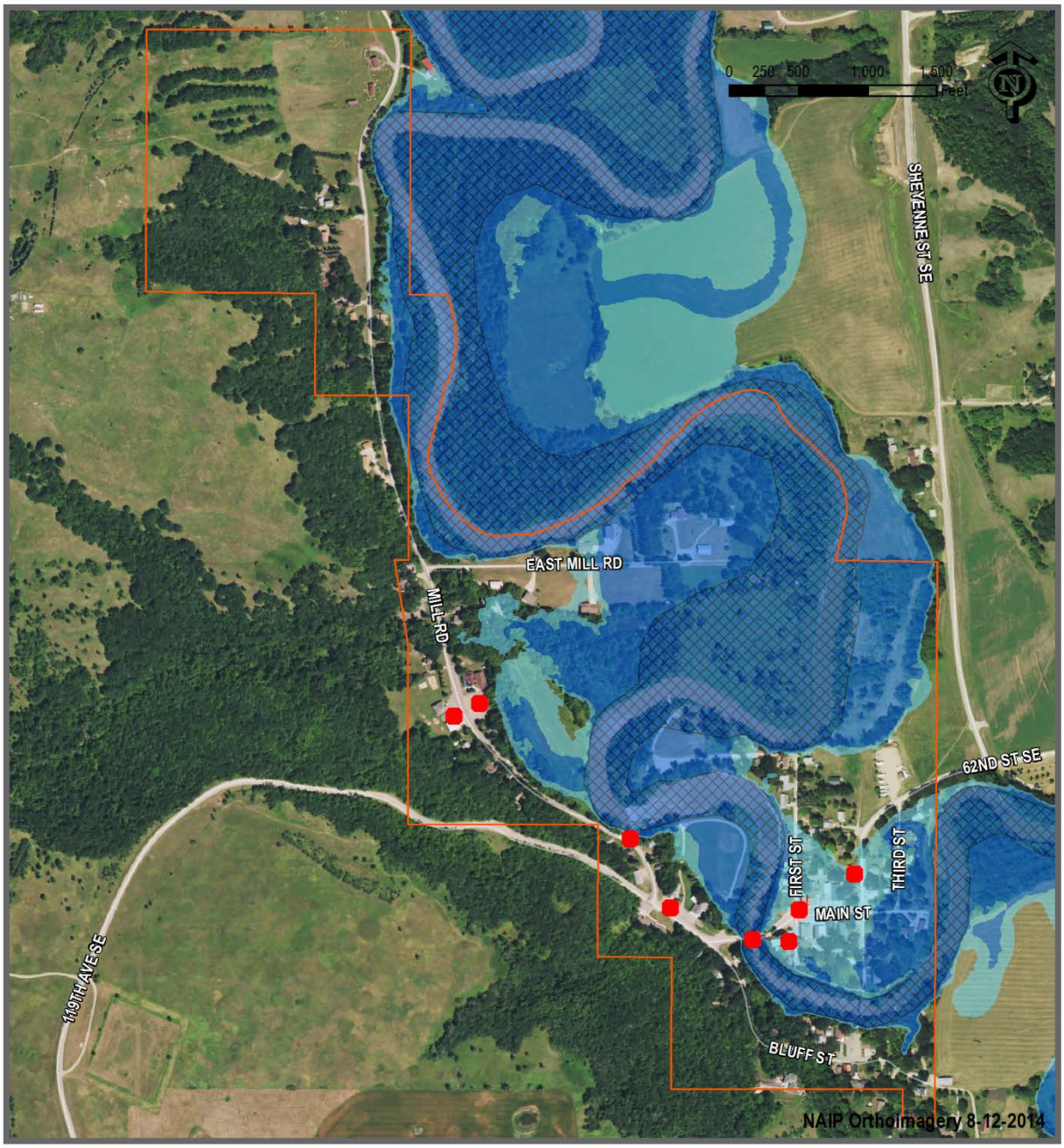


Figure 3.5
Flood Hazard Areas
Fort Ransom

Source:
FEMA DFIRM (effective date 1-19-2011)
ND GIS Hub

For Planning Purposes Only

FEMA Flood Zones
- Floodway
- Zones A & AE (1% Annual Chance)
- Zone X (0.2% Annual Chance)

- City Limits
- Key Facilities

KLJ

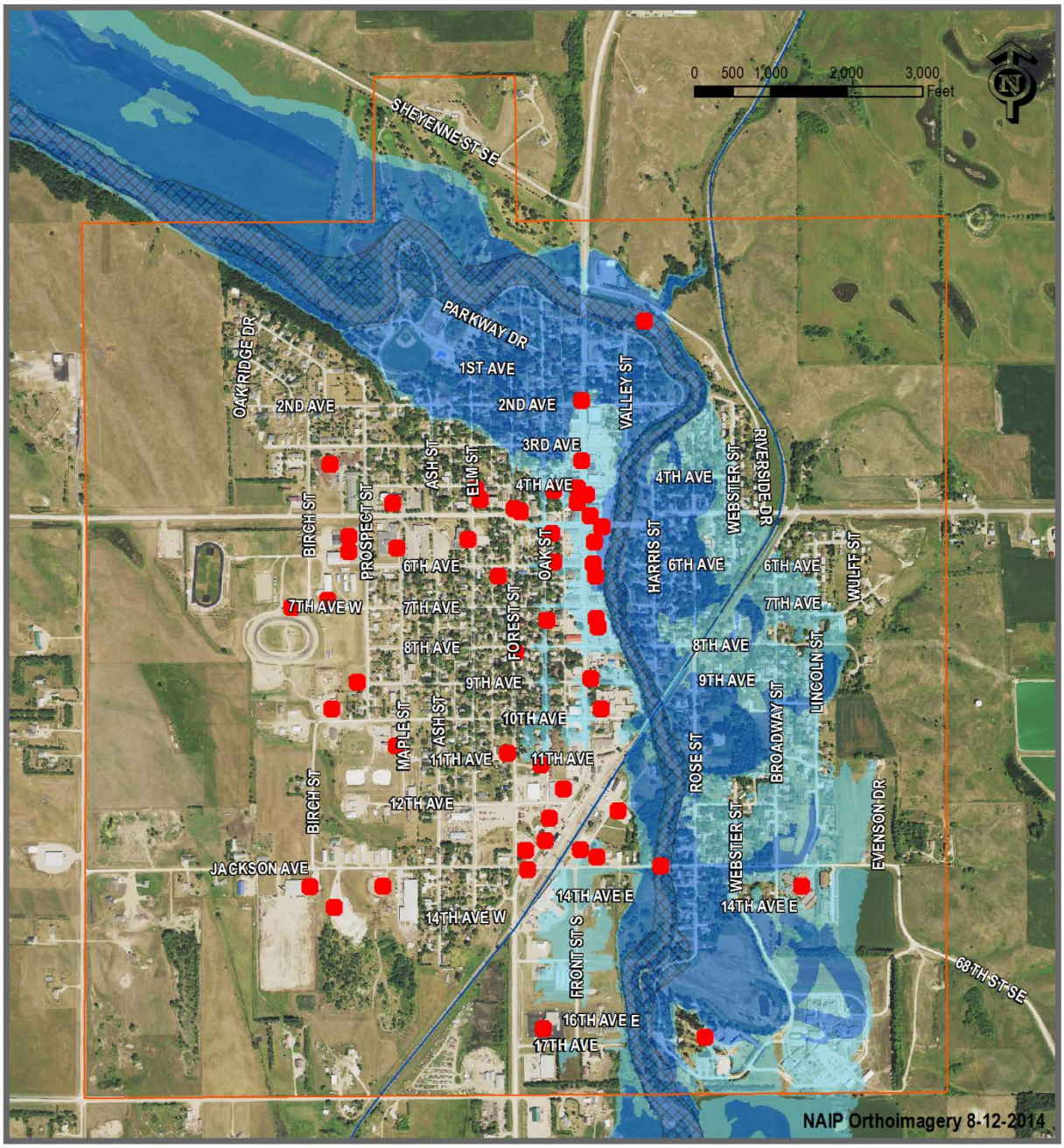


Figure 3.6
Flood Hazard Areas
Lisbon

FEMA Flood Zones
- Floodway
- Zones A & AE (1% Annual Chance)
- Zone X (0.2% Annual Chance)

- City Limits
- Key Facilities

Source:
FEMA DFIRM (effective date 1-19-2011)
ND GIS Hub

For Planning Purposes Only

KLJ

Vulnerability

Population

- Vulnerable population can be estimated by identifying the intersection of 2010 US Census Blocks and the FEMA DFIRM floodplain. Census blocks in rural areas are generally large, which makes detailed estimates difficult. For purposes of this analysis, only census blocks that have their centroid within the modeled floodplain are included; however, it is important to note that this analysis does not consider the exact location of residential structures within each census block. Vulnerable population is shown in Table 3.4.

- There are no identified floodplains in Elliott and Sheldon.

Table 3.4 – Ransom County Population within Flood Hazard Area

	Population in Flood Area	% of Total Population
Rural County	114	5.1%
Enderlin	15	1.7%
Fort Ransom	35	44.3%
Lisbon	661	30.4%
Total	*917*	*16.6%*

Note: Flood area from FEMA DFIRM (Zones A and AE)
Source: FEMA, US Census Bureau

Key Facilities

- Rural areas of the county:
  - Portions of Fort Ransom State Park are within the 100-year floodplain. The floodplain area is primarily preserved as open space and includes no permanent structures.
  - Dead Colt Creek Dam could be damaged during a significant flooding event.
  - The county contains two bridges that could be damaged during a significant flooding event: the Highway 27 bridge east of Lisbon and the 136th Avenue bridge east of Enderlin.

- Enderlin:
  - The Highway 46 bridge could be damaged in a significant flooding event.
  - Enderlin Dam could be damaged during a significant flooding event.
  - The city lagoons are within the 100-year floodplain. They have no history of flooding, but floodwaters have been very close in recent years.
  - Twenty-three additional key facilities are within the 500-year floodplain.

- Fort Ransom:
  - The Main Street bridge could be damaged during a significant flooding event.
  - The Dickey Rural Telephone offices and Fort Ransom Fire Department are within the 500-year floodplain.
- Lisbon:
  - Three major bridges, Jackson Avenue, Highway 27 (5th Avenue) and Highway 32, could be damaged during a significant flooding event. The 5th Avenue bridge is particularly vulnerable due to its low elevation and central location in the city.
  - Lisbon Dam could be damaged during a significant flooding event.
  - A portion of the Lisbon Fire Department building is within the 100-year floodplain.
  - Twelve additional key facilities are within the 500-year floodplain.

Property

- The statewide Multi-Hazard Mitigation Plan includes information about crop insurance payments from the USDA Risk Management Agency. Flood-related **crop insurance payments in Ransom County from 2003 to 2012 totaled $84 million**. Based on a statewide rate of 89 percent of crops being insured, **total estimated**

damages for the county were $94.4 million. Over a 10-year period this results in an annualized loss of $9.4 million.

- A review of NFIP policies in Ransom County from Table 3.2 provides a general estimate about the number and value of properties located in the floodplain. Note that only properties with an active mortgage and located in a SFHA (100-Year Floodplain) are required to acquire flood insurance, so some properties that do not have a mortgage and are located in a floodplain may not have flood insurance. Additionally, some policies are for areas that are not located within a floodplain. FEMA's nation-wide policy statistics indicate that approximately 30 percent of flood insurance policies are for properties that are not within a SFHA. Policies also vary based on types of coverage. Nation-wide, approximately 66 percent of flood insurance policies include building and contents, 32 percent include buildings only and two percent include contents only.
    - **The rural county has 15 NFIP properties with total insured value of $3,096,300**. Total structure value in rural areas of the county is $67,536,820, which suggests that approximately 3 to 10 percent of the rural county's total structure value is within a flood hazard area.
    - **Fort Ransom has four NFIP properties with total insured value of $664,200**. Total structure value in Fort Ransom is $5,312,100, which suggests that approximately 10 to 30 percent of the city's total structure value is within a flood hazard area.
    - **Lisbon has 84 NFIP properties with total insured value of $11,549,500**. Total structure value in Lisbon is $84,215,560, which suggests that approximately 10 to 30 percent of the city's total structure value is within a flood hazard area.
    - **Sheldon has one NFIP property with insured value of $175,000**. Total structure value in Sheldon is $3,582,100, which suggests that approximately 5 to 15 percent of the city's total structure value is within a flood hazard area.
    - **Enderlin has no NFIP properties**; however, the DFIRM shows that much of the town is within the 500-year floodplain (0.2 percent annual chance).
    - **Elliott and Sheldon are not located near identified floodplain areas**.
- The most damaging flooding event since 1996 was flooding in spring 2007 that resulted in $300,000 of damage to rural roads.
- Repetitive loss properties are tracked for communities that participate in the NFIP. **There are six repetitive loss properties in Ransom County.** Repetitive loss properties are addressed in the mitigation strategy found in Chapter 4.

Future Development

- All communities in the county with a history of flooding participate in the NFIP and have floodplain regulations that limit future growth into high risk areas.
- A levee construction project is currently underway to reduce flooding risk in Lisbon.

Existing Capabilities

- Ransom County, Enderlin, Fort Ransom, Lisbon and Sheldon have floodplain administrators and floodplain ordinances that are actively enforced.

Key Issues and Potential Action Items

- *Key Issue*: Ransom County experiences about two flood events per year. Flood events in the county include riverine flooding and overland flooding, both of which have a history of significant in recent decades.
    - *Potential Action Item*: Conduct NFIP workshop to educate public about benefits of flood insurance.
    - *Potential Action Item*: Improve natural stream function to reduce overflow volume in floodplain area.
    - *Potential Action Item*: Place riprap on river banks to help prevent erosion.
    - *Potential Action Item*: Construct additional flood protection levees to protect key facilities.

- *Potential Action Item*: Acquire and remove high risk properties in the floodplain.
- *Potential Action Item*: Consider joining the NFIP Community Rating System (CRS) program.
- *Potential Action Item*: Install sewer backflow prevention valves on select facilities.

- *Key Issue*: Many roads and bridges in the county are commonly washed-out or inundated during flooding events.
  - *Potential Action Item*: Adopt policy for minimum culvert size to help prevent washouts.
  - *Potential Action Item:* Elevate commonly-impacted roads or bridges.

- *Key Issue*: Ice jams have a history of damaging roads and structures in the county.
  - *Potential Action Item*: Restrict development in areas that are commonly inundated from ice jams but may not be included in the regulatory FIRM.
  - *Potential Action Item*: Construct ice control structures in strategic locations.

    Potential Action Item: Develop ice removal procedures.

Severe Summer Weather

All Jurisdictions:
Overall Risk: High
Probability: High (approximately 6 event days per year county-wide)
Magnitude: High (potential for damages totaling millions of dollars and many fatalities)

Seasonal Pattern: May - October
Duration: A few minutes to six hours
Speed of Onset: Quick
Primary Impacts: Agricultural loss (crops, livestock)
Economic loss
Human loss and injuries
Increased stress on medical services
Permanent loss of businesses
Power loss
Property damage or loss
Release of hazardous materials

Hazard Profile

The elements of severe summer weather include tornadoes, wind, hail and lightning.

Tornadoes are the most destructive weather phenomenon on earth. They can produce winds ranging from 65 MPH to more than 300 MPH, and pose severe danger to life and property. Peak tornado season is from June to August, and most occur during evening hours. Tornadoes typically travel from southwest to northeast at a speed between 30 and 70 MPH, and are generally on the ground for less than 10 minutes; however, tornado characteristics are highly unpredictable and can change rapidly.

Tornado severity is recorded with the Enhanced Fujita (EF) Scale, which replaced the Fujita (F) Scale in 2007. Wind speed estimates are determined by the damage created by a tornado. The EF Scale is shown below.

EF 0: 65-85 MPH	EF 3: 136-165 MPH
EF 1: 86-110 MPH	EF 4: 166-200 MPH
EF 2: 111-135 MPH	EF 5: Over 200 MPH

Most tornado fatalities are caused by flying debris. Wind, hail and scud clouds may mask the presence of a tornado and associated debris, which makes a public warning system critical for preventing loss of life and injuries.

Straight line winds are a common element of severe summer storms, and typically responsible for most damage associated with the storms. Strong winds often form on the leading edge of severe storms, and gusts more than 100 MPH are possible.

Hail presents a hazard for property, crops, livestock and occasionally human life. Hail events range from an area of a few acres up to hundreds of square miles, although small events are most common. Hailstones can fall to the surface at more than 100 MPH, and reach more than seven inches in diameter; however, most hailstones do not exceed two inches in diameter.

Lightning strikes pose multiple threats to life and property. A lightning strike can electrocute humans and animals, vaporize materials, cause fire and cause an electrical surge that may damage equipment. Human deaths from lightning strikes are somewhat uncommon. According to the National Oceanic and Atmospheric Administration, there were 12 recorded lightning fatalities in North Dakota from 1959-2013. Florida led the nation during that time period with 471 lightning fatalities. Livestock deaths and property damage are the most common lightning-related threats in North Dakota.

Local Risk

- Severe summer weather events in Ransom County are summarized in Table 3.5. **Hail and wind events both occur more than once per year on average**. Summer weather classification criteria and a detailed listing of events can be found in Appendix C.

Table 3.5 - Severe Summer Weather Events in Ransom County, 1996-2013

Summer Storm Events	Event Days*	Annual Probability	Event Days per Year
Total	*111*	*616.7%*	*6.2*
Hail	61	338.9%	3.4
High/Thunderstorm Wind	28	155.6%	1.6
Tornado/Funnel Cloud	18	100.0%	1.0
Lightning	2	11.1%	0.1
Excessive Heat	1	5.6%	0.1

**Number of days with a reported event*
Source: National Climatic Data Center Storm Events Database

- A severe hail event is defined as a storm producing hailstones greater than 0.75 inches in diameter. According to the National Weather Service, **the largest hailstone recorded in Ransom County from 1996-2013 is 2.25 inches in diameter**, which occurred in July 1998. **July is the most common month for severe hail in the county, accounting for 33 percent of all reported hail events between 1996 and 2013**. Common impacts from hail include broken windows, damaged shingles, dented or broken gutters, and damaged vehicles. Heavy hail events can also injure livestock and destroy crops.

- A severe wind event is defined as gusts of at least 50 kts or 58 MPH. According to the National Climatic Data Center **the greatest straight-line wind gust recorded in Ransom County from 1996-2013 is 65 kts (74 MPH)**, which occurred at Lisbon in June 2005. **June is the most common month for high wind in the county, accounting for 39 percent of all reported wind events between 1996 and 2013**. Common impacts from severe winds include broken trees and limbs, damaged agricultural structures and damaged power poles.

- Tornadoes are rare in the county, as shown in Figure 3.7**.** There were 18 tornadoes/funnel clouds reported in the county between 1996 and 2013; however, a majority were rated at EF0 or EF1 meaning they caused minimal damage to property. A few tornadoes, described later in this profile, caused property damage in the county. The impact would be devastating if a large tornado were to directly strike a city.

- Anecdotal evidence from the Planning Team and public suggests that **lightning presents an ongoing risk to people and property in the county**.

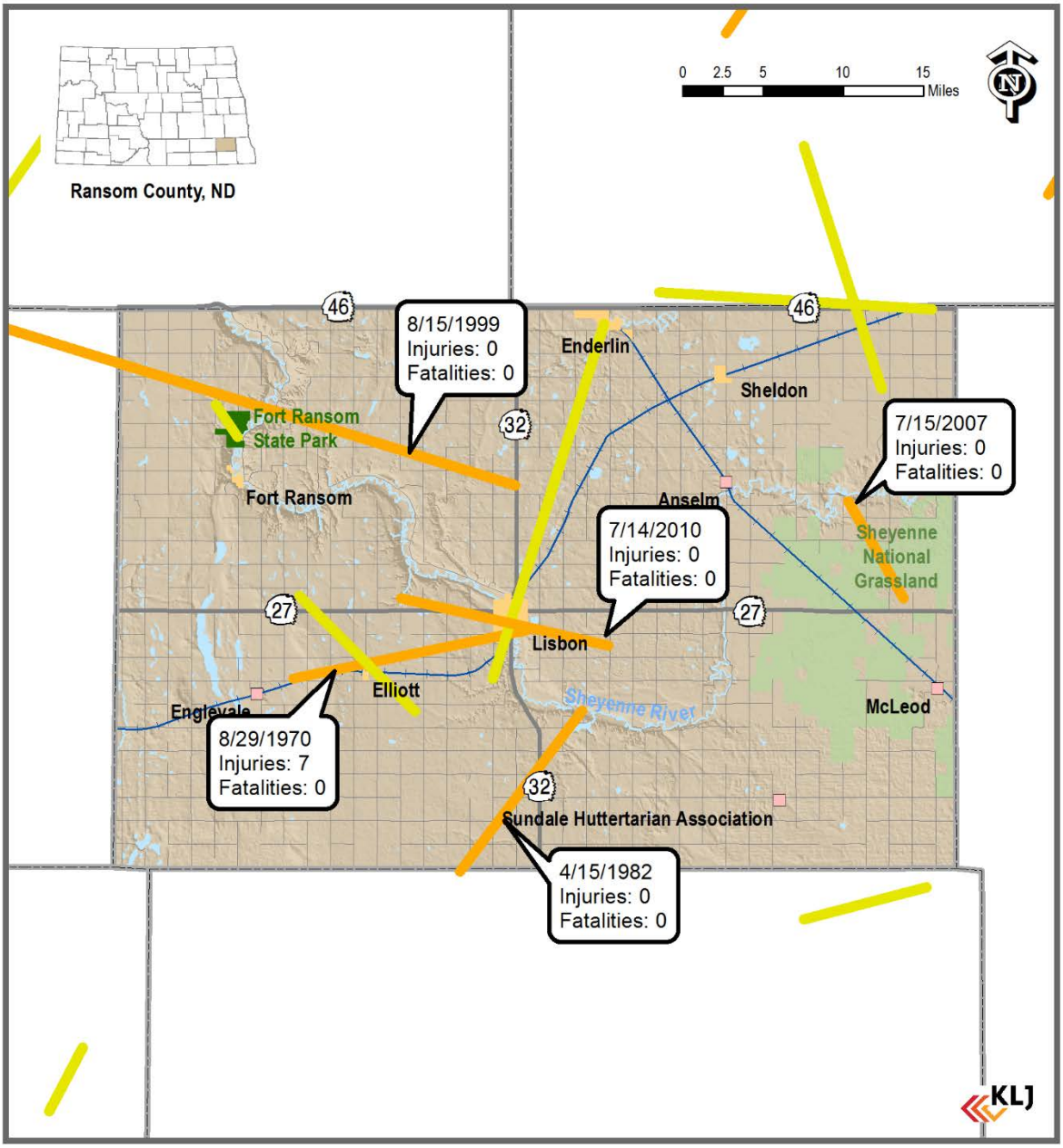


Figure 3.7
Tornado Tracks
1955-2011

Note:
Tornadoes after 2008 are categorized using the Enhanced Fujita Scale

Source:
NWS Storm Prediction Center
Tornado History Project
ND GIS Hub

For Planning Purposes Only

Fujita Scale

1
2
3
4
5

- The National Climatic Data Center Storm Events Database includes brief summaries of significant storm events. A selection of recent summer storm events within Ransom County are summarized below.
    - *July 18, 1998*. An F1 tornado touched down near a farmstead, damaging several buildings. One barn was destroyed and 60 hogs inside were killed. Total estimated damage was $250,000.
    - *August 15, 1999*. An F2 tornado touched down three miles northeast of Fort Ransom. Five barns were completely destroyed, thousands of large trees were broken and a feeding car was thrown half a mile. Total damages were estimated at $1.2 million.
    - *June 17, 2001*. Lightning struck a home in Lisbon, starting a fire in the attic.
    - *October 29, 2004*. Lightning struck the side of a house in Lisbon. The strike blew the telephone box off the side of the house and knocked a hole in the foundation.
    - *June 20, 2005*. Several large trees were blown down around Sheldon, and one tree fell on a house. An F1 tornado near Fort Ransom destroyed a metal machine shed.
    - *June 17, 2007*. An EF0 tornado touched down near Enderlin and tore metal roofing off the airport hangar.
    - *August 14, 2008*. Several sections of cropland in Northland Township received damage from hail and wind. Total crop damages were estimated at $500,000.
    - *July 14, 2010*. An EF2 tornado touched down near Lisbon. A barn was ripped off its foundation and destroyed, and a steel shop was blown apart. Several wooden power poles were snapped east of Lisbon. Many homes and businesses within the city had extensive roofing damage. Total property and crop damages were estimated at $2.4 million.

Vulnerability

Population

- The entire population is vulnerable to a severe summer storm event. Residents living in homes without a basement are particularly vulnerable to tornado and wind events. Examples include residents living in mobile homes, recreational vehicles or traditional homes without basements. According to the most recent American Community Survey estimates **there are approximately 160 occupied mobile homes in the county**. Assuming the county-wide median housing size of 2.32 persons per unit, there are approximately 370 persons with an increased vulnerability for summer storm. According to the most recent American Community Survey Estimates, approximately 80 percent of the county's mobile home residents are in unincorporated areas of the county, with the remaining 20 percent split between Elliott, Enderlin, Lisbon and Sheldon.

- Dead Colt Creek Reservoir includes a recreation area that is a popular gathering place in the county. The recreation area includes primitive campsites and 43 recreational vehicle sites. It also features a pavilion than can accommodate more than 300 people. The area has concrete bathrooms that can be used as a shelter during storm events, although the bathrooms may not be large enough to accommodate everyone if hundreds of people are in the area. The reservoir is located approximately seven miles southeast of Lisbon and is not within range of any warning sirens.

- Fort Ransom State Park features 30 full-service campsites. The park has a visitor center that can be utilized as a storm shelter, and the siren from nearby Fort Ransom can be heard in the park.

Key Facilities

- All key facilities are vulnerable to a severe summer storm event. Facilities with an increased vulnerability include schools, special care centers and event facilities. Elliott and Sheldon do not have any identified key facilities with an increased vulnerability to severe summer storms.

- Rural areas of the county:
    - The Sundale Huttertarian Association includes a school facility.
    - The Ransom County 911 tower, KQLX radio tower or KVLY television tower could be damaged by a wind, hail, lightning or tornado event.
    - There are several substations throughout the county that could be damaged by a lightning event.
    - The county has four rural churches.

- Enderlin:
  - The city auditorium and Hendrickson Field are often used as a gathering spaces.
  - Enderlin Public School has approximately 325 students according to the North Dakota Department of Public Instruction.
  - Maryhill Manor is a 54-bed nursing home.
  - The city has four churches.

- Fort Ransom:
  - Fort Ransom School has approximately 20 students according to the North Dakota Department of Public Instruction.
  - Fort Ransom Senior Citizens is a gathering space.
  - The city has one church.

- Lisbon:
  - The city has three nursing/retirement homes with a total of approximately 225 beds.
  - The Expo Center is a gathering space.
  - The city has three schools with approximately 615 students according to the North Dakota Department of Public Instruction.
  - The city has eight churches.

Property

- The 2014 statewide Multi-Hazard Mitigation Plan documents claims paid to cover damages on local government facilities and property insured by the state. From 1989 to 2013, claims were paid for the following hazards in Ransom County.
  - Hail: $72,804
  - Lightning: $2,014
  - Wind: $46,776

- The 2014 statewide Multi-Hazard Mitigation Plan also documents damage claims for public school facilities. From 1989 to 2013, claims were paid for the following hazards in Ransom County.
  - Hail: $14,573
  - Lightning: $0
  - Wind: $450

- The most damaging summer storm event recorded by the National Climatic Data Center since 1996 is a tornado near Lisbon on July 14, 2010 that caused an estimated $2.4 million in damage.

- A worst-case scenario for summer storm structure damage is a direct hit of a large tornado on a city or populated rural area. Estimates for an event of that magnitude are presented in Table 3.6. Note that many properties are not given an assessed value, which means that structure estimates contained in the table are generally lower than real-world exposure.

Future Development

- Enderlin and Lisbon have adopted the state building code. The North Dakota State Building Code consists of the 2012 International Building Code, International Residential Code, International Mechanical Code and International Fuel Gas Code published by the International Code Council. The code includes a provision that buildings must be constructed to withstand a wind load of 75 MPH constant velocity and three-second gusts of 90 MPH.

Existing Capabilities

- Each city has at least one tornado siren. Lisbon has three sirens. Fort Ransom's siren can be heard at Fort Ransom State Park.

Table 3.6 - Ransom County Tornado Damage Scenarios				
Tornado in Elliott				
Land Use	**Structure Value**	**Area Affected**	**Damage Extent**	**Total Damages**
Residential	$320,400	50%	80%	$128,160
Other	$459,000	50%	80%	$183,600
Total	$779,400	50%	80%	*$311,760*
Tornado in Enderlin				
Land Use	**Structure Value**	**Area Affected**	**Damage Extent**	**Total Damages**
Residential	$17,426,760	50%	80%	$6,970,704
Other	$41,923,000	50%	80%	$16,769,200
Total	$59,349,760	50%	80%	*$23,739,904*
Tornado in Fort Ransom				
Land Use	**Structure Value**	**Area Affected**	**Damage Extent**	**Total Damages**
Residential	$4,413,200	50%	80%	$1,765,280
Other	$898,900	50%	80%	$359,560
Total	$5,312,100	50%	80%	*$2,124,840*
Tornado in Lisbon				
Land Use	**Structure Value**	**Area Affected**	**Damage Extent**	**Total Damages**
Residential	$62,041,260	50%	80%	$24,816,504
Other	$22,174,300	50%	80%	$8,869,720
Total	$84,215,560	50%	80%	*$33,686,224*
Tornado in Sheldon				
Land Use	**Structure Value**	**Area Affected**	**Damage Extent**	**Total Damages**
Residential	$2,029,800	50%	80%	$811,920
Other	$1,552,300	50%	80%	$620,920
Total	$3,582,100	50%	80%	*$1,432,840*
Tornado in Rural Area of County				
Land Use	**Structure Value**	**Area Affected**	**Damage Extent**	**Total Damages**
Residential	$53,777,520	5%	80%	$2,151,101
Other	$13,759,300	5%	80%	$550,372
Total	$67,536,820	5%	80%	*$2,701,473*

Source: Ransom County Tax Equalization Director (2014 Property Values)

Key Issues and Potential Action Items

- *Key Issue*: Ransom County averages approximately six days per year with a summer storm event. Severe wind and hail are the most common summer storm events in the county, and tornadoes are also a possibility in the region.
  - *Potential Action Item*: Cover windows in select key facilities with shatter-resistant film.
  - *Potential Action Item*: Offer information about weather-resistant building best practices.
  - *Potential Action Item*: Install and maintain surge protection on critical equipment.

Severe Winter Weather

All Jurisdictions:
Overall Risk: High
Probability: High (approximately 8 event days per year county-wide)
Magnitude: High (potential for damages totaling millions of dollars with fatalities)

Seasonal Pattern: October - April
Duration: One to three days
Speed of Onset: Quick, with a potential warning time of several days
Primary Impacts:
Agricultural loss (crops, livestock)
Blocked roads
Economic loss
Exposure risks to people, pets, livestock and wildlife
Freezing pipes
Human loss and injuries
Increased stress on medical services
Power loss
Property damage or loss
School closure
Vehicle accidents

Hazard Profile

Elements of severe winter weather include blizzards, heavy snow, ice storms and extreme cold. These elements can produce life-threatening situations and are a threat to people and property.

A blizzard is defined by the National Weather Service as a storm producing winds of 35 MPH or more, with snow and/or blowing snow reducing visibility to less than 0.25 miles for at least three hours. A closely related weather event known as a surface blizzard occurs when heavy winds blow snow that has already fallen. Both traditional and surface blizzards can reduce visibility, disrupting transportation and communication systems in the area.

Heavy snow is defined as six or more inches of snow in 12 hours, or eight or more inches of snow in 24 hours. Heavy snow can damage property and make roads impassable for extended periods.

An ice storm produces heavy and damaging accumulations of ice due to a combination of rain and below freezing surface temperatures. Accumulated ice can bring down trees and power lines and poses a threat to motorists, pedestrians and livestock.

Extreme cold is a common occurrence in North Dakoa during the winter months. Cold temperatures are amplified when combined with wind, creating dangerous wind chills. Exposure to extreme cold temperatures and wind chill can damage tissue (frostbite) and lower the body's core temperature (hypothermia), presenting a risk to both humans and livestock.

Local Risk

- Ransom County was included in four winter storm-related Presidential Disaster Declarations between 1989 and 2014.

- A summary of the severe winter weather events in Ransom County is shown in Table 3.7. On average, **a severe winter weather event occurs in the county approximately eight days per year**. Generally classified "winter storm" and blizzard events are most common. Winter weather classification criteria and a detailed listing of events can be found in Appendix C.

Table 3.7 - Severe Winter Weather Events in Ransom County, 1996-2013			
Winter Storm Events	**Event Days***	**Annual Probability**	**Event Days per Year**
Total	*137*	*761.1%*	*7.6*
Winter Storm	38	211.1%	2.1
Blizzard	37	205.6%	2.1
Extreme Cold/Wind Chill	27	150.0%	1.5
Heavy Snow	17	94.4%	0.9
High Wind	13	72.2%	0.7
Ice Storm	5	27.8%	0.3

**Number of days with a reported event*
Source: National Climatic Data Center Storm Events Database

- The most common impact identified during Planning Team and public meetings was **road closure.** There is one living snow fence near Enderlin.

- **Power loss happens occasionally** throughout the county during severe winter storms, but electricity is generally restored quickly. The most severe power outage in recent memory was following a winter storm in 1997 when the **county lost power for a week**.

Vulnerability

Population

- Residents living in mobile homes, recreational vehicles, or poorly insulated homes may find it **difficult to adequately heat their homes during cold temperature events**. According to the most recent American Community Survey estimates **there are approximately 160 occupied mobile homes in the county**. Assuming the county-wide median housing size of 2.32 persons per unit, there are approximately 370 persons with an increased vulnerability for winter storm. According to the most recent American Community Survey Estimates, approximately 80 percent of the county's mobile home residents are in unincorporated areas of the county, with the remaining 20 percent split between Elliott, Enderlin, Lisbon and Sheldon.

- Wind, ice, heavy snow and cold temperatures can combine to create hazardous conditions and **"trap" residents in their homes without heat or electricity**. Elderly residents may be especially vulnerable to this hazard as they are more likely to have limited mobility, especially in the event of hazardous road conditions. According to the most recent American Community Survey estimates, approximately **1,125 residents in the county are 65 years of age or older.** Five residents age 65 or older live in Elliott, 245 in Enderlin, ten in Egeland, 30 in Fort Ransom, 420 in Lisbon and 20 in Sheldon; the remainder live in rural areas of the county.

- **People required to travel on a daily basis face increased road hazards**. According to the Job Service North Dakota Labor Market Information Center, **the labor force in Ransom County is approximately 2,700 people**. The average commute time to work for residents in the county as recorded in the most recent American Community Survey is 18 minutes.

Key Facilities

- A winter storm event that "traps" fire and ambulance responders within the facility would severely limit the emergency response capability of the County.

- A severe winter storm event would most likely require closure of schools. A winter storm event that begins mid-day could present issues for students leaving school.

- Power outages and loss of heating could impact the elderly and populations that require assistance for daily living who are located in special care facilities.

- Rural areas of the county:
  - The Sundale Huttertarian Association includes a school facility.
  - Response capabilities of the Verona Fire Department could be inhibited by a winter storm.

- Enderlin:
  - Enderlin Public School has approximately 325 students according to the North Dakota Department of Public Instruction.
  - Maryhill Manor is a 54-bed nursing home. The facility has a backup generator.
  - Response capabilities of the Enderlin Fire Department could be inhibited by a winter storm. The fire hall has a backup generator.

- Fort Ransom:
  - Fort Ransom School has approximately 20 students according to the North Dakota Department of Public Instruction.
  - Response capabilities of the Fort Ransom Fire Department could be inhibited by a winter storm.

- Lisbon:
  - The city has three nursing/retirement homes with a total of approximately 225 beds. Each nursing home has a backup generator.
  - The city has three schools with approximately 615 students according to the North Dakota Department of Public Instruction.
  - Response capabilities of the Lisbon Fire Department, Ambulance Service and law enforcement could be inhibited by a winter storm.

- Sheldon:
  - Response capabilities of the Sheldon Fire Department could be inhibited by a winter storm. The fire hall has a backup generator.

- No key facilities in Elliott are directly impacted by severe winter weather.

Property

- It is difficult to estimate the impact of winter storms on property in the county. **The most likely damages involve roof collapse due to heavy snow loads and vehicle accidents**. A winter storm can also result in an **increased risk of structure fire due to use of portable heaters and fireplaces** during events that involve extremely cold temperatures.

- A severe winter storm can cause significant livestock fatalities. According to the 2012 Census of Agriculture, the **market value of livestock in Ransom County was $26 million**. Losses vary based on storm severity and duration, but losses to unprotected livestock can be significant following a major storm event. Winter storms in the spring season have the potential to affect calving operations.

Future Development

- The potential vulnerability to winter weather in the county is not expected to change in the foreseeable future.

Existing Capabilities

- Electricity is generally restored quickly in the event of power loss. Facilities with backup generators include the Enderlin Fire Hall, Sheldon Fire Hall, hospital, North Dakota Veterans Home and all nursing homes.

- Snow removal on rural and city roads is timely and effective.

Key Issues and Potential Action Items

- *Key Issue*: Ransom County averages approximately eight days per year with a winter storm event. Severe winter weather events in the county include winter storm, high wind, heavy snow, blizzard, extreme cold/wind chill and ice storm.
    - *Potential Action Item*: Coordinate with landowners to identify strategic locations for constructing snow fences.
    - *Potential Action Item*: Continue educating residents about winter storm safety.

- *Key Issue*: A winter storm event that causes a power outage may make it difficult for residents to heat their homes. Elderly residents and residents in mobile homes are the most vulnerable to extreme cold temperatures. Approximately 1,500 residents in the county are elderly or live in a mobile home. Power loss occasionally occurs in the county during winter storm events.
    - *Potential Action Item*: Identify emergency warming shelter(s) and acquire back-up generator(s) to heat shelters and provide electricity during a winter storm event. Promote shelters so residents are aware of their availability.
    - *Potential Action Item*: Encourage utility provider to bury electric power lines when undergoing upgrades or repair.

Wildland Fire

Rural County:
Overall Risk: Moderate
Probability: Moderate (six fires greater than 100 acres from 1992 to 2012)
Magnitude: Moderate (a large wildfire could potentially cause damages totaling millions of dollars and put human lives at risk; however, the largest wildfire reported from 1992 to 2012 was 943 acres)

Elliott:
Overall Risk: Moderate
Probability: Low (no history of wildfire impacting city)
Magnitude: High (estimated 75 percent of city could be directly impacted)

Enderlin:
Overall Risk: Moderate
Probability: Low (no history of wildfire impacting city)
Magnitude: High (estimated 20 percent of city could be directly impacted)

Fort Ransom:
Overall Risk: Moderate
Probability: Low (no history of wildfire impacting city)
Magnitude: High (estimated 75 percent of city could be directly impacted)

Lisbon:
Overall Risk: Moderate
Probability: Low (no history of wildfire impacting city)
Magnitude: High (estimated 10 percent of city could be directly impacted)

Sheldon:
Overall Risk: Moderate
Probability: Low (no history of wildfire impacting city)
Magnitude: High (estimated 30 percent of city could be directly impacted)

Seasonal Pattern: March - November
Duration: Hours to weeks
Speed of Onset: Rapid
Primary Impacts: Agricultural loss (crops, livestock)
Blocked roads
Economic loss
Explosion
Hazardous materials release
Human loss and injuries
Increased stress on medical services
Localized evacuation
Property damage or loss
Reduced air quality

Hazard Profile

A wildfire is an unplanned fire, a term which includes grass fires, forest fires and scrub fires either human-caused or natural in origin. In 2013 an estimated 4.3 million acres burned (47,579 fires) across the United States due to wildfires, according to the National Interagency Fire Center. This number is well below the 10-year average, due in part to weather conditions. Although there were fewer acres burned and fewer fires, 2013 was one of the deadliest years for firefighters with the loss of 34 lives. Many of the fires occurred in or near urban/suburban areas.

Wildfires pose increasing threats to people and their property as communities develop in the wildland-urban interface. The wildland-urban interface refers to areas where structures and other human development meet or intermingle with undeveloped wildland or vegetative fuels. The threat exists anywhere that structures are located close to natural vegetation and where fire can spread from vegetation to structures, or from structures to vegetation.

The three major factors that affect the occurrence and severity of wildfires are the fuels supporting the fire, the weather conditions during a fire event and the topography in which the fire is burning. These factors affect and increase the likelihood of a fire starting, the speed and direction in which a fire will travel, the intensity at which it burns, and the ability to control and extinguish it. At the landscape level, both topography and weather are beyond our control. Fuel is the only factor influencing fire behavior that humans have the ability to manage.

Local Risk

- Figure 3.8 shows fuel types in Ransom County. Predominate fuel types are classified using the 13 standard fuel models for fire behavior by Anderson. **Much of the county is agricultural land, which the Anderson models do not consider to be a significant fuel**; however, in times of drought or during harvest season agricultural fields may present a wildfire risk. **The most prevalent fuels on the county are of the grass and brush groups**. These fuels generally burn with a low intensity, but can spread quickly.

- Figure 3.8 also shows incidence of wildfires over 100 acres. The information is from the Interagency Fire Program Analysis fire-occurrence database, compiled by Karen C. Short of the USDA Forest Service, Rocky Mountain Research Station. The database is sourced from multiple reporting agencies; however, due to reporting limitations, it should not be considered an all-inclusive list. According to the database, **Ransom County had 21 wildfires (of any size) between 1992 and 2012 for a total of 2,190 burned acres.** The average fire size was 104 acres, and 11 fires were less than ten acres. **Six fires were greater than 100 acres, with the largest being 943 acres.** Five out of six fires greater than 100 acres were located in Sheyenne National Grassland.

- There were **no wildfires greater than 1,000 acres** in Ransom County reported to the National Interagency Fire Center between 1980 and 2012.

- In 2009 the North Dakota Forest Service developed a wildfire risk assessment for every county in the state based on wildfire occurrence, fire department response capabilities and weather. The assessment ranked Ransom County as having a low risk for wildfire.

- The wildland-urban interface identifies risk areas where fire can spread from vegetation to structures, or from structures to vegetation. **Any areas where structures are located within or adjacent to wildland environments can be included within the wildland-urban interface**. This includes all rural structures in Ransom County and structures along the edges of each city.

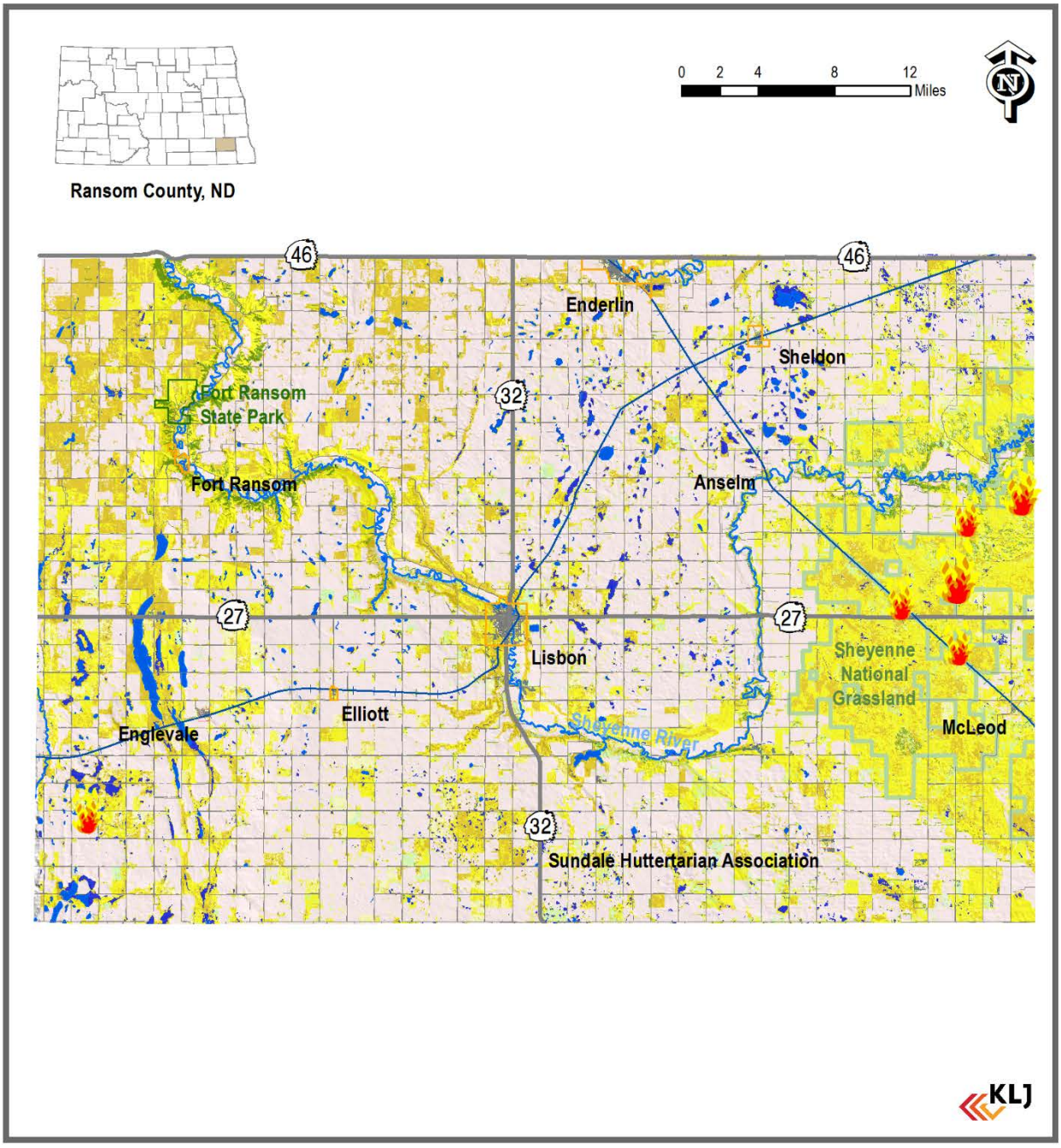


Figure 3.8
Wildfire Fuels & Incidence

13 Anderson Wildfire Fuel Models

Source:
USGS LANDIRE 2010 (fuels)
Karen C. Short, Fire Program Analysis fire-occurrence database (incidence)
ND GIS Hub

For Planning Purposes Only

Grass Fuels
- 1: Short grass (1 foot)
- 2: Timber (grass and understory)
- 3: Tall grass (2.5 feet)

Brush Fuels
- 5: Brush (2 feet)
- 6: Dormant brush, hardwood slash

Timber Fuels
- 8: Closed timber litter
- 9: Hardwood litter

Not Considered a Fuel Source
- Urban
- Agriculture
- Water
- Barren

Wildfires >100 Acres (1992-2012)

Vulnerability

Population

- Residents of non-urbanized areas (in the wildland-urban interface) are generally at a higher risk of wildfire. According to 2013 Census Bureau estimates, there are approximately 5,516 residents in the county; of these, 2,231 live outside of an incorporated city and are at increased vulnerability to wildfire. Assuming approximately 10 percent of residents in incorporated cities live along or near the wildland-urban interface, 330 additional residents are vulnerable to wildfire. Using these estimates, **approximately 2,560 residents (46 percent of total population) in the county are vulnerable to wildfire.**

Key Facilities

- Although nearly all of the county's key facilities are within urbanized areas, which are considered defensible space for wildfire, **several key facilities are located along the edges of cities near the wildland-urban interface or in rural areas**. Facilities within 100 yards of the edge of town, or within non-urbanized rural areas are listed below.

- Rural areas of the county:
  - Six electric substations
  - Three churches
  - NDDOT Shop
  - Four communications towers
  - Sundale Huttertarian Association

- Elliott:
  - Farmer's Union Oil Company

- Enderlin:
  - Archer Daniels Midland
  - Municipal Airport

- Fort Ransom:
  - Fort Ransom School
  - Senior Citizens Center
  - Standing Rock Lutheran Church

- Lisbon:
  - North Dakota Veterans Home

- Sheldon:
  - Farmer's Elevator
  - The abandoned school on the edge of town could be a target for arson

Property

- The statewide Multi-Hazard Mitigation Plan includes information about crop indemnity payments from the USDA Risk Management Agency. There were **no wildfire-related crop indemnity payments** in Ransom County between 2003 and 2012.

- The largest wildfire in Ransom County reported to the Interagency Fire Program Analysis Fire-Occurrence Database from 1992 to 2012 was 943 acres.

- There is no instance of recorded widespread property loss in Ransom County due to wildfire. Table 3.8 shows scenarios for a wildfire near each city and a rural area of the county. Affected areas for each city include an estimated wildland-urban interface area along the edges of the city's urbanized area. Smaller communities have a larger proportion of their properties along the wildland-urban interface because they have a smaller

centralized urban area. Note that this analysis does not include infrastructure damage or the cost of suppression.

Table 3.8 – Ransom County Wildfire Scenarios				
Wildfire near Elliott				
Land Use	**Structure Value**	**Area Affected**	**Damage Extent**	**Total Damages**
Residential	$320,400	75%	80%	$192,240
Other	$459,000	75%	80%	$275,400
Total	$779,400	75%	80%	*$467,640*
Wildfire near Enderlin				
Land Use	**Structure Value**	**Area Affected**	**Damage Extent**	**Total Damages**
Residential	$17,426,760	20%	80%	$2,788,282
Other	$41,923,000	20%	80%	$6,707,680
Total	$59,349,760	20%	80%	*$9,495,962*
Wildfire near Fort Ransom				
Land Use	**Structure Value**	**Area Affected**	**Damage Extent**	**Total Damages**
Residential	$4,413,200	75%	80%	$2,647,920
Other	$898,900	75%	80%	$539,340
Total	$5,312,100	75%	80%	*$3,187,260*
Wildfire near Lisbon				
Land Use	**Structure Value**	**Area Affected**	**Damage Extent**	**Total Damages**
Residential	$62,041,260	10%	80%	$4,963,301
Other	$22,174,300	10%	80%	$1,773,944
Total	$84,215,560	10%	80%	*$6,737,245*
Wildfire near Sheldon				
Land Use	**Structure Value**	**Area Affected**	**Damage Extent**	**Total Damages**
Residential	$2,029,800	30%	80%	$487,152
Other	$1,552,300	30%	80%	$372,552
Total	$3,582,100	30%	80%	*$859,704*
Wildfire in Rural Area of County				
Land Use	**Structure Value**	**Area Affected**	**Damage Extent**	**Total Damages**
Residential	$53,777,520	5%	80%	$2,151,101
Other	$13,759,300	5%	80%	$550,372
Total	$67,536,820	5%	80%	*$2,701,473*

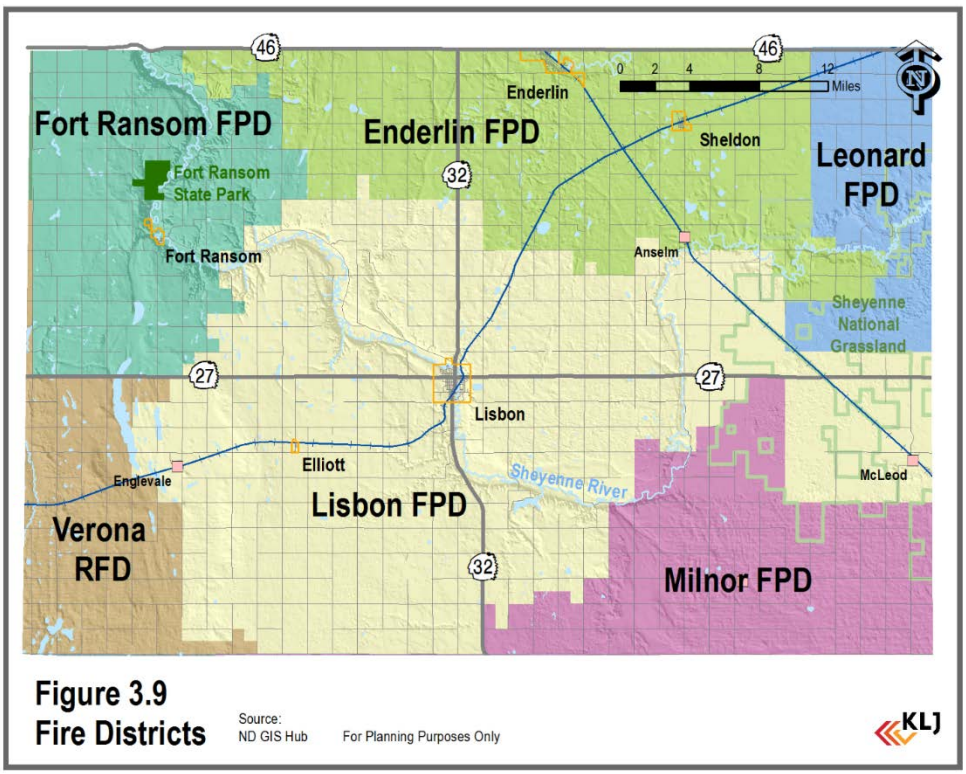
Source: Ransom County Tax Equalization Director

Future Development

- The Ransom County zoning regulations include enhanced provisions for wildfire hazard areas. The regulations include defensible space standards, road access and adequate water supply.

Existing Capabilities

- The Ransom County zoning regulations include enhanced provisions for wildfire hazard areas.
- The Lisbon Fire Protection District conducts fire safety education at the schools.
- Several fire vehicles are stationed in the McLeod area to assist with fire suppression.
- Wildfire response in the county is coordinated by several fire districts. District boundaries are shown in Figure 3.9.
    - Enderlin Fire Protection District
    - Fort Ransom Fire Protection District
    - Leonard Fire Protection District
    - Lisbon Fire Protection District
    - Milnor Fire Protection District
    - Verona Rural Fire Department



Key Issues and Potential Action Items

- *Key Issue*: Ransom County experiences a wildfire greater than 100 acres approximately once every three to four years. Most large wildfires are located in Sheyenne National Grassland and cause minimal property damage.
    - *Potential Action Item*: Perform fuel reduction activities in high-risk rural areas.
    - *Potential Action Item*: Educate residents about defensible space best practices.
    - *Potential Action Item*: Encourage the use of non-combustible materials (stone, brick, stucco, etc.) for new construction in wildfire hazard areas.
    - *Potential Action Item*: Administer Firewise program and implement fuel reduction activities during wildfire season.
    - *Potential Action Item*: Remove abandoned properties that could be a target for arson.

Communicable Disease

All Jurisdictions:
Overall Risk: Low
Probability: Low (no incidence of major disease outbreak in recent decades)
Magnitude: Moderate (approximately 25 percent of population is under 18 or over 65 years of age, fatality rates for most modern diseases in North Dakota are significantly lower than one percent, agricultural losses could total millions of dollars)

Seasonal Pattern: None
Duration: Varies
Speed of Onset: Quick
Primary Impacts: Agricultural loss (crops, livestock)
Economic loss
Human loss and injuries
Increased stress on medical services
Localized evacuation
School closure

Hazard Profile

Communicable disease is an illness caused by an infectious agent such as bacteria, virus, fungi, parasites or toxin. Communicable diseases of particular concern are those that can lead to the loss of human life or widespread loss of crops and livestock. A severe communicable disease incident has potential for catastrophic effects on human populations and the economy.

There are numerous ways for communicable disease to spread among humans: physical contact with an infected person, contact with contaminated object, bites from animals or insects carrying the disease, or air travel. A widespread occurrence of infection in a community is called an epidemic. Epidemics may lead to quarantines, school and business closures, and stress on medical facilities. A widespread epidemic (often countrywide or worldwide in scope) is referred to as a pandemic. Perhaps the most notable pandemic in the modern era was the Spanish Influenza in 1918. The disease killed an estimated 20 to 40 million people worldwide, including 675,000 Americans. In North Dakota, about 2,700 people died and 6,000 were infected.

Animal and plant diseases can harm the economy through the loss of livestock and crops. Widespread plant and animal diseases can lead to food shortages. Some animal diseases may cause sickness in humans if proper precautions are not taken with infected animals. Diseases that are a threat to cattle include tuberculosis and anthrax. According to the North Dakota Department of Health, there has been one report of tuberculosis in cattle in recent years. Anthrax is much more common, with 185 cases between 1989 and 2010; a majority of those cases occurred in 2005 when there were 109 reports. Plant diseases in North Dakota include karnal bunt disease, black stem rust race Ug99, and emerald ash borer.

Local Risk

- Populations throughout the world are susceptible to epidemics and national pandemics, and Ransom County residents are no exception, although **the generally low population density of the area makes rapid transmission of communicable disease less likely**.

- There is **no recent history of major crop, animal or human epidemic disease or contamination** in the county.

Vulnerability

Population

- Elderly and young persons are most at risk for communicable disease.

- Approximately **20.4 percent, or 1,125 of the county's residents, are 65 years of age or older**. Five residents age 65 or older live in Elliott, 245 in Enderlin, ten in Egeland, 30 in Fort Ransom, 420 in Lisbon and 20 in Sheldon; the remainder live in rural areas of the county.
- Approximately **5.7 percent, or 315 of the county's residents, are under five years of age**. Forty residents under five years of age live in Enderlin, 245 in Enderlin, 125 in Lisbon, five in Sheldon and less than five in Elliott and Fort Ransom; the remainder live in rural areas of the county.

- According to the North Dakota Department of Health, the death rate for foodborne illnesses in the state was 31.7 per 100,000 population in 2011. Since 2005, the lowest death rate was 55 and the highest was 78. **The death rate of 78 per 100,000 equates to approximately four foodborne illness deaths in Ransom County over a one-year period.**

- According to the North Dakota Department of Health, the death rate for influenza in the state was 55 per 100,000 population in 2011. Since 2005, the lowest death rate was 27.1 and the highest was 61.7. **The death rate of 61.7 per 100,000 equates to approximately three influenza deaths in Ransom County over a one-year period.**

- The Centers for Disease Control and Prevention (CDC) estimates that a medium-level influenza pandemic would result in 30 percent ill, 0.8 percent of ill requiring hospitalization and 0.2 percent of ill dying from the disease. In Ransom County this would equate to **1,655 ill, 13 requiring hospitalization and three deaths from a medium-level influenza pandemic**.

Key Facilities

- Assisted living facilities, hospitals and schools have an increased vulnerability to communicable disease due to the high density of occupants.

- Rural areas of the county:
  - The Sundale Huttertarian Association includes a school facility.
  - The Ransom County 911 tower, KQLX radio tower or KVLY television tower could be damaged by a wind, hail, lightning or tornado event.
  - There are several substations throughout the county that could be damaged by a lightning event.
  - The county has four rural churches.

- Enderlin:
  - Enderlin Public School has approximately 325 students according to the North Dakota Department of Public Instruction.
  - Maryhill Manor is a 54-bed nursing home.

- Fort Ransom:
  - Fort Ransom School has approximately 20 students according to the North Dakota Department of Public Instruction.
  - Fort Ransom Senior Citizens is a gathering space for vulnerable elderly residents.

- Lisbon:
  - The city has three nursing/retirement homes with a total of approximately 225 beds.
  - The city has three schools with approximately 615 students according to the North Dakota Department of Public Instruction.

Property

- The statewide Multi-Hazard Mitigation Plan estimated that communicable disease could impact 20 percent of crop and livestock values. According to the 2012 Census of Agriculture, the market value of crops in Ransom County was $153 million and the market value of livestock was $26 million. **Estimating 20 percent loss for each sector results in $31 million in communicable disease-related crop loss and $5 million livestock loss**.

Future Development

- The median age in the county is currently 42.2 years, almost five years higher than the state-wide median. As residents continue to age they will become more susceptible to communicable disease.

Existing Capabilities

- A critical access hospital is located in Lisbon.
- The USDA Farm Service Agency and North Dakota State University Extension both have field offices located in Lisbon and offer technical assistance to farmers and ranchers for the prevention and treatment of agricultural diseases.

Key Issues and Potential Action Items

- *Key Issue*: Human and agricultural disease have the potential to greatly impact the health and economy of the county. There are several concentrations of vulnerable populations in the area.
    - *Potential Action Item:* Continue supporting the efforts of the USDA Farm Service Agency and NDSU Extension.

Dam Failure

Rural County:
Overall Risk: Low
Probability: Low (no history of significant dam failure)
Magnitude: Moderate (3 percent of total population [evacuation would reduce impact], 2 to 10 percent of total structure value)

Elliott:
Overall Risk: Low
Probability: Low (no history of significant dam failure)
Magnitude: Low (not located in potential inundation area)

Enderlin:
Overall Risk: Low
Probability: Low (no history of significant dam failure)
Magnitude: Low (not located in potential inundation area)

Fort Ransom:
Overall Risk: Low
Probability: Low (no history of significant dam failure)
Magnitude: Moderate (not located in potential inundation area)

Lisbon:
Overall Risk: Low
Probability: Low (no history of significant dam failure)
Magnitude: Moderate (30 percent of population [evacuation would reduce impact], 10 to 30 percent of total structure value)

Sheldon:
Overall Risk: Low
Probability: Low (no history of significant dam failure)
Magnitude: Low (not located in potential inundation area)

Duration: 24 hours
Speed of Onset: Quick
Identified Risks: Agricultural loss (crops, livestock)
Economic loss
Human loss and injuries
Increased stress on medical services
Localized evacuation
Loss of power
Release of hazardous materials
Shortage of critical materials

Hazard Profile

A dam is defined as an artificial barrier across a watercourse or natural drainage area that may impound or divert water. Dams have many potential uses, including hydro-electric power generation, irrigation, flood control, water supply and recreation. Dam structures can be earthen or from manmade materials. Dam failure is a sudden, uncontrolled release of impounded water, and can have a devastating effect on people and property downstream.

The Association of State Dam Officials identifies five primary causes of dam failure, which are often interrelated:

- Overtopping of a dam occurs when water from the reservoir spills over the top of the dam, creating instability in the structure. This can occur during a major flood event if the spillways are not adequately designed or if there is blockage in the spillway. Approximately 34 percent of all dam failures in the United States are due to overtopping.
- Foundation defects, including settlement and slope instability, cause about 30 percent of all dam failures.
- Piping is a term used to describe the process that occurs as seepage pathways create eroded pipes through a structure. Seepage often occurs around hydraulic structures and earthen features, and if left unchecked can gradually reduce the dam structure's stability. About 20 percent of all dam failures in the United States are caused by piping.

- Structural failure of materials used to construct the dam.
- Inadequate maintenance.

The Association of State Dam Officials and the US Army Corps of Engineers utilize a rating system to determine potential hazard to property or life if a dam were to suddenly fail.

- *Low*: Dams located in rural or agricultural areas where there is little possibility of future development. Failure of low hazard dams may result in damage to agricultural land, township and county roads and farm buildings other than residences. No loss of life is expected if the dam fails.
- *Significant*: Dams located in predominantly rural or agricultural areas where failure may damage isolated homes, main highways, railroads or cause interruption of minor public utilities. Potential for the loss of life may be expected if the dam fails.
- *High*: Dams located upstream of developed and urban areas where failure may cause serious damage to homes, industrial and commercial buildings and major public utilities. Potential for loss of life if the dam fails. High hazard dam reservoirs must be at least 50 acre-feet.

According to the statewide Multi-Hazard Mitigation Plan, no North Dakota dams rated as a high or significant hazard failed between 2009 and 2013; however, some dams did sustain significant damage from major flood events during the time period.

The North Dakota Century Code requires that all dams with greater than 1,000 acre-feet of storage have emergency procedures and safety plans. Safety plans must include a map of the evacuation area, notification directory, name of the dam owner or responsible entity, availability of materials for emergency repairs, and a list of contractors that could provide emergency assistance.

Local Risk

- The North Dakota State Water Commission maintains a database of all dams in the county. T**here are 23 dams in Ransom County, none of which are classified as being high hazard**. The county has two significant hazard dams – **Lisbon Dam** on the Sheyenne River and **Dead Colt Creek Dam** on Dead Colt Creek near the Sheyenne River. Lisbon Dam was constructed for water supply and Dead Colt Creek Dam was constructed for flood control and recreation. Dams in the county are described in Table 3.9 and shown in Figure 3.10.

- **Baldhill Dam** on the Sheyenne River in Barnes County is a high hazard dam that could impact the county in the event of failure. Baldhill Dam is owned by the US Army Corps of Engineers.

Dead Colt Creek Reservoir as seen from Dead Colt Creek Dam.

- According to Stanford University's National Performance of Dams Database there was one dam incident in Ransom County between 1970 and 2013. Enderlin Park Dam failed in April 1978 during a spring flooding event. The dam has since been upgraded and is classified as low hazard by the ND State Water Commission.

Table 3.9 – Ransom County Significant Hazard Dams

Dam Name	Action Plan	Owner	Type	Year Built	Storage (acre-feet)
Lisbon Dam	No	City of Lisbon	Concrete Gravity	1890	443
Dead Colt Creek Dam	Yes	Ransom County WRD	Rolled Earth	1984	8,901

Source: ND State Water Commission

Vulnerability

Population

- Dead Colt Creek Dam is the only dam in the county with an emergency action plan, and the only dam where detailed analysis of a dam failure event is possible. According to the dam's emergency action plan, a flood-stage failure event of Dead Colt Creek Dam would inundate or partially inundate approximately 32 residences in Ransom County. Using the county's average household size of 2.32 persons from the most recent census, it is estimated that **approximately 75 people (three percent of rural population) are vulnerable to a failure of Dead Colt Creek Dam**. It is important to note that flooding along the length of the Sheyenne River would not occur simultaneously at the moment of dam failure. The emergency action plan estimates that occurrence of peak inundation would vary between 30 minutes to 15 hours depending on distance from the dam site; therefore, it is expected that many residents in the hazard area could be evacuated before floodwaters reach their homes.

Lisbon Dam on the Sheyenne River in northeast Lisbon.
Source: Google Earth

- Lisbon Dam does not have an emergency action plan, which limits vulnerability analysis. The dam was constructed to provide water supply for the city (not flood control) and has a small reservoir. It is expected that failure of the dam would result in flooding of nearby homes in Lisbon; however, the dam's small reservoir size suggests that failure would not result in significant flooding outside the boundaries of the existing 100-year floodplain. Detailed inundation modeling would be required to determine more accurate vulnerability analysis.

- Baldhill Dam, located in Barnes County approximately 45 miles northwest of Lisbon, would present a significant risk to Ransom County residents along the Sheyenne River. This would include the communities of Fort Ransom and Lisbon. Detailed inundation mapping in Ransom County is not available, but the impacts could be significant in Fort Ransom and Lisbon due to the river's close proximity to both cities. As noted with Dead Colt Creek Dam, peak inundation in Ransom County would not occur for many hours, which would allow most residents to evacuate before floodwaters reach their homes. The same analysis technique presented in the flood section of this document indicates that **61 (2.7 percent of total) rural residents and 661 (30.4 percent of total) Lisbon residents live within the flood hazard area**.

Key Facilities

- The Highway 27 bridge east of Lisbon is the only key facility that could potentially be impacted by a failure of Dead Colt Creek Dam.

- Detailed inundation mapping for failure of Baldhill Dam is not available. For purposes of this analysis, the 100-year floodplain is utilized as the estimated inundation area.
    - Rural areas of the county:
        - Portions of Fort Ransom State Park are within the 100-year floodplain. The floodplain area is primarily preserved as open space and includes no permanent structures.
        - Dead Colt Creek Dam and Lisbon Dam could be damaged.
    - Fort Ransom:
        - The Main Street bridge could be damaged during a significant flooding event.
    - Lisbon:
        - Three major bridges, Jackson Avenue, Highway 27 (5th Avenue) and Highway 32, could be damaged during a significant flooding event. The 5th Avenue bridge is particularly at risk due to its low elevation and central location in the city.
        - Lisbon Dam could be damaged during a significant flooding event.
        - A portion of the Lisbon Fire Department building is within the 100-year floodplain.

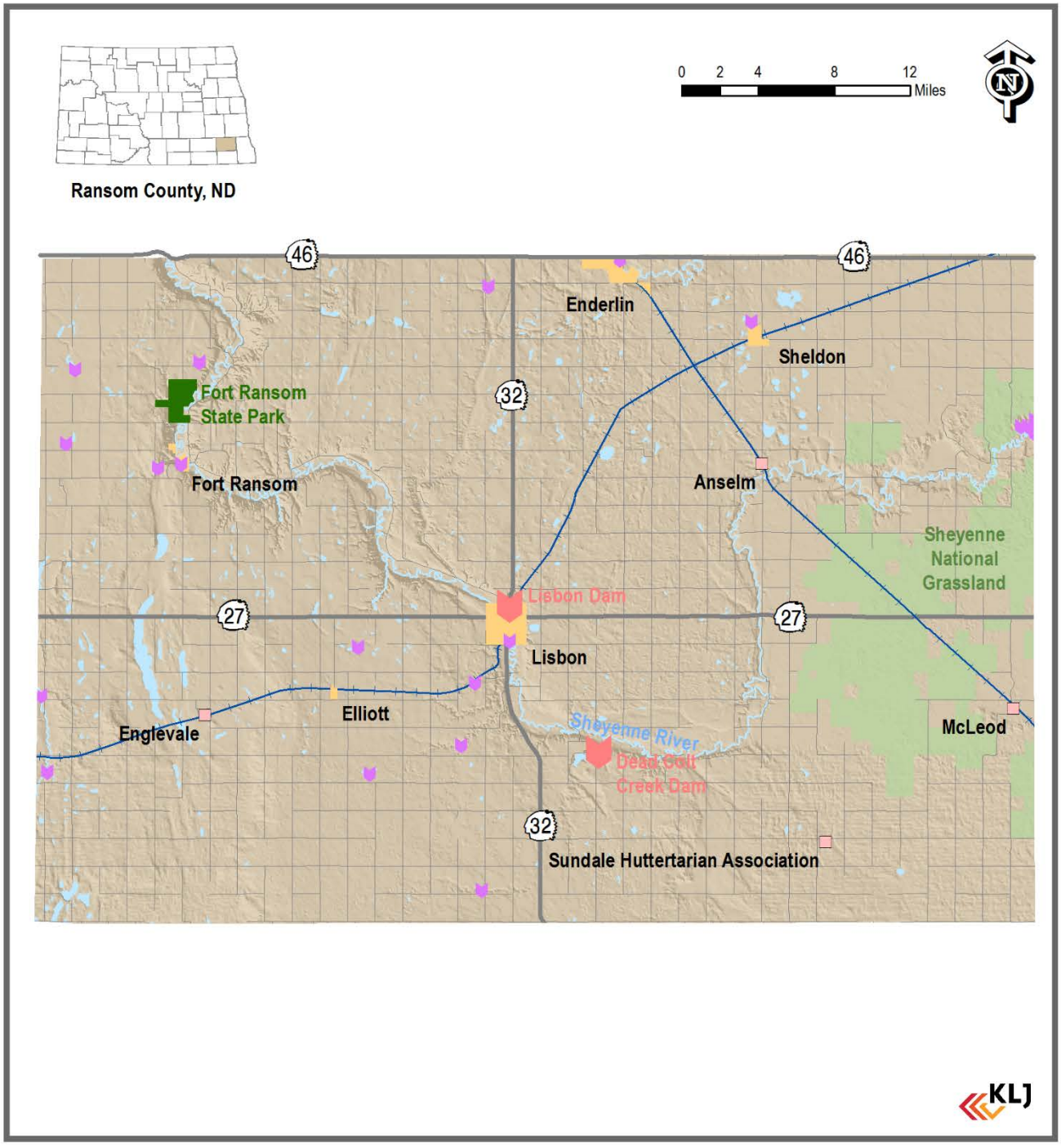


Figure 3.10
Dams

Source:
ND State Water Commission
ND GIS Hub

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Hazard Rating
- High
- Significant
- Low

Property

- According to the Dead Colt Creek Dam emergency action plan, a flood-stage failure event of the dam would inundate or partially inundate approximately 32 residences in Ransom County. The median housing value in the county is $87,400 according to 2013 American Community Survey estimates. Using this information, the estimated value of residences in the inundation area is $2.8 million. There are no commercial, industrial or public structures in the inundation area.

- Detailed inundation mapping for failures of Baldhill Dam and Lisbon Dam are not available. For purposes of this analysis, the 100-year floodplain is utilized as the estimated inundation area.
    - **The rural county has 15 NFIP properties with total insured value of $3,096,300**. Total structure value in rural areas of the county is $67,536,820, which suggests that approximately 3 to 10 percent of the rural county's total structure value is within a flood hazard area. It is important to note that not all of these properties may be located along the Sheyenne River.
    - **Fort Ransom has four NFIP properties with total insured value of $664,200**. Total structure value in Fort Ransom is $5,312,100, which suggests that approximately 10 to 30 percent of the city's total structure value is within a flood hazard area.
    - **Lisbon has 84 NFIP properties with total insured value of $11,549,500**. Total structure value in Lisbon is $84,215,560, which suggests that approximately 10 to 30 percent of the city's total structure value is within a flood hazard area.

- Agricultural land would be at risk if a low hazard dam failed in a rural part of the county.

Future Development

- Floodplain regulations limit development within the 100-year floodplain in Lisbon, Fort Ransom and rural areas of the county.

Existing Capabilities

- An emergency action plan is available for Dead Colt Creek Dam.

Key Issues and Potential Action Items

- *Key Issue*: Dead Colt Creek Dam would have a significant impact in the event of failure. A failure of Baldhill Dam, located in Barnes County, would impact Fort Ransom and Lisbon.
    - *Potential Action Item*: Restrict future development in the flood-stage dam failure inundation area identified in the Dead Colt Creek Dam emergency action plan.
    - *Potential Action Item*: Follow guidance as necessary from US Army Corps of Engineers regarding Baldhill Dam.

Hazardous Materials Release

Rural County:
Overall Risk: Moderate
Probability: Low (approximately one reported incident per year county-wide)
Magnitude: High (approximately 50 percent of county within potential hazard area, no incident since 2000 has resulted in more than $1,500 in damages but a large event could have a significant impact)

Elliott:
Overall Risk: Moderate
Probability: Low (approximately one reported incident per year county-wide)
Magnitude: High (entire city within potential hazard area)

Enderlin:
Overall Risk: Moderate
Probability: Low (approximately one reported incident per year county-wide)
Magnitude: High (entire city within potential hazard area)

Fort Ransom:
Overall Risk: Low
Probability: Low (approximately one reported incident per year county-wide)
Magnitude: Low (city not within potential hazard area)

Lisbon:
Overall Risk: Moderate
Probability: Low (approximately one reported incident per year county-wide)
Magnitude: High (entire city within potential hazard area)

Sheldon:
Overall Risk: Moderate
Probability: Low (approximately one reported incident per year county-wide)
Magnitude: High (entire city within potential hazard area)

Seasonal Pattern: None
Duration: 1-10 hours
Speed of Onset: Quick
Primary Impacts:
Agricultural loss (crops, livestock)
Economic loss
Human loss and injuries
Increased stress on medical services
Localized evacuation
Loss of income for displaced workers
Loss of power
Permanent loss of business
Structure collapse

Hazard Profile

A hazardous material is any substance that has the potential to cause harm to humans, animals or the environment, either by itself or through interaction with other factors.

Hazardous materials incidents can occur at a fixed facility or while a material is transported. Common hazardous materials incidents at fixed sites include the improper storage, treatment and disposal of hazardous waste at manufacturing and processing facilities. Transportation-related hazardous materials incidents generally occur along major transportation routes such as highways, interstates, pipelines and railroads.

Common hazardous materials found in North Dakota include natural gas, anhydrous ammonia and crude oil.

Natural gas is commonly used in North Dakota, often in its refined form of propane or butane. Propane and butane are generally transported as a liquid, but will vaporize in the event of an unintended release (butane only vaporizes at temperatures above 32 degrees Fahrenheit). In their gaseous form they are both heavier than air, and generally remain close to the ground. Propane and butane are both highly flammable and present the risk of explosion.

Exposure to propane and butane can also be a health hazard. Acute exposure can cause asphyxiation, respiratory irritation and physiological damage; however, these effects are most likely to occur in enclosed spaces or areas with poor ventilation.

Anhydrous ammonia is used in manufacturing, refrigeration and fertilizer. It is often stored and transported as a pressurized liquid, but it will vaporize under normal pressure. Anhydrous ammonia has explosive potential, but it requires extremely high temperatures to ignite. It generally only produces a significant health hazard when released in poorly ventilated areas, but when exposed to moisture it can cause a low-lying ammonia fog. Effects of acute anhydrous ammonia exposure include severe irritation to the eyes, respiratory tract, gastrointestinal tract and skin; severe repetitive exposure can cause permanent damage to these tissues. Anhydrous ammonia is not known to be carcinogenic.

Crude oil poses a significant risk due to its high flammability. It may release flammable vapors that increase the risk of explosion. Crude oil also poses several health risks. Exposure to crude oil can come from direct contact, inhalation or ingestion. Acute exposure to crude oil can cause direct effects such as skin irritation, breathing difficulty, headaches and nausea. Acute exposure may also lead to long-term complications such as lung, liver or kidney damage, and increased cancer risk.

Local Risk

- **Transportation routes present a risk for a hazardous materials release in Ransom County**. Highways and railroads are the major transportation routes through the county. Materials transported on truck through the county include fuel and anhydrous ammonia. The Canadian Pacific Railroad, which travels through the northeast part of the county and through Enderlin, carries approximately seven oil trains per day through the county. The Red River Valley Western Railroad, which travels through Elliott, Lisbon and Sheldon, primarily transports grain.

- The Emergency Planning and Community Right-to-Know Act (EPCRA) requires that operators of facilities containing hazardous materials and chemicals must identify themselves to appropriate state and local agencies. North Dakota requires that all hazardous materials operators submit Tier II Chemical Inventory Reports to the county's Local Emergency Planning Committee (LEPC) on an annual basis. Typical Tier II facilities include bulk fuel plants, anhydrous ammonia plants, propane plants, agricultural processing plants and energy producing sites. **There are 23 Tier II-reporting facilities in the county**. Major facilities include the Archer Daniels Midland biomass energy plant in southeast Enderlin and the Dakota Plains anhydrous ammonia plant in southwest Lisbon.

- The National Response Center is an interagency effort managed by the US Coast Guard that catalogs all reported hazardous materials incidents in the United States. The Pipeline and Hazardous Materials Safety Administration (PHMSA) is part of the US Department of Transportation and monitors all transportation-related hazardous materials incidents in the United States. Table 3.10 summarizes reported hazardous materials incidents in Ransom County reported to the National Response Center and PHMSA between 2000 and 2014. **There were 17 reported incidents during the time period. Fourteen (82 percent) of the incidents were transportation related; only three (18 percent) occurred at a fixed facility.** A majority of the releases were minor and resulted in minimal impacts.

Table 3.10 – Hazardous Materials Incidents in Ransom County 2000-2014

Material	# of Incidents
Anhydrous Ammonia	4
Diesel	4
Hydraulic Oil	2
Ammonium Sulfate	1
Gasoline	1
Herbicide	1
Lubricating Oil	1
Oil Condensate	1
Pot Ash	1
Total	*17*

Source: National Response Center, PHMSA Incident Reports Database

- **One incident in the county was classified as "serious" by the PHMSA**. In March 2002 a truck accident resulted in the release of 200 gallons of gasoline. There were no associated fatalities or injuries. A "serious" incident occurs when the release of a hazardous material results in one or more of the following: death, major injury resulting in a hospitalization, an evacuation of 25 or more persons, closure of a major transportation artery, alteration of

an aircraft flight plan or operation, failure of a Type B radioactive packaging, release of over 11.9 gallons or 88.2 pounds of a severe marine pollutant, or release of a bulk quantity (over 119 gallons or 882 pounds) of a hazardous material.

- **There are two transmission pipelines in the county** according to the PHMSA – a crude oil pipeline and a natural gas pipeline. Both pipelines are shown in Figure 3.11. The county also has several other pipelines that are not reported by the PHMSA. The Keystone pipeline travels across the county and has a branch substation that connects to Fort Ransom. A 1.23 mile natural gas pipeline travels from Cass County and connects to the Enderlin ADM plant. The Alliance pipeline carries various gas products and shares a route with the Kinder Morgan Cochin pipeline, which carries propane. There were no pipeline incidents in the county reported to the PHMSA between 2000 and 2014.

- Figure 3.11 shows major transportation corridors in Ransom County, with evacuation areas of 1/2 mile and 1 mile. Tier II facilities are not shown on the map due to security concerns, although their hazard areas are utilized to calculate risks and vulnerabilities. Hazard areas are from the 2012 Emergency Response Guidebook. Recommendations for initial evacuation in the case of fire for common hazardous materials are shown below:
  - Crude oil, petroleum and diesel fuel: 1/2 mile evacuation
  - Propane, natural gas: 1 mile evacuation
  - Anhydrous ammonia: 1 mile evacuation
  - Chlorine: 1/2 mile evacuation
  - Ammonium nitrate fertilizers: 1/2 mile evacuation

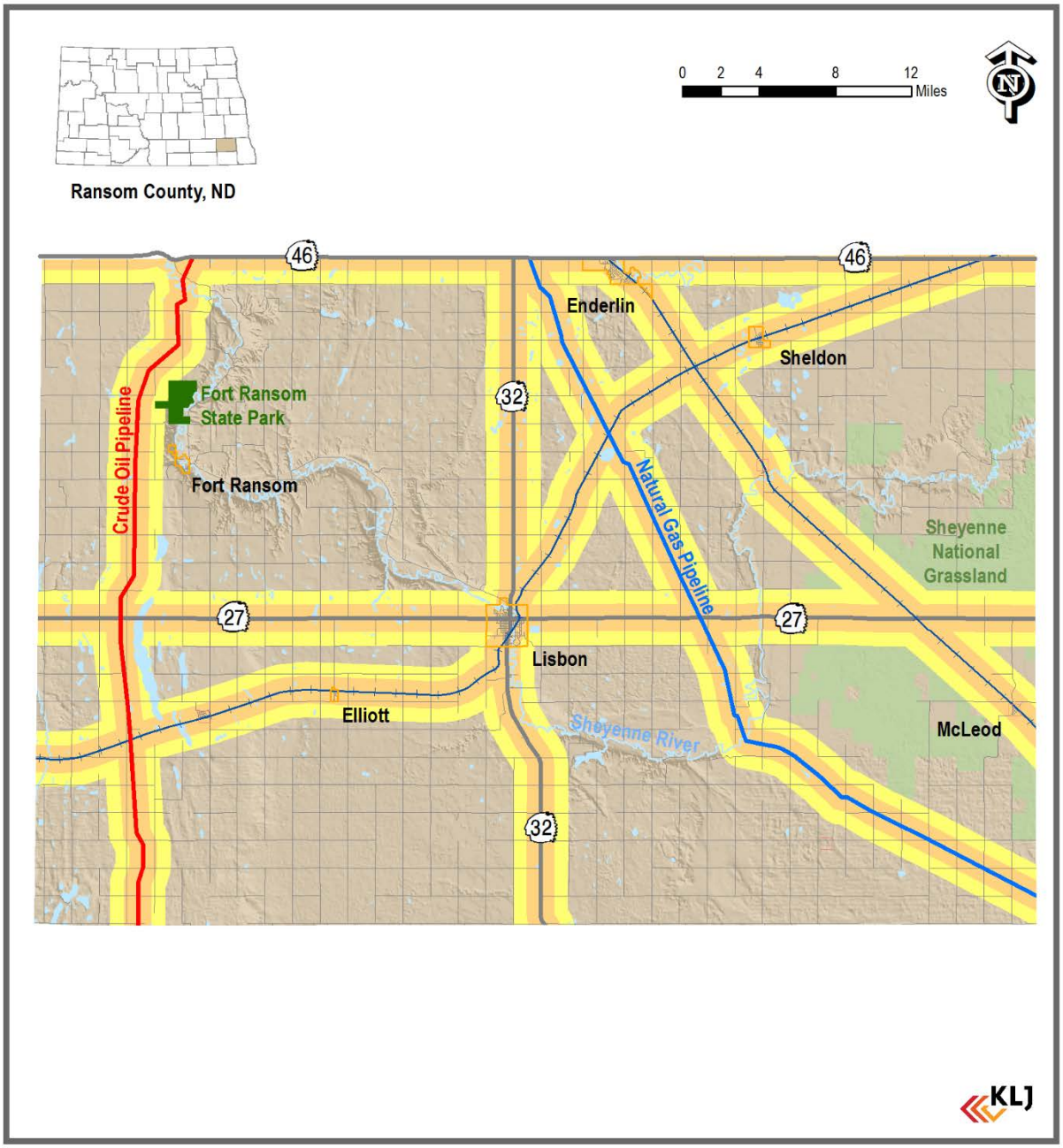

Figure 3.11
Hazardous Materials
Transportation Hazard Areas

0.5 Mile Hazard Area
1 Mile Hazard Area

Source:
ND GIS Hub
Gernalized pipeline locations adapted
from teh PHMSA National Pipeline
Mapping System

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Vulnerability

Population

- Vulnerable population can be estimated by identifying the intersection of 2010 US Census Blocks and the identified hazard areas in Figure 3.10. Census blocks in rural areas are generally large, which makes detailed estimates difficult. For purposes of this analysis, only census blocks that have their centroid within the hazard area are included; however, it is important to note that this analysis does not consider the exact location of residential structures within each census block. Vulnerable population estimates are shown in Table 3.11.

Table 3.11 – Ransom County Population within Hazardous Materials Hazard Area

	Population in 1/2 Mile Hazard Area	% of Total Population	Population in 1 Mile Hazard Area	% of Total Population
Rural County	627	28.1%	1,088	48.8%
Elliott	25	100%	25	100%
Enderlin	888	100%	888	100%
Fort Ransom	0	0%	0	0%
Lisbon	2,172	100%	2,172	100%
Sheldon	121	100%	121	100%
Total	*3,833*	*69.5%*	*4,294*	*77.8%*

Source: US Census Bureau

Key Facilities

- Nearly all key facilities in the county are within the 1/2 mile and 1 mile hazard areas. Fort Ransom is the only community not within a hazard area.

- Significant fixed facilities within city limits include the Archer Daniels Midland biomass energy plant in southeast Enderlin and the Dakota Plains anhydrous ammonia plant in southwest Lisbon. Approximate hazard areas for these facilities are shown in Appendix C. Nineteen key facilities in Lisbon are within one-half mile of Dakota Plains, and nearly all facilities in the city are within one mile. The Enderlin lagoon is the only key facility within one mile of Archer Daniels Midland.

Property

- The entirety of Elliott, Enderlin, Lisbon and Sheldon are all within the one-half mile hazard area for transportation incidents.

- No reported incident in the county since 2000 has resulted in more than $1,500 in damages.

- Significant fixed facilities within city limits include the Archer Daniels Midland biomass energy plant in southeast Enderlin and the Dakota Plains anhydrous ammonia plant in southwest Lisbon. Approximate hazard areas for these facilities are shown in Appendix C. Approximately one-third of Lisbon is within one-half mile of Dakota Plains, and nearly the entire city is within one mile. No properties in Enderlin are within one-half mile of Archer Daniels Midland, and approximately the eastern one-third of Enderlin is within one mile.

Future Development

- The county's vulnerability to hazardous materials is not expected to change in the foreseeable future.

- The Lisbon zoning ordinances restrict the future location of certain high risk hazardous materials facilities within city limits.

Existing Capabilities

- Many first responders in the county are hazardous materials trained at the awareness level.
- Hazardous materials operators are responsible for clean-up and reclamation of incident sites.

Key Issues and Potential Action Items

- *Key Issue*: Many residents in the county, including all city residents, live in a potential hazard area for a hazardous materials incident. There were 17 reported hazardous materials incidents in the county between 2000 and 2014.
    - *Potential Action Item*: Survey the number and types of hazardous materials passing through the county.
    - *Potential Action Item*: Educate first responders and residents about hazardous materials safety.
    - *Potential Action Item*: Designate evacuation shelter facility for each city located a safe distance from potential sources of a hazardous materials incident.
    - *Potential Action Item*: Explore the possibility of bypasses around populated areas when possible.

Homeland Security Incident

All Jurisdictions:
Overall Risk: Low
Probability: Low (no history of major incidents)
Magnitude: Moderate (magnitude could vary widely)

Seasonal Pattern: None
Duration: Varies
Speed of Onset: Quick
Primary Impacts: Agricultural loss (crops, livestock)
Economic loss
Human loss and injuries
Increased stress on medical services
Localized evacuation
Property damage or loss
Release of hazardous materials
Structure collapse

Hazard Profile

A homeland security incident is any intentional adversarial human-caused incident, domestic or intentional, that causes mass casualties, large economic losses or widespread panic in the county. Terrorism is an example of an intentional adversarial human-caused incident. Terrorism is defined by the Code of Federal Regulations as "the unlawful use of force and violence against persons or property to intimidate or coerce a government, the civilian population, or any segment thereof, in furtherance of political or social objectives." Terrorist attacks are generally premeditated and motivated by a political and social methodology.

Local Threat

- The North Dakota Critical Infrastructure Program (CIP) collects data on critical infrastructure and key resources (CIKR) that exist in the state. CIKR facilities are divided into seven sectors. Each sector and their presence in Ransom County is summarized in Table 3.12.

Table 3.12 – Critical Infrastructure and Key Resources in Ransom County

CIKR Resource	Description	# in Ransom County
Food/Agriculture	Major food distribution centers	0
Energy	Power generation and chemical facilities	0
Public Health	Hospitals and public health offices	2
Transportation	Bridges and major highways	0
Emergency Services	Police, fire and dispatch centers	2
Communications	Major communications towers	0
Water	Treatment facilities	1

Source: North Dakota Critical Infrastructure Program, 2014 North Dakota Multi-Hazard Mitigation Plan

Vulnerability

Population

- The number of residents vulnerable to a terrorist attack is highly variable based on time of day and extent of the attack. A large-scale incident, such as an attack on a municipal water supply, would have **the potential for hundreds of injuries or fatalities**.

- High density populations are generally more susceptible to large-scale terrorism events. The overall population density in Ransom County is 6.4 persons per square mile, although the density of certain population centers is significantly higher. Figure 2.4 shows population density throughout the county. **The largest concentration of high density population can be found in Lisbon**.

Key Facilities

- Local government facilities, including the county courthouse and each city hall, may be attractive targets. Other potential targets include schools, the county fairgrounds and major infrastructure.

Property

- The North Dakota Tornado and Fire Fund compensates for losses related to vandalism and theft at various essential facilities. **Between 1989 and 2013, Ransom County received $5,139 for local government facility losses and $7,799 for school facility losses.**

Future Development

- The county's overall vulnerability to homeland security incidents is not expected to change in the foreseeable future.

Existing Capabilities

- The county courthouse and schools have security cameras.

Key Issues and Potential Action Items

- *Key Issue*: Terrorism and violence are an ongoing concern, but it is very unlikely a large-scale event will occur in the county.
    - *Potential Action Item*: Continue general surveillance of suspicious persons or activities within the county.
    - *Potential Action Item*: Review evacuation plans that could be utilized in the event of a terrorist attack.
    - *Potential Action Item*: Continue education and review of school response procedures for all schools in the county.
    - *Potential Action Item*: Enhance security measures at key facilities.

Urban Fire

All Jurisdictions: *Overall Risk:* Low
Probability: Low (no history of major incidents)
Magnitude: Moderate (magnitude could vary widely)

Seasonal Pattern: None
Duration: Varies
Speed of Onset: Quick
Primary Impacts: Agricultural loss (crops, livestock)
Economic loss
Human loss and injuries
Increased stress on medical services
Localized evacuation
Property damage or loss
Release of hazardous materials
Structure collapse

Hazard Profile

Urban fire is a threat to all communities. A small flame can begin inside a structure and rapidly turn into a major fire, creating a costly and deadly situation. The National Fire Protection Association (NFPA) reports that fires in the United States caused 3,005 civilian deaths and 17,500 civilian injuries in 2011. Eighty-four percent of civilian fire deaths were due to home structure fires. According to the National Fire Incident Reporting System (NFIRS) there are about 2,500 urban fire events each year in North Dakota.

Fires may begin intentionally (arson) or by accident. Common motives for arson are insurance fraud, vandalism and murder. Common causes of accidental fires are cooking equipment, heating equipment, electrical distribution and lighting equipment, cigarettes, clothes dryer or washer, candles, and spontaneous combustion. According to the NFPA, unattended cooking is the leading cause of structure fires, with frying as the leading type of cooking activity. Heating equipment is the second leading cause of structure fire.

Local Risk

- Most structure fires are individual disasters and not community-wide, but the potential exists for widespread urban fires that displace several businesses or residences. The greatest risk of a multiple-structure urban fire is in historic downtowns. There is no history of multi-structure fire in Ransom County. Agricultural facilities, such as grain elevators and dryers, are also at risk for significant fire.

Vulnerability

Population

- All residents in urban areas of the county are vulnerable to an urban fire event. The county's five cities contain approximately 3,285 residents (60 percent of total population in the county).

Key Facilities

- Key facilities in historic downtowns generally have a greater vulnerability to fire. There are 11 key facilities in downtown Enderlin, one in downtown Fort Ransom, 20 in downtown Lisbon and two in downtown Sheldon.
- Each incorporated community, with the exception of Fort Ransom, has a large grain storage facility that could be vulnerable to fire.
- The abandoned school building on the edge of Sheldon could be a target for arson.

Property

- The North Dakota Tornado and Fire Fund compensates for losses related to smoke damages at various essential facilities. Between 1989 and 2013, **Ransom County received $275 for local government facility smoke damages and $4,269 for school facility smoke damages**.

Future Development

- The North Dakota State Building Code consists of the 2012 International Building Code, International Residential Code, International Mechanical Code and International Fuel Gas Code published by the International Code Council. Enderlin and Lisbon have adopted the State Building Code.

Existing Capabilities

- All areas of the county are within the service area of a volunteer fire department.

Key Issues and Potential Action Items

- *Key Issue*: There is no history of large-scale urban fire in the county, but it is an ongoing concern.
  - *Potential Action Item*: Provide education about fire prevention best practices for local business owners and residents.
  - *Potential Action Item*: Continue response preparation with local fire districts.
  - *Potential Action Item*: Remove abandoned properties that could be a target for arson.

Summary

There are ten priority hazards identified for Ransom County. The key issues for each hazard are summarized on the following pages. Hazards are summarized for the county overall and listed alphabetically within priority class. Hazard risk for each jurisdiction is summarized in Table 3.13.

Table 3.13 – Ransom County Risk Summary

	Rural County	Elliott	Enderlin	Fort Ransom	Lisbon	Sheldon
Drought	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate
Flood	Moderate	Low	Low	High	High	Low
Severe Summer Weather	High	High	High	High	High	High
Severe Winter Weather	High	High	High	High	High	High
Wildland Fire	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate
Communicable Disease	Low	Low	Low	Low	Low	Low
Dam Failure	Low	Low	Low	Low	Low	Low
Hazardous Materials Release	Moderate	Moderate	Moderate	Low	Moderate	Moderate
Homeland Security Incident	Low	Low	Low	Low	Low	Low
Urban Fire	Low	Low	Low	Low	Low	Low

Drought

- Agriculture is a key component of the county's economy. A significant drought has the potential to greatly affect the industry and the county as a whole.
- A significant and prolonged drought could affect municipal water supplies and personal wells throughout the county.

Flood

- Ransom County experiences about two flood events per year. Flood events in the county include riverine flooding and flash flooding, both of which have a significant history in recent decades.
- Many roads and bridges in the county are commonly washed-out or inundated during flooding events.
- Ice jams have a history of damaging roads and structures in the county.

Severe Summer Weather

- Ransom County averages approximately six days per year with a summer storm event. Severe wind and hail are the most common summer storm events in the county, and tornadoes are also a possibility in the region.

Severe Winter Weather

- Ransom County averages approximately eight days per year with a winter storm event. Severe winter weather events in the county include winter storm, high wind, heavy snow, blizzard, extreme cold/wind chill and ice storm.
- A winter storm event that causes a power outage may make it difficult for residents to heat their homes. Elderly residents and residents in mobile homes are the most vulnerable to extreme cold temperatures. Approximately 1,500 residents in the county are elderly or live in a mobile home. Power loss occasionally occurs in the county during winter storm events.

Wildland and Rangeland Fire

- Ransom County experiences a wildfire greater than 100 acres approximately once every three to four years. Most large wildfires are located in Sheyenne National Grassland and cause minimal property damage.

Communicable Disease

- Human and agricultural disease have the potential to greatly impact the health and economy of the county. There are several concentrations of vulnerable populations in the area.

Dam Failure

- Dead Colt Creek Dam would have a significant impact in the event of failure. A failure of Baldhill Dam, located in Barnes County, would impact Fort Ransom and Lisbon.

Hazardous Materials Incident

- Many residents in the county, including all city residents, live in a potential hazard area for a hazardous materials incident. There were 17 reported hazardous materials incidents in the county between 2000 and 2014.

Homeland Security Incident

- Terrorism and violence are an ongoing concern, but it is very unlikely a large-scale event will occur in the county.

Urban Fire

- There is no history of large-scale urban fire in the county, but it is an ongoing concern.

Chapter 4: Mitigation Strategy

The mitigation strategy includes specific action items to reduce the impact of the priority hazards identified in Chapter 3. The process for identifying action items included a Planning Team meeting, community survey and public meeting. Goals were identified to guide the development of action items.

Capability Assessment

Before identifying goals and action items, it is important to know the capabilities of each jurisdiction to undertake different types of hazard mitigation projects. Specific capabilities are listed as part of each hazard profile in Chapter 3. Additional capabilities are summarized below.

Legal and Regulatory Capabilities

- *Zoning Ordinance*. Each incorporated city, as well as the unincorporated county, has a zoning ordinance.
- *Floodplain Ordinance*. Enderlin, Fort Ransom, Lisbon, Sheldon and the County have floodplain ordinances that are actively enforced.
- *Building Code*. Enderlin and Lisbon have adopted the North Dakota State Building Code.

Administrative and Technical Capabilities

- Ransom County has an Emergency Management Department that oversees mitigation, response and recovery activities county-wide.
- Ransom County's Local Emergency Planning Committee (LEPC) includes County officials (commissioners, fire, police, emergency management, health, social services), professional services (physicians, nurses, EMTs) and volunteers (organizations and individuals).
- Enderlin, Fort Ransom, Lisbon, Sheldon and the County have a floodplain administrator.

Fiscal Capabilities

- Ransom County and each incorporated jurisdiction are eligible for a variety of federal grants, including Community Development Block Grants.
- Ransom County and each incorporated jurisdiction have the ability to issue bonds and levy taxes.

The County and each incorporated jurisdiction have limited resources and would have difficulty implementing a wide range of comprehensive mitigation actions. The action items contained in this plan are generally small in scope and specific to each community's biggest issues. Funding/financing mechanisms for large projects is the greatest element that limits the capability of each jurisdiction. The County has a small tax base, and any financing mechanism that increases the public tax burden is not desired by residents. As a result, a majority of projects identified in this plan have a minimal cost and can be completed by local staff. Outside funding sources and technical assistance would need to be acquired to help fund and complete the few large projects identified in this plan.

The greatest opportunity for the County to upgrade its governance capabilities would be to create a multi-jurisdictional comprehensive plan. A comprehensive plan could create a vision for the county and help to guide development in an efficient and hazard-resilient manner. A comprehensive plan could also provide guidance for future updates to zoning regulations.

Goals

The goals defined below provide the general guiding principles that were used when developing mitigation activities. The goals may be used to guide the development of additional action items as the plan is evaluated in future years. Goals from the county's previous plan were evaluated. It was determined that the goals are still valid for this plan update. The goals below are all priorities and presented in no particular order.

- Reduce the loss of life and personal injuries from hazard events.
- Reduce hazard impacts to public and private property, and the local economy.
- Reduce hazard impacts to key facilities, infrastructure and other community assets.

Previous Mitigation Actions

Mitigation actions from the 2009 Ransom County Multi-Hazard Mitigation Plan are shown in Appendix F. The plan included 28 actions. Nineteen actions were completed (or partially completed), and two actions are included in this plan.

The greatest challenge to completing mitigation activities has been the limited resources (time and money) of the County and each jurisdiction. Local government is run by a small number of people, some part-time. A majority of mitigation actions included in this plan can be implemented through existing County and City programs, and many require only a minimal cost. Those that require substantial costs are linked to grant programs that can provide much of the necessary funding.

Funding

Ransom County will need to utilize local, state and federal funding to implement the action items identified in this plan. The County and each jurisdiction have access to multiple state and federal funding opportunities. US Department of Housing and Urban Development (HUD) Community Development Block Grants (CDBG) and US Department of Agriculture (USDA) Community Facility Grants are available for a wide variety of uses. There are also other viable funding streams tailored specifically for hazard mitigation and disaster response. FEMA's Hazard Mitigation Grant Program (HMGP) could provide funding for a wide variety of mitigation projects, and is only available following a North Dakota disaster declaration. Additional FEMA grant programs that provide funds for mitigation include the Pre-Disaster Mitigation (PDM) program and Flood Mitigation Assistance (FMA) program.

FEMA's Hazard Mitigation Assistance Unified Guidance, which includes eligible activities for each of FEMA's mitigation grant programs, can be found at:

https://www.fema.gov/media-library/assets/documents/103279

Action Items

The action items identified in Table 4.1 are recommendations developed through discussion with local officials, stakeholders and other interested members of the public. A broad range of potential mitigation activities were considered; each of these potential activities is listed in Chapter 3 with the applicable hazard. The Planning Team discussed each activity in order to develop a list of priority projects that will have the greatest benefit. Further explanation of the mitigation activity selection process can be found in Appendix F. Several preparedness and response actions discussed during the planning process are also included in the plan.

The activities list found in this section provides a roadmap for targeting and implementing mitigation projects over the next five years. Projects are prioritized based on a generalized benefit-cost analysis that factors in potential cost and project benefit. It is important to note that many project costs are eligible for grant or other outside funding. Funding options and project costs may vary year-to-year, so before moving forward with implementation the jurisdiction should perform a detailed benefit-cost analysis. The implementation timeline for each project may be highly variable based on the availability of funds.

Table 4.1 - Action Items, 2015-2019					
Priority	**Action**	**Hazard**	**Jurisdiction**	**Cost**	**Time Frame**
High	**Conduct NFIP workshop to educate public about benefits of flood insurance**	**Flooding**	**Ransom County Enderlin Fort Ransom Lisbon Sheldon**	**Staff Time**	**2015**
High	**Install box culvert on County Road 136 to reduce local flooding**	**Flooding**	**Sheldon**	**$5,000+**	**2015**
Low	Consider enrolling in NFIP Community Rating System (CRS)	Flooding	Ransom County Enderlin Fort Ransom Lisbon Sheldon	Staff Time	2015
Low	Identify location of all hazardous materials facilities in county and distribute maps to first responders	Hazardous Materials Incident	Ransom County	$5,000	2015
Moderate	Install a warning siren at Dead Colt Creek Reservoir	Multiple Hazards	Ransom County	$10,000+	2016
Moderate	Conduct riverbank stabilization activities along the Sheyenne River	Flooding	Fort Ransom	Varies	2016
Moderate	Update emergency operations plan	Multiple Hazards	Ransom County	$15,000 - $25,000	2016
Low	Remove abandoned school to prevent risk of arson	Urban Fire Wildfire	Sheldon	Varies	2016
Low	Administer Firewise program and implement fuel reduction activities during wildfire season.	Wildfire	Elliott	Staff Time	2016
High	**Mitigate flooding hazard to sewer lagoons**	**Flooding**	**Enderlin**	**Varies**	**2017**
Low	Create living snow fences in strategic locations	Winter Storm	Ransom County	$750 - $1,500 per 100 feet of frontage	2018
High	**Elevate 5th Avenue bridge to reduce flooding risk**	**Flooding**	**Lisbon**	**High**	**2019**
Moderate	Remove dead trees along county road right-of-way	Wildfire	Ransom County	Varies	Ongoing
Moderate	Install permanent levees along the Sheyenne and Maple Rivers	Flooding	Lisbon Enderlin	High	Ongoing
Moderate	Construct or enlarge culverts to reduce flooding risk for rural roads	Flooding	Ransom County	$5,000 - $50,000	Ongoing
Moderate	Acquire and remove repetitive loss properties	Flooding	Ransom County	$30,000+	Ongoing
Low	Develop a public information campaign for agricultural producers.	Drought	Ransom County	Staff Time	Ongoing

Notes for Action Items

The Ransom County Emergency Manager is the local champion for the plan, and responsible for maintaining energy and enthusiasm for each jurisdiction's overall mitigation program. Responsibility for implementing mitigation projects ultimately rests with each jurisdiction. The individual responsible for overseeing implementation of mitigation projects for each jurisdiction is listed as part of each project summary. This individual was identified during the planning process. The actual person performing the project may be different than the responsible party.

Conduct NFIP workshop to educate public about benefits of flood insurance.

Workshops would be targeted at educating residents not required to buy flood insurance but still at risk for flooding. Technical assistance for a workshop is available from the North Dakota State Water Commission.

Funds for public awareness or education campaigns about mitigation are available under the HMGP Five Percent Initiative.

Responsible party: Ransom County Emergency Manager

Install box culvert on County Road 136 to reduce local flooding.

An improved culvert on County Road 136 in Sheldon would improve drainage through town and reduce localized overland flooding. Culvert mitigation is eligible for FEMA funds through the HMGP, PDM and FMA grant programs.

Responsible party: Sheldon Mayor

Consider enrolling in the NFIP Community Rating System (CRS).

The NFIP CRS is a voluntary incentive program that recognizes and encourages community floodplain management activities that exceed the minimum NFIP requirements. Flood insurance premium rates for residents are discounted to reflect the reduced flood risk resulting from community actions that meet CRS goals. Flood insurance premium discounts can range from 5 to 45 percent within Special Flood Hazard Areas (100-year floodplains).

Communities receive "credits" for 18 different activities within the program. A larger number of credits results in a greater premium discount for residents. Activities eligible for credit include outreach projects, open space preservation, stormwater management regulations, flood protection projects and flood warning programs.

The greatest challenge with CRS participation is the time requirements of administering the program. Each activity must be documented to receive credit, and the time required to create and maintain the documentation can be significant. Additionally, significant time may be required to administer the CRS activities that the community decides to utilize for credits.

FEMA does not charge a fee to apply or participate in the program. The overall cost varies based on staff time and expenses related to implementing the CRS activities selected by the community.

More information about the CRS can be found at:
http://www.fema.gov/national-flood-insurance-program-community-rating-system

Responsible party: Ransom County Emergency Manager, Enderlin Public Works, Fort Ransom Mayor, Lisbon Mayor, Sheldon Mayor

Identify location of all hazardous materials facilities in county and distribute maps to first responders.

Hazardous materials can be mapped using a GIS software platform. Tier II reports include coordinates for facility locations and can be a starting point for map creation.

Responsible party: Ransom County Emergency Manager

Install a warning siren at Dead Colt Creek Reservoir.

There are many different types of sirens, each with a different price point. Items to consider include fixed or rotating, duty rating, decibel ratings, sound circle and source of power. Warning sirens are not eligible for FEMA mitigation funding, but funding is periodically made available from North Dakota DES.

Responsible party: Ransom County Emergency Manager

Conduct riverbank stabilization activities along the Sheyenne River.

Riverbank stabilization could occur through a variety of methods, including riprap and vegetative buffers. Soil stabilization is eligible for funding through the FEMA HMGP, PDM and FMA grant programs.

Responsible party: Fort Ransom Mayor

Update emergency operations plan.

The county's emergency operations plan is out of date, particularly regarding hazardous materials response.

Responsible party: Ransom County Emergency Manager

Remove abandoned school to prevent risk of arson.

School is owned privately and any removal would be voluntary. The city could offer financial assistance if it felt that removal of the structure is a high priority.

Responsible party: Sheldon Mayor

Administer Firewise program and implement best practices during wildfire season.

Note: This action item is focused on Elliott for implementation, but the county and each city should evaluate these activities for potential implementation at a future date.

Firewise is a nationwide program produced by the National Fire Protection Association. Within North Dakota the program is operated by the state Forest Service. Firewise focuses on education for individual homeowners to help prepare homes for wildfire resistance. Each jurisdiction's role within this program is to educate residents about wildfire risks and mitigation activities they can do to reduce their individual risk.

In addition to public education, Elliott should coordinate with the county to conduct fuel reduction activities during wildfire season. Fuel reduction in Elliott would focus on wildland-interface areas on the edge of town, particularly near identified critical facilities.

More information about Firewise can be found at:
http://www.firewise.org/
http://www.ag.ndsu.edu/ndfs/documents/firewise-standard.pdf/view
http://www.firewise.org/usa-recognition-program/state-liaison-list.aspx?sso=0

Additional resources may be required to implement fuel reduction activities. Wildfire fuels reduction is eligible for funding through the FEMA HMGP and PDM grant programs.

Responsible party: Ransom County Emergency Manager, Elliott Mayor

Mitigate flooding hazard to sewer lagoons.

Potential actions include constructing a protective levee around the lagoons, elevating the entire lagoon infrastructure or moving the lagoons. These projects are eligible for funding through the FEMA HMGP and PDM grant programs.

Responsible party: Enderlin Public Works Director

Create living snow fences in strategic locations.

Living snow fences are a long-tern solution to hazardous road sections. They generally last approximately 75 years and require little maintenance once roots are established in new plantings. A mature living snow fence can hold approximately 12 times as much snow as a similar-sized Wyoming-style slatted snow fence. Living snow fences can also provide cover for livestock and create wildlife habitat.

Living snow fences present several challenges. They are generally located beyond the road's right-of-way, so it is necessary to work with neighboring landowners to establish the fence. A snow fence often takes away land that could otherwise be used for agriculture, and it can also present a maintenance challenge for landowners. For these reasons it is often necessary to provide compensation to landowners in the form of an annual stipend. These payments vary based on potential productivity of the land.

Another challenge is that living snow fences can take five to seven years to mature and be an effective barrier. A manufactured snow fence would be required during this time period if immediate results are desired.

Funding for living snow fences may be available from FEMA mitigation programs through the Five Percent Initiative. State agencies in North Dakota occasionally make funds available for snow fence projects. Specific fence locations have not been identified at this point, but the primary routes of transport are State Highways 27, 32 and 46.

Responsible party: Ransom County Emergency Manager

Elevate 5th Avenue bridge to reduce flooding risk.

The 5th Avenue bridge in Lisbon is particularly vulnerable to flooding due to its low elevation and central location. Infrastructure mitigation is eligible for funding through the FEMA HMGP, FMA and PDM grant programs.

Responsible party: Lisbon Mayor

Remove dead trees along county road right-of-way.

Large amounts of dead trees along county roads provide a source of wildfire fuel. Areas along roads are at an elevated risk of wildfire due to nearby traffic. Common causes of wildfires near roadways include trucks/trailers throwing sparks and cigarette butts. Wildfire fuels reduction is eligible for funding through the FEMA HMGP and PDM grant programs.

Responsible party: Ransom County Emergency Manager

Install permanent levees along the Sheyenne and Maple Rivers.

This is an ongoing project in the county. Funding for minor localized mitigation projects is available through the FEMA HMGP, PDM and FMA programs. Funding may also be available from the FEMA Public Assistance Program, USDA Natural Resources Conservation Service (NRCS) or US Army Corps of Engineers. Levee installation was ranked as the most-preferred flood mitigation strategy in the community survey administered as part of this plan.

Responsible party: Lisbon Mayor, Enderlin Public Works Director

Construct or enlarge culverts to reduce flooding risk for rural roads.

Culverts on rural roads in the county commonly wash out during times of snowmelt and heavy rain. Culvert mitigation is eligible for FEMA funds through the HMGP, PDM and FMA grant programs.

Responsible party: Ransom County Emergency Manager

Acquire and remove repetitive loss properties.

The County has already participated in the acquisition of several repetitive loss properties along the Sheyenne River. It is believed that no repetitive loss properties in the county are currently occupied. Funding for property acquisition is available through the FEMA HMGP, PDM and FMA programs. Any repetitive loss properties acquired using FEMA funds must be deed-restricted in perpetuity to open space uses following structure removal.

Responsible party: Ransom County Emergency Manager

Develop a public information campaign for agricultural producers.

The campaign could include information about the county's current and projected drought status and ideas for best practices to reduce drought impacts. The campaign should be coordinated with NDSU Extension and USDA FSA offices in Lisbon.

Responsible party: Ransom County Emergency Management

Chapter 5: Plan Maintenance

This chapter details the plan maintenance process to make sure the Ransom County Multi-Hazard Mitigation Plan will remain an active and relevant document. The plan maintenance process includes monitoring the implementation of mitigation projects, evaluating the effectiveness of the plan at achieving its goals and updating the plan. This chapter also includes information regarding how the plan will be integrated into existing planning mechanisms.

Plan Monitoring and Evaluation

The Local Emergency Planning Committee (LEPC) will monitor and evaluate the plan once per year. A basic agenda for each meeting should include:

- Discussion of project progress for the current period (and uncompleted projects from previous periods)
- Local champion reports on project status
- Discussion of upcoming projects and grant/funding opportunities
- Develop action list for upcoming reporting period

The responsible party should provide the following basic information about projects in the reporting period:

- What was accomplished for the project since the last meeting
- What obstacles, problems or delays the project encountered
- If the project needs to be changed or revised

Project progress should be recorded on the Mitigation Action Progress Report Form found in Appendix G. A form should be completed for each project during the reporting period (and projects from previous reporting periods that have not been completed). If time constraints are an issue, the LEPC may decide to only complete the form for high priority projects; lower-priority projects may be generally discussed without completing the form.

The Ransom County Emergency Manager should maintain a folder with all Mitigation Action Progress Report Forms and meeting notes.

The risk and vulnerability assessment should be evaluated during a LEPC meeting approximately two years after plan adoption. Any changes to risks since plan adoption, such as a major flood event that damaged areas thought to be safe from flooding, should be noted. The key facilities list should also be reviewed to see if any additions or deletions need to be made. A report detailing these changes should be made. If significant changes are required, the Emergency Manager should schedule a meeting to discuss amending the current plan. If no significant changes are required, the Emergency Manager should save the report of changes for reference during the next five-year plan update.

LEPC meetings that are reserved for discussion of the plan should be open to the public and advertised.

Integrating the Plan into Existing Planning Mechanisms

The County's 2009 Multi-Hazard Mitigation Plan explained that the plan should be integrated into other jurisdictional plans and mechanisms. Specifically mentioned were the county's zoning ordinances, local flood maps and potential Wildfire Protection Plan. The county's zoning ordinances were updated in 2008, just prior to the previous Hazard Mitigation Plan update. The ordinances contain extensive provisions that address multiple hazards. The Wildfire Protection Plan was not completed and is no longer considered a priority for the county. Local flood maps were updated in 2011 as part of FEMA's map modernization program.

Due to the limited resources of each jurisdiction, few planning mechanisms exist within the county. The county's projected population decline through 2025 suggests that resources will continue to remain scarce in the near future. A declining population could result in reduced tax revenue and less "human capital" to champion and implement projects. For the next five years, specific effort needs to be directed at maintaining interest in mitigation. The limited resources of each jurisdiction do not allow for many activities beyond the standard course of business, and mitigation can get overlooked. A majority of projects identified in this plan are infrastructure-related; however, no jurisdiction in the county has a capital improvement plan. It is the role of each responsible party identified in Chapter 4 to be present at annual budget meetings and advocate for consideration of mitigation projects.

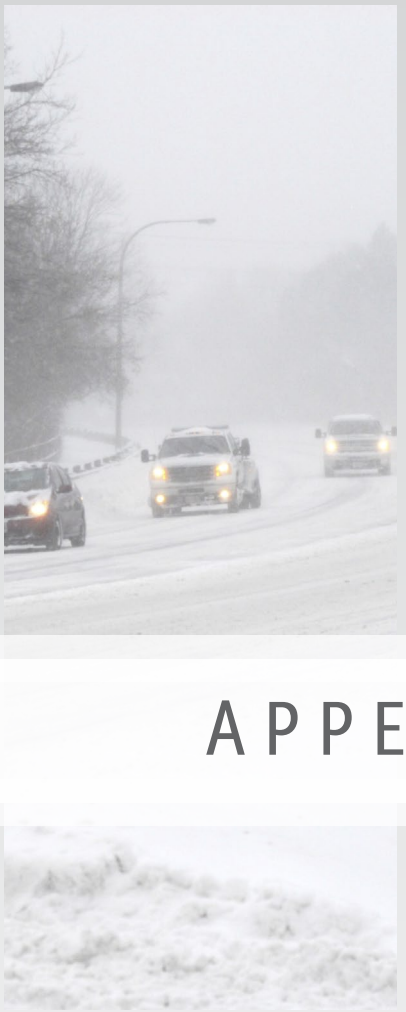
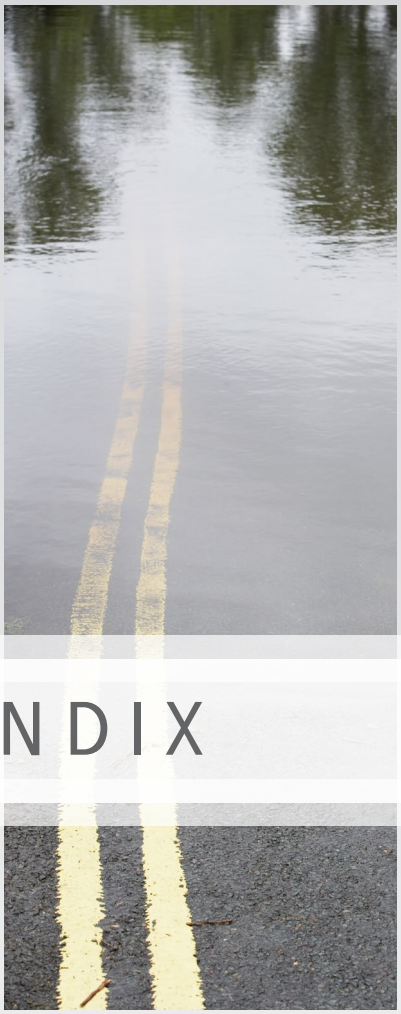
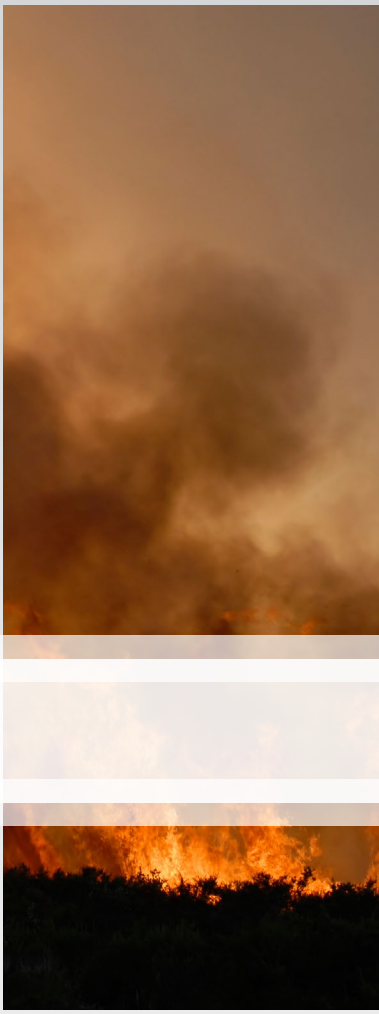
As noted in Chapter 4, a new comprehensive plan is something that the County should consider during the current planning period. A comprehensive plan could create a vision for the county and help to guide development in an efficient and hazard-resilient manner. A comprehensive plan could also provide guidance for future updates to zoning regulations.

Updating the Plan

The Ransom County Emergency Manager is responsible for overseeing the five-year update process. Nine months should be allowed for completion of the plan – six months to develop a draft and three months to collect DES and FEMA comments/revisions and formally adopt the plan. The Emergency Manager should begin the plan update process approximately one year prior to the expiration of the current plan. The first step is to develop the project scope by utilizing the Plan Update Evaluation Worksheet in Appendix G. Funding opportunities from DES/FEMA may also be evaluated when determining project scope. The Emergency Manager should also evaluate the possibility of contacting neighboring jurisdictions to join in the plan to achieve cost savings.

The Emergency Manager should maintain any documentation gathered during the five-year period that will be useful when developing the update. This will help to greatly reduce the research collection phase of the plan update, which will reduce the time and cost of the plan update. It will also ensure that any priority items identified during LEPC monitoring meetings will be included in the plan.

RANSOM COUNTY, ND

APPENDIX

FEMA

NDDES Homeland Security State Radio

KLJ

Appendix A: Approval and Adoption Documentation

ND Department of Emergency Services

NDDES Homeland Security State Radio

PO Box 5511
Bismarck, ND 58506-5511

Tel: (701) 328-8100
Fax: (701) 328-8181

Email: nddes@nd.gov
Website: www.nd.gov/des

Ensuring a safe and secure homeland for all North Dakotans

September 28, 2015

George Bunn, Chairman
Ransom County Commission
204 5th Ave West
PO Box 668
Lisbon, ND 58054

Dear Chairman Bunn:

Congratulations on successful efforts to increase your communities' resilience to emergencies and disasters through Ransom County's recent comprehensive mitigation planning initiative, led by Emergency Manager Tricia Kriel.

The Federal Emergency Management Agency (FEMA) Region VIII, approved the Ransom County Multi-Hazard Mitigation Plan (MHMP) September 15, 2015, through September 14, 2020, for Ransom County and the Cities of Elliot, Enderlin, Fort Ransom, Lisbon and Sheldon.

Now that your MHMP has been completed and approved by FEMA, please submit any eligible costs, in-kind documentation (if applicable), and proof of payments to Hazard Mitigation Specialist Gary Simmons for reimbursement. Gary will review the documentation and, if eligible, reimburse all costs as outlined in the approved scope of work and budget of the project. Gary's contact information is 701-328-8255, gsimmons@nd.gov.

Once all costs have been reimbursed, the last step still required is project closeout. NDDES will forward a closeout letter template with examples for your use, which will include the final project costs, and the county will simply need to copy this template onto its letterhead, sign the document, and resubmit the completed letter back to NDDES. If a final 404 quarterly report form had never been submitted, NDDES will request that as well showing the project is 100% completed with the final approval date including day, month and year. NDDES will submit all closeout paperwork to FEMA once it has been compiled.

During the next five years, we encourage the Ransom County Planning Team to ensure the MHMP becomes a living document. We recommend the Planning Team begin that effort by ensuring periodic updates to content and by pursuing mitigation projects, as outlined in the plan. My staff and FEMA Region VIII mitigation planners provided comments and recommended revisions in the enclosed Plan Review Tool, which will help guide update efforts.

Jack Dalrymple
Governor

Major General David Sprynczynatyk
Director – Department of Emergency Services

Greg M. Wilz
Director - Division of Homeland Security

Mike Lynk
Director - Division of State Radio

My staff can assist your Planning Team move forward with plan and project implementation. For information about potential sources of funding for mitigation projects, contact Justin Messner, State Hazard Mitigation Officer, at 701-328-8107, jmessner@nd.gov. Questions about mitigation planning can be directed to Kathleen Donahue, Deputy Chief for Recovery and Mitigation Planning, at 701-328-8113, kdonahue@nd.gov.

Thanks for all your hard work.

Sincerely,

Cody Schulz
Disaster Recovery Chief
N.D. Division of Homeland Security

Enclosures: 9-15-2015 FEMA Approval Letter, Plan Review Tool

cc: Tricia Kriel, Ransom County Emergency Manager

U.S. Department of Homeland Security
Region VIII
Denver Federal Center, Building 710
P.O. Box 25267
Denver, CO 80225-0267

FEMA

R8-MT

September 15, 2015

Mr. Cody Schulz
Disaster Recovery Chief
North Dakota Department of Emergency Services
Fraine Barracks Lane, Building 35
P.O. Box 5511
Bismark, North Dakota 58502-5511

Dear Mr. Schulz:

We are pleased to announce the approval of the **Ransom County Multi-Hazard Mitigation Plan** as meeting the requirements of the Stafford Act and Title 44 Code of Federal Regulations 201.6 for a local hazard mitigation plan. The plan approval extends to the following participating jurisdictions that have adopted the plan: **Ransom County and the Cities of Elliot, Enderlin, Fort Ransom, Lisbon and Sheldon.**

The approved jurisdictions are eligible for FEMA Hazard Mitigation Assistance grant programs. All requests for funding will be evaluated individually according to the specific eligibility and other requirements of the particular programs under which the application is submitted. Approved mitigation plans may be eligible for points under the National Flood Insurance Program Community Rating System.

This plan is approved through September 14, 2020. A local jurisdiction must revise its plan to reflect changes in development, progress in local mitigation efforts, changes in priorities, and resubmit for approval within five years to continue to be eligible for mitigation project grant funding.

We have provided comments and recommended revisions of the enclosed Plan Review Tool. We wish to thank all jurisdictions that participated in the planning process and commend your continued commitment to reducing future disaster losses.

Sincerely,

Jeanine Petterson
Mitigation Division Director

Enclosure: Plan Review Tool

www.fema.gov

LOCAL MITIGATION PLAN REVIEW TOOL

The *Local Mitigation Plan Review Tool* demonstrates how the Local Mitigation Plan meets the regulation in 44 CFR §201.6 and offers States and FEMA Mitigation Planners an opportunity to provide feedback to the community.

- The Regulation Checklist provides a summary of FEMA's evaluation of whether the Plan has addressed all requirements.
- The Plan Assessment identifies the plan's strengths as well as documents areas for future improvement.
- The Multi-jurisdiction Summary Sheet is an optional worksheet that can be used to document how each jurisdiction met the requirements of the each Element of the Plan (Planning Process; Hazard Identification and Risk Assessment; Mitigation Strategy; Plan Review, Evaluation, and Implementation; and Plan Adoption).

The FEMA Mitigation Planner must reference this *Local Mitigation Plan Review Guide* when completing the *Local Mitigation Plan Review Tool*.

Jurisdiction: Ransom County	**Title of Plan:** Multi-Hazard Mitigation Plan	**Date of Plan:** April 2015
Local Point of Contact: Tricia Kriel		**Address:** 204 5th Avenue West Lisbon, ND 58054
Title: Emergency Manager		
Agency: Ransom County		
Phone Number: (107) 683-6125		**E-Mail:** tricia.kriel@co.ransom.nd.us

State Reviewer: Kathleen Donahue, NDDES	**Title:** Deputy, Recovery & Mitigation	**Date:** April 27, 2015

FEMA Reviewer: Margaret Doherty	**Title:** Community Planner	**Date:** May 28, 2015
Date Received in FEMA Region VIII	**April 28, 2015**	
Plan Not Approved		
Plan Approvable Pending Adoption	**June 8, 2015**	
Plan Approved	**September 15, 2015**	

SECTION 1:
MULTI-JURISDICTION SUMMARY SHEET

MULTI-JURISDICTION SUMMARY SHEET									
#	Jurisdiction Name	Jurisdiction Type	Jurisdiction Contact	Email	Requirements Met (Y/N)				
					A. Planning Process	B. HIRA	C. Mitigation Strategy	D. Update Rqtms.	E. Adoption Resolution
1	Ransom	County	Tricia Kriel, Emergency Manager	tricia.kriel@co.ransom.nd.us	Y	Y	Y	Y	Y
2	Elliott	City	Kory Jalbert, Mayor	kjalbert@kwh.com	Y	Y	Y	Y	Y
3	Enderlin	City	Cyndee Chesley, Auditor	enderlincity@mlgc.com	Y	Y	Y	Y	Y
4	Fort Ransom	City	Darrel Bjone, Mayor	701-680-9457	Y	Y	Y	Y	Y
5	Lisbon	City	Tim Meyer, Mayor	tim.meyer@titanmachinery.com	Y	Y	Y	Y	Y
6	Sheldon	City	Rick Taylor, Mayor	701-882-3431	Y	Y	Y	Y	Y
7									
8									
9									
10									

SECTION 2:
REGULATION CHECKLIST

1. REGULATION CHECKLIST **Regulation** (44 CFR 201.6 Local Mitigation Plans)	Location in Plan (section and/or page number)	Met	Not Met
ELEMENT A. PLANNING PROCESS			
A1. Does the Plan document the planning process, including how it was prepared and who was involved in the process for each jurisdiction? (Requirement §201.6(c)(1))	Appendix B	X	
A2. Does the Plan document an opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, agencies that have the authority to regulate development as well as other interests to be involved in the planning process? (Requirement §201.6(b)(2))	Appendix B	X	
A3. Does the Plan document how the public was involved in the planning process during the drafting stage? (Requirement §201.6(b)(1))	Appendix B	X	
A4. Does the Plan describe the review and incorporation of existing plans, studies, reports, and technical information? (Requirement §201.6(b)(3))	Appendix B	X	
A5. Is there discussion of how the community(ies) will continue public participation in the plan maintenance process? (Requirement §201.6(c)(4)(iii))	Page 5-1	X	
A6. Is there a description of the method and schedule for keeping the plan current (monitoring, evaluating and updating the mitigation plan within a 5-year cycle)? (Requirement §201.6(c)(4)(i))	Pages 5-1—5-2	X	
ELEMENT A: REQUIRED REVISIONS			
ELEMENT B. HAZARD IDENTIFICATION AND RISK ASSESSMENT			
B1. Does the Plan include a description of the type, location, and extent of all natural hazards that can affect each jurisdiction(s)? (Requirement §201.6(c)(2)(i))	Chapter 3	X	
B2. Does the Plan include information on previous occurrences of hazard events and on the probability of future hazard events for each jurisdiction? (Requirement §201.6(c)(2)(i))	Chapter 3	X	
B3. Is there a description of each identified hazard's impact on the community as well as an overall summary of the community's vulnerability for each jurisdiction? (Requirement §201.6(c)(2)(ii))	Chapter 3	X	
B4. Does the Plan address NFIP insured structures within the jurisdiction that have been repetitively damaged by floods? (Requirement §201.6(c)(2)(ii))	Pages 3-15 and 4-6	X	
ELEMENT B: REQUIRED REVISIONS			

1. REGULATION CHECKLIST Regulation (44 CFR 201.6 Local Mitigation Plans)	Location in Plan (section and/or page number)	Met	Not Met
ELEMENT C. MITIGATION STRATEGY			
C1. Does the plan document each jurisdiction's existing authorities, policies, programs and resources and its ability to expand on and improve these existing policies and programs? (Requirement §201.6(c)(3))	Page 4-1	X	
C2. Does the Plan address each jurisdiction's participation in the NFIP and continued compliance with NFIP requirements, as appropriate? (Requirement §201.6(c)(3)(ii))	Pages 3-8 and 4-3	X	
C3. Does the Plan include goals to reduce/avoid long-term vulnerabilities to the identified hazards? (Requirement §201.6(c)(3)(i))	Page 4-2	X	
C4. Does the Plan identify and analyze a comprehensive range of specific mitigation actions and projects for each jurisdiction being considered to reduce the effects of hazards, with emphasis on new and existing buildings and infrastructure? (Requirement §201.6(c)(3)(ii))	Pages 4-3—4-6	X	
C5. Does the Plan contain an action plan that describes how the actions identified will be prioritized (including cost benefit review), implemented, and administered by each jurisdiction? (Requirement §201.6(c)(3)(iv)); (Requirement §201.6(c)(3)(iii))	Pages 4-3—4-6 and Appendix F	X	
C6. Does the Plan describe a process by which local governments will integrate the requirements of the mitigation plan into other planning mechanisms, such as comprehensive or capital improvement plans, when appropriate? (Requirement §201.6(c)(4)(ii))	Pages 5-1 – 5-2	X	
ELEMENT C: REQUIRED REVISIONS			
ELEMENT D. PLAN REVIEW, EVALUATION, AND IMPLEMENTATION (applicable to plan updates only)			
D1. Was the plan revised to reflect changes in development? (Requirement §201.6(d)(3))	Pages 2-3 – 2-4	X	
D2. Was the plan revised to reflect progress in local mitigation efforts? (Requirement §201.6(d)(3))	Appendix F	X	
D3. Was the plan revised to reflect changes in priorities? (Requirement §201.6(d)(3))	Chapter 3	X	
ELEMENT D: REQUIRED REVISIONS			
ELEMENT E. PLAN ADOPTION			
E1. Does the Plan include documentation that the plan has been formally adopted by the governing body of the jurisdiction requesting approval? (Requirement §201.6(c)(5))			NA

1. REGULATION CHECKLIST **Regulation** (44 CFR 201.6 Local Mitigation Plans)	Location in Plan (section and/or page number)	Met	Not Met
E2. For multi-jurisdictional plans, has each jurisdiction requesting approval of the plan documented formal plan adoption? (Requirement §201.6(c)(5))		X	
ELEMENT E: REQUIRED REVISIONS			
ELEMENT F. ADDITIONAL STATE REQUIREMENTS (OPTIONAL FOR STATE REVIEWERS ONLY; NOT TO BE COMPLETED BY FEMA)			
F1.			
F2.			
ELEMENT F: REQUIRED REVISIONS			

SECTION 3:
PLAN ASSESSMENT

A. Plan Strengths and Opportunities for Improvement

This section provides a discussion of the strengths of the plan document and identifies areas where these could be improved beyond minimum requirements.

State Comments

The Executive Summary provides a good at-a-glance summary of key issues discussed by the Planning Team. The Planning Team took the extra steps required to obtain feedback when not all jurisdictions participated in meetings.

The Purpose provides a good reminder of why mitigation plans are developed; Ransom County is encouraged to continue this initiative to increase awareness of hazards and implement viable strategies to mitigate potential impacts.

Element A: Planning Process

State Comments

Requirement A1 – In the absence of meeting participation, the Planning Team made a concerted effort to conduct outreach with jurisdictions to elicit insights, as illustrated in the addition of the listing of team members in Appendix B.

For the next update, involve more representatives of the communities, to include the U.S. Forest Service (Sheyenne National Grasslands), N.D. Parks and Recreation Department, senior centers, schools, historical societies/libraries and businesses. Also consider coordinating with the Sundale Huttertarian Association. These participants can be a valuable resource for understanding the communities' concerns regarding hazards. If time permits, consider moving the meetings to various locations in the county.

The Project Schedule and Meeting Summaries provide a good summary of key concerns and mitigation strategies.

Requirement A3 – Overall, feedback from the Community Survey was incorporated into the plan when selecting strategies. For the next update, consider setting up a mitigation information booth at Sodbuster Days.

Element B: Hazard Identification and Risk Assessment

State Comments

Requirement B3 – This section contains solid analysis of about current risk in comparison to past events. The section also provides the foundation for mitigation strategies. As example, the risk of flooding prompted an evaluation of NFIP participation during strategy development. The damage scenarios are a good addition. The hazmat section contains a solid analysis of risk.

FEMA:
The problem statements are well done and provide a list of key issues to be addressed in the mitigation strategy. Consider including this information by jurisdiction, similar to how it is done in the flood section on page 3-14. The flood maps (starts page 3-11 are particularly well done).

Element C: Mitigation Strategy

State Comments

Requirement C3 –Revisions to the vulnerability analysis improved this section, particularly in comparison to the past plan. For the next update, discuss the economic impacts of drought in addition to population and water systems.

Requirement C6 – Note the mitigation strategies include updating the Emergency Operations Plan (EOP), which will be based on the mitigation plan data.

FEMA:
The plan includes a comprehensive range of actions; however, as part of the next update, consider how the legal and regulatory capabilities of the jurisdictions can be improved upon to prevent future losses.

Element D: Plan Review, Evaluation, and Implementation

State Comments

Requirement D1 – Comments throughout the plan about the decline in population point to a potential lack of revenue to enact mitigation strategies.

FEMA:
The plan would be improved with more celebration of past mitigation successes. The completed actions in Appendix F are impressive and should be highlighted in the Executive Summary.

B. Resources for Implementing Your Approved Plan

State Comments

The N.D. Department of Emergency Services is developing a Hazard Mitigation Toolbox on its webpage: http://www.nd.gov/des/disaster/. The goal is to provide guidance to emergency managers and their contractors regarding available resources.

FEMA:
- The mitigation strategy includes projects that may be eligible for FEMA's grant programs. Contact your State Hazard Mitigation Officer for application information.
- Each year, FEMA partners with the State on training courses designed to help communities be more successful in their applications for grants, including the Unified Hazard Mitigation Grant Assistance Application Development Course and the Benefit Cost Analysis (BCA) course. Contact your State Hazard Mitigation Officer for course offering schedules.

- The US Department of Transportation's Hazardous Materials Emergency Preparedness (HMEP) grant program provides financial and technical assistance as well as national direction and guidance to enhance State, Territorial, Tribal, and local hazardous materials emergency planning and training. See this website for more information: http://www.phmsa.dot.gov/grants-state-programs.

RANSOM COUNTY AUDITOR
Kristi Johnson, County Auditor
P.O. Box 668 | Lisbon, ND 58054-0668
t. 701.683.6113 | f. 701.683.5827
kristi.johnson@co.ransom.nd.us

Ransom County Multi-Hazard Mitigation Plan

Whereas, Ransom County recognizes the threat that natural, man-made or technological hazards pose to people and property within our community; and

Whereas, undertaking hazard mitigation actions will reduce and/or eliminate the potential for harm to people and property from future hazard occurrences; and

Whereas, an adopted Multi-Hazard Mitigation Plan is required as a condition of future funding for mitigation projects under multiple Federal Emergency Management Agency (FEMA) pre- and pot-disaster mitigation grant programs; and

Whereas, Ransom County participated in the preparation of this plan in accordance with the Disaster Mitigation Act of 2000; and

Whereas, adoption of the Ransom County Multi-Hazard Mitigation Plan demonstrates the commitment to hazard mitigation; and

Now, therefore, be it resolved, that the Ransom County Commission adopts the Ransom County Multi-Hazard Mitigation Plan.

Signed this 16th day of June, 2015.

Signed: George D. Bunn
George Bunn, Chairperson Ransom County Commission

Attested: Kristi Johnson
Kristi Johnson, Auditor Ransom County

Ransom County Multi-Hazard Mitigation Plan

Whereas, the City of Lisbon recognizes the threat that natural, man-made or technological hazards pose to people and property within our community; and

Whereas, undertaking hazard mitigation actions will reduce and/or eliminate the potential for harm to people and property from future hazard occurrences; and

Whereas, an adopted Multi-Hazard Mitigation Plan is required as a condition of future funding for mitigation projects under multiple Federal Emergency Management Agency (FEMA) pre- and pot-disaster mitigation grant programs; and

Whereas, the City of Lisbon participated in the preparation of this plan in accordance with the Disaster Mitigation Act of 2000; and

Whereas, adoption of the Ransom County Multi-Hazard Mitigation Plan demonstrates the commitment to hazard mitigation; and

Now, therefore, be it resolved, that the Lisbon City Council adopts the Ransom County Multi-Hazard Mitigation Plan.

Signed this 16th day of July, 2015.

Signed: T Meyer

Tim Meyer, Mayor City of Lisbon

Attested: Gwen Crawford

Gwen Crawford, Auditor City of Lisbon

Ransom County Multi-Hazard Mitigation Plan

Whereas, the City of Enderlin recognizes the threat that natural, man-made or technological hazards pose to people and property within our community; and

Whereas, undertaking hazard mitigation actions will reduce and/or eliminate the potential for harm to people and property from future hazard occurrences; and

Whereas, an adopted Multi-Hazard Mitigation Plan is required as a condition of future funding for mitigation projects under multiple Federal Emergency Management Agency (FEMA) pre- and pot-disaster mitigation grant programs; and

Whereas, the City of Enderlin participated in the preparation of this plan in accordance with the Disaster Mitigation Act of 2000; and

Whereas, adoption of the Ransom County Multi-Hazard Mitigation Plan demonstrates the commitment to hazard mitigation; and

Now, therefore, be it resolved, that the Enderlin City Council adopts the Ransom County Multi-Hazard Mitigation Plan.

Signed this 6th day of July, 2015.

Signed: _____

Deon Maasjo, Mayor City of Enderlin

Attested: _____

Cyndee Chesley, Auditor City of Enderlin

Ransom County Multi-Hazard Mitigation Plan

Whereas, the City of Fort Ransom recognizes the threat that natural, man-made or technological hazards pose to people and property within our community; and

Whereas, undertaking hazard mitigation actions will reduce and/or eliminate the potential for harm to people and property from future hazard occurrences; and

Whereas, an adopted Multi-Hazard Mitigation Plan is required as a condition of future funding for mitigation projects under multiple Federal Emergency Management Agency (FEMA) pre- and pot-disaster mitigation grant programs; and

Whereas, the City of Fort Ransom participated in the preparation of this plan in accordance with the Disaster Mitigation Act of 2000; and

Whereas, adoption of the Ransom County Multi-Hazard Mitigation Plan demonstrates the commitment to hazard mitigation; and

Now, therefore, be it resolved, that the Fort Ransom City Council adopts the Ransom County Multi-Hazard Mitigation Plan.

Signed this 6 day of July, 2015.

Signed: Darrel Bjone

Darrel Bjone, Mayor City of Fort Ransom

Attested: [signature]

Auditor City of Fort Ransom

Ransom County Multi-Hazard Mitigation Plan

Whereas, the City of Sheldon recognizes the threat that natural, man-made or technological hazards pose to people and property within our community; and

Whereas, undertaking hazard mitigation actions will reduce and/or eliminate the potential for harm to people and property from future hazard occurrences; and

Whereas, an adopted Multi-Hazard Mitigation Plan is required as a condition of future funding for mitigation projects under multiple Federal Emergency Management Agency (FEMA) pre- and pot-disaster mitigation grant programs; and

Whereas, the City of Sheldon participated in the preparation of this plan in accordance with the Disaster Mitigation Act of 2000; and

Whereas, adoption of the Ransom County Multi-Hazard Mitigation Plan demonstrates the commitment to hazard mitigation; and

Now, therefore, be it resolved, that the Sheldon City Council adopts the Ransom County Multi-Hazard Mitigation Plan.

Signed this 30 day of July, 2015.

Signed: Rick Taylor

Rick Taylor, Mayor City of Sheldon

Attested: Tammy Boeder

Tammy Boeder, Auditor City of Sheldon

Ransom County Multi-Hazard Mitigation Plan

Whereas, the City of Elliott recognizes the threat that natural, man-made or technological hazards pose to people and property within our community; and

Whereas, undertaking hazard mitigation actions will reduce and/or eliminate the potential for harm to people and property from future hazard occurrences; and

Whereas, an adopted Multi-Hazard Mitigation Plan is required as a condition of future funding for mitigation projects under multiple Federal Emergency Management Agency (FEMA) pre- and pot-disaster mitigation grant programs; and

Whereas, the City of Elliott participated in the preparation of this plan in accordance with the Disaster Mitigation Act of 2000; and

Whereas, adoption of the Ransom County Multi-Hazard Mitigation Plan demonstrates the commitment to hazard mitigation; and

Now, therefore, be it resolved, that the Elliott City Council adopts the Ransom County Multi-Hazard Mitigation Plan.

Signed this 3rd day of August, 2015.

Signed: _____

Kory Jalbert, Mayor City of Elliott

Attested: _____

Doris Stroh, Auditor City of Elliott

Appendix B: Planning Process

The planning process included Planning Team meetings, public meetings and a public survey.

Project Schedule

Note: Sign-In Sheets, Meeting Notes and Advertisements can be found later in this appendix. A list of representatives from participating jurisdictions is available with the sign-in sheets.

Planning Team Meeting 1
County Courthouse, Lisbon
December 22nd, 2014
5:15 pm – 6:30 pm

This meeting focused on discussion of potential risks and vulnerabilities for each jurisdiction. The Planning Team was presented with a list of hazards, and the consultant guided a conversation about risks and vulnerabilities associated with each hazard.

Planning Team Meeting 2
County Courthouse, Lisbon
January 21st, 2015
6:00 pm – 7:00 pm

This meeting focused on determining a preliminary list of mitigation actions for each jurisdiction. A list of potential actions was presented to the Planning Team and each action was discussed based on STAPLEE criteria.

Public Meeting 1
County Courthouse, Lisbon
January 21st, 2015
7:00 pm – 8:00 pm

A summary of the project to this point was presented. The presentation included information from the first two planning team meetings and data/maps from various sources. Potential mitigation actions were also discussed. The public was invited to provide comments and input about risks and potential mitigation actions.

Community Survey
February

Meetings with each Jurisdiction
February - March

Representatives for each jurisdiction were contacted during the month of February. More information about each jurisdiction's participation can be found later in this appendix.

Public Meeting 2
County Courthouse, Lisbon
March 26th, 2015
5:30 pm – 6:30 pm

The draft plan was presented and an opportunity for comments was provided.

Community Survey

The community survey asked questions related to hazard prioritization and preferred strategies. The survey was available on the county website and paper copies were available at the county courthouse. It was advertised through the newspaper, active word of mouth from Planning Team members and a flyer. The survey was available January 15th through the end of February. More information about advertisements can be found later in this appendix. Results from the community survey were incorporated into the risk assessment and mitigation strategy; however, the results were given a low priority due to the low response rate.

1. Where do you live?

Answer Options	Response Percent	Response Count
Elliott	0.0%	0
Enderlin	16.7%	1
Fort Ransom	0.0%	0
Lisbon	33.3%	2
McLeod	16.7%	1
Sheldon	0.0%	0
Other within Ransom County	0.0%	0
Outside Ransom County	33.3%	2
	answered question	6
	skipped question	0

2. Choose the top three natural hazards that are a threat to your community.

Answer Options	Response Percent	Response Count
Drought	0.0%	0
Earthquake	0.0%	0
Flood	100.0%	6
Landslide	0.0%	0
Severe Summer Storm (hail, lighting, wind, tornado, heavy rain)	100.0%	6
Severe Winter Storm (ice, snow, wind)	83.3%	5
Wildfire	16.7%	1
Other (please specify)		0
	answered question	6
	skipped question	0

3. Choose the top two human-caused hazards that are a threat to your community.

Answer Options	Response Percent	Response Count
Communicable Disease (human, crop, livestock)	33.3%	2
Dam Failure	0.0%	0

Hazardous Materials Release	100.0%	6
Homeland Security Incident	0.0%	0
Urban Fire	66.7%	4
Other (please specify)		0
	answered question	6
	skipped question	0

4. Potential action items to mitigate the effects of flooding are shown below. Please identify up to 3 action items that you think the County should consider pursuing.

Answer Options	Response Percent	Response Count
Construct additional flood protection dikes in strategic locations	83.3%	5
Develop municipal storm sewer cleaning/inspection procedures	16.7%	1
Educate residents about the benefits of flood insurance	0.0%	0
Encourage all communities to join the National Flood Insurance Program (NFIP)	0.0%	0
Identify and protect commonly washed-out roads	16.7%	1
Install rip rap on river banks	16.7%	1
Install sewer backflow prevention valves on select facilities	50.0%	3
Property acquisition, relocation, and elevation	33.3%	2
Restrict development in high risk flood areas	33.3%	2
Treat invasive species to restore natural stream function	0.0%	0
Upgrade municipal storm water management infrastructure	50.0%	3
Other (please specify)		0
	answered question	6
	skipped question	0

5. Potential action items to mitigate the effects of severe summer storms (hail, lightning, wind, tornado, heavy rain) are shown below. Please identify up to 3 action items that you think the County should consider pursuing.

Answer Options	Response Percent	Response Count
Back-up power sources	66.7%	4
Building code enforcement	16.7%	1
Construction/designation of community shelters	16.7%	1
Distribute additional NOAA weather radios	33.3%	2
Installing shatter-resistant window film on key public facilities	16.7%	1
Installing surge protection on critical electronic equipment	16.7%	1
Installing new warning sirens	66.7%	4
Public education on summer storm safety	33.3%	2
Require sheltering plan for new mobile home parks	16.7%	1
Weather spotter training	16.7%	1
Other (please specify)		0
	answered question	6
	skipped question	0

6. Potential action items to mitigate the effects of severe winter storms (snow, ice, wind) are shown below. Please identify up to 3 action items that you think the County should consider pursuing.

Answer Options	Response Percent	Response Count
Back-up power sources	100.0%	6
Designation and advertisement of accessible heating centers during power outages	33.3%	2
Encourage homeowners to install carbon monoxide monitors and alarms	16.7%	1
Including safety strategies for severe weather in driver education classes and materials	16.7%	1
Identify critical routes to keep plowed	0.0%	0

Improve access to livestock during snowstorms	0.0%	0
Public education on winter weather safety	33.3%	2
Retrofitting public buildings to withstand snow loads and prevent roof collapse	16.7%	1
Snow fences/living snow fences	16.7%	1
Tree removal/maintenance near power lines	16.7%	1
Work with electric provider to bury power lines	0.0%	0
Other (please specify)		0
	answered question	6
	skipped question	0

7. Potential action items to mitigate the effects of wildfires are shown below. Please identify up to 3 action items that you think the County should consider pursuing.

Answer Options	Response Percent	Response Count
Construct water storage tanks in strategic rural areas	40.0%	2
Develop defensible space education for rural homeowners	20.0%	1
Ensure adequate water supplies for fire suppression	40.0%	2
Implement a brush/fuel removal program to create defensible zones around major streets, power lines, and other infrastructure systems	40.0%	2
Install dry hydrants at strategic locations	20.0%	1
Install water supply monitors at storage facilities	20.0%	1
Provide training and additional resources to improve fire department response to wildfire	20.0%	1
Public education about special precautions during periods of high fire risk	20.0%	1

Remove abandoned or collapsed structures	40.0%	2
Routinely inspecting and repairing fire hydrants	0.0%	0
Other (please specify)		0
	answered question	5
	skipped question	1

8. Are there mitigation projects for other hazards that the County should pursue? If "Yes," please list the projects.

Answer Options	Response Percent	Response Count
No	100.0%	2
Yes		2
	answered question	2
	skipped question	4

Reviewed Documents

Documents reviewed and incorporated into this plan include:

2009 Ransom County Multi-Hazard Mitigation Plan
Dead Colt Creek Emergency Action Plan (risk assessment)
Ransom County Flood Insurance Study (risk assessment)
Ransom County Zoning Ordinance (capability assessment)
Ransom County Floodplain Ordinance (capability assessment)
Ransom County Emergency Operations Plan (capability assessment)
North Dakota State Building Code (capability assessment)
2014 North Dakota Multi-Hazard Mitigation Plan (risk assessment and mitigation ideas)

Neighboring Jurisdictions and Regional Agencies

Both public meetings were advertised in the *Ransom County Gazette*, which has distribution throughout the region. Invited regional agencies include representatives from the North Dakota Parks and Recreation Department and the State Water Commission. In addition, a draft of the plan was personally e-mailed to each neighboring Emergency Manager for their review and comment (Barnes, Cass, Richland, Sargent, Dickey and LaMoure).

Attendance

Sign-in sheets for each meeting are presented below. Additionally, representatives for each city were contacted during the months of February and March to discuss their city's hazard risk and potential mitigation actions. Notes for each meeting are included later in this appendix.

Planning team representatives who participated via in person meeting or phone call for each jurisdiction were:

Ransom County
Tricia Kriel, Emergency Manager
Neil Olerud, County Commissioner
Brenna Welton, Public Health Administrator
Darren Benneweis, Sheriff

City of Lisbon
Tim Meyer, Mayor
Bob Smith, City Council
Jeanette Persons, Chief of Police

City of Enderlin
Cyndee Chesley, Auditor
Rick Gillund, Public Works Superintendent
Tyler Kilde, Enderlin EMS
Dan Gross, Asst Fire Chief
Dan Spiekermeier, Asst Fire Chief

City of Fort Ransom
Darrel Bjone, Mayor

City of Sheldon
Rick Taylor, Mayor
Dan Spiekermeier, Asst Fire Chief

City of Elliott
Kory Jalbert, Mayor

MEETING SIGN-IN SHEET

Project:	Ransom County Hazard Mitigation Plan Update Meeting	**Meeting Date:**	12/22/2014
Facilitator:	KLJ	**Place/Room:**	Ransom County Courthouse

Name	Title	Jurisdiction	Mileage	E-Mail
Andrew Thierolf	Planner	KLJ	360	andrew.thierolf@kljeng.com
Carron Day	Planner	KLJ	360	carron.day@kljeng.com
Tyler Kilde	Enderlin EMS	Enderlin Fire Dept.	36	TylerK@MLGC.BIZ
Dan Gross	Enderlin Fire	Enderlin Fire Dist	36	fire9442@hotmail.com
Bob Smith	City of Lisbon	Lisbon City Council	4	bob.smith@reis.com
Dan Spiekermeier	Sheldon Firechief	Enderlin Sheldon Rural	40	danspiek@hotmail.com
Tricia Kriel	Ransom County EM	Ransom County		tricia.kriel@co.ransom.nd.us
Brenna Welton	Ransom Co. Public Health, Administrator	Ransom Co.	10	brenna.welton@co.ransom.nd.us
Jeanette Persons	Chief of Police Lisbon PD	Lisbon PD	½ mile	persj520@hotmail.com

MEETING SIGN-IN SHEET

Project:	Ransom County Hazard Mitigation Plan Update Meeting	**Meeting Date:**	1/21/2015
Facilitator:	KLJ 6:00pm planning meeting	**Place/Room:**	Ransom County Courthouse

Name	Title	Jurisdiction	Mileage	E-Mail
Tricia Kriel	Ransom County Emergency Manager	Ransom County	Ø	tricia.kriel@co.ransom.nd.us
Brenna Welton	Administrator Ransom Co. Public Health	Ransom Co.	10	brenna.welton@co.ransom.nd.us
Jeanette Persons	~~Police Chief Lisbon PD~~	Lisbon PD		persis52d@hotmail.com
Dan Spietermeier	Enderlin FD Asst Chief	Enderlin	40	danspiet@hotmail.com
Dan Gross	Enderlin FD Asst Chief	Enderlin	30	Fire9442@hotmail.com
Darren Benneweis	Ransom CTY Sheriff	Ransom CTY	—	
Michelle Smith	CHI Lisbon Health ED Manager	Lisbon	0	michelle.smith6@catholichealth.net
Neil Olerud	Ransom County Comm	Ransom County	36	neilolerud@yahoo.com
Andrew Thierolf	KLJ Planner	KLJ	360	
Carron Day	Planner	KLJ	360	

MEETING SIGN-IN SHEET

Project:	Ransom County Hazard Mitigation Plan Update Meeting	**Meeting Date:**	1/21/2015
Facilitator:	KLJ 7:00pm Public Meeting	**Place/Room:**	Ransom County Courthouse

Name	Title	Jurisdiction	Mileage	E-Mail
Lyle Thomason	Lisbon City Council member	Lisbon	-0-	
Catherine Cole	Resident	Lisbon	-0-	
Neil Olerud	Ransom County Comm	Ransom County	36	neilolerud@yahoo.com

MEETING SIGN-IN SHEET

Project:	Hazard mitigation draft plan review meeting	**Meeting Date:**	March 26th 2015
Facilitator:	KLJ	**Place/Room:**	Ransom County Courthouse – Lisbon ND

Name	Agency you represent	Mileage	E-Mail
Connie Gilbert	County Commission	17	gilbertconnie_54@hotmail.com
Neil Olerud	County Commission	36	neilolerud@yahoo.com
Terri Kelly Barta	R.C. Gazette		tabar@rcgazette.com
Teresa Sorby Rotenberger	County Auditor		tsorbyrotenberger@co.ransom.nd.us
NORMAN HANSEN	COMMISSIONER		—
George D. Bunn	COMMISSIONER	34	—
Bob Smith	City of Lisbon		—
Carron Day	KLJ	360	carron.day@kljeng.com
Andrew Thierolf	KLJ	360	andrew.thierolf@kljeng.com
Michelle Smith	CHI Lisbon Health		michelle.smith6@catholichealth.net

From: Tricia Kriel
Sent: Thursday, December 11, 2014 4:43 PM
To: 'timk@drtel.net'; 'pers1520@hotmail.com'; 'steven.johnson@sendit.nodak.edu'; Darren Benneweis; Smith, Michelle Mae (MichelleSmith@catholichealth.net); 'Lisbon Fire Department'; 'ksorby@drtel.net'; enderlinchief@aol.com; 'enderlincity@mlgc.com'; Tim Meyer; Julie Cole; 'vberreth@ringdahlems.com'; 'brenna.welton@co.ransom.nd.us'; 'Larson, Peggy A (PeggyALarson@catholichealth.net)'; 'danspiek@hotmail.com'; 'Neil Olerud'; 'Randy Seelig'; 'LYLE THOMASON'; 'rcwrd@drtel.net'; 'info@fortransomnd.com'; 'info@enderlinmuseum.org'; 'lisbonnd@drtel.net'; 'mjohn@nd.gov'; Will & Sue (swschlecht@mlgc.com); 'robert.smith@rcis.com'; 'LyDell.Mairs@sendit.nodak.edu'; 'gemar@drtel.net'; 'walt@nd-insure.com'; 'baseball@mlgc.com'; Chris Sandvig; Roberta Hopkins
Cc: 'triciakriel@gmail.com'
Subject: Hazard Mitigation Plan Update Planning Meeting

Hello all, I would like to invite you to take part in the Ransom County Multi-Hazard Mitigation Plan Update. Having a State and FEMA approved plan allows the County to be eligible for disaster aid and many different Federal grants. The plan needs to be updated every 5 years which happens to be this year. You are being invited to represent your agency in this process or to designate someone else from your agency for this process. There will be several in-person meetings and some done through conference call or email communication. The meetings should be around 1 hour and it is not necessary to attend every meeting but will help overall in the process if that is possible. There will be public meetings as well to get ideas & input from anyone in the County wishing to voice it.

The kickoff meeting will take place on Monday December 22nd at 5:15 PM at the Ransom County Courthouse Community Room this meeting will be about 1 hour in length. If you cannot attend please send a representative from your agency, you do not need to attend every meeting for this plan update it is just helpful to have a variety at each meeting to get different ideas and opinions. This update is being conducted by K L J with assistance from County employees when needed.

If you feel I have forgotten anyone who would be interested in being a part of this plan update please forward this email to them.

We hope to see you there,

Tricia Kriel
Ransom County Emergency Manager
PO BOX 1024 Lisbon ND 58054
Office phone: 701-683-6125
Office fax: 701-683-5158

From: Tricia Kriel
Sent: Tuesday, January 20, 2015 9:55 AM
To: 'timk@drtel.net'; 'pers1520@hotmail.com'; 'steven.johnson@sendit.nodak.edu'; Darren Benneweis; Lisbon Fire Department; 'ksorby@drtel.net'; enderlinchief@aol.com; 'enderlincity@mlgc.com'; Tim Meyer; Julie Cole; 'vberreth@ringdahlems.com'; 'danspiek@hotmail.com'; 'rcwrd@drtel.net'; info@fortransomnd.com; info@enderlinmuseum.org; 'lisbonnd@drtel.net'; 'mjohn@nd.gov'; Will & Sue; robert.smith@rcis.com; LyDell.Mairs@sendit.nodak.edu; gemar@drtel.net; walt@nd-insure.com; 'baseball@mlgc.com'; Chris Sandvig; Roberta Hopkins; Smith, Michelle Mae (MichelleSmith@catholichealth.net); Brenna Welton; 'Larson, Peggy A (PeggyALarson@catholichealth.net)'; LYLE THOMASON; Neil Olerud; Randy Seelig; 'enderlincity@mlgc.com'
Cc: Tricia Kriel
Subject: Multi-Hazard Mitigation Plan Meeting

Hello all, We will be having a planning meeting at 6:00PM at the Ransom County Courthouse Community Room, Wednesday January 21st 2015.

Please see attached flyer for the public meeting, this will take place after the planning meeting at 7:00 PM if you cannot attend the meeting please be sure to visit the project website and take the online survey.
http://www.ransomcountyhazards.com/

Thanks,

Tricia Kriel
Ransom County Emergency Manager
PO BOX 1024 Lisbon ND 58054
Office phone: 701-683-6125
Office fax: 701-683-5158

From: Tricia Kriel <Tricia.Kriel@co.ransom.nd.us>
Sent: Wednesday, March 11, 2015 1:31 PM
To: 'enderlincity@mlgc.com'; Tim Meyer; 'lisbonnd@drtel.net'; cityaud@drtel.net; Kimberly Robbins (kimberly.robbins@co.lamoure.nd.us); 'Russell, Charles J.'; 'Sandra A. Hanson (sandra.hanson@co.sargent.nd.us)'; Rogness, Dave (RognessD@casscountynd.gov); Brett D. Lambrecht (brettl@co.richland.nd.us); Kimberly Franklin (kfranklin@barnescounty.us); 'timk@drtel.net'; 'pers1520@hotmail.com'; 'steven.johnson@sendit.nodak.edu'; Darren Benneweis; Lisbon Fire Department; 'ksorby@drtel.net'; enderlinchief@aol.com; 'enderlincity@mlgc.com'; Tim Meyer; Julie Cole; 'vberreth@ringdahlems.com'; 'danspiek@hotmail.com'; 'rcwrd@drtel.net'; info@fortransomnd.com; info@enderlinmuseum.org; 'lisbonnd@drtel.net'; 'mjohn@nd.gov'; Will & Sue; robert.smith@rcis.com; LyDell.Mairs@sendit.nodak.edu; gemar@drtel.net; walt@nd-insure.com; 'baseball@mlgc.com'; Chris Sandvig; Roberta Hopkins; Smith, Michelle Mae (MichelleSmith@catholichealth.net); Brenna Welton; 'Larson, Peggy A (PeggyALarson@catholichealth.net)'; LYLE THOMASON; Neil Olerud; Randy Seelig; 'enderlincity@mlgc.com'
Cc: Andrew Thierolf; Carron Day
Subject: Draft review of Ransom County Multi-Hazard Mitigation Plan
Attachments: March 26 Meeting.jpg

Hello All, a draft of the Multi-Hazard Mitigation plan is available for review at http://www.ransomcountyhazards.com , paper copies are available at the Ransom County Courthouse, Emergency Management office. Please leave any comments on the website. Attached is a the public meeting notice for March 26th 2015, 5:30 PM at the Ransom County Courthouse, Community Room in Lisbon.

If you have already reviewed the plan and left comments please disregard this email.

Thank you,

Tricia Kriel
Ransom County Emergency Manager
PO BOX 1024 Lisbon ND 58054
Office phone: 701-683-6125
Office fax: 701-683-5158

Advertisements

The public meetings and community survey were advertised in the Ransom County Gazette and Enderlin Independent, and flyers were distributed at various locations in Lisbon.

Flyers

Flyers were posted in high traffic areas in Lisbon to promote the online survey. Lisbon is the county seat and commercial center of the county, so most of the flyers were posted in Lisbon. Flyer locations in Lisbon were the grocery store, Pizza Ranch, Subway, city hall, gas station and courthouse. Flyers were also posted in the Enderlin grocery store and city hall. The flyers were posted prior to the January 21st and March 26th meetings.


RANSOM
COUNTY
MULTI-HAZARD MITIGATION PLAN
PUBLIC MEETING
JAN. 21ST, 7:00 PM
COUNTY COURTHOUSE
Ransom County is preparing an update to the county's Multi-Hazard Mitigation Plan. This Plan presents a strategy for reducing the impacts of natural and man-made hazards in the county. Help shape the plan with your input on local hazards and share your ideas for potential strategies.
Visit the project website for more information and to take the online survey.
www.ransomcountyhazards.com
KLJ
SEVERE WINTER WEATHER FLOODING LANDSLIDE
EARTHQUAKE TERRORISM AND VIOLENCE
COMMUNICABLE DISEASE DAM FAILURE DROUGHT
VOLCANIC ERUPTION WILDLAND AND RANGELAND FIRE
SEVERE SUMMER WEATHER HAZARDOUS MATERIALS RELEASE


RANSOM
COUNTY
MULTI-HAZARD MITIGATION PLAN
PUBLIC MEETING
MARCH 26TH, 5:30 PM
COUNTY COURTHOUSE
Ransom County is preparing an update to the county's Multi-Hazard Mitigation Plan. This Plan presents a strategy for reducing the impacts of natural and man-made hazards in the county. This meeting will include a presentation of the draft plan and provide an opportunity for comments.
REVIEW THE DRAFT PLAN ONLINE
Paper copies are also available at the county courthouse. Submit your comments by March 27th.
www.ransomcountyhazards.com
KLJ
SEVERE WINTER WEATHER FLOODING LANDSLIDE
EARTHQUAKE TERRORISM AND VIOLENCE
COMMUNICABLE DISEASE DAM FAILURE DROUGHT
VOLCANIC ERUPTION WILDLAND AND RANGELAND FIRE
SEVERE SUMMER WEATHER HAZARDOUS MATERIALS RELEASE

Notices in the Ransom County Gazette

Run date: January 19th

Gazette Extra Circ.*, January 19, 2015, Page 4

Farm and Ranch

wiped away tears and the heaving horses gathered their breath. The event was "the talk" among the threshing crew for the rest of the day, but it was the horses that deserved the credit, and I knew it, even though several of the threshing hands said I was a brave little boy.

Years later I learned running is one of the ways horses rid themselves of biting insects. These horses knew what they were doing and meant no harm to me or Dad, or any deviation from their work expectations.

Since Dad had raised colts every year and "green-broke" two-year-olds for sale to lumber harvesters or other farmers who kept draft horses for farm chores, it seemed natural for me to raise riding horses when my family moved from Virginia to our Iowa farm in 1979.

While growing up, my brothers and I frequently rode saddle horses to gather cattle, check gopher traps, and just for fun. I wanted my children to experience the same enjoyment.

I purchased a filly and an 18 year-old registered American Quarter Horse mare. I joined the AQHA to learn more and to register the colts we raised.

I used the horses to check cows during calving season until I figured out it was easier to get a new mama to follow her calf as it rode in a cart trailing an ATV where she could see and smell it than when the calf was slung over a saddle.

It also was easier starting and driving the ATV with its lights around the calving field at night than saddling a horse and holding reins, a flashlight and perhaps a calf as well while riding the horse.

The horses were relegated to pleasure-riding. The older mare figured out how to dump the kids by purposefully scraping their legs when circling fence posts too closely and by running under low-hanging tree branches when they rode her.

The wily animal never tried these tricks when I rode her. I began to wonder if the horses, especiall ting bucked off a fe colts as I broke them

One summer day called to say one o was running with hi asked me to get the of his field.

I took the ATV the bull from his and drive him throu way to my farm. Ev drew near the pastu he bolted and ran at

I had to hightail avoid getting buttec trumpeted to his ne as I returned home the experienced qu mare.

Fort Ransom Rural Fire Protection District

The annual meeting of the
Fort Ransom Rural Protection District
will be held at the
Fort Ransom Fire Hall on
Wednesday, January 21, 2015
beginning at 7p.m.

-All district patrons are invited to attend-
Everyone Welcome!

HELP REDUCE THE IMPACT OF LOCAL HAZARDS

What: Public Meeting for the Ransom County Multi-Hazard Mitigation Plan

When: Wednesday, January 21st, 7:00 pm

Where: County Courthouse, Lisbon

Why: The Multi-Hazard Mitigation Plan will develop strategies for reducing the impact of hazards in the community. Help shape the plan with your input on local hazards and share your ideas for potential strategies. Visit the project website for more information and to take the online survey.

www.ransomcountyhazards.com

Save 10% Now & Build this Winter

Prairie Fare

Celebrate soup comforting satis

"I could use some help in the kitchen," I said to my three kids who were on their phones or computers. I decided they needed to be dragged away from technology and immersed in real-life experiences.

My 19-year-old son somewhat reluctantly entered the kitchen. I set up a spot for him with bags of carrots and celery from the refrigerator, a colander to rinse them, a knife and cutting board.

I think I detected some discreet "eye rolling" from my son. However, he is quite clever at avoiding verbal commentary when his mother is in meal-management mode.

My 16-year-old daughter began peeling and chopping onions and mincing garlic. For some reason, her eyes are immune to the usual tear-inducing effects of flavorful onion bulbs, so she often is on "onion duty." She began sauteing them our New Year's resc maintain our curren lose a few pounds.

In a study repc journal Appetite, I State University rese vided various types lowed by entrees tc and 38 men. They w how soup consumpt meal, which they ter preload," affected th calories consumed b pants in the overall

They monitored food was eaten an participants to rate t the food and their ov

The researchers having soup before take the edge off y In fact, their researcl cut the total amour they consumed by compared with part had no soup.

Instead of soup, eat some vegetable

Run date: March 9th

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penalty was lifted for the winter.

On another matter, Loegering indicated that, according to information he has received, Ransom County will be receiving $2,099,000 from the surge bill recently passed by the state legislature.

Loegering went on to say that he had asked North Dakota Department of Transportation (NDDOT) officials whether the surge funds could be used to pay what is left of Phase 1. Loegering estimated that balance to be $750,000. The DOT officials are looking into that request, but sounded doubtful as to whether the surge funding could be

weeks.

Loegering stated that, since the

CONTINUED ON PAGE 9

Meeting to update County's Multi-Hazard Mitigation

A public meeting to review an update to Ransom County's Multi-Hazard Mitigation plan will be held on Thursday, March 26. The meeting will begin at 5:30 p.m. in the community room of the Ransom County Courthouse.

This plan presents a strategy for reducing the impact of natural and man-made hazards in the county

The meeting will include a presentation of the draft plan and provide the opportunity for comments from the public.

The draft plan can be reviewed online at www.ransomcountyhazards.com

Paper copies are also available at the county courthouse.

Submit your comments by March 27, 2015

f Fame inductee has ties to McLeod

brown
was inducted

for a premium," said Kensinger. "You see there were buyers from

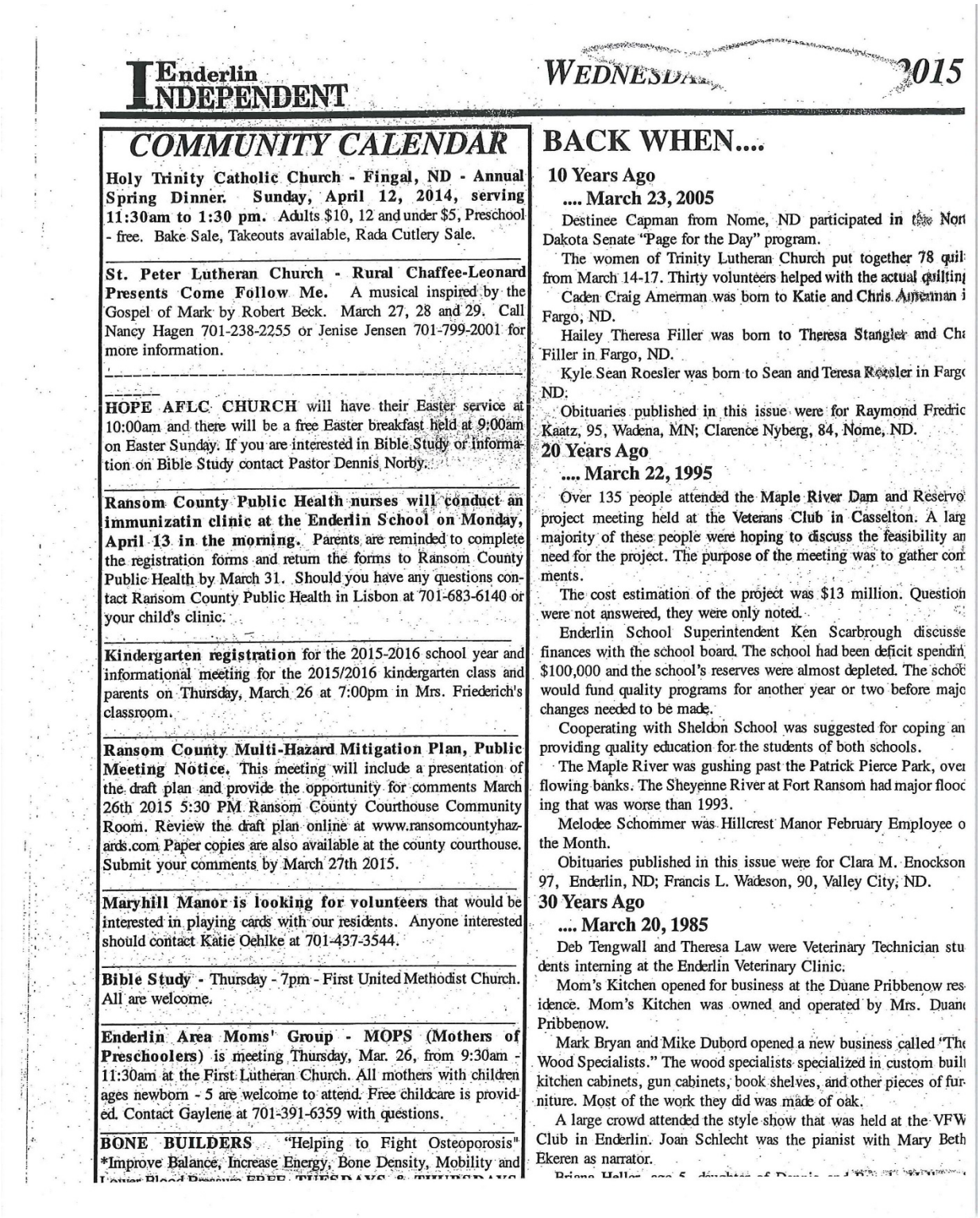
meant there wasn't time for them to lay around the feed lot and pass on any diseases. They weren't stale

Those men who helped build the sale barn earned shares in it. The organizers bought cows for the

Run date: March 23rd

Notice in the Enderlin Independent

Run date: March 18th



Enderlin INDEPENDENT — WEDNESDAY, 2015

COMMUNITY CALENDAR

Holy Trinity Catholic Church - Fingal, ND - Annual Spring Dinner. Sunday, April 12, 2014, serving 11:30am to 1:30 pm. Adults $10, 12 and under $5, Preschool - free. Bake Sale, Takeouts available, Rada Cutlery Sale.

St. Peter Lutheran Church - Rural Chaffee-Leonard Presents Come Follow Me. A musical inspired by the Gospel of Mark by Robert Beck. March 27, 28 and 29. Call Nancy Hagen 701-238-2255 or Jenise Jensen 701-799-2001 for more information.

HOPE AFLC CHURCH will have their Easter service at 10:00am and there will be a free Easter breakfast held at 9:00am on Easter Sunday. If you are interested in Bible Study or information on Bible Study contact Pastor Dennis Norby.

Ransom County Public Health nurses will conduct an immunizatin clinic at the Enderlin School on Monday, April 13 in the morning. Parents are reminded to complete the registration forms and return the forms to Ransom County Public Health by March 31. Should you have any questions contact Ransom County Public Health in Lisbon at 701-683-6140 or your child's clinic.

Kindergarten registration for the 2015-2016 school year and informational meeting for the 2015/2016 kindergarten class and parents on Thursday, March 26 at 7:00pm in Mrs. Friederich's classroom.

Ransom County Multi-Hazard Mitigation Plan, Public Meeting Notice. This meeting will include a presentation of the draft plan and provide the opportunity for comments March 26th 2015 5:30 PM Ransom County Courthouse Community Room. Review the draft plan online at www.ransomcountyhazards.com Paper copies are also available at the county courthouse. Submit your comments by March 27th 2015.

Maryhill Manor is looking for volunteers that would be interested in playing cards with our residents. Anyone interested should contact Katie Oehlke at 701-437-3544.

Bible Study - Thursday - 7pm - First United Methodist Church. All are welcome.

Enderlin Area Moms' Group - MOPS (Mothers of Preschoolers) is meeting Thursday, Mar. 26, from 9:30am - 11:30am at the First Lutheran Church. All mothers with children ages newborn - 5 are welcome to attend. Free childcare is provided. Contact Gaylene at 701-391-6359 with questions.

BONE BUILDERS "Helping to Fight Osteoporosis" *Improve Balance, Increase Energy, Bone Density, Mobility and Lower Blood Pressure FREE TUESDAYS & THURSDAYS

BACK WHEN....

10 Years Ago

.... March 23, 2005

Destinee Capman from Nome, ND participated in the Nort Dakota Senate "Page for the Day" program.

The women of Trinity Lutheran Church put together 78 quil from March 14-17. Thirty volunteers helped with the actual quilting

Caden Craig Amerman was born to Katie and Chris Amerman i Fargo, ND.

Hailey Theresa Filler was born to Theresa Stangler and Cha Filler in Fargo, ND.

Kyle Sean Roesler was born to Sean and Teresa Roesler in Fargo ND.

Obituaries published in this issue were for Raymond Fredric Kaatz, 95, Wadena, MN; Clarence Nyberg, 84, Nome, ND.

20 Years Ago

.... March 22, 1995

Over 135 people attended the Maple River Dam and Reservo project meeting held at the Veterans Club in Casselton. A larg majority of these people were hoping to discuss the feasibility an need for the project. The purpose of the meeting was to gather com ments.

The cost estimation of the project was $13 million. Question were not answered, they were only noted.

Enderlin School Superintendent Ken Scarbrough discusse finances with the school board. The school had been deficit spendin $100,000 and the school's reserves were almost depleted. The schoo would fund quality programs for another year or two before majo changes needed to be made.

Cooperating with Sheldon School was suggested for coping an providing quality education for the students of both schools.

The Maple River was gushing past the Patrick Pierce Park, over flowing banks. The Sheyenne River at Fort Ransom had major flooc ing that was worse than 1993.

Melodee Schommer was Hillcrest Manor February Employee o the Month.

Obituaries published in this issue were for Clara M. Enockson 97, Enderlin, ND; Francis L. Wadeson, 90, Valley City, ND.

30 Years Ago

.... March 20, 1985

Deb Tengwall and Theresa Law were Veterinary Technician stu dents interning at the Enderlin Veterinary Clinic.

Mom's Kitchen opened for business at the Duane Pribbenow res idence. Mom's Kitchen was owned and operated by Mrs. Duane Pribbenow.

Mark Bryan and Mike Dubord opened a new business called "The Wood Specialists." The wood specialists specialized in custom built kitchen cabinets, gun cabinets, book shelves, and other pieces of fur niture. Most of the work they did was made of oak.

A large crowd attended the style show that was held at the VFW Club in Enderlin. Joan Schlecht was the pianist with Mary Beth Ekeren as narrator.

Briana Heller, age 5, daughter of Dennis and [illegible]

Meeting Notes

Planning Team Meeting 1
County Courthouse, Lisbon
December 22nd, 2014
5:15 pm – 6:30 pm

Summary:
This meeting focused on discussion of potential risks and vulnerabilities for each jurisdiction. The Planning Team was presented with a list of hazards, and the consultant guided a conversation about risks and vulnerabilities associated with each hazard.

Notes:
General

- There are some new houses being built in Lisbon and Enderlin. It is mainly existing residents building new houses.
- McLeod and Engleville are the only unincorporated communities with many residents.

Drought

- Drought has not been an issue in recent years.

Flood

- Major flood events occurred in 2009, 2010, and 2011. All of these events were riverine and caused by spring snowmelt combined with rain. The flooding primarily affected Enderlin, Fort Ransom and Lisbon.
- Sheldon's flooding in 2011 was caused by a beaver dam that blocked a drainage culvert. It was a "once in a lifetime" event.
- Lisbon is in the process of constructing a levee system to reduce risk in town. Phase 1 (out of 3 phases) is complete. It is funded by the State Water Commission and the city.
- Fort Ransom did a riverbank restoration project in 2013.
- Enderlin recently repaired a small flood control dam that was damaged.
- Other recent mitigation projects throughout the county include buyouts and culvert enlargements.

Geologic Hazards

- Earthquakes and landslides are not an issue.

Severe Summer Weather

- There have been a lot of wind and tornado events recently.
- The Fire Hall in Enderlin is an emergency storm shelter.
- Each incorporated city has a tornado siren. Lisbon has three.
- The county recently acquired CodeRed reverse 911 capabilities. It costs about $4,000 per year. It is not currently being used for weather alerts, but it's a potential capability of the system.

Severe Winter Weather

- 46 east of Enderlin has a lot of issues when it snows. It's a DOT road.
- Snow removal is generally pretty good.
- Emergency snow removal routes have been established.
- In 1997 the county lost power for a week. This is uncommon. Generally power is only out for short periods of time.
- Backup generators: Enderlin fire hall, Sheldon fire hall, hospital, veterans home, all nursing homes.

Wildland Fire

- Generally have a fire of significance once about every four years.
- The USFS does controlled burns in Sheyenne National Grassland.
- County mows county road ROW throughout the year.
- The railroads do controlled burns and vegetation spraying along their ROW.

Communicable Disease

- No history of major disease outbreak.

Dam Failure

- Bald Hill dam could create issues for the county if it failed. The county does not have an emergency action plan for that dam.

Hazardous Materials Release

- Archer Daniels Midland has a plant southeast of Enderlin. There is also some anhydrous storage outside of Enderlin off 46.
- An anhydrous plant is located in Lisbon.
- There are 23 Tier II facilities in the county.
- There are propane tanks by the grain elevator in Lisbon.
- CP Rail through Enderlin has about 7 oil trains per day. Red River Valley Western rail, which goes throughout the rest of the county, primarily transports grain.
- Trucks that pass through the county transport anhydrous, some gas, a lot of farm products.

Homeland Security Incident

  - Maybe the fair, school events would be high profile targets.
  - The school has had one bomb threat and one gun threat.
  - The courthouse and schools have security cameras.

Urban Fire or Structure Collapse

- Grain elevator fires/grain dryers.
- Grocery store on Main Street burned down in 1998.
- There was a hotel fire in Enderlin several years ago.

Planning Team Meeting 2
County Courthouse, Lisbon
January 21st, 2015
6:00 pm – 7:00 pm

Summary:
This meeting focused on determining a preliminary list of mitigation actions for each jurisdiction. A list of potential actions was presented to the Planning Team and each action was discussed based on STAPLEE criteria.

Notes:
Drought

- Status of items from previous plan:
  - Provide education on conservation of water and fire safety (completed, the county sends out info through the mail during drought season)
- Notes:
  - Most cities have municipal water. Sheldon gets their water from Enderlin. Fort Ransom might be on rural water system. Many residents are on rural water system.

Flood

- Status of items from previous plan:
  - Continue to reduce losses through compliance with the NFIP and floodplain management (Completed, ongoing)
  - Implement permanent dikes along the Sheyenne and Maple Rivers (Project currently in progress)
  - Install drain tile to lower the water table in McLeod to drain #10 (Completed)
  - Improve drainage of roadways in low-lying areas (Completed, ongoing)
  - Update floodplain ordinances (Not completed, no longer identified as a priority)
  - Develop riverbank stabilization or diversion programs (Recently completed at Fort Ransom)
- New action items to include in plan:
  - Join the NFIP Community Rating System (CRS)

  - Mitigate roads and culverts
  - Acquire and remove repetitive loss properties
  - Clear debris from streams and rivers near bridges

Hazardous Materials Incident

- Status of items from previous plan:
  - Train and exercise HazMat identification and response to hazardous materials incidents (Ongoing)
  - Teach shelter-in-place and evacuation planning in county schools (Not completed, no longer identified as a priority)
- New action items to include in plan:
  - Look into mapping the location of hazardous materials in GIS

Severe Summer Weather

- Status of items from previous plan:
  - Establish a safe shelter at Dead Colt Creek Reservoir and areas with mobile homes (Concrete bathrooms installed at Dead Colt Creek Reservoir)
- New action items to include in plan:
  - Install a warning siren at Dead Colt Creek Reservoir

Severe Winter Weather

- Status of items from previous plan:
  - Routinely trim branches that are near power lines, and bury power lines (Utilities trim branches, burying of power lines not completed and not considered to be a realistic priority for the county)
- New action items to include in plan:
  - Acquire additional generators for winter shelters
  - Install living snow fences in select areas

Wildfire

- Status of items from previous plan:
  - Reduce the number of human-caused fires through public education (Completed, Lisbon FPD provides fire safety education at schools)
  - Develop a county rural fire protection plan and rural fire hazard mapping (Not completed, no longer considered a priority because local officials feel the plan would not be utilized)
  - Develop a satellite fire department in McLeod as support for firefighting in the National Grassland area (Completed, some vehicles are stationed in McLeod)
  - Pursue additional equipment and training for fire departments (Ongoing)
- New action items to include in plan:
  - Remove the abandoned Sheldon School to prevent risk of arson

Miscellaneous

- Status of items from previous plan:
  - Improve NOAA all-hazard radio communication (Completed, a new radio tower was constructed in Fort Ransom)
  - Obtain generators for shelter facilities and EOC (Completed, but there are still additional facilities that could use generators)
  - Review and update Emergency Operations Plan (Not completed, the plan still needs updated)
  - Establish a Ransom County Pandemic Coordinating Committee (Not completed, local officials feel that the county does not have the resources to put together this type of committee).
  - Study and prepare for a pandemic (Completed)
  - Tabletop training on a major disaster that would involve all jurisdictions (Ongoing)
  - Incident command training (Ongoing)
  - Conduct public education campaigns and CERT training (Ongoing)
  - Study the impacts of dam/dike failures and exercise evacuation plans (Partially completed, Dead Colt now has an emergency action plan)

- Study the impacts of non-jurisdictional dams and upstream water retention (No longer a priority, non-jurisdictional plans that may impact the county all have emergency action plans)
- Install security fences, outdoor lighting, and security fences to protect critical infrastructure (Completed for many facilities, Enderlin water treatment plant could use security)
- Utilize neighborhood watch program (No formal program established, not considered a priority)
- Encourage citizens/businesses to develop emergency operations plans (Partially completed, many of the large hazmat producers in the county have emergency plans)

Public Meeting 1
County Courthouse, Lisbon
January 21st, 2015
7:00 pm – 8:00 pm

Summary:
A summary of the project to this point was presented. The presentation included information from the first two planning team meetings and data/maps from various sources. Potential mitigation actions were also discussed. The public was invited to provide comments and input about risks and potential mitigation actions.

Comments:

- The 5th Ave Bridge in Lisbon creates recurrent flooding issues, particularly with ice jams. It needs to be elevated.

Discussions with each City
City of Enderlin: Cyndee Chesley, Auditor; Rick Gillund, Public Works Superintendent
Contacted February 17

The primary issue identified for Enderlin was flooding. The city's lagoon is within the 100-year floodplain. It has no history of flooding, but water has been getting closer in recent years. The lagoons will need an embankment or some sort of mitigation soon. Ponding on roads is also an issue during flash flood events. The city recently completed several mitigation activities including a new box culvert and new floodgates in the pump house. Potential identified projects were:

- Mitigate flooding hazard for city lagoons (highest priority)
- Street drainage improvements
- Generators for shelter facility
- Improved building to protect pump house from weather

City of Lisbon: Tim Meyer, Mayor
Discussions throughout process with Emergency Manager, contact with consultant on February 18

Mayor Meyer reviewed the mitigation actions discussed at previous meetings with Lisbon city council members. He also confirmed information about hazard risks in the city, particularly with flooding and hazardous materials. Projects identified or confirmed by Mayor Meyer were:

- The 5th Avenue bridge needs to be elevated or modified in some way to help mitigate recurrent flooding issues.
- Consider enrolling in the NFIP Community Rating System
- Continue the levee project along the Sheyenne River
- Continue removal of repetitive loss properties
- Acquire additional generators for winter shelters

City of Sheldon: Rick Taylor, Mayor
Contacted February 18

The primary issue identified for Sheldon was flooding. The city constructed a levee along the creek on the south end of town. They are currently in the process of enlarging culverts throughout town. Following the 2011 flood, the city dug a ditch through the southwest corner of the town to improve drainage. The ditch has not been maintained since initial construction and has lost some of its effectiveness. The most important project is to enlarge a culvert in the center of town that disrupts drainage and causes flooding issues. Potential identified projects were:

- Culvert enlargement (highest priority)
- Maintenance of drainage ditch southwest of town

City of Fort Ransom: Darrel Bjone, Mayor
Contacted February 24

The primary issue identified for Fort Ransom was flooding. The river floods and affects downtown and a few homes. The city has been looking at several mitigation projects in recent years, but they have not been feasible to implement. They looked into installing a river diversion around city, but the cost was estimated at $10 million. The US Army Corps of Engineers conducted a levee study and determined that additional levees would not be feasible due to soil conditions. Potential identified projects were:

- Riverbank stabilization
- Determine way to install additional levees

City of Elliott: Kory Jalbert, Mayor
Contact during plan process with Emergency Manager, correspondence with consultant on March 18

Mayor Jalbert was presented a summary of the in-progress plan and invited to provide input about risks and projects. Elliott has an overall low risk and vulnerability to most hazards and no history of any significant events. Potential identified projects were:

- Cleaning of drainage ditches

Public Meeting 2
County Courthouse, Lisbon
March 26th, 2015
5:30 pm – 6:30 pm

Summary:
The draft plan was presented and an opportunity for comments was provided.

Comments:

- The Sheldon road is currently being reconstructed and the box culvert strategy should be moved forward to this year.
- Something needs to be done to address hazardous materials response. There's a lot of incidents that could happen that local first responders are not adequately prepared to respond to.
    - A strategy to update the county's EOC was added.
- Additional key facilities that should be added: Enderlin museum, Fort Ransom museum

Appendix C: Additional Hazard Statistics

This appendix contains storm events from the NOAA National Climatic Data Center Storm Events Database. The criteria for each event type to qualify for inclusion to the database are:

- *Blizzard*: Sustained winds of 35 MPH or greater, snow reducing visibility to less than ¼ mile and lasting at least three hours.
- *Cold/Wind Chill*: Wind chill reaching -35 degrees F or lower.
- *Flash Flood*: Rapid and extreme flow of high water above pre-determined flood levels, beginning within six hours of the causative event.
- *Drought*: Deficiency of moisture resulting in a D2 classification or higher as indicated in the multi-agency Drought Monitor.
- *Flood*: Any high flow, overflow or inundation by water that causes or threatens damage, generally occurring more than six hours after the causative event.
- *Funnel Cloud*: A rotating, visible, extension of a cloud pendant from a convective cloud with circulation not reaching the ground.
- *Hail*: Hail of at least ¾ inch diameter, or hail less than ¾ inch diameter that causes injuries or fatalities.
- *Heavy Rain*: Unusually large amount of rain which does not cause a flash flood or flood, but causes damage, e.g., roof collapse or other human/economic impact. Urban ponding events would generally be classified as heavy rain.
- *Heat*: A period of heat resulting from high temperatures and relative humidity as determined by locally-established thresholds.
- *Heavy Snow*: Snow accumulation exceeding locally defined 12 and/or 24-hour criteria. Could include snow events of 6, 8 or 10 inches in 24 hours or less depending on typical regional snowfall.
- *High/Strong/Thunderstorm Wind*: Sustained winds of 40 mph or greater lasting for 1 hour or longer, or winds of 58 mph for any duration.
- *Ice Storm*: Ice accretion of ¼ or ½ inch or more (varies depending on local jurisdiction defining criteria).
- *Lightning*: Sudden electrical discharge from a storm resulting in a fatality, injury or property damage.
- *Tornado*: A funnel cloud that makes contact with the ground and creates ground-based visual effects such as dust/dirt or other disturbance.
- *Wildfire*: Wildfire that causes one or more fatalities or injuries, and/or property damage.
- *Winter Storm*: A winter weather event that has more than one significant hazard (i.e. heavy snow and blowing snow; snow and ice; snow and sleet; sleet and ice; or snow, sleet and ice). A winter storm would normally pose a threat to life and property.
- *Winter Weather*: Winter precipitation event that causes a death, injury or significant economic impact.

Note that in most instances property and crop damage was not included with storm reports in the county. No storm events resulted in reported injury or death.

National Climatic Data Center Storm Events Database, Ransom County, 1996-2013						
Location	**Date**	**Time**	**Type**	**Mag**	**Property Damage**	**Crop Damage**
RANSOM (ZONE)	RANSOM (ZONE)	1/17/1996	Blizzard		0.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	1/17/1996	Blizzard		0.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	2/1/1996	Cold/Wind Chill		0.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	2/1/1996	Cold/Wind Chill		0.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	2/10/1996	Blizzard		0.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	2/10/1996	Blizzard		0.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	2/22/1996	Ice Storm		0.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	2/22/1996	Ice Storm		0.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	2/26/1996	Blizzard		0.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	2/27/1996	Blizzard		0.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	3/23/1996	Blizzard		0.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	3/23/1996	Blizzard		0.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	4/10/1996	Flood		0.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	4/10/1996	Flood		0.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	4/10/1996	Flood		0.00K	0.00K
LISBON	RANSOM CO.	10/26/1996	Hail	0.75 in.	0.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	11/16/1996	Blizzard		0.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	11/20/1996	Winter Storm		0.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	11/25/1996	Cold/Wind Chill		0.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	12/17/1996	Blizzard		0.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	12/21/1996	Cold/Wind Chill		0.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	1/4/1997	Blizzard		0.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	1/4/1997	Heavy Snow		0.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	1/9/1997	Blizzard		0.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	1/15/1997	Blizzard		0.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	1/21/1997	Blizzard		0.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	1/30/1997	Ice Storm		0.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	3/4/1997	Blizzard		0.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	3/13/1997	Heavy Snow		0.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	4/3/1997	Flood		500.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	4/4/1997	Ice Storm		6.000M	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	4/5/1997	Blizzard		6.000M	0.00K
MCLEOD	RANSOM CO.	6/19/1997	Thunderstorm Wind	50 kts.	0.00K	0.00K
FT RANSOM	RANSOM CO.	6/28/1997	Tornado	F0	0.00K	0.00K
MCLEOD	RANSOM CO.	7/1/1997	Hail	1.00 in.	0.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	11/2/1997	High Wind	47 kts.	0.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	11/13/1997	Winter Storm		0.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	3/15/1998	Heavy Snow		0.00K	0.00K
FT RANSOM	RANSOM CO.	5/27/1998	Hail	0.75 in.	0.00K	0.00K

FT RANSOM	RANSOM CO.	5/27/1998	Tornado	F0	0.00K	0.00K
LISBON	RANSOM CO.	6/10/1998	Hail	1.00 in.	0.00K	0.00K
LISBON	RANSOM CO.	6/10/1998	Hail	0.75 in.	0.00K	0.00K
LISBON	RANSOM CO.	6/18/1998	Funnel Cloud		0.00K	0.00K
MCLEOD	RANSOM CO.	6/26/1998	Thunderstorm Wind	60 kts.	0.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	7/9/1998	Flood		100.00K	0.00K
SHELDON	RANSOM CO.	7/18/1998	Hail	1.00 in.	0.00K	0.00K
ENDERLIN	RANSOM CO.	7/18/1998	Hail	1.00 in.	0.00K	0.00K
MCLEOD	RANSOM CO.	7/18/1998	Hail	1.75 in.	0.00K	0.00K
LISBON	RANSOM CO.	7/18/1998	Tornado	F1	250.00K	0.00K
SHELDON	RANSOM CO.	7/20/1998	Hail	2.25 in.	0.00K	0.00K
MCLEOD	RANSOM CO.	7/20/1998	Hail	1.00 in.	0.00K	0.00K
ENGLEVALE	RANSOM CO.	9/25/1998	Hail	0.88 in.	0.00K	0.00K
LISBON	RANSOM CO.	9/25/1998	Hail	0.88 in.	0.00K	0.00K
LISBON	RANSOM CO.	9/25/1998	Hail	0.88 in.	0.00K	0.00K
LISBON	RANSOM CO.	9/25/1998	Hail	1.75 in.	0.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	11/10/1998	Blizzard		0.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	11/18/1998	Winter Storm		0.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	1/1/1999	Heavy Snow		0.00K	0.00K
ENGLEVALE	RANSOM CO.	3/31/1999	Hail	1.00 in.	0.00K	0.00K
ENDERLIN	RANSOM CO.	7/25/1999	Hail	1.75 in.	0.00K	0.00K
ENDERLIN	RANSOM CO.	7/25/1999	Hail	1.00 in.	0.00K	0.00K
ANSELM	RANSOM CO.	7/25/1999	Hail	0.75 in.	0.00K	0.00K
ENDERLIN	RANSOM CO.	7/27/1999	Hail	0.75 in.	0.00K	0.00K
LISBON	RANSOM CO.	7/27/1999	Hail	1.75 in.	0.00K	0.00K
FT RANSOM	RANSOM CO.	7/27/1999	Hail	1.75 in.	0.00K	0.00K
LISBON	RANSOM CO.	7/27/1999	Thunderstorm Wind	52 kts.	0.00K	0.00K
MCLEOD	RANSOM CO.	7/27/1999	Thunderstorm Wind	72 kts.	0.00K	0.00K
ANSELM	RANSOM CO.	8/6/1999	Hail	0.75 in.	0.00K	0.00K
MCLEOD	RANSOM CO.	8/8/1999	Hail	0.75 in.	0.00K	0.00K
FT RANSOM	RANSOM CO.	8/15/1999	Tornado	F2	1.200M	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	9/1/1999	Flood		0.00K	0.00K
LISBON	RANSOM CO.	9/1/1999	Hail	0.75 in.	0.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	11/1/1999	High Wind	66 kts.	0.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	2/12/2000	Heavy Snow		0.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	3/8/2000	Blizzard		0.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	3/8/2000	Ice Storm		0.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	4/5/2000	High Wind	62 kts. M	100.00K	0.00K
SHELDON	RANSOM CO.	6/19/2000	Flash Flood		0.00K	0.00K
LISBON	RANSOM CO.	7/4/2000	Hail	0.88 in.	0.00K	0.00K
LISBON	RANSOM CO.	7/4/2000	Thunderstorm Wind	56 kts. M	0.00K	0.00K

MCLEOD	RANSOM CO.	7/4/2000	Thunderstorm Wind	59 kts. M	0.00K	0.00K
LISBON	RANSOM CO.	7/5/2000	Flash Flood		0.00K	0.00K
LISBON	RANSOM CO.	7/12/2000	Hail	0.88 in.	0.00K	0.00K
LISBON	RANSOM CO.	7/12/2000	Hail	1.75 in.	0.00K	0.00K
FT RANSOM	RANSOM CO.	8/30/2000	Hail	1.00 in.	0.00K	0.00K
LISBON	RANSOM CO.	9/2/2000	Flash Flood		0.00K	0.00K
FT RANSOM	RANSOM CO.	9/2/2000	Hail	0.75 in.	0.00K	0.00K
ENDERLIN	RANSOM CO.	9/2/2000	Hail	1.00 in.	0.00K	0.00K
MCLEOD	RANSOM CO.	9/2/2000	Hail	0.75 in.	0.00K	0.00K
LISBON	RANSOM CO.	9/2/2000	Hail	1.00 in.	0.00K	0.00K
ELLIOTT	RANSOM CO.	9/2/2000	Hail	1.00 in.	0.00K	0.00K
LISBON	RANSOM CO.	9/2/2000	Hail	1.75 in.	0.00K	0.00K
LISBON	RANSOM CO.	9/2/2000	Hail	0.75 in.	0.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	11/6/2000	Winter Storm		2.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	11/11/2000	Heavy Snow		20.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	12/16/2000	Blizzard		0.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	12/20/2000	Blizzard		0.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	12/27/2000	Winter Storm		0.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	2/23/2001	Winter Storm		0.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	2/24/2001	Blizzard		0.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	4/1/2001	Flood		250.00K	0.00K
MCLEOD	RANSOM CO.	4/7/2001	Flash Flood		0.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	4/22/2001	Winter Storm		0.00K	0.00K
FT RANSOM	RANSOM CO.	6/11/2001	Hail	0.75 in.	0.00K	0.00K
MCLEOD	RANSOM CO.	6/11/2001	Hail	2.00 in.	0.00K	0.00K
ENDERLIN	RANSOM CO.	6/13/2001	Hail	0.75 in.	0.00K	0.00K
SHELDON	RANSOM CO.	6/16/2001	Hail	0.75 in.	0.00K	0.00K
LISBON	RANSOM CO.	6/17/2001	Lightning		15.00K	0.00K
LISBON	RANSOM CO.	6/20/2001	Hail	0.75 in.	0.00K	0.00K
SHELDON	RANSOM CO.	7/17/2001	Hail	0.75 in.	0.00K	0.00K
LISBON	RANSOM CO.	7/17/2001	Hail	1.50 in.	0.00K	0.00K
LISBON	RANSOM CO.	7/17/2001	Hail	1.75 in.	0.00K	0.00K
LISBON	RANSOM CO.	7/20/2001	Hail	1.25 in.	0.00K	0.00K
MCLEOD	RANSOM CO.	7/21/2001	Thunderstorm Wind	52 kts. E	0.00K	0.00K
ENGLEVALE	RANSOM CO.	7/30/2001	Hail	0.75 in.	0.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	8/4/2001	Heat		0.00K	0.00K
LISBON	RANSOM CO.	8/8/2001	Thunderstorm Wind	54 kts. E	0.00K	0.00K
LISBON	RANSOM CO.	8/8/2001	Thunderstorm Wind	61 kts. E	0.00K	0.00K
LISBON	RANSOM CO.	8/26/2001	Hail	0.75 in.	0.00K	0.00K
MCLEOD	RANSOM CO.	8/26/2001	Hail	0.75 in.	0.00K	0.00K
ENGLEVALE	RANSOM CO.	9/6/2001	Hail	0.75 in.	0.00K	0.00K

RANSOM (ZONE)	RANSOM (ZONE)	11/1/2001	High Wind	41 kts. M	0.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	11/26/2001	Winter Storm		0.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	2/11/2002	High Wind	50 kts. M	0.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	3/8/2002	Winter Storm		0.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	4/24/2002	High Wind	53 kts. M	0.00K	0.00K
MCLEOD	RANSOM CO.	6/25/2002	Hail	0.75 in.	0.00K	0.00K
LISBON	RANSOM CO.	6/25/2002	Hail	1.00 in.	0.00K	0.00K
MCLEOD	RANSOM CO.	6/25/2002	Hail	0.75 in.	0.00K	0.00K
LISBON	RANSOM CO.	8/16/2002	Hail	1.00 in.	0.00K	0.00K
MCLEOD	RANSOM CO.	8/16/2002	Hail	1.00 in.	0.00K	0.00K
SHELDON	RANSOM CO.	9/18/2002	Hail	1.75 in.	0.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	10/20/2002	Heavy Snow		0.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	2/11/2003	Blizzard		0.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	3/8/2003	Cold/Wind Chill		5.00K	0.00K
SHELDON	RANSOM CO.	6/21/2003	Thunderstorm Wind	55 kts. EG	0.00K	0.00K
ENDERLIN	RANSOM CO.	6/23/2003	Flash Flood		0.00K	0.00K
MCLEOD	RANSOM CO.	7/3/2003	Thunderstorm Wind	56 kts. MG	0.00K	0.00K
LISBON	RANSOM CO.	7/30/2003	Hail	1.25 in.	0.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	10/28/2003	High Wind	55 kts. MG	0.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	12/15/2003	Winter Storm		0.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	1/24/2004	Winter Storm		0.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	1/26/2004	Cold/Wind Chill		0.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	2/10/2004	Blizzard		0.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	3/10/2004	High Wind	52 kts. MG	0.00K	0.00K
MCLEOD	RANSOM CO.	5/11/2004	Hail	0.75 in.	0.00K	0.00K
MCLEOD	RANSOM CO.	5/11/2004	Hail	1.00 in.	0.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	5/31/2004	Flood		0.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	6/1/2004	Flood		0.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	6/23/2004	Cold/Wind Chill		0.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	8/19/2004	Cold/Wind Chill		0.00K	0.00K
LISBON	RANSOM CO.	10/29/2004	Lightning		2.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	12/11/2004	High Wind	40 kts. MS	0.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	12/30/2004	Ice Storm		0.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	1/12/2005	Winter Storm		0.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	1/13/2005	Cold/Wind Chill		0.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	1/21/2005	Blizzard		0.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	3/10/2005	High Wind	40 kts. MS	0.00K	0.00K
ENGLEVALE	RANSOM CO.	5/7/2005	Hail	0.88 in.	0.00K	0.00K
MCLEOD	RANSOM CO.	5/7/2005	Hail	0.75 in.	0.00K	0.00K

MCLEOD	RANSOM CO.	5/7/2005	Hail	0.88 in.	0.00K	0.00K
LISBON	RANSOM CO.	5/8/2005	Hail	0.75 in.	0.00K	0.00K
ENGLEVALE	RANSOM CO.	6/7/2005	Thunderstorm Wind	61 kts. EG	0.00K	0.00K
MCLEOD	RANSOM CO.	6/7/2005	Thunderstorm Wind	52 kts. EG	0.00K	0.00K
MCLEOD	RANSOM CO.	6/11/2005	Flash Flood		0.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	6/11/2005	Flood		0.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	6/13/2005	Flood		0.00K	0.00K
MCLEOD	RANSOM CO.	6/20/2005	Flash Flood		0.00K	0.00K
LISBON	RANSOM CO.	6/20/2005	Hail	1.75 in.	0.00K	0.00K
ENDERLIN	RANSOM CO.	6/20/2005	Hail	1.00 in.	0.00K	0.00K
SHELDON	RANSOM CO.	6/20/2005	Thunderstorm Wind	55 kts. EG	0.00K	0.00K
FT RANSOM	RANSOM CO.	6/20/2005	Tornado	F1	0.00K	0.00K
FT RANSOM	RANSOM CO.	6/26/2005	Flash Flood		0.00K	0.00K
FT RANSOM	RANSOM CO.	6/26/2005	Hail	0.88 in.	0.00K	0.00K
LISBON	RANSOM CO.	6/26/2005	Hail	0.75 in.	0.00K	0.00K
LISBON	RANSOM CO.	6/26/2005	Thunderstorm Wind	65 kts. EG	0.00K	0.00K
MCLEOD	RANSOM CO.	6/29/2005	Flash Flood		0.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	6/29/2005	Flood		0.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	7/1/2005	Flood		0.00K	0.00K
LISBON	RANSOM CO.	8/9/2005	Hail	1.25 in.	0.00K	0.00K
LISBON	RANSOM CO.	9/3/2005	Thunderstorm Wind	54 kts. EG	0.00K	0.00K
FT RANSOM	RANSOM CO.	9/5/2005	Hail	0.75 in.	0.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	11/8/2005	High Wind	52 kts. MG	0.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	11/27/2005	Winter Storm		250.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	11/28/2005	Blizzard		0.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	12/29/2005	Winter Storm		0.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	2/16/2006	Cold/Wind Chill		0.00K	0.00K
COUNTYWIDE	RANSOM CO.	3/21/2006	Flood		0.00K	0.00K
COUNTYWIDE	RANSOM CO.	4/1/2006	Flood		113.00K	0.00K
ENGLEVALE	RANSOM CO.	4/28/2006	Hail	0.75 in.	0.00K	0.00K
MCLEOD	RANSOM CO.	4/28/2006	Thunderstorm Wind	50 kts. EG	0.00K	0.00K
SHELDON	RANSOM CO.	6/5/2006	Tornado	F0	0.00K	0.00K
FT RANSOM	RANSOM CO.	6/23/2006	Hail	0.88 in.	0.00K	0.00K
RANSOM (ZONE)	RANSOM CO.	6/30/2006	Thunderstorm Wind	54 kts. MG	0.00K	0.00K
RANSOM (ZONE)	RANSOM CO.	6/30/2006	Thunderstorm Wind	52 kts. EG	0.00K	0.00K
RANSOM (ZONE)	RANSOM CO.	8/5/2006	Hail	2.00 in.	0.00K	0.00K
RANSOM (ZONE)	RANSOM CO.	8/5/2006	Tornado	F0	0.00K	0.00K

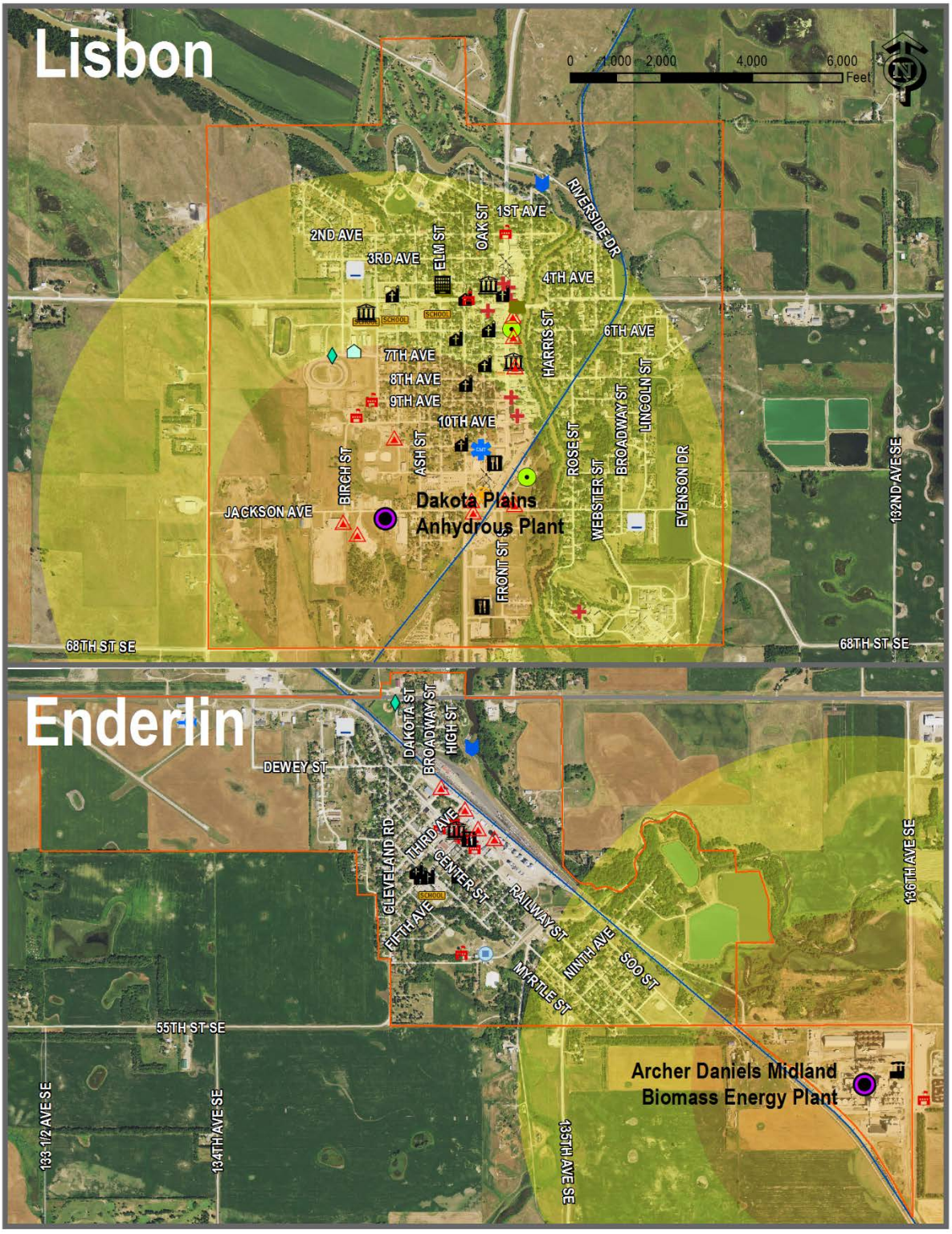
RANSOM (ZONE)	RANSOM (ZONE)	8/8/2006	Drought		0.00K	0.00K
RANSOM (ZONE)	RANSOM CO.	8/9/2006	Hail	0.88 in.	0.00K	0.00K
RANSOM (ZONE)	RANSOM CO.	9/7/2006	Hail	1.00 in.	0.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	12/30/2006	Winter Storm		0.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	2/3/2007	Extreme Cold/Wind Chill		0.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	2/24/2007	Winter Storm		0.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	2/27/2007	Winter Storm		0.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	3/1/2007	Blizzard		0.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	3/1/2007	Winter Storm		0.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	4/2/2007	Winter Storm		0.00K	0.00K
RANSOM (ZONE)	RANSOM CO.	4/20/2007	Hail	0.75 in.	0.00K	0.00K
LISBON	RANSOM CO.	5/6/2007	Flash Flood		0.00K	0.00K
RANSOM (ZONE)	RANSOM CO.	5/6/2007	Flood		0.00K	0.00K
RANSOM (ZONE)	RANSOM CO.	6/2/2007	Flood		0.00K	0.00K
RANSOM (ZONE)	RANSOM CO.	6/15/2007	Flood		0.00K	0.00K
RANSOM (ZONE)	RANSOM CO.	6/17/2007	Thunderstorm Wind	70 kts. EG	0.00K	0.00K
RANSOM (ZONE)	RANSOM CO.	6/17/2007	Thunderstorm Wind	55 kts. EG	0.00K	0.00K
RANSOM (ZONE)	RANSOM CO.	6/17/2007	Tornado	EF0	0.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	7/10/2007	High Wind	59 kts. MG	0.00K	0.00K
RANSOM (ZONE)	RANSOM CO.	7/15/2007	Hail	1.75 in.	100.00K	0.00K
RANSOM (ZONE)	RANSOM CO.	7/15/2007	Hail	1.75 in.	0.00K	0.00K
RANSOM (ZONE)	RANSOM CO.	7/15/2007	Thunderstorm Wind	54 kts. MG	200.00K	5.000M
RANSOM (ZONE)	RANSOM CO.	7/15/2007	Thunderstorm Wind	61 kts. EG	100.00K	3.000M
RANSOM (ZONE)	RANSOM CO.	7/15/2007	Thunderstorm Wind	70 kts. EG	200.00K	1.000M
RANSOM (ZONE)	RANSOM CO.	7/15/2007	Thunderstorm Wind	59 kts. MG	0.00K	0.00K
RANSOM (ZONE)	RANSOM CO.	7/15/2007	Thunderstorm Wind	71 kts. MG	500.00K	0.00K
RANSOM (ZONE)	RANSOM CO.	7/15/2007	Thunderstorm Wind	60 kts. EG	0.00K	0.00K
RANSOM (ZONE)	RANSOM CO.	7/15/2007	Tornado	EF1	250.00K	0.00K
MCLEOD	RANSOM CO.	7/15/2007	Tornado	EF2	1.000M	500.00K
FT RANSOM	RANSOM (ZONE)	12/1/2007	Winter Storm		0.00K	0.00K
MCLEOD	RANSOM (ZONE)	1/29/2008	Extreme Cold/Wind Chill		0.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	2/9/2008	Blizzard		0.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	2/9/2008	Extreme Cold/Wind Chill		0.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	2/19/2008	Extreme Cold/Wind Chill		0.00K	0.00K
FT RANSOM	RANSOM (ZONE)	3/20/2008	Heavy Snow		0.00K	0.00K
FT RANSOM	RANSOM (ZONE)	4/6/2008	Winter Storm		0.00K	0.00K
LISBON	RANSOM (ZONE)	4/10/2008	Winter Storm		0.00K	0.00K

LISBON	RANSOM CO.	4/21/2008	Hail	0.88 in.	0.00K	0.00K
LISBON	RANSOM CO.	5/6/2008	Hail	0.88 in.	0.00K	0.00K
MCLEOD	RANSOM CO.	5/24/2008	Hail	0.88 in.	0.00K	0.00K
RANSOM (ZONE)	RANSOM CO.	5/24/2008	Hail	0.75 in.	0.00K	0.00K
SHELDON	RANSOM CO.	5/24/2008	Tornado	EF0	0.00K	0.00K
ENDERLIN	RANSOM (ZONE)	6/11/2008	High Wind	43 kts. ES	0.00K	20.00K
MCLEOD	RANSOM (ZONE)	6/11/2008	High Wind	40 kts. ES	0.00K	0.00K
LISBON	RANSOM CO.	6/14/2008	Thunderstorm Wind	52 kts. EG	0.00K	0.00K
SHELDON	RANSOM CO.	6/27/2008	Hail	1.00 in.	0.00K	200.00K
MCLEOD	RANSOM CO.	8/14/2008	Funnel Cloud		0.00K	0.00K
ENGLEVALE	RANSOM CO.	8/14/2008	Hail	0.75 in.	0.00K	0.00K
LISBON	RANSOM CO.	8/14/2008	Hail	1.00 in.	5.00K	500.00K
LISBON	RANSOM (ZONE)	10/26/2008	High Wind	35 kts. MS	0.00K	0.00K
LISBON	RANSOM (ZONE)	12/13/2008	Blizzard		0.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	12/15/2008	Extreme Cold/Wind Chill		0.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	12/19/2008	Winter Storm		0.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	12/20/2008	Extreme Cold/Wind Chill		0.00K	0.00K
ENGLEVALE	RANSOM (ZONE)	12/29/2008	Heavy Snow		0.00K	0.00K
ENDERLIN	RANSOM (ZONE)	1/4/2009	Extreme Cold/Wind Chill		0.00K	0.00K
ENDERLIN	RANSOM (ZONE)	1/11/2009	Blizzard		0.00K	0.00K
ANSELM	RANSOM (ZONE)	1/14/2009	Cold/Wind Chill		0.00K	0.00K
ENDERLIN	RANSOM (ZONE)	1/14/2009	Cold/Wind Chill		0.00K	0.00K
LISBON	RANSOM (ZONE)	1/15/2009	Cold/Wind Chill		0.00K	0.00K
FT RANSOM	RANSOM (ZONE)	1/31/2009	High Wind	40 kts. MS	0.00K	0.00K
LISBON	RANSOM (ZONE)	2/25/2009	Winter Storm		0.00K	0.00K
MCLEOD	RANSOM (ZONE)	3/9/2009	Blizzard		0.00K	0.00K
ANSELM	RANSOM CO.	3/22/2009	Flood		5.00K	0.00K
MCLEOD	RANSOM CO.	3/27/2009	Flash Flood		0.50K	0.00K
FT RANSOM	RANSOM (ZONE)	3/29/2009	Winter Storm		0.00K	0.00K
RANSOM (ZONE)	RANSOM CO.	4/1/2009	Flood		5.00K	0.00K
LISBON	RANSOM CO.	5/1/2009	Flood		5.00K	0.00K
RANSOM (ZONE)	RANSOM CO.	6/18/2009	Hail	1.00 in.	0.00K	0.00K
RANSOM (ZONE)	RANSOM CO.	6/18/2009	Hail	1.00 in.	0.00K	0.00K
RANSOM (ZONE)	RANSOM CO.	6/18/2009	Hail	1.00 in.	0.00K	0.00K
RANSOM (ZONE)	RANSOM CO.	6/18/2009	Hail	1.00 in.	0.00K	0.00K
RANSOM (ZONE)	RANSOM CO.	6/18/2009	Thunderstorm Wind	52 kts. EG	0.00K	0.00K
RANSOM (ZONE)	RANSOM CO.	7/20/2009	Hail	0.75 in.	0.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	10/14/2009	Heavy Snow		0.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	12/23/2009	Heavy Snow		0.00K	0.00K

RANSOM (ZONE)	RANSOM (ZONE)	12/24/2009	Blizzard		0.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	1/6/2010	Heavy Snow		0.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	1/7/2010	Extreme Cold/Wind Chill		0.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	1/22/2010	Winter Storm		0.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	1/25/2010	Blizzard		0.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	2/13/2010	Winter Storm		0.00K	0.00K
RANSOM (ZONE)	RANSOM CO.	3/18/2010	Flood		0.00K	0.00K
RANSOM (ZONE)	RANSOM CO.	3/21/2010	Flash Flood		0.50K	0.00K
RANSOM (ZONE)	RANSOM CO.	4/1/2010	Flood		0.00K	0.00K
RANSOM (ZONE)	RANSOM CO.	6/22/2010	Hail	0.88 in.	0.00K	0.00K
RANSOM (ZONE)	RANSOM CO.	6/22/2010	Hail	1.00 in.	0.00K	0.00K
RANSOM (ZONE)	RANSOM CO.	7/13/2010	Hail	1.50 in.	0.00K	0.00K
RANSOM (ZONE)	RANSOM CO.	7/13/2010	Hail	2.00 in.	0.00K	0.00K
RANSOM (ZONE)	RANSOM CO.	7/14/2010	Funnel Cloud		0.00K	0.00K
RANSOM (ZONE)	RANSOM CO.	7/14/2010	Thunderstorm Wind	55 kts. MG	0.00K	0.00K
RANSOM (ZONE)	RANSOM CO.	7/14/2010	Thunderstorm Wind	70 kts. EG	40.00K	0.00K
RANSOM (ZONE)	RANSOM CO.	7/14/2010	Tornado	EF1	1.000M	250.00K
RANSOM (ZONE)	RANSOM CO.	7/14/2010	Tornado	EF2	2.000M	400.00K
RANSOM (ZONE)	RANSOM CO.	7/17/2010	Hail	1.00 in.	0.00K	0.00K
LISBON	RANSOM CO.	7/17/2010	Hail	1.00 in.	0.00K	0.00K
RANSOM (ZONE)	RANSOM CO.	7/20/2010	Hail	1.00 in.	0.00K	0.00K
RANSOM (ZONE)	RANSOM CO.	8/12/2010	Flash Flood		10.00K	15.00K
RANSOM (ZONE)	RANSOM CO.	8/12/2010	Tornado	EF0	0.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	10/26/2010	High Wind	35 kts. MS	0.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	10/26/2010	Winter Storm		0.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	11/22/2010	Heavy Snow		0.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	12/3/2010	Heavy Snow		0.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	12/15/2010	Heavy Snow		0.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	12/19/2010	Heavy Snow		0.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	12/30/2010	Blizzard		0.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	12/31/2010	Blizzard		0.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	1/1/2011	Blizzard		0.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	2/1/2011	Extreme Cold/Wind Chill		0.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	2/8/2011	Extreme Cold/Wind Chill		0.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	2/13/2011	High Wind	35 kts. MS	0.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	3/11/2011	Blizzard		0.00K	0.00K
MCLEOD	RANSOM (ZONE)	3/22/2011	Winter Storm		0.00K	0.00K
FT RANSOM	RANSOM CO.	4/3/2011	Flood		0.00K	0.00K
MCLEOD	RANSOM (ZONE)	4/15/2011	Winter Storm		0.00K	0.00K

RANSOM (ZONE)	RANSOM CO.	5/10/2011	Hail	1.00 in.	0.00K	0.00K
RANSOM (ZONE)	RANSOM CO.	5/30/2011	Thunderstorm Wind	56 kts. EG	0.00K	0.00K
RANSOM (ZONE)	RANSOM CO.	6/13/2011	Funnel Cloud		0.00K	0.00K
FT RANSOM	RANSOM CO.	6/17/2011	Funnel Cloud		0.00K	0.00K
FT RANSOM	RANSOM CO.	6/17/2011	Funnel Cloud		0.00K	0.00K
LISBON	RANSOM CO.	7/10/2011	Funnel Cloud		0.00K	0.00K
LISBON	RANSOM CO.	7/10/2011	Thunderstorm Wind	50 kts. EG	0.00K	0.00K
LISBON	RANSOM CO.	7/10/2011	Thunderstorm Wind	60 kts. EG	0.00K	0.00K
MCLEOD	RANSOM CO.	7/15/2011	Hail	1.00 in.	0.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	7/16/2011	Excessive Heat		0.00K	0.00K
SHELDON	RANSOM CO.	7/30/2011	Hail	1.00 in.	0.00K	0.00K
ENDERLIN	RANSOM CO.	7/30/2011	Heavy Rain		0.00K	0.00K
MCLEOD	RANSOM (ZONE)	1/18/2012	Extreme Cold/Wind Chill		0.00K	0.00K
LISBON	RANSOM (ZONE)	2/26/2012	Winter Storm		0.00K	0.00K
SHELDON	RANSOM (ZONE)	2/28/2012	Winter Storm		0.00K	0.00K
MCLEOD	RANSOM CO.	7/6/2012	Thunderstorm Wind	52 kts. EG	0.00K	0.00K
ENGLEVALE	RANSOM (ZONE)	7/17/2012	Drought		0.00K	0.00K
LISBON	RANSOM CO.	7/22/2012	Hail	1.75 in.	0.00K	0.00K
LISBON	RANSOM CO.	7/22/2012	Hail	1.75 in.	0.00K	0.00K
LISBON	RANSOM CO.	7/22/2012	Hail	1.00 in.	0.00K	0.00K
RANSOM (ZONE)	RANSOM CO.	7/22/2012	Hail	1.00 in.	0.00K	0.00K
RANSOM (ZONE)	RANSOM CO.	7/24/2012	Hail	1.25 in.	0.00K	300.00K
RANSOM (ZONE)	RANSOM CO.	7/24/2012	Hail	1.50 in.	0.00K	0.00K
ENGLEVALE	RANSOM CO.	7/24/2012	Hail	1.25 in.	0.00K	0.00K
ENDERLIN	RANSOM (ZONE)	8/1/2012	Drought		0.00K	0.00K
ENDERLIN	RANSOM CO.	8/3/2012	Thunderstorm Wind	58 kts. MG	0.00K	0.00K
ANSELM	RANSOM (ZONE)	9/1/2012	Drought		0.00K	0.00K
ENDERLIN	RANSOM (ZONE)	10/1/2012	Drought		0.00K	0.00K
LISBON	RANSOM (ZONE)	12/8/2012	Winter Storm		0.00K	0.00K
FT RANSOM	RANSOM (ZONE)	1/11/2013	Winter Storm		0.00K	0.00K
LISBON	RANSOM (ZONE)	1/19/2013	High Wind	40 kts. MS	0.00K	0.00K
MCLEOD	RANSOM (ZONE)	1/20/2013	Extreme Cold/Wind Chill		0.00K	0.00K
ANSELM	RANSOM (ZONE)	1/28/2013	Heavy Snow		0.00K	0.00K
MCLEOD	RANSOM (ZONE)	1/31/2013	Extreme Cold/Wind Chill		0.00K	0.00K
FT RANSOM	RANSOM (ZONE)	2/1/2013	Extreme Cold/Wind Chill		0.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	2/10/2013	Blizzard		0.00K	0.00K
LISBON	RANSOM (ZONE)	3/3/2013	Winter Storm		0.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	3/17/2013	Blizzard		0.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	3/17/2013	Winter Storm		0.00K	0.00K

RANSOM (ZONE)	RANSOM (ZONE)	4/14/2013	Blizzard		0.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	4/14/2013	Winter Storm		0.00K	0.00K
RANSOM (ZONE)	RANSOM CO.	6/20/2013	Flash Flood		5.00K	20.00K
SHELDON	RANSOM CO.	6/20/2013	Flash Flood		5.00K	50.00K
RANSOM (ZONE)	RANSOM CO.	8/6/2013	Hail	1.00 in.	0.00K	0.00K
RANSOM (ZONE)	RANSOM CO.	8/6/2013	Hail	0.75 in.	0.00K	0.00K
RANSOM (ZONE)	RANSOM CO.	8/6/2013	Hail	1.25 in.	0.00K	0.00K
RANSOM (ZONE)	RANSOM CO.	8/6/2013	Hail	1.00 in.	0.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	12/3/2013	Winter Storm		0.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	12/6/2013	Extreme Cold/Wind Chill		0.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	12/28/2013	Blizzard		0.00K	0.00K
RANSOM (ZONE)	RANSOM (ZONE)	12/28/2013	Extreme Cold/Wind Chill		0.00K	0.00K



Hazard Areas for Select Facilities

1/2 Mile Hazard Area

1 Mle Hazard Area

Appendix D: Key Facilities

Rural County Key Facilities	
Name	**Category**
Anselm Lutheran Church	Church
Bridges	Bridge
Cass County Electric Coop	Substation
Central Power Electric Coop	Substation
Dead Colt Creek Dam	Dam
Fillmore Lutheran Church	Church
Fort Ransom State Park	Park
Jehovah's Witnesses	Church
KQLX Radio Tower	Communications
KVLY Television Tower	Communications
Larson Grain Co	Grain Storage
Minnkota Electric Coop	Substation
NDDOT Shop	Hazardous Materials
North Dakota Forestry Service	State Government
Ottertail Power	Substation
Ottertail/Hospital Tower	Communications
Preston Lutheran Church	Church
Ransom County 911 Tower	Communications
Sundale Huttertarian Association	Special Facilities
Verona Fire Department	Fire Department

Elliott Key Facilities	
Name	**Category**
Farmers Union Oil Company	Hazardous Materials

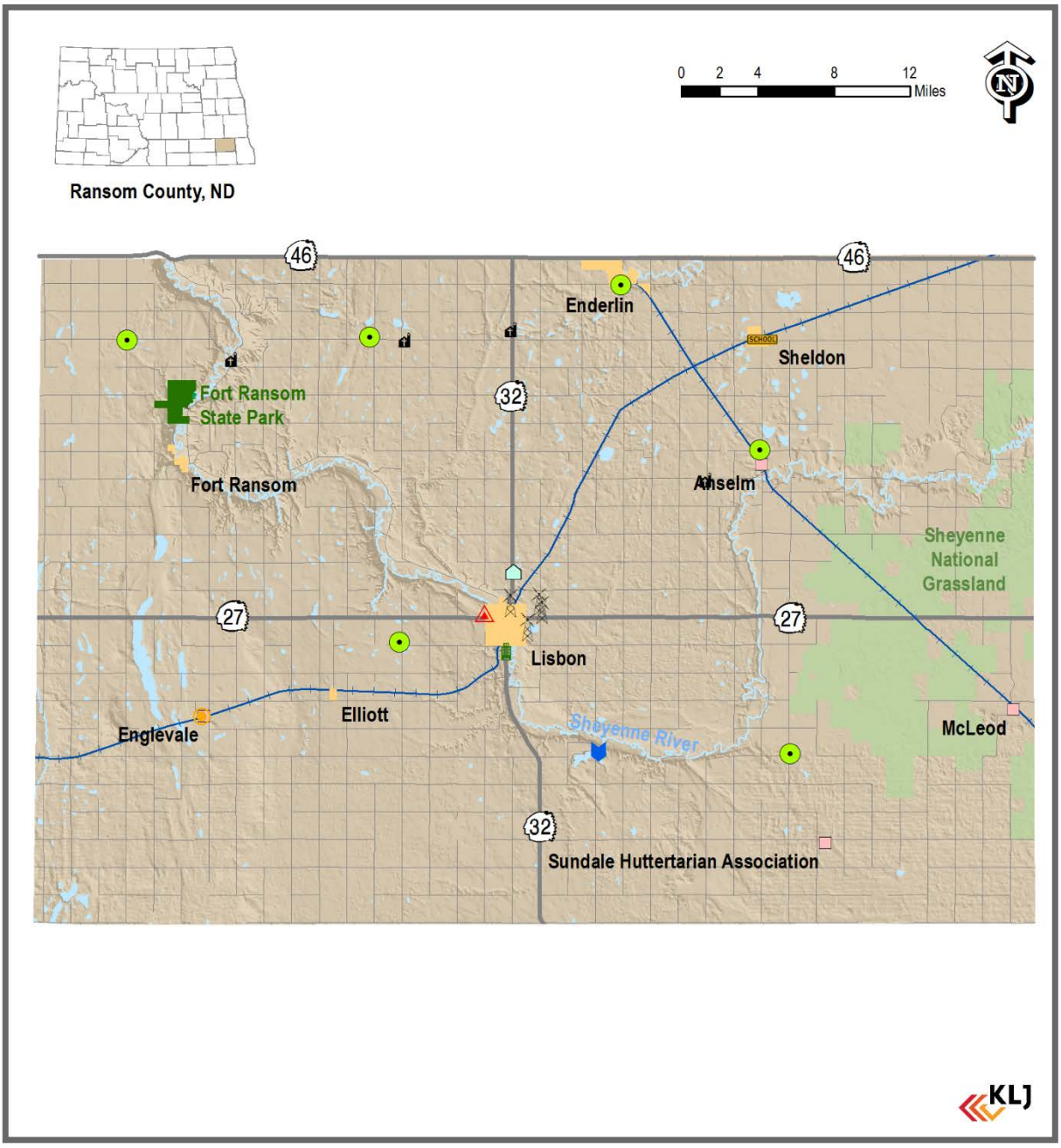
Enderlin Key Facilities	
Name	**Category**
Archer Daniels Midland	Commercial, Hazardous Materials
Anhydrous Storage	Industrial, Hazardous Materials
Bridges	Bridge
Canadian Pacific Rail Yard	Transportation
City Auditorium	City Facilities
City Offices	City Facilities
Enderlin Dam	Dam
Enderlin Fire Hall	Fire Department
Enderlin Independent	Communications
Enderlin Lagoon	City Facilities
Enderlin MeritCare	Medical
Enderlin Municipal Airport	Airport
Enderlin Municipal Library	City Facilities
Enderlin Historical Society and Museum	City Facilities
Enderlin Public School	School
Enderlin Senior Citizens	City Facilities
Enderlin Water Tower	City Facilities
Enderlin Water Treatment Plant	Water Treatment
First Lutheran Church	Church
First United Methodist Church	Church
Hendrickson Field	Events
Jay's Food Pride	Food Supply
Maryhill Manor	Nursing/Retirement
Plains, Grains, and Agronomy	Hazardous Materials
St. Patrick's Catholic Church	Church
Trinity Lutheran Church	Church
US Post Office	Federal Government

Fort Ransom Key Facilities	
Name	**Category**
Dickey Rural Telephone offices	Communications
Fort Ransom Dam	Dam
Fort Ransom School	School
Fort Ransom Senior Citizens	City Facilities
Fort Ransom Fire Department	Fire Department
Main Street Bridge	Bridge
Ransom County Historical Society Museum	County Facilities
Standing Rock Lutheran Church	Church
US Post Office	Federal Government

Lisbon Key Facilities	
Name	**Category**
Aggregate Industries, Inc.	Hazardous Materials
Assembly of God Church	Church
Beverly Anne	Nursing/Retirement
Bridges	Bridge
Cenex	Industrial, Hazardous Materials
Dakota Clinic	Medical
Expo Center	Public Shelters
Family Medical Clinic	Medical
Farmer's Union Oil Company	Hazardous Materials
First Baptist Church	Church
First Methodist Church	Church
Gas Plus	Hazardous Materials
Harvest Boards	Hazardous Materials
Hope Evangelical Free Church	Church
KQXL Radio	Communications
Lisbon Ambulance Service	Ambulance
Lisbon City Offices	City Facilities
Lisbon Dam	Dam
Lisbon Eagles	Public Shelters
Lisbon Elementary and Middle School	School
Lisbon Elevator	Grain Storage
Lisbon Fire Department	Fire Department
Lisbon Gymnasium	School
Lisbon High School	School
Lisbon Medical Center	Medical
Lisbon Oil	Hazardous Materials
Lisbon Pharmacy, Inc.	Pharmacy
Lisbon Police Department	Law Enforcement
Lisbon Public Library	City Facilities
Lisbon Warehouse Grocery	Food Supply
Lisbon Water Plant	Hazardous Materials
Lisbon Water Tower	City Facilities
National Guard Armory	Federal Government
North Dakota Highway Patrol	Law Enforcement
North Dakota Veterans Home	Medical
Orv's Oil	Hazardous Materials
Ottertail Power Company	Substation
Parkside Lutheran Nursing Home	Nursing/Retirement
Presbyterian Church	Church
Ransom County Clinic	Medical
Ransom County Courthouse	County Facilities
Ransom County Gazette	Communications

Ransom County Road Department	County Facilities
Ransom County Sheriff's Department	Law Enforcement
Redeemer Lutheran Church	Church
Remily's Market	Food Supply
Sheyenne Racing	Events
Southeast Propane, LLC	Hazardous Materials
St. Aloysius Catholic Church	Church
Trinity Lutheran Church	Church
US Farm Service	Federal Government
US Post Office	Federal Government

Sheldon Key Facilities	
Name	**Category**
Sheldon Farmer's Elevator	Grain Storage
Sheldon Fire Hall	Fire Department
Sheldon Senior Citizens	City Facilities
US Post Office	Federal Government

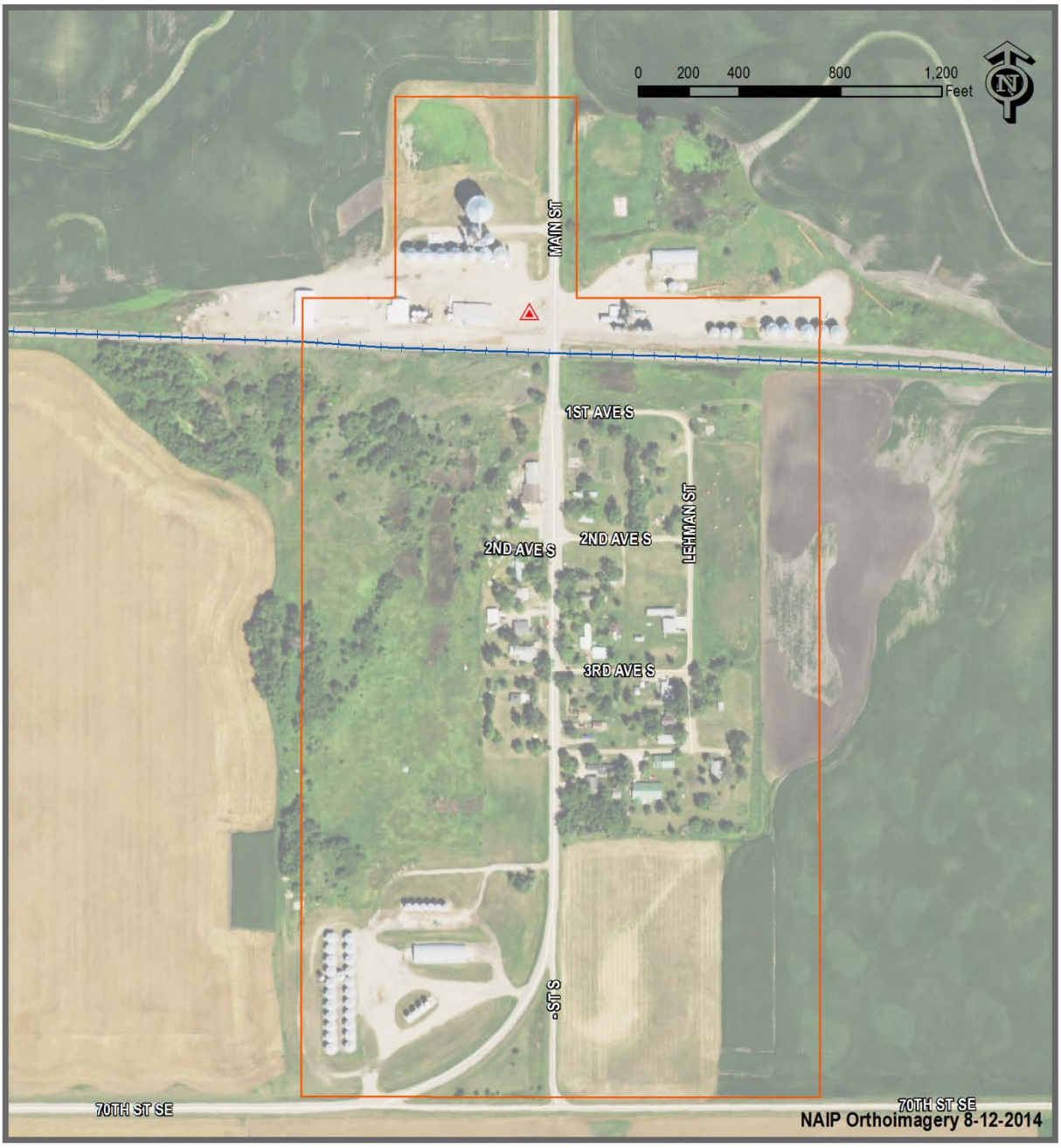


Key Facilities
Ransom County

Source:
KLJ, ND GIS Hub

For Planning Purposes Only

- Airport
- Ambulance
- Child Care
- Church
- City Facilities
- Commercial
- Communications
- County Facilities
- Dam
- Events
- Federal Government
- Fire Department
- Food Supply
- Grain Storage
- Hazardous Materials
- Law Enforcement
- Medical/Pharmacy
- Nursing/Retirement
- Parks
- Public Shelters
- Schools
- State Government
- Substation
- Water Treatment



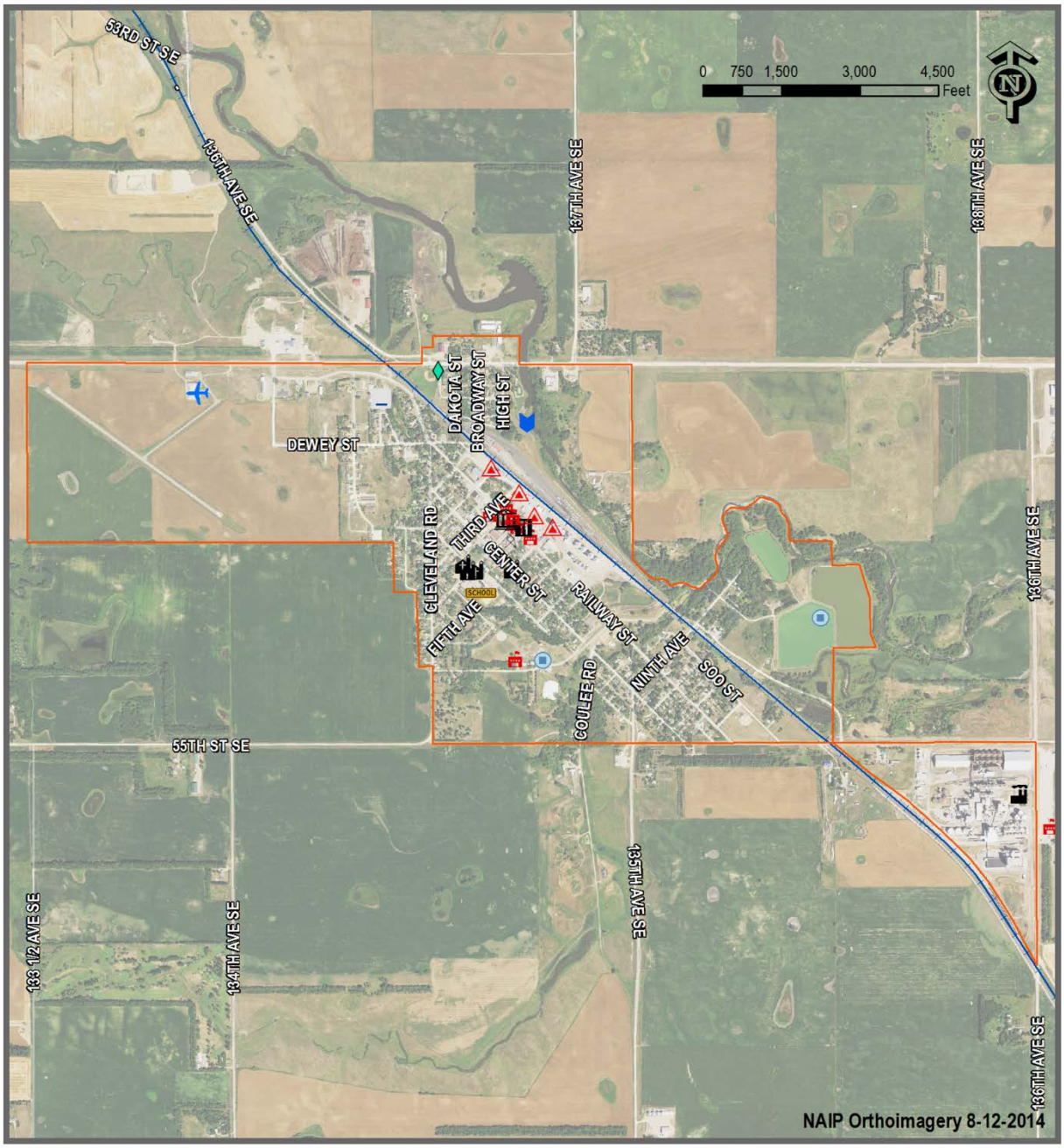
Key Facilities
Elliott

Source:
KLJ
ND GIS Hub

For Planning Purposes Only

KLJ

- Airport
- Ambulance
- Child Care
- Church
- City Facilities
- Commercial
- Communications
- County Facilities
- Dam
- Events
- Federal Government
- Fire Department
- Food Supply
- Grain Storage
- Hazardous Materials
- Law Enforcement
- Medical/Pharmacy
- Nursing/Retirement
- Parks
- Public Shelters
- Schools
- State Government
- Substation
- Water Treatment



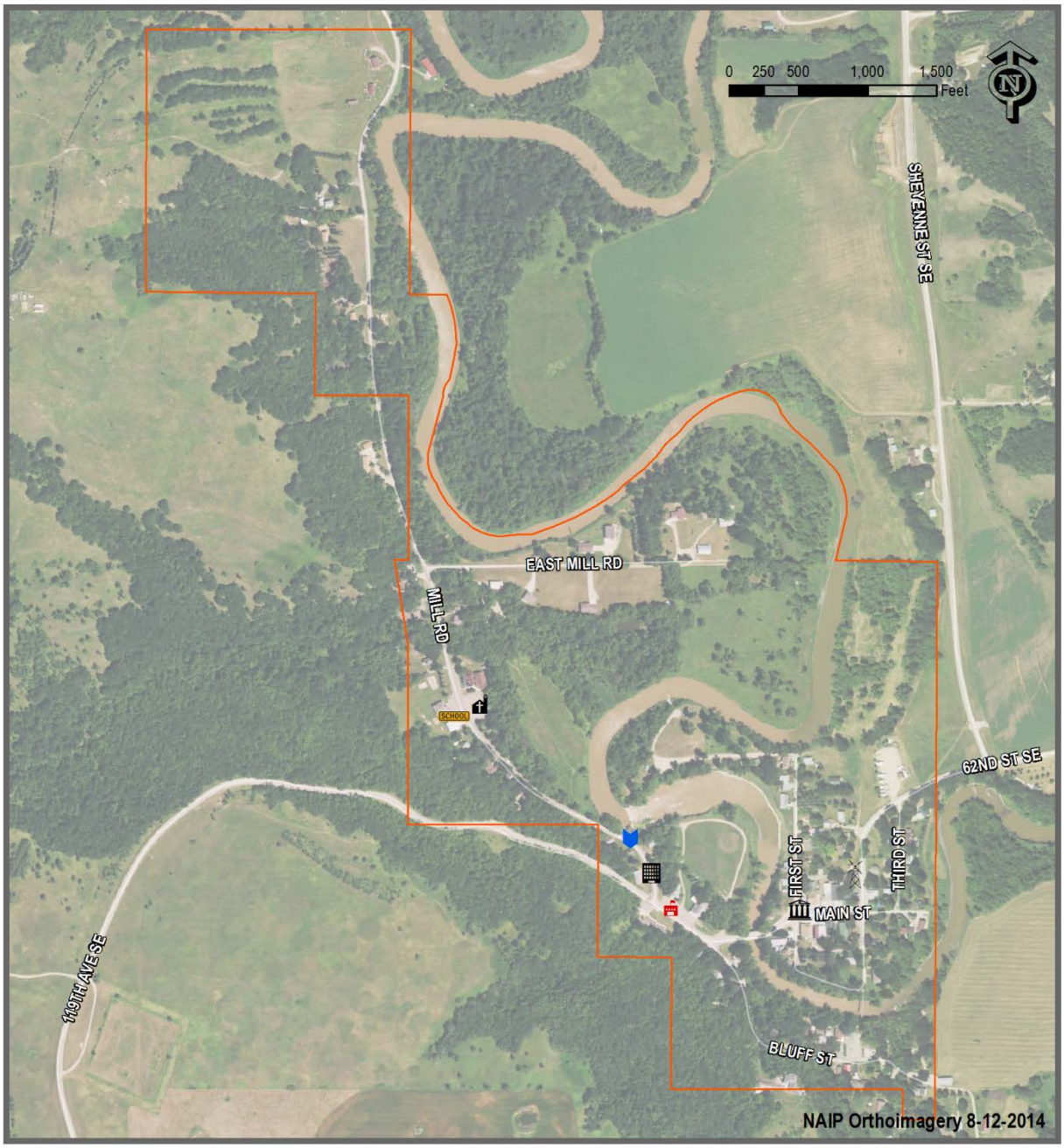
Key Facilities Enderlin

Source:
KLJ
ND GIS Hub

For Planning Purposes Only

KLJ

- Airport
- Ambulance
- Child Care
- Church
- City Facilities
- Commercial
- Communications
- County Facilities
- Dam
- Events
- Federal Government
- Fire Department
- Food Supply
- Grain Storage
- Hazardous Materials
- Law Enforcement
- Medical/Pharmacy
- Nursing/Retirement
- Parks
- Public Shelters
- Schools
- State Government
- Substation
- Water Treatment



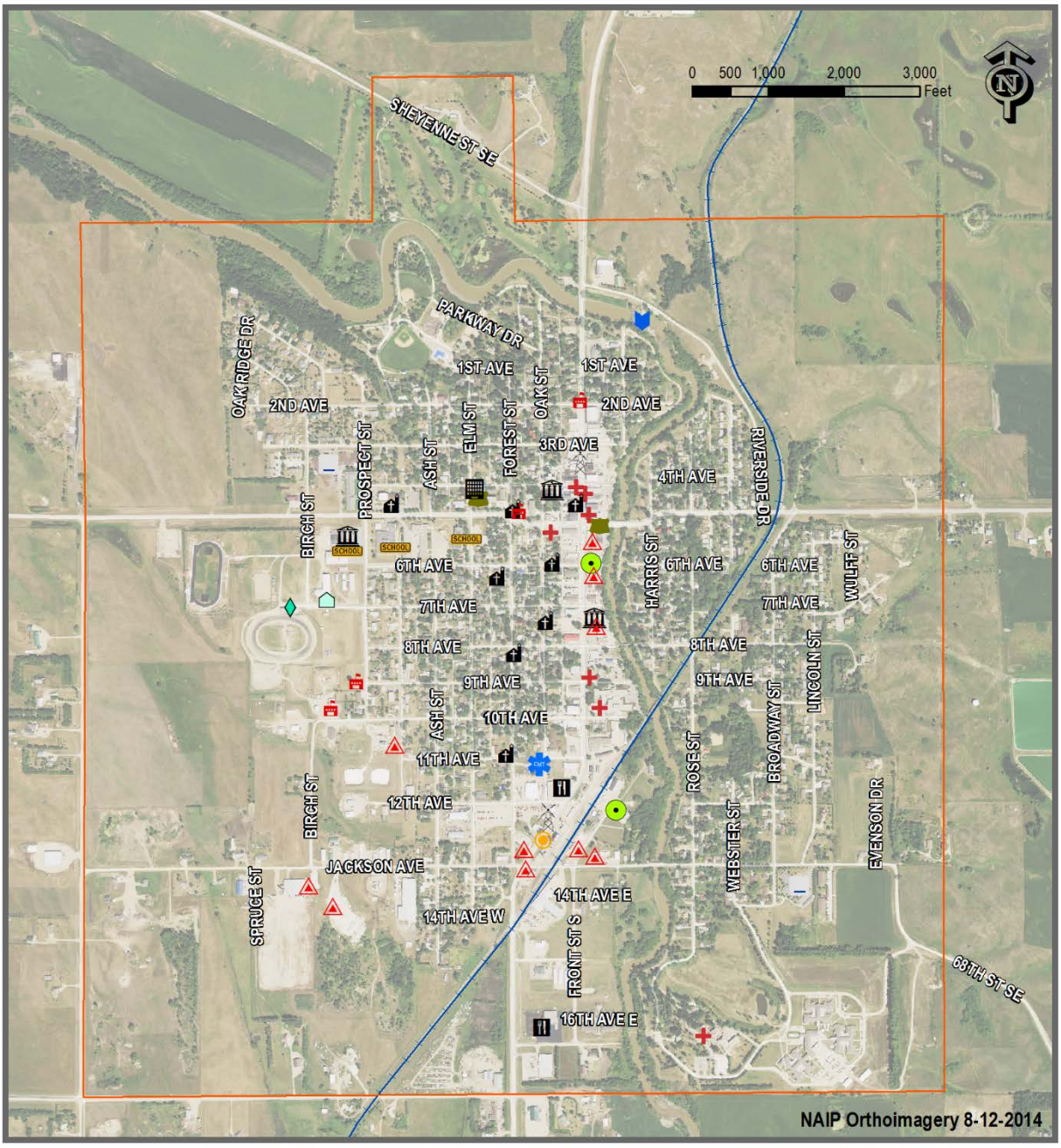
Key Facilities Fort Ransom

Source:
KLJ
ND GIS Hub

For Planning Purposes Only

KLJ

- Airport
- Ambulance
- Child Care
- Church
- City Facilities
- Commercial
- Communications
- County Facilities
- Dam
- Events
- Federal Government
- Fire Department
- Food Supply
- Grain Storage
- Hazardous Materials
- Law Enforcement
- Medical/Pharmacy
- Nursing/Retirement
- Parks
- Public Shelters
- Schools
- State Government
- Substation
- Water Treatment



Key Facilities
Lisbon

Source:
KLJ
ND GIS Hub

Note: Not pictured are the Lisbon lagoons and airport.

For Planning Purposes Only

KLJ

- Airport
- Ambulance
- Child Care
- Church
- City Facilities
- Commercial
- Communications
- County Facilities
- Dam
- Events
- Federal Government
- Fire Department
- Food Supply
- Grain Storage
- Hazardous Materials
- Law Enforcement
- Medical/Pharmacy
- Nursing/Retirement
- Parks
- Public Shelters
- Schools
- State Government
- Substation
- Water Treatment

Key Facilities
Sheldon

Source:
KLJ
ND GIS Hub

For Planning Purposes Only

KLJ

- Airport
- Ambulance
- Child Care
- Church
- City Facilities
- Commercial
- Communications
- County Facilities
- Dam
- Events
- Federal Government
- Fire Department
- Food Supply
- Grain Storage
- Hazardous Materials
- Law Enforcement
- Medical/Pharmacy
- Nursing/Retirement
- Parks
- Public Shelters
- Schools
- State Government
- Substation
- Water Treatment

Appendix E: Excluded Hazards

Geologic Hazards are featured in the state-wide plan that are not profiled in this document due to the limited risk found in the county. Geologic hazards include landslide, earthquake and mining.

The state-wide plan indicates that the county is not a potential earthquake hazard area. There is no history of a significant earthquake in the county.

The US Geological Survey catalogs landslide hazard areas based on susceptibility and incidence. Susceptibility is defined as the probable degree of response of the areal rocks and soils to natural or artificial cutting of slopes, or to anomalously high precipitation. There are no landslide areas in Ransom County cataloged by the US Geological Survey. There is no history of significant landslide in the county; therefore, landslide is not considered to be a priority hazard for the county.

There is no history of mining-related hazard in the county.

Appendix F: Mitigation Action Determination

Mitigation activities were discussed at a public meeting and Planning Team meeting. The public was also able to provide input on mitigation actions with the online survey. Activity selection included multiple steps. For the first step, goals were determined to help guide strategy selection. Following goal selection, the mitigation actions from the county's 2009 plan were reviewed. The result of the review is shown below.

Status of Ransom County Mitigation Actions, 2009 Hazard Mitigation Plan	
Mitigation Action	**Status**
Provide education on conservation of water and fire safety	Completed, ongoing
Continue to reduce losses through compliance with the NFIP	Completed, ongoing
Implement permanent dikes along the Sheyenne and Maple Rivers	Project currently in progress
Install drain tile to lower the water table in McLeod to drain #10	Completed
Improve drainage of roadways in low-lying areas	Completed, ongoing
Updated floodplain ordinances	Not completed, no longer identified as a priority
Develop riverbank stabilization or diversion programs	Recently completed at Fort Ransom
Train and exercise HazMat identification and response to hazardous materials incidents	Ongoing
Teach shelter-in-place and evacuation planning in county schools	Not completed, no longer identified as a priority
Establish a safe shelter at Dead Colt Creek Reservoir	Concrete bathrooms installed at Dead Colt Creek Reservoir
Routinely trim branches that are near power lines, and bury power lines	Utilities trim branches, burying of power lines not completed and not considered to be a realistic priority for the county
Reduce the number of human-caused fires through public education	Completed, Lisbon FPD provides fire safety education at schools
Develop a county rural fire protection plan and rural fire hazard mapping	Not completed, no longer considered a priority because local officials feel the plan would not be utilized
Develop a satellite fire department in McLeod as support for firefighting in the National Grassland Area	Completed, some vehicles are stationed in McLeod
Pursue additional equipment and training for fire departments	Ongoing
Improve NOAA all-hazard radio communication	Completed, a new radio tower was constructed in Fort Ransom
Obtain generators for shelter facilities and EOC	Completed, but there are still additional facilities that could use generators
Review and update Emergency Operations Plan	Not completed, the plan needs updated
Establish a Ransom County Pandemic Coordinating Committee	Not completed, local officials feel that the county does not have the resources to put together this type of committee
Study and prepare for a pandemic	Completed
Tabletop training on a major disaster that would involve all jurisdictions	Ongoing

Incident command training	Ongoing
Conduct public education campaigns and CERT training	Ongoing
Study the impacts of dam/dike failures and exercise evacuation plans	Partially completed, Dead Colt now has an emergency action plan
Study the impacts on non-jurisdictional dams and upstream water retention	No longer a priority, non-jurisdictional plans that may impact the county all have emergency action plans
Install security fences and outdoor lighting to protect critical infrastructure	Completed for many facilities, Enderlin water treatment plant could use security
Utilize neighborhood watch program	No formal program established, not considered a priority
Encourage citizens/businesses to develop emergency operations plans	Partially completed, many of the large HazMat producers in the county have emergency plans

In addition to the list of previously uncompleted actions, the consultant provided a list of recommendations for new action items. A refined list was developed using the preliminary list and other projects brought up during the meeting. The refined list was then developed into a priority action plan by discussing each item. The consultant provided assistance with ranking each project based on discussions at the Planning Team and public meetings. Items were scored based on 10 criteria that help to determine their future feasibility and effectiveness. The prioritization criteria are:

Life Safety – Does the item protect the life of residents?

Property Protection – Does the item protect public and personal property in the county?

Technical – Is the item technically feasible to implement?

Political – Is the item politically acceptable in the community?

Legal – Is the item legal to implement?

Environmental – Does the item have an impact on the environment?

Social – Is the item socially acceptable in the community?

Administrative – Does the jurisdiction have the administrative capacity to implement the item?

Local Champion – Does the item have a committed local champion?

Cost/Benefit – Does the benefit justify the cost?

A prioritization hierarchy was developed based on each item's total score. The action item prioritization scores are presented in the following table. Priorities were adjusted further based on comments received during the final public review period.

Note: Items in the following tables are ranked 0 to 3 (low to high)

Low: 20 or below
Moderate: 21 to 25
High: 26 or above

Action Item Prioritization Scores												
Action	Life Safety	Property Protection	Technical	Political	Legal	Environmental	Social	Administrative	Local Champion	Cost/Benefit	Total	Priority
Conduct NFIP workshop to educate public about benefits of flood insurance	1	2	3	3	3	3	3	3	2	3	26	High
Consider enrolling in NFIP Community Rating System (CRS)	1	1	1	1	2	3	3	1	1	2	16	Low
Identify location of all hazardous materials facilities in county and distribute maps to first responders	1	0	2	2	2	3	3	3	1	1	18	Low
Install a warning siren at Dead Colt Creek Reservoir	2	0	3	3	3	3	3	2	1	2	22	Moderate
Conduct riverbank stabilization activities along the Sheyenne River	1	2	2	3	3	2	3	2	3	2	23	Moderate
Remove abandoned school to prevent risk of arson	1	1	2	2	3	3	3	1	1	1	18	Low
Mitigate flooding hazard to sewer lagoons	2	2	2	3	3	3	3	3	3	2	26	High
Install box culvert on County Road 136 to reduce local flooding	2	3	3	3	3	3	3	2	3	3	28	High
Create living snow fences in strategic locations	1	0	2	2	3	2	2	2	1	1	16	Low
Elevate 5th Avenue bridge to reduce flooding risk	2	2	2	3	3	3	3	3	3	2	26	High
Remove dead trees along county road right-of-way	0	1	2	3	3	3	3	3	3	2	23	Moderate
Install permanent levees along the Sheyenne and Maple Rivers	1	3	2	2	3	3	3	2	2	2	23	Moderate
Remove silt and debris from drainages	1	1	3	3	3	2	3	3	2	1	22	Moderate
Construct or enlarge culverts to reduce flooding risk for rural roads	1	2	3	3	3	3	3	3	2	2	25	Moderate
Acquire and remove repetitive loss properties	0	2	2	1	2	2	3	3	3	3	21	Moderate
Develop a public information campaign for agricultural producers.	0	1	3	2	3	3	2	2	2	2	20	Low
Administer Firewise program and implement fuel reduction activities during wildfire season.	1	1	2	2	2	2	2	2	1	2	17	Low

Appendix G: Monitoring Forms

Worksheet 7.1
Mitigation Action Progress Report Form

Mitigation Action Progress Report Form

Progress Report Period	From Date:	To Date:
Action/Project Title		
Responsible Agency		
Contact Name		
Contact Phone/Email		
Project Status	❑ Project completed ❑ Project canceled ❑ Project on schedule ❑ Anticipated completion date:_____ ❑ Project delayed Explain _____	

Summary of Project Progress for this Report Period

1. What was accomplished for this project during this reporting period?

_____

_____

2. What obstacles, problems, or delays did the project encounter?

_____

_____

3. If uncompleted, is the project still relevant? Should the project be changed or revised?

_____

_____

4. Other comments

_____

_____

Worksheet 7.2
Plan Update Evaluation Worksheet

Plan Update Evaluation Worksheet

Plan Section	Considerations	Explanation
Planning Process	Should new jurisdictions and/or districts be invited to participate in future plan updates?	
	Have any internal or external agencies been invaluable to the mitigation strategy?	
	Can any procedures (e.g., meeting announcements, plan updates) be done differently or more efficiently?	
	Has the Planning Team undertaken any public outreach activities?	
	How can public participation be improved?	
	Have there been any changes in public support and/or decision- maker priorities related to hazard mitigation?	
Capability Assessment	Have jurisdictions adopted new policies, plans, regulations, or reports that could be incorporated into this plan?	
	Are there different or additional administrative, human, technical, and financial resources available for mitigation planning?	
	Are there different or new education and outreach programs and resources available for mitigation activities?	
	Has NFIP participation changed in the participating jurisdictions?	
Risk Assessment	Has a natural and/or technical or human-caused disaster occurred?	
	Should the list of hazards addressed in the plan be modified?	
	Are there new data sources and/or additional maps and studies available? If so, what are they and what have they revealed? Should the information be incorporated into future plan updates?	
	Do any new critical facilities or infrastructure need to be added to the asset lists?	
	Have any changes in development trends occurred that could create additional risks?	
	Are there repetitive losses and/or severe repetitive losses to document?	

Worksheet 7.2
Plan Update Evaluation Worksheet

Plan Section	Considerations	Explanation
Mitigation Strategy	Is the mitigation strategy being implemented as anticipated? Were the cost and timeline estimates accurate?	
	Should new mitigation actions be added to the Action Plan? Should existing mitigation actions be revised or eliminated from the plan?	
	Are there new obstacles that were not anticipated in the plan that will need to be considered in the next plan update?	
	Are there new funding sources to consider?	
	Have elements of the plan been incorporated into other planning mechanisms?	
Plan Maintenance Procedures	Was the plan monitored and evaluated as anticipated?	
	What are needed improvements to the procedures?	

SEPTEMBER 15, 2015

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