2025

HAZARD MITIGATION PLAN

Lyman County, South Dakota

PREPARED BY:

Lyman County Hazard Mitigation Planning Team

TECHNICAL ASSISTANCE PROVIDED BY:

Planning & Development District III
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CHAPTER I
PLANNING PROCESS

Background

This plan is an update of the Lyman County Hazard Mitigation Plan, which was approved by FEMA in February 2021. The purpose of the plan is to prevent or reduce losses to people and property that may result from future hazard events in Lyman County. The plan identifies and analyzes the hazards that the county is susceptible to and proposes a mitigation strategy to minimize future damage that may be caused by those hazards. The document will serve as a strategic planning tool for use by Lyman County in its efforts to mitigate future disaster events.

This is a multi-jurisdictional plan. All the municipalities located within Lyman County were invited to participate in the plan's development, as they had when the current plan (that is, the plan now being updated) was being developed. Following is the list of jurisdictions that participated in the plan's development by having a representative attending the planning meetings and by providing input into the plan:

- Lyman County
- Town of Kennebec
- Town of Oacoma
- City of Presho
- Town of Reliance

Production of the plan was the ultimate responsibility of the Lyman County Emergency Management Director, who served as the county's point of contact for all activities associated with this plan. Input was received from a hazard mitigation planning team whose members are listed in **Table 1.1**, as well as the public and other stakeholders.

The plan itself was written by an outside contractor, Planning & Development District III of Yankton, South Dakota, one of the state's six regional planning entities. The office has an extensive amount of experience in producing various kinds of planning documents, including municipal ordinances, land use plans, and zoning ordinances, and it is an acknowledged leader in geographic information systems (GIS) technology in South Dakota. Furthermore, its staff has written hazard mitigation plans for all fifteen of the counties in the District's planning area, including Lyman County's current plan.

Figure 1.1 – County Location

The following staff members of Planning & Development District III were involved in producing the plan. John Clem, a Community Development Specialist, was the project manager and author of the plan. Eric Ambroson assisted in the public outreach and risk assessment efforts and gathered some of the demographic data used in the plan. Harry Redman, a Geographic Information Systems Professional, produced maps for the plan, directed the floodplain risk analysis, and completed the county land cover analysis. Jen Moser assisted with the public outreach and survey effort and Shannon Viereck provided additional research assistance and edited the final copy of the plan.

Development of Planning Team

The initial planning stages for this plan update began in 2023 when an application was submitted to FEMA for funding to help pay for the update. The funds were awarded to the County in October 2024. Following this, Mr. Clem and the Lyman County Emergency Management Director began to develop the methodology and strategy that was used to update the plan.

The first step was to organize the hazard mitigation planning team, the group of individuals representing the participating jurisdictions at the planning team meetings. People invited to participate from each jurisdiction included elected officials, finance personnel, public works staff, planning and zoning staff, code enforcement staff, floodplain management staff, and emergency response personnel. These individuals provided information that was used to develop the plan, reviewed drafts of the plan as it was being assembled, and approved the final version of the plan.

Other organizations were also contacted by email and/or telephone to participate in the plan's development and were provided with a copy of the current plan. These stakeholders included:

- Lower Brule Sioux Tribe
- West Central Electric Cooperative
- West River/Lyman-Jones Rural Water System
- Sanford Chamberlain Regional Hospital
- Lyman County *Herald*
- Lyman County School District
- Major employers
- Neighboring counties (Brule, Buffalo, Gregory, Hughes, Hyde, Jones, Mellette, Stanley, and Tripp)

Each individual invited to participate in the plan's development had knowledge in one or more of the following subject areas that helped contribute to the planning process:

- Infrastructure within the county.

- Economic development activities within the county.
- Natural and cultural resources.
- Floodplain management.
- Building codes and other development regulations.
- Mapping and GIS.
- Social services, including vulnerable populations.
- Other technical expertise or specialized knowledge to assist in the planning effort.

Table 1.1 lists the individuals who participated in the plan's development, including their contribution to the process. The columns on the right show their attendance at the planning meetings that were held. Additional meetings took place in the participating jurisdictions; those meetings are not reflected in the table, but documentation is provided in **Appendix B**.

Table 1.1 – Participation in Plan Development

Name	Representing	Position	Role	Mtg 1 4/22/25	Mtg 2 5/27/25	Mtg 3 7/22/25
John Clem	Planning District III	Planner	Plan author	X	X	X
Eric Ambroson	Planning District III	Planner	Research, Support	X		
Shannon Viereck	Planning District III	Planner	Research, Support	X	X	X
Margo Mitchell	Lyman County	Emergency Mgmt Dir	Guidance, Review	X	X	X
Beau Johnson	Lyman County	County commission	Input, Review	X	X	X
Ryan Huffman	Lyman County	County commission	Input, Review	X	X	
Timothy Feliciano	Lyman County	County commission	Input, Review	X	X	X
Lawrence Thompson	Lyman County	County commission	Input, Review	X	X	X
Zane Reis	Lyman County	County commission	Input, Review		X	X
Kalli Houchin	Lyman County	Auditor	Input, Data, Review	X	X	X
Staci Gran	Lyman County	Director of Equalization	Input, Data, Review	X	X	
Walter Nagel	Lyman County	Hwy Superintendent	Input, Data, Review	X	X	
Gary Dominiack	City of Oacoma	Mayor	Input, Data, Review	X	X	X
Jaica Kenzy-Adamson	City of Oacoma	Finance Officer	Input, Data, Review	X		X
Bryan Mahrt	City of Oacoma	Public Works Director	Input, Data, Review	X		
Shelly Long	Town of Kennebec	Finance Officer	Input, Review		X	
Charlie Gran	Town of Kennebec	Public Works Director	Input, Review		X	
Brody Ness	Town of Kennebec	*(Private citizen)*	Input, Review		X	
Tonya Ness	Town of Kennebec	*(Private citizen)*	Input, Review		X	
Angela Ehlers	City of Presho	Mayor	Input, Review		X	
Melissa Slaba	City of Presho	Finance Officer	Input, Review		X	
John Uthe	City of Presho	Public Works Director	Input, Review		X	
Cody Uthe	City of Presho	Assistant Public Works Dir	Input, Review		X	
Beth Herman	Town of Reliance	Finance Officer	Input, Review		X	
Keith Herman	Town of Reliance	Public Works Director	Input, Review			X
Shane Neiderworfer	West Central Electric	Staff	Input, Data, Review	X		
Kit Talich	West Central Electric	Manager	Input, Data, Review		X	
Brent Kolstad	SDOEM	Region Coordinator	Guidance	X		

Public Outreach

Throughout the plan's development, efforts were made to obtain broader involvement in the plan beyond the core planning team and stakeholders. This outreach effort included press releases that were printed in the local newspaper, information posted on community websites, and social media.

New for this update, surveys were made available to provide another way for people to contribute their thoughts and opinions on hazard mitigation. Survey forms were distributed to all planning team members, as well as other city and county staff who did not participate in the planning meetings, and other stakeholders. To generate broader public input, the surveys were made available on the community websites and through social media, survey posters with a QR code were placed in various public locations throughout the county [1], and a press release at the start of the planning process included a QR code so that the public could participate in the survey. Respondents were able to provide their opinion of which hazards have the biggest impact on the county, how those hazards have personally impacted them, and what actions could be taken to mitigate the hazards. See **Appendix A** for documentation of the public outreach effort.

Incorporation of Other Plans

Information from various local plans, studies, and reports was incorporated into this plan. Each of the items listed in the table below was reviewed as this plan was developed, and a brief description is given of how relevant information was incorporated into this plan. In addition to these local resources, a considerable amount of information and data was incorporated into this plan from the South Dakota Hazard Mitigation Plan (both the 2019 version and the current enhanced version).

Table 1.2 – Plans, Studies, and Reports Incorporated Into Plan

Item	Notes
Planning & Development District III Comprehensive Economic Development Strategy (CEDS)	The CEDS analyzes development issues in the District III service area, including Lyman County. Economic resiliency, including the role hazard mitigation can play in helping maintain economic strength, is discussed. Regional development priorities and demographic data from the CEDS was incorporated into the plan.
Lyman County Highway Plan	The plan includes a list of county roads scheduled for improvements within the next five years, which was useful for development of the mitigation strategy.
Lyman County Local Emergency Operations Plan (LEOP)	The LEOP was used to evaluate the status of previously proposed hazard mitigation actions.
Town of Oacoma Comprehensive Plan	The environmental constraints section of the plan was used to identify areas suitable for development within the city.
Town of Reliance Comprehensive Plan	The environmental constraints section of the plan was used to identify areas suitable for development within the city.
West Central Electric Construction Work Plan	The plan provides details about the cooperative's anticipated projects over the next four years, including location and estimated cost.
Big Bend Dam Emergency Action Plan	This plan, from the U.S. Army Corps of Engineers, identifies actions to be taken during an emergency situation at the dam. The Corps has control over development surrounding Lake Sharpe, which is the body of water impounded by the dam.

[1] Posters were placed at the courthouse, city offices, grocery stores and other businesses, and at local schools.

Planning Meetings

Pictured: Lyman County Courthouse in Kennebec.

Several meetings were held to develop the plan, all of which took place at the Lyman County courthouse as described below. The planning process associated with the plan's development was relaxed and informal, and free-flowing discussion was always encouraged. No subcommittees were formed, no votes were taken or motions made, and decisions were made by mutual consensus of the planning team members. Everyone's opinion was respected, and nobody was discouraged from voicing his/her opinion. Leadership and guidance at the meetings was provided by Planning & Development District III staff and the Lyman County Emergency Management Director [2].

Prior to the first planning team meeting, the stakeholders identified earlier in this chapter were contacted and invited to participate in the planning process. A survey instrument was also developed, which was distributed to the planning team members and stakeholders, and which was also made available to the public as described earlier in the Public Outreach section.

First Planning Team Meeting

The first planning team meeting began with a reintroduction to the concept of hazard mitigation for the team members, many of whom had participated in the development of the current plan. The county's current mitigation plan was then reviewed, focusing on the hazards identified in the plan and the progress being made to implement the mitigation actions listed in the plan. Discussion also occurred about other local plans and policies that could be incorporated into this plan.

The planning team also reviewed the initial results of the survey, which helped determine which hazards to address in the plan, and additional hard copies of the survey were distributed. The meeting ended with a discussion about the process by which the plan would be developed over the coming months.

[2] The communities of Kennebec, Presho, and Reliance were not represented at the first meeting and Kennebec and Presho also missed the final meeting. For any meetings that were missed, the communities were briefed on the discussion that took place.

Activity between meetings

After the meeting, the Planning & Development District III office did a considerable amount of work on the risk assessment using various methods as described in **Chapter III**. The results of this work were shared with the planning team, including a summary of the textual information presented in **Chapter III**, maps showing hazard-prone areas in relation to important assets in each jurisdiction, and information about the value of property at risk to the various hazards impacting the county. Since the next meeting would focus on development of the mitigation strategy, the District III office also distributed a list of potential mitigation actions to the team, which was based on FEMA's guidance document *Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards*.

Second Planning Team Meeting

Development of the mitigation strategy was the focus of the second meeting. It began with identification of the mitigation goals and objectives to be achieved, followed by a discussion about local mitigation capabilities. Discussion about the specific mitigation actions to include in the plan followed, the participants being reminded that they should focus on hazard mitigation - *sustained action* taken to reduce the long-term risk to people and property from hazards – as opposed to preparedness. They were also encouraged to consider a comprehensive range of actions, regardless of whether they seemed likely to be achievable in the foreseeable future. A preliminary list of actions for each jurisdiction was developed, including details about the actions, such as estimated cost, timeframe for implementation, and the party responsible for implementation.

Activity between meetings

After the second meeting, each jurisdiction discussed the mitigation actions they wanted to include in the plan. This discussion took place at an official meeting of each jurisdiction's governing body, which ensured that the public could participate in the selection process, since hazard mitigation was an agenda item. The list of mitigation actions selected by the communities is presented in **Chapter IV** (see **Table 4.5**).

Final Planning Team Meeting

Following the jurisdictional meetings, the Planning & Development District III office completed the first draft of the plan. After this, the planning team was brought together again for a final meeting to review the draft and discuss how the plan will be maintained going forward. The importance of integrating the plan into the existing planning mechanisms within the county was emphasized. Prior to the meeting, a press release was run in the local newspaper and posted online and on social media which gave the public another opportunity to provide input into the plan.

Post-meeting activity

After the final planning team meeting, some additional information was added to the plan based on discussion at the meeting, primarily involving clarification of some of the details of

the proposed mitigation actions. The plan was then submitted to the South Dakota Office of Emergency Management.

Acknowledgements

The Planning & Development District III office would like to thank the members of the Lyman County Hazard Mitigation Planning team for participating in the planning meetings that were held, and for supplying information that was used to develop the plan. We would particularly like to thank County Emergency Management Director Margo Mitchell for arranging the planning team meetings and for coordinating with the participating jurisdictions. Thanks also are extended to Jim Poppen, Kyle Kafka, Blaire Jonas, and Marc Macy at the South Dakota Office of Emergency Management for information and guidance that was helpful in developing the plan.

2025 Lyman County (SD)
Hazard Mitigation Plan

CHAPTER II

Community Profile

PLANNING & DEVELOPMENT DISTRICT III

CHAPTER II
COMMUNITY PROFILE

Background

This chapter serves as a basic introduction of Lyman County. Topics addressed in this chapter include a general description of the county, its physical characteristics, socio-economic characteristics, infrastructure and utilities, and services. Following chapters are devoted to assessing risks in the county, presenting the county's mitigation strategy, and discussing how the plan will be implemented.

General Description

Lyman County is located in central South Dakota (see **Figure 1.1**). The county covers approximately 1,707 square miles in area, and its Census 2020 population was 3,718. Its population density is only 2.2 people per square mile compared to 11.7 people per square mile in South Dakota and 93.8 people per square miles in the United States. There are four incorporated municipalities located within the county – Kennebec (pop 281), Oacoma (pop 386), Presho (pop 472), and Reliance (pop 128). The county seat is located in Kennebec. Unincorporated communities include Lower Brule (pop 613), Vivian (pop 119) and Iona (pop 81). **Figure 2.1** shows the county's communities and highway network.

Physical Characteristics

Lyman County is very lightly settled, with most of the land devoted to livestock grazing, although crops are grown where the terrain and local conditions are favorable. These crops include corn, wheat, alfalfa, sorghum, and sunflowers. Most of the land is fairly level to gently rolling, but there are some rugged areas, especially along the Missouri and White Rivers. Away from the rivers, there are some isolated buttes that rise prominently from the landscape. The Missouri River forms the county's eastern border.

Figure 2.1 – Lyman County

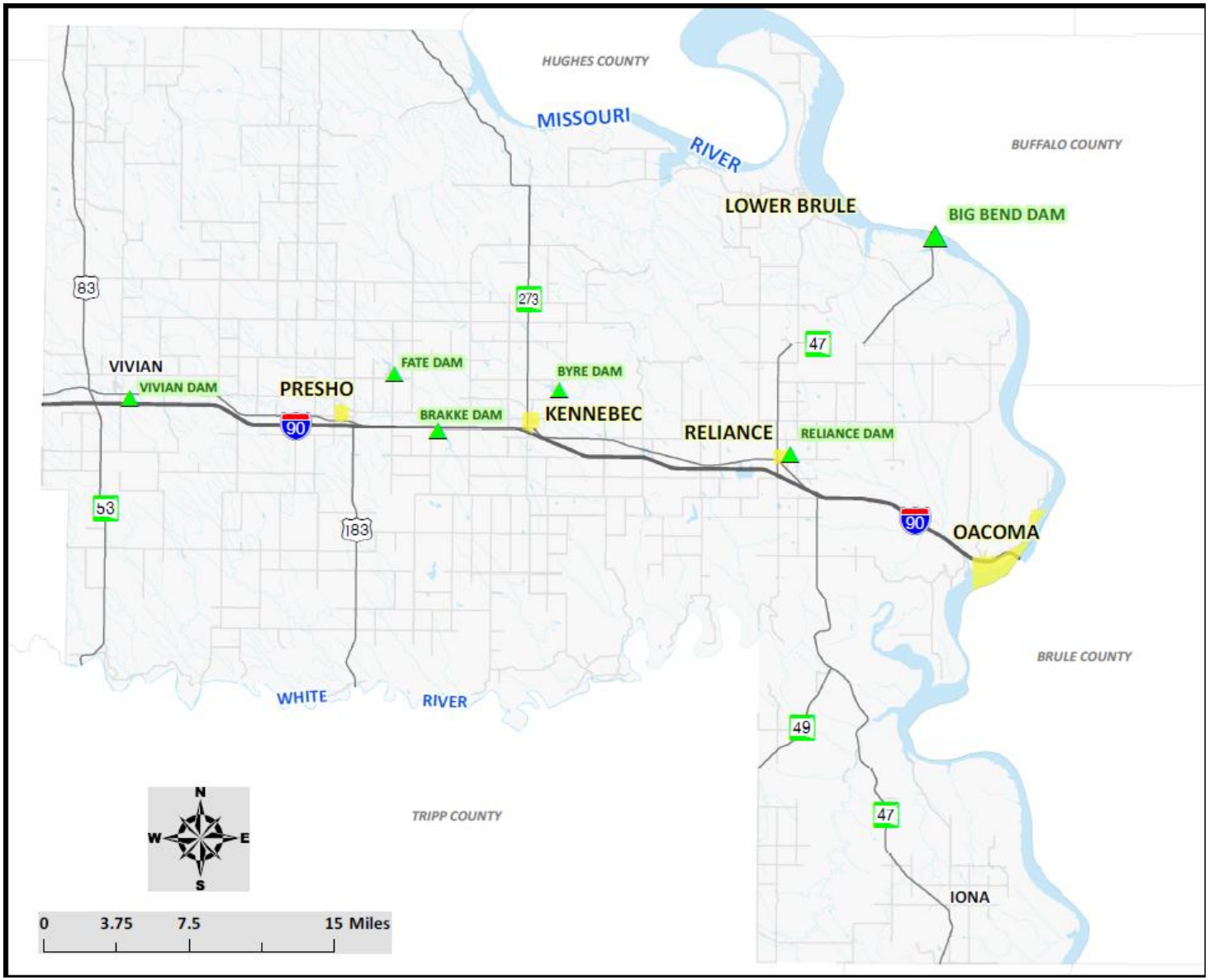


Table 2.1 provides a breakdown of the land cover in Lyman County, which is shown graphically in **Figure 2.2**. The table is based off satellite imagery from the United States Geological Service's National Land Cover Database. As the table shows, the predominant types of land cover in the county are grassland and cropland, which together comprise about 90 percent of the county's area. Developed land makes up only a very small fraction of the land area. The table also tracks the change over time in land cover since 1985; grassland has had the greatest absolute increase, while pastureland has shown the most relative growth. Developed land has also shown significant growth, especially in relative terms

Table 2.1 - Vegetative Land Cover

Cover Type	Sq Miles (1985)	Sq Miles (2023)	% Change	% Total Area
Grassland	1,014.0	1,051.3	3.7%	61.6%
Cultivated Crops	544.6	491.3	-9.8%	28.8%
Open Water	67.4	66.4	-1.5%	3.9%
Wetlands	41.9	42.6	1.7%	2.5%
Developed, Open Space	21.9	20.6	-5.8%	1.2%
Developed Land (Low to High Intensity)	9.2	18.6	102.3%	1.1%
Pasture/Hay	3.4	9.8	188.5%	0.6%
Forested Land	1.9	4.0	115.6%	0.2%
Barren Land	2.5	2.1	-15.4%	0.1%

Source: www.mrlc.gov/index.php

As in most of South Dakota, the climate of Lyman County is characterized as sub-humid and continental, which means that summers are often hot and winters can be very cold. There are no large bodies of water or mountain ranges to mitigate against these extremes. High temperatures in the summer can exceed 100 degrees Fahrenheit [3], while winter lows can drop below -20 degrees. Precipitation averages about 21.5 inches per year, much of which occurs during the spring and early summer. Following is climate data in the county as reported from the Chamberlain weather station in adjacent Brule County.

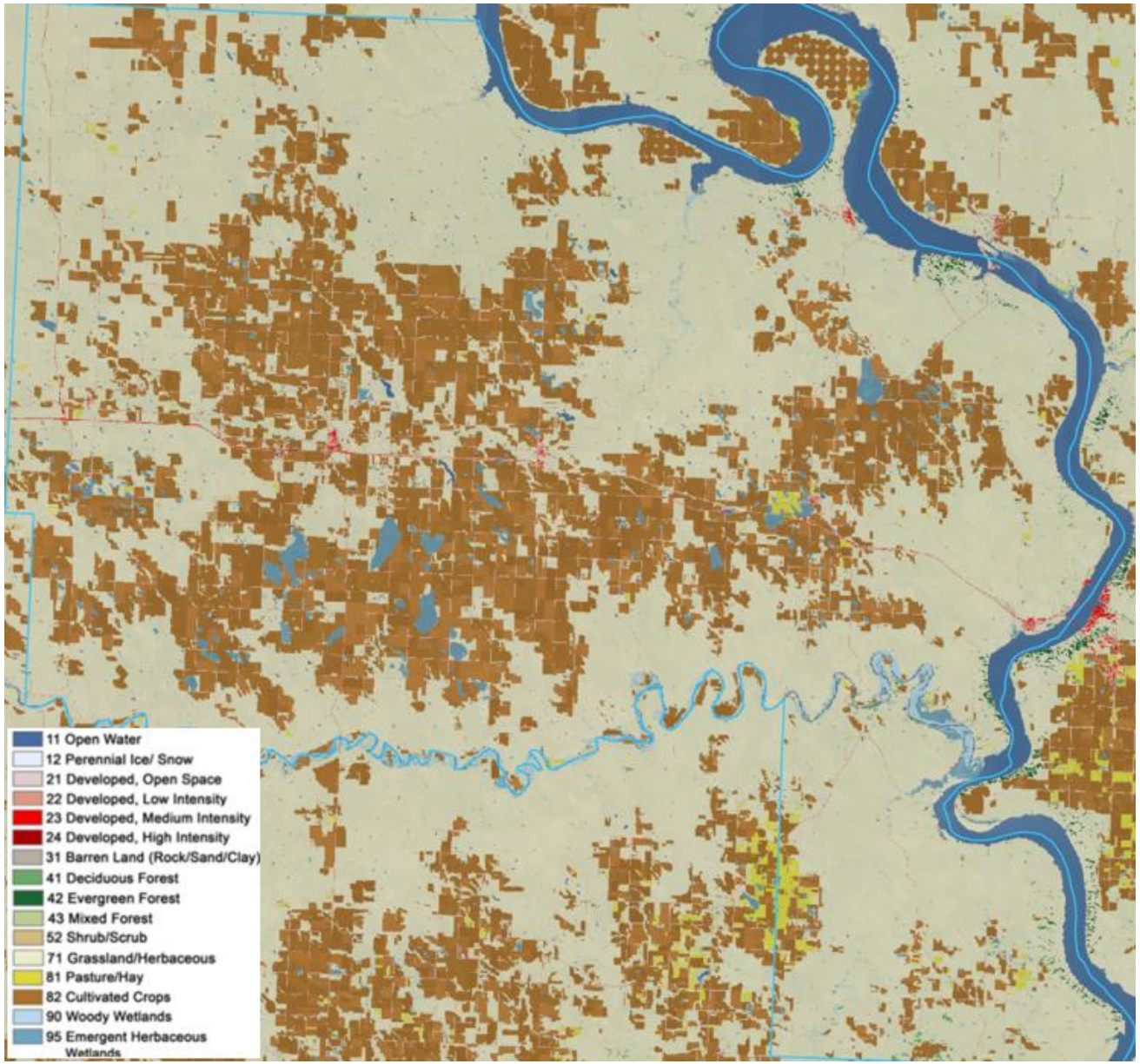
Table 2.2 - Monthly Climate Conditions at Chamberlain, SD Weather Station (1896 – 1978)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Ave High	28.9	33.5	46.6	62.5	73.4	82.4	89.7	88.0	78.5	66.2	48.2	34.3
Ave Low	5.9	10.2	22.0	35.9	46.5	56.4	62.7	60.2	50.4	38.1	24.1	12.1
Ave Precipitation	0.4	0.6	0.9	2.1	2.9	3.3	2.5	2.2	1.7	1.2	0.6	0.5

Source: www.weather.gov/wrh/climate
The average high and low are in degrees Fahrenheit; the precipitation figures are in inches.

[3] According to the National Weather Service, Sioux Falls, South Dakota has averaged about two days per year of 100-degree temperatures since records began to be kept in 1893.

Figure 2.2 - County Land Cover (2023)



The impact that climate change may have on the county is difficult to predict with any degree of certainty. The South Dakota Hazard Mitigation Plan discusses climate change in some depth, analyzing its possible impacts for each of the hazards affecting the state. According to the plan, mean temperatures have been increasing in the northern Great Plains region, especially in the winter. The plan also notes a long-term trend of increasing annual precipitation across South Dakota, among the highest in the country, much of it occurring in the spring and fall seasons.

By 2050, according to research from Headwaters Economics, Lyman County is expected to experience 16 more days per year that reach above 95 degrees Fahrenheit (from 34 days to 50 days per year) and the average annual temperature is expected to increase from 50°F to 53°F. No significant change in average annual precipitation is expected.

There is no consensus yet on climate change science and it is difficult to make any definitive plans for climate change, but it appears likely that communities that are already vulnerable to weather and climate extremes will be stressed even further by more frequent extreme events occurring within an already highly variable climate system. Increased demand for water and energy may constrain development, stress natural resources, and increase competition for water, and new agricultural practices may be needed to cope with changing conditions.

Socioeconomic Description

Population Trends

Like many other rural counties in the Midwest, Lyman County has been experiencing a steady population decline over the last several decades. The county's Census 2020 population of 3,718 is only 81 percent of the population that was recorded in 1950. As the table below shows, Lyman County's population is expected to continue decreasing. The projections are based on an analysis of past population records and current age and sex cohorts in the county.

Table 2.3 - Lyman County Population

Pop 1950	Pop 1960	Pop 1970	Pop 1980	Pop 1990	Pop 2000	Pop 2010	Pop 2020	Pop 2030 Projected	Pop 2040 Projected	Pop 2050 Projected
4,572	4,428	4,060	3,864	3,638	3,895	3,755	3,718	3,698	3,688	3,638

Source: U.S. Census

Race and Age

The population of Lyman County includes a large and growing percentage of American Indians. The current 44.1% representation of American Indians in the county is a significant increase over the 2010 figure of 38.2%. The population is also young, which indicates there is some potential for population growth, depending on the level of future out-migration.

Table 2.4 - Racial and Age Characteristics

	White Pop	Black Pop	American Indian Pop	Asian Pop	Other Race	Two or More Races	Hispanic Pop	Pop Under 18	Pop 65 and Over	Median Age
Lyman County	51.6%	0.1%	44.1%	0.1%	0.2%	3.8%	1.2%	28.5%	17.1%	36.0
South Dakota	80.7%	2.0%	8.8%	1.5%	1.8%	5.3%	4.4%	24.1%	18.2%	38.5
United States	61.6%	12.4%	1.1%	6.0%	8.6%	10.2%	18.7%	21.7%	17.3%	39.0

Source: American Community Survey 2022 1-Year Estimates

Income and Education

Income levels in Lyman County are below state and national figures. The overall poverty rate in the county is higher than the state and national figures, and much higher among those under 18. Educational attainment also lags somewhat behind state and national averages.

Table 2.5 – Income and Education

	Median Household Income	Poverty Rate – All People	Poverty Rate – Under 18	Poverty Rate – Over 65	High School Grad or Higher	Bachelor's Degree or Higher	Graduate Degree
Lyman County	$60,284	25.1%	35.6%	15.5%	91.5%	23.2%	6.3%
South Dakota	$69,728	12.5%	15.2%	10.9%	93.1%	31.6%	9.9%
United States	$74,755	12.6%	16.3%	10.9%	89.6%	35.7%	14.0%

Source: American Community Survey 2022 1-Year Estimates

Employment

Lyman County's economy is dependent to a large extent upon agriculture, mostly cattle grazing. Government, education, and health care are other important employment sectors, and another important revenue generator is the Golden Buffalo Casino on the Lower Brule Indian Reservation. Industry and manufacturing are essentially nonexistent in Lyman County.

Table 2.6 – Employment Sectors

	Lyman County	South Dakota	United States
Agriculture, Forestry, Fishing, Mining	15.4%	6.4%	1.6%
Construction	7.0%	7.4%	6.9%
Manufacturing	0.8%	9.9%	9.9%
Wholesale Trade	2.8%	2.1%	2.2%
Retail Trade	7.1%	11.4%	11.1%
Transportation, Warehousing, Utilities	2.6%	4.4%	6.0%
Information	1.7%	1.5%	1.9%
Finance, Insurance, Real Estate	5.1%	6.0%	6.7%
Professional, Scientific, Management	5.5%	6.7%	12.6%
Education, Health Care, Social Assistance	28.6%	26.3%	23.1%
Arts, Entertainment, Recreation, Accommodation, Food Service	9.1%	8.8%	8.7%
Other Services	2.4%	4.3%	4.7%
Public Administration	7.6%	4.8%	4.6%

Source: American Community Survey 2022 1-Year Estimates

Vulnerable Populations

There are certain populations and social groups within Lyman County that may be particularly susceptible to the adverse impacts of hazards, suffering disproportionate rates of death, injury, loss, or disruption of livelihood when hazard events occur. Various social, economic, demographic, and housing characteristics are considered here that may influence the community's ability to prepare for, respond to, cope with, recover from, and adapt to environmental hazards.

Available data indicates that Lyman County has a significant proportion of vulnerable people. The Centers for Disease Control Social Vulnerability Index shows Lyman County with a rating of .8670 (0 being least vulnerable and 1 being most vulnerable), which is considered a high level of vulnerability. For comparison, only five of South Dakota's 66 counties have a higher vulnerability score. FEMA's Resilience and Planning Tool shows that the county's Community Resilience Challenges Index (CRCI) percentile is 73 on a scale of 1 (lowest vulnerability relative to the rest of the United States) to 100 (highest). The county's top three drivers of CCRI value are Lack of Health Insurance, Single-Parent Households, and Poverty.

The following table shows the percentage of the population in Lyman County and each of the communities that fall into key metrics of social vulnerability, which is compared to the state and national average. The county is above the state and national averages for many of the variables, and significantly higher for people living in poverty and people without health insurance. At the community level, the Lower Brule community has a very high poverty rate and percentage of people without health insurance, while Presho has a high percentage of people with a disability.

Table 2.7 – Social Vulnerability Indicators

Characteristic	Lyman County	Kennebec	Lower Brule	Oacoma	Presho	Reliance	South Dakota	United States
People living in poverty	25.1%	7.9%	52.7%	3.9%	6.3%	1.8%	12.5%	12.6%
People with a disability	16.3%	11.7%	17.7%	9.2%	29.8%	13.5%	13.2%	13.4%
People w/out health insurance	20.6%	1.6%	37.1%	6.9%	8.9%	4.5%	8.1%	8.0%
Adults w/out high school diploma	8.5%	12.3%	12.4%	7.3%	1.4%	2.6%	6.9%	10.4%
Population under 18	28.5%	31.4%	36.3%	18.2%	10.4%	29.5%	24.1%	21.7%
Population over 65	17.1%	18.4%	10.7%	28.6%	13.0%	30.4%	18.2%	17.3%
People with limited English proficiency	1.8%	0.0%	1.9%	4.1%	1.9%	0.0%	2.1%	8.4%
Households without internet subscription	19.3%	8.4%	37.6%	16.3%	15.2%	17.5%	13.0%	11.5%
Households without a vehicle	7.8%	0.0%	32.7%	7.9%	3.7%	2.5%	4.5%	7.5%

Source: American Community Survey 2022 1-Year Estimates

The margin of error for some of the communities may be over 10% in some instances, due to their small size.

Infrastructure and Utilities

Transportation

Lyman County's main transportation route is Interstate 90, which connects every community in the county, except for Lower Brule and Iona. Other important highways include S.D. Highway 47, which runs north to Lower Brule and south to Iona; U.S. Highway 83 on the western edge of the county, which runs north to the state capital of Pierre; and U.S. Highway 183, which runs south from Presho to the town of Winner in Tripp County.

Regarding other modes of transportation, a rail line operated by the Mitchell-Rapid City (MRC) Regional Railroad Authority runs parallel to Interstate 90. The line had been out of service for many years, but rehabilitation of the line from the eastern border of the county to Presho was completed in 2013. Eventually the line may be rehabilitated all the way east to Rapid City. Presho has a public airport, and there are private airports in Kennebec and Vivian; all these airports have a gravel landing surface.

Utilities

Most residents of Lyman County are served by the West River/Lyman-Jones Rural Water System. The Town of Oacoma has its own municipal water system, the Mni Wiconi Water System serves the Lower Brule Indian Reservation, and the Tripp County Water Users District serves households in the southeast part of the county, including Iona. Regarding sewage disposal, each community in the county has a wastewater collection and treatment system. Rural residents use individual septic tanks and drainfields.

Solid waste service is provided by the Tri-County Landfill, which operates a landfill located in adjacent Brule County. Designated rubble sites are located outside each community.

Electric power is provided to most county residents by the West Central Electric Cooperative. The Rosebud Electric Cooperative serves the Iona area. There is no natural gas service available anywhere in Lyman County.

Services

Medical Services

The medical system in Lyman County includes the Kennebec Clinic Avera, the Stanley-Jones Memorial Clinic in Presho, and the Indian Health Service clinic in Lower Brule. The nearest hospital for most county residents is in Chamberlain, but people in the northwest part of the county have closer access to treatment in Pierre. People needing serious medical attention can be transported to trauma center hospitals in Pierre, Rapid City, or Sioux Falls.

Pictured: Stanley-Jones Memorial Clinic in Presho.

Fire and Emergency Response

Fire departments in Lyman County are located in Kennebec, Presho, Reliance, and Vivian. Oacoma is served by the Chamberlain Fire Department, which is located just east of Oacoma in Brule County. All these departments respond to both structural and wildland fires, and they also respond to accidents and other emergency events.

The Missouri Valley Ambulance Service, based in Chamberlain, serves the eastern portion of Lyman County. The Lyman County Ambulance Service covers the west side of the county.

Education

The only high schools in the county are located in Presho and Lower Brule. Middle schools are located in Presho and Lower Brule, and elementary schools are located in Kennebec and Lower Brule. The only post-secondary education available in the county is the Lower Brule Community College in Lower Brule.

2025 Lyman County (SD)
Hazard Mitigation Plan

CHAPTER III

Risk Assessment

PLANNING & DEVELOPMENT DISTRICT III

CHAPTER III
RISK ASSESSMENT

Background

The risk assessment provides the foundation for the rest of the mitigation planning process. It sets the stage for identifying mitigation goals and actions to help Lyman County become disaster resilient and keep county residents safe, and it answers the following questions: What are the hazards that could affect Lyman County? What could happen as a result of those hazards? How likely are the possible outcomes? When the outcomes occur, what are the likely consequences and losses?

Risk assessment is the process of measuring the potential loss of life, personal injury, economic injury, and property damage resulting from hazards. FEMA defines risk assessment terminology as follows:

- **Natural Hazard**—A source of harm created by a meteorological, environmental, or geologic event.
- **Assets** – This includes people, structures (e.g. homes, critical facilities, and infrastructure), systems and networks, other resources important to the community, and activities important to the community.
- **Risk**—The potential for damage or loss created by the interaction of natural hazards with assets.

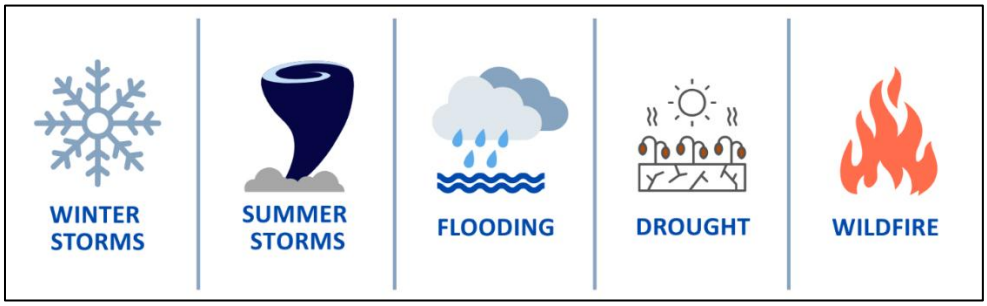
According to FEMA's mitigation planning guidance, the basic components of the risk assessment are: 1) identifying hazards that affect the community, 2) profiling the hazards, 3) conducting an inventory of community assets, and 4) analyzing impacts. This process measures the potential loss of life, personal injury, economic injury, and property damage resulting from natural hazards by assessing the vulnerability of people, buildings and other property, and infrastructure to natural hazards.

After reviewing the risk assessment section of the current plan, the planning team decided that no major changes were needed to the risk assessment. This determination was made because of the lack of population growth and development in the county and because no natural disasters have had a major impact on the county since the current plan was completed. However, many of the tables have been updated with more current information, including **Table C.2** in **Appendix C**, which lists significant hazard events that have occurred in the county through 2024.

Identifying Hazards

To determine which hazards to address in this plan, the planning team first reviewed the county's current mitigation plan. The team also considered the results of the survey that was conducted at the start of the planning process, especially the question about the hazards that most impact the county. Following this, the planning participants reviewed historical records of hazard events that have occurred in the county, relying on the National Climatic Data Center's Storm Events Database (see **Table C.2** in **Appendix C**). At the end of this process, the planning team decided to focus on the following hazards:

- **Winter storms**
- **Summer storms**
- **Flooding**
- **Drought**
- **Wildfire**



The planning team acknowledges that additional hazards could have been addressed in this plan. High wind events, for instance, are not considered separate from winter storms and summer storms. Following is a list of other hazards the team considered but chose not to include in this plan, with a justification for their omission:

- Geologic Hazards – these hazards, which include earthquakes, landslides, and expansive soils, are profiled in the South Dakota Hazard Mitigation Plan, but the overall significance of such hazards is rated as low, and the state does not appear to be particularly vulnerable to such events. A map generated through the U.S. Geological Service Earthquake Hazards Program website indicates no more than a two percent chance that a quake of at least magnitude 5 will occur in Lyman County in any 100-year period, and virtually no chance of a magnitude 6 or greater earthquake [4]. The largest earthquake known to have occurred in Lyman County was a 4.4 magnitude quake in 1967. Regarding landslides, a review of the United States Geological Survey's Landslide Incidence and Susceptibility Map indicates potential of a landslide occurring along the Missouri River, but such an event likely

[4] A magnitude 5 earthquake is considered moderate, potentially causing varying amounts of damage to poorly constructed buildings, but significant damage would be unlikely to occur. A magnitude 6 quake is strong, with the potential to cause damage to well-built structures.

would be localized and minor. Earthquakes and landslides were the two lowest ranking hazards facing the county, according to the survey conducted for this plan.

- Agricultural pests and diseases - this hazard is profiled in the South Dakota Hazard Mitigation Plan. However, despite the obvious importance of agriculture to the local economy, the planning team considered the subject matter to be outside the intended focus of this plan.
- Technological and human-caused hazards – some of these hazards, including hazardous materials releases, are analyzed in the South Dakota Hazard Mitigation Plan. Again, the planning team considered the subject matter to be outside the scope of this plan.

Hazard Profiles

In this section, each of the hazards the planning team chose to focus on is described in terms of the hazard's ***location*** within Lyman County, its ***extent***, the ***history*** of the hazard's occurrence in the county, and the ***probability*** of future events occurring. In addition, a background description of each hazard is presented at the beginning of each hazard's profile.

- ***Location*** is the geographic areas within the county affected by the hazards. Some of the hazards - winter storms, summer storms, and drought - do not have a geographic definition at this level of analysis, since they occur in all areas of the county more or less with equal frequency. Flooding and wildfires, however, do pose a greater risk in specific areas of the county than in other locations.
- ***Extent*** is the strength or magnitude of the hazard, which is described in a variety of ways depending on the type of hazard. For example, tornado strength is measured on the Fujita Scale, high wind events are measured by speed, fire is measured in terms of acres affected, and winter storms can be measured by snowfall accumulation or the duration of the event.
- A brief section on the ***history*** of each hazard's occurrence in the county is presented, with a description of some of the most significant events. More information about the hazard events that have impacted the county is presented in **Appendix C**, which includes a table of the major disaster declarations in Lyman County, a table showing a comprehensive list of weather-related hazard events recorded in the county from the National Climatic Data Center's Storm Events Database, and tables showing crop loss to Lyman County farmers.
- ***Probability*** of occurrence of a hazard impacting an area is the likelihood that such an event will occur. In this plan, a hazard with a "high" probability is one that is expected to occur at least five times over a ten-year period, a "moderate" probability hazard is expected to occur from two to five times in any given ten-year period, and a "low" probability hazard would be expected to occur no more than twice per ten-year period. Probability for some of the hazards was determined by reviewing the frequency of past hazard events in the Storm Events Database.

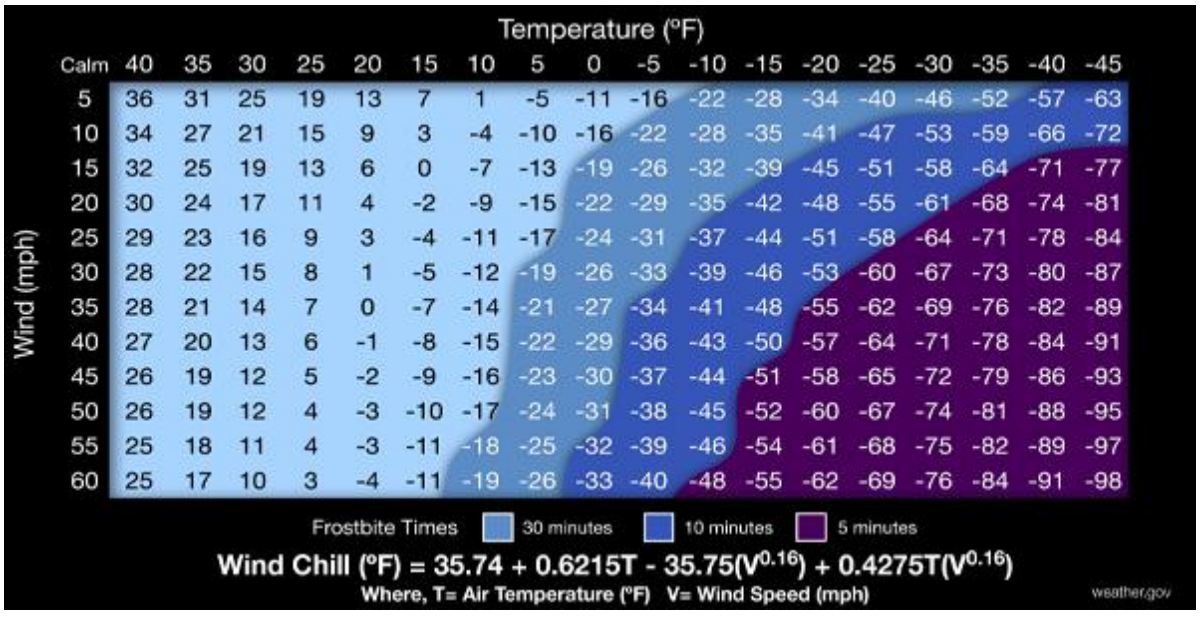
Winter Storm

Description

Winter storms include snow events, freezing rain, and sleet, with some storms taking on the characteristics of these categories during distinct phases of the storm. They typically occur from late fall to the middle of spring, varying in intensity from mild to severe. A long warning time is associated with most winter storms, giving people time to prepare, but they still have a major impact in South Dakota. They can immobilize a region by blocking transportation routes, thus disrupting emergency and medical services, hampering the flow of supplies, and isolating homes and farms. Heavy snow can collapse roofs and knock down trees and power lines. Unprotected livestock may be lost. Economic impacts of winter storms include the cost of snow removal, damage repair, and business losses. According to the survey conducted for this plan, winter storms are the third most serious hazard facing the county, behind tornadoes and drought.

The most dangerous of all winter storms are blizzards, which occur when snow is combined with winds of at least 35 mph reducing visibility to less than ¼ mile for at least three hours. Severe blizzard conditions exist when heavy snow is accompanied by winds of at least 45 mph and temperatures of 10 degrees Fahrenheit or lower. Early blizzards in South Dakota were so devastating that the state once had the dubious distinction of being called the Blizzard State. Freezing rain is also dangerous because it coats objects with ice and can make travel especially hazardous. Sleet does not generally cling to objects like freezing rain, but it makes the ground slippery, increasing the number of traffic accidents and injuries due to falls.

Extreme cold often accompanies winter storms or is left in their wake. Prolonged exposure to the cold can cause frostbite or hypothermia and can become life threatening. Infants and the elderly are most susceptible. Property damage is also possible when pipes freeze and burst in homes or buildings that are poorly insulated or without heat. The following chart shows how quickly frostbite can occur at a given combination of temperature and windspeed.



Winter storms can have a major impact on the power lines operated by rural electric providers, especially when they are accompanied by high winds or freezing rain. They can knock down power lines, which tend to be the most vulnerable elements of the electrical grid, and they can even snap the poles.

Location

The topography of South Dakota is such that no part of the state is immune from the effects of winter storms. Farmland and grassland, which covers Lyman County and most of the state, offers little resistance to high winds and drifting snow, and there are no large bodies of water or mountain ranges to mitigate against temperature extremes. All areas of the county are equally likely to be impacted.

Extent

The extent of winter storms in Lyman County can be quite substantial. In terms of snowfall, many winter storms in the county have dropped more than 10 inches of snow. A blizzard in November 2005 dumped 21 inches at Kennebec. In terms of duration, some winter storms in the county have resulted in power outages of over a week in some locations, although typical outages last for no more than a few hours. Regarding wind speed, **Table C.2** in **Appendix C** shows numerous records of high wind events occurring during the winter months with wind speeds in excess of 50 knots (about 58 miles per hour).

History

Table C.2 in **Appendix C** lists many significant winter storms that have impacted the county. Following are details about the winter storms that resulted in a major disaster declaration (see also **Table C.1** in **Appendix C**).

LYMAN COUNTY MAJOR WINTER STORM DISASTERS

 1995	 1997	 2005	 2009
FEMA Disaster Declaration 1045	**FEMA Disaster Declaration 1156**	**FEMA Disaster Declaration 1620**	**FEMA Disaster Declaration 1886**
More than 13,435 households statewide were without power due to ice, fog, and winds impacting power lines. Deep snow drifts delayed repairs for up to 12 days.	Winter storm hit numerous counties in South Dakota, including Lyman County.	Heavy freezing rain resulted in up to 3 inches of ice on roads and power lines. Statewide, more than 9,400 power lines damaged and 56,000 people were without power.	Record snowfall over 2 days and high winds created widespread blizzard conditions over the Christmas holiday.
Estimated statewide damages of $3.8 million & 1,700 power poles replaced	More than $19 million in damages statewide	Lyman County was not included in declared area, but experienced blizzard conditions, snowfall of 11 to 21 inches, and road closures.	Some snow accumulations reached over 20 inches

In January 1995, an ice storm caused damage to electric power lines in 21 counties in South Dakota, resulting in FEMA Disaster Declaration 1045. Unusually foggy January weather resulted in a heavy crust of ice forming on many of the power lines in central South Dakota, including Lyman County. The addition of high winds caused power poles to snap. Deep drifts of snow made it difficult for power company repairers to gain access to the damaged power lines, and in many areas of the county snow removal equipment was required to provide access. In the affected counties, at least 13,435 households were without electric power for varying periods of time, with some homes without power for 12 days. Statewide, more than 1,700 power poles had to be replaced, and the damage estimate was over $3.8 million.

A winter storm in 1997 resulted in FEMA Disaster Declaration 1156. Statewide in the affected counties the event caused over $19,000,000 in reported damage.

Another very serious winter storm to impact Lyman County occurred in late November 2005 when heavy freezing rain coated roads and power lines with ice up to three inches thick throughout much of central and eastern South Dakota. The storm resulted in FEMA Disaster Declaration 1620. Although Lyman County was not part of the disaster declaration, the event had a major impact on the county. Heavy snow, combined with winds gusting to 70 miles per hour, caused blizzard conditions in the county. Many roads, including Interstate 90, were closed due to treacherous travel conditions, and several accidents were reported. Snowfall amounts included 11 inches near Presho and 21 inches at Kennebec.

A severe winter storm accompanied by record snowfall and high winds in December 2009 resulted in FEMA Disaster Declaration 1886. Prolonged snowfall from two days before to the day after Christmas produced heavy accumulations ranging up to over 20 inches in several areas. The snowfall was accompanied by increasing north to northwest winds that caused widespread blizzard conditions.

Probability

A total of 91 winter storm events, including blizzards, ice storms, heavy snow, and extreme cold events, have been recorded in Lyman County since the mid-1990s, an average of over three per year (see **Table C.2 in Appendix C**). Therefore, based on the historic evidence, the probability of a significant winter storm affecting Lyman County in a given year is high. The probability of a winter storm causing substantial damage (e.g. power lines blown down) in any given year is at least moderate.

Summer storm

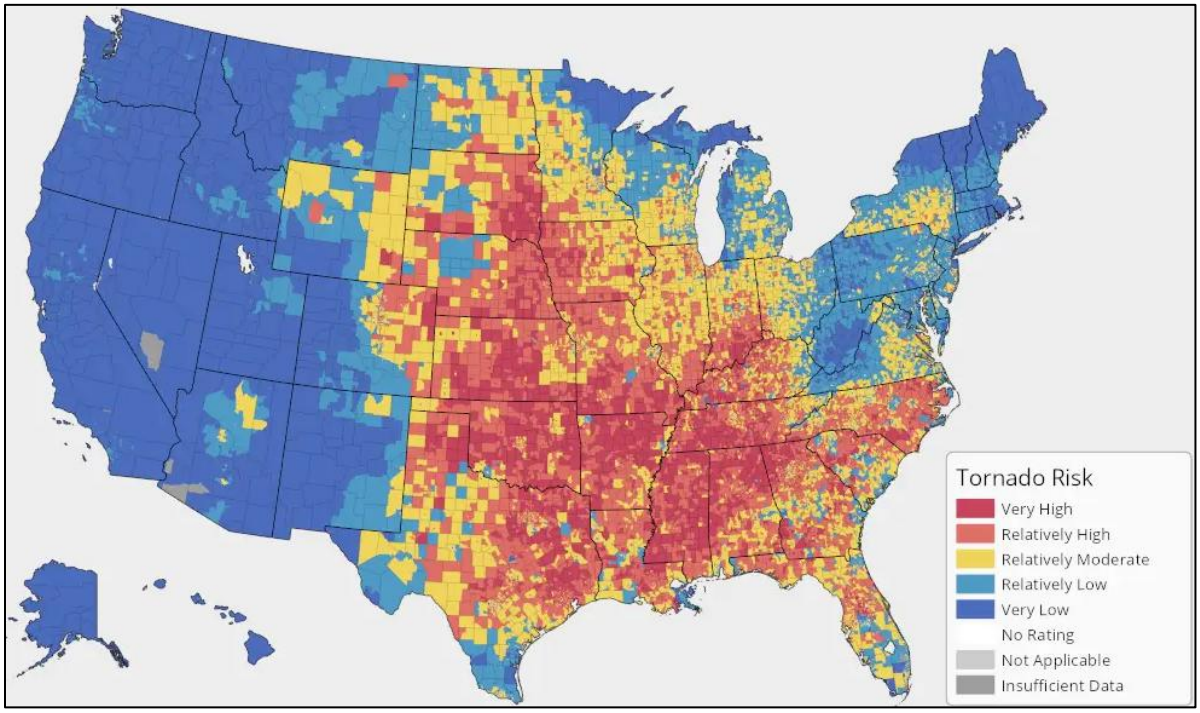
Description

Summer storms can include heavy rainfall, hail, tornadoes, and thunderstorm activity. These events usually are associated with unstable weather conditions. In Lyman County, most damage from summer storms occurs because of high wind events and/or hail. Hail is always closely connected with thunderstorms. Hailstones can be pea-sized, up to the size of baseballs. Large hailstones are dangerous to people and animals, but most hail damage is

typically suffered by crops or structures. Almost every year someone in Lyman County reports some kind of hail damage to crops or property.

Tornadoes are the most dramatic type of summer storm experienced in Lyman County and are a special source of concern. They are one of nature's most violent storms, capable of tremendous destruction with wind speeds of 250 mph or more. Damage paths can be a mile wide and can extend for more than 50 miles. Tornadoes mostly occur in South Dakota during the months of May, June, and July. The greatest period of tornado activity is between 4 PM and 6 PM. Tornadoes present a difficult mitigation challenge, since few structures can withstand the violent winds of a twister. According to the survey conducted for this plan, tornadoes are the most serious hazard facing the county.

South Dakota is located near the northern edge of the core area of tornado activity in the United States, as shown in the image below (it is difficult to tell at this scale, but Lyman County is in the 'Relatively Moderate' risk category). Often referred to as "tornado alley", this part of the country is susceptible to the conditions that favor the formation of tornadoes: warm air from the Gulf of Mexico coming in contact with cool Canadian air fronts and dry air systems from the Rocky Mountains. According to the National Oceanic and Atmospheric Administration's Storm Prediction Center, South Dakota ranked eighth in the nation in the frequency of tornadoes from 1950 to 1994, with a total of 1,139 tornadoes reported in the state (an average of 25.3 per year). During this period, there were 11 deaths in the state attributed to tornadoes, and 243 injuries. South Dakota ranked 27th in the nation in tornado damage, with average annual losses of $3.8 million.



Source: hazards.fema.gov/nri/tornado

Location

Summer storms are equally likely to occur in all parts of Lyman County.

Extent

The extent of summer storms can be measured in many ways. In terms of wind speed, **Table C.2** in **Appendix C** shows over 50 thunderstorms that produced wind speeds over 60 knots, including 20 that were over 70 knots. **Table C.2** also shows more than 90 events with hail at least one inch in diameter, including 13 events with hail at least two inches in diameter, and five records of a tornado with a magnitude greater than EF1 – two EF3 tornadoes and three EF2 tornadoes. In terms of onset, summer storms typically develop with a long warning time, although certain hazards associated with such storms, such as hail or tornadoes, can develop more suddenly. The following tables show classifications of hail size, wind speeds, lightning activity, and tornado strength.

Table 3.1 - Hail Size Comparison

Size (Inches)	Object Comparison
0.5 “	Marble or moth ball
1.0”	Quarter
1.5”	Walnut or ping pong ball
2.0”	Hen’s egg
2.5”	Tennis ball
3.0”	Tea cup
4.0”	Softball
4.5”	Grapefruit

Table 3.2 - Beaufort Wind Scale

Force	Wind (Knots)	WMO Classification	Appearance of Wind Effects On Land
0	Under 1	Calm	Calm, smoke rises vertically
1	1 to 3	Light Air	Smoke drift indicates wind direction, still wind vanes
2	4 to 6	Light Breeze	Wind felt on face, leaves rustle, vanes begin to move
3	7 to 10	Gentle Breeze	Leaves and small twigs constantly moving, light flags extended
4	11 to 16	Moderate Breeze	Dust, leaves, and loose paper lifted, small tree branches move
5	17 to 21	Fresh Breeze	Small trees in leaf begin to sway
6	22 to 27	Strong Breeze	Larger tree branches moving, whistling in wires
7	28 to 33	Near Gale	Whole trees moving, resistance felt walking against wind
8	34 to 40	Gale	Twigs breaking off trees, generally impedes progress
9	41 to 47	Strong Gale	Slight structural damage occurs, slate blows off roofs
10	48 to 55	Storm	Trees broken or uprooted, much structural damage (seldom experienced)
11	56 to 63	Violent Storm	
12	64 +	Hurricane	

Table 3.3 - Lightning Activity Levels

Level	Description
LAL 1	No thunderstorms.
LAL 2	Isolated thunderstorms. Light rain will occasionally reach the ground. Lightning is very infrequent, 1 to 5 cloud to ground strikes in a 5 minute period.
LAL 3	Widely scattered thunderstorms. Light to moderate rain will reach the ground. Lightning is infrequent, 6 to 10 cloud to ground strikes in a 5 minute period.
LAL 4	Scattered thunderstorms. Moderate rain is commonly produced. Lightning is frequent, 11 to 15 cloud to ground strinkes in a 5 minute period.
LAL 5	Numerous thunderstorms. Rainfall is moderate to heavy. Lightning is frequent and intense, greater than 15 cloud to ground strikes in a 5 minute period.
LAL 6	Dry lightning. This type of lightning has the potential for extreme fire activity and is normally highlighted in fire weather forecasts with Red Flag Warning.

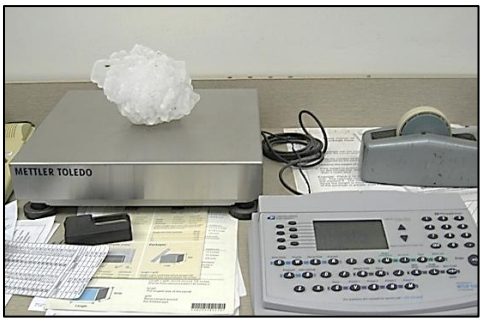
Table 3.4 – Enhanced Fujita Scale

Scale	Wind Speed (MPH)	Potential Damage
EFO	65 to 85	Minor damage. Peels surface off some roofs; some damage to gutters or siding; branches broken off trees; shallow-rooted trees pushed over.
EF1	86 to 110	Moderate damage. Roofs severely damaged; mobile homes overturned or badly damaged; loss of exterior doors; windows and other glass broken.
EF2	111 to 135	Considerable damage. Roofs torn off well-constructed houses; foundations of frame homes shifted; mobile homes completely destroyed; large trees snapped or uprooted; light-object missiles generated; cars lifted off ground.
EF3	136 to 165	Severe damage. Entire stories of well-constructed houses destroyed; severe damage to large buildings; trains may be overturned; heavy cars lifted off ground and thrown; structures with weak foundations badly damaged.
EF4	166 to 200	Devastating damage. Frame homes are completely destroyed and some may be swept away; cars and other large objects are thrown in the air.
EF5	Over 200	Incredible damage. Nearly all buildings aside from heavily built structures are destroyed; frame houses and brick homes are swept away; cars are thrown hundreds of yards.

Source: en.wikipedia.org/wiki/Enhanced_Fujita_scale

History

As **Table C.1** in **Appendix C** shows, several major disaster declarations involving a summer storm have affected Lyman County. **Table C.2** in **Appendix C** lists many other significant summer storms that have impacted the county. A thunderstorm that struck near Vivian in July 2010 included extremely large hail, including one hailstone that measured 8 inches in diameter and weighed 1.9 pounds. As of 2025, this is still the largest hailstone ever recorded in the United States. Details about the storm are shown in **Table C.2** in **Appendix C**.



Pictured: Hail from the Vivian storm being weighed following the 2010 storm.

A notable summer storm occurred in June 2015, causing substantial property damage and resulting in FEMA Disaster Declaration 4233. Winds estimated at 100 miles per hour caused severe damage to several buildings in Lower Brule, damaged the roof of the Lyman County courthouse, downed many trees, and caused other damage. The Red Cross set up shelter for displaced people. Public assistance costs to Lyman County resulting from this storm were approximately $260,000.

Probability

As shown in **Table C.2 in Appendix C**, over 250 summer storm events, including hailstorms, thunderstorms, lightning, and tornadoes, have been recorded in Lyman County since 1960, an average of more than four per year. Thirty-nine of these storms involved a tornado. From this information, the probability of a summer storm affecting Lyman County in a given year is high and the probability of a storm causing significant damage (e.g., damaging hail or a tornado) can be considered at least moderate.

Flooding

Description

Floods are among the most serious and costly disaster events. In South Dakota, there are two main climatologic causes of flooding: runoff from rainfall and runoff from melting snow. The water from rainfall or melting snow flows overland until it reaches a nearby river or lake. If the river or lake cannot hold all of the water that is entering it, some of the water will begin to overflow, causing flooding. The size of the flood is influenced by such factors as the intensity or length of the rainfall, melting rate of the snow, and the infiltration of the water into the ground. According to the survey conducted for this plan, flooding is not among the most serious hazards facing the county, ranking above only earthquakes and landslides.

Following is a description of the four types of flooding that have the potential of impacting South Dakota, based on information in the South Dakota Hazard Mitigation Plan:

- Flash flooding, which results from several inches or more of rain falling in a very short period. This high intensity rainfall is commonly caused by powerful thunderstorms that cover a small geographic area. The flood that occurs because of this runoff happens very rapidly, and is generally very destructive, although usually only a small area is affected.
- Long-rain flooding, which results after several days or even weeks of fairly low-intensity rainfall over a widespread area. This is the most common cause of major flooding. The ground becomes "waterlogged," and the water can no longer infiltrate into the ground. The flooding that results is often widespread, covering hundreds of square miles, and can last for several days or many weeks.
- Flooding resulting from melting snow in the spring. This type has characteristics of both flash floods and long-rain floods. The area covered is generally not as large as that covered by the long-rain flood, but is typically larger than that covered by the flash flood. Generally, the flood lasts for several days, occurring when large amounts of snow melt rapidly due to warm temperatures. The flooding can be

made worse if the ground remains frozen while the snow is melting, causing the melt water to run off to nearby rivers and lakes rather than infiltrating into the ground. Some of the largest floods in South Dakota have been the result of melting snow and ice.

- Dam failure, resulting from natural or man-made causes. Lyman County is vulnerable to this type of flood primarily because of the dams that impound the Missouri River, including the Oahe Dam and the Big Bend Dam, both of which are classified as high hazard dams [5].

Location

Many areas of Lyman County are vulnerable to flooding. The flooding that occurs typically happens during wet springs after winters with heavy snow cover, but flash flooding after very heavy rain also causes trouble. Typical damage includes washed out or damaged roads and culverts. Land along the Missouri River and its tributaries, including the White River, is especially vulnerable. Flooding along the White River sometimes involves ice jams, which occur during the spring thaw and block the flow of water. These ice jams have caused water to flow onto the road surface of the U.S. Highway 183 bridge, but the highway has never actually been closed due to flooding. Medicine Creek, which flows past Kennebec and Presho, also has caused flooding over the years.

In the past, the greatest flooding threat in South Dakota was along the Missouri River, which flows south/southeastward across the state in a deep, wide channel. Flooding along the river used to be an annual threat until a series of huge dams along the river, including Big Bend, was constructed in the 1950s. Now, most of the Missouri River within South Dakota consists of a chain of reservoirs impounded by the dams. From north to south, these dams are Oahe, Big Bend, Fort Randall, and Gavins Point. The dams were built for flood control, to provide water for irrigation, and for the generation of hydroelectricity.

Because of the dams, the threat of flooding from the Missouri River has been greatly reduced, although it has not been entirely eliminated. In 2011, significant flooding along the river did occur. The primary cause of the flooding was very heavy snowmelt at the river's source in the Rocky Mountains, along with extremely high spring rains throughout much of the river's drainage basin. The complicated politics concerning river management also played a role in the disaster that unfolded over the next few months.

Extent

Nothing beyond what would be considered minor flooding has ever been known to occur in Lyman County. Floodwater depth is usually not significant. In terms of duration, flooding can cause road closures lasting from less than a day to several weeks or longer. The most serious flooding the county ever experienced was during the historic 2011 Missouri River flood when the river reached a record 9.6 feet above flood stage at Oacoma. The flooding that occurred in Lyman County in 2019 was notable both for its severity and its widespread impact, with

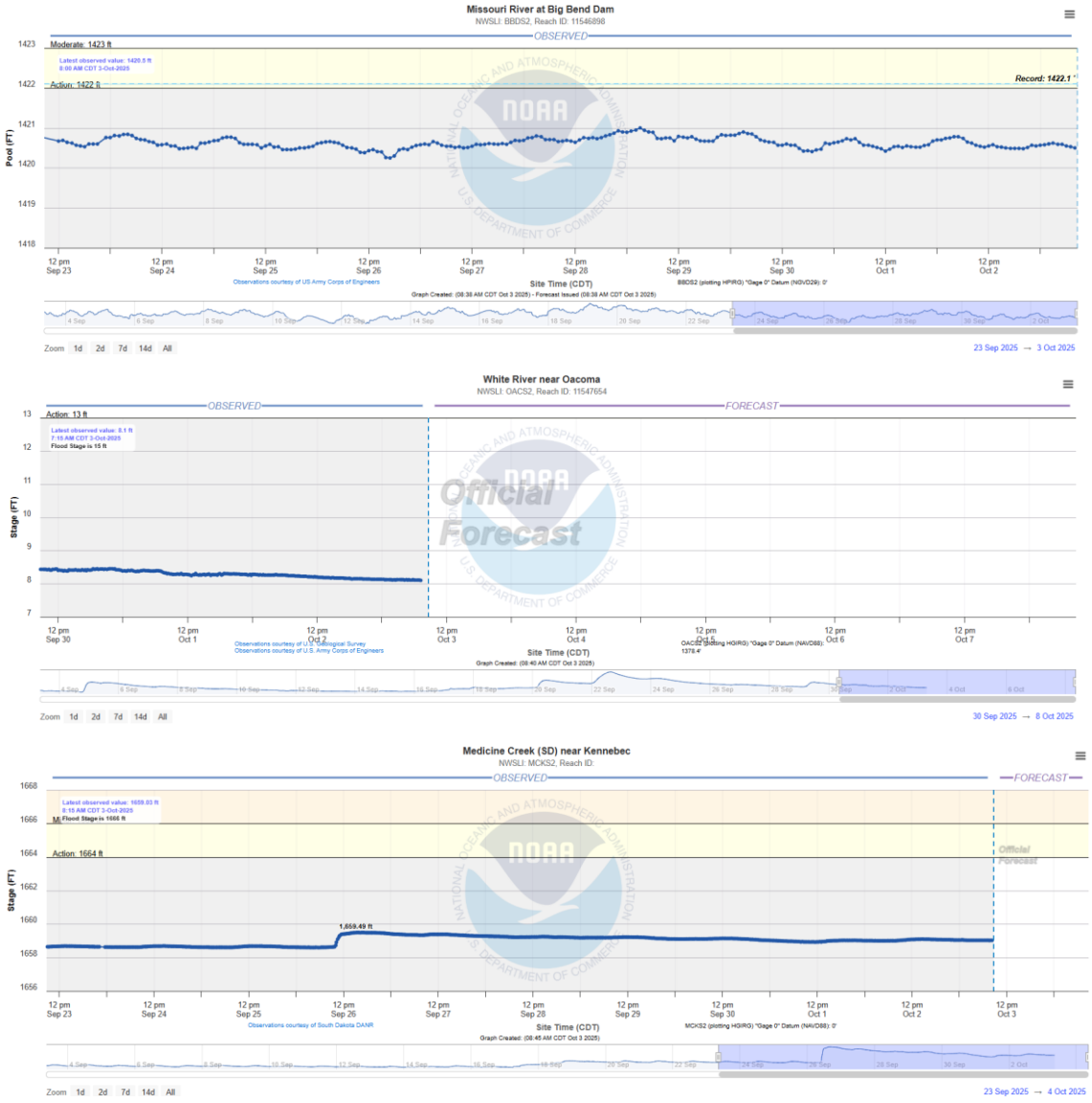
[5] A high hazard dam is one whose loss would cause major economic loss, and in which there are anywhere from a few to hundreds of inhabited structures located in the predicted area of inundation.

water over county and township roads in many locations. The following table shows a description of the various stages of flooding.

Table 3.5 – Flood Stages and Associated Impacts

Flood Stage	Impact
Minor Flood	Minimal or no property damage, but possibly some public threat (e.g. road inundation).
Moderate Flood	Some inundation of structures and roads near stream, evacuations of people and/or transfer of property to higher elevations.
Major Flood	Extensive inundation of structures and roads, significant evacuations of people and/or transfer of property to higher elevation.

The following images show the current river gauge charts for the Missouri River at the Big Bend Dam, the White River near Oacoma, and Medicine Creek in Kennebec.



History

Table C.2 in **Appendix C** lists many significant flooding events that have impacted the county. Following are details about some of the most notable events that resulted in a major disaster declaration (see also **Table C.1** in **Appendix C**).

LYMAN COUNTY MAJOR FLOODING DISASTERS

1995	1997	2010	2011	2019
FEMA Disaster Declaration 1052	**FEMA Disaster Declaration 1173**	**FEMA Disaster Declaration 1915**	**FEMA Disaster Declaration 1984**	**FEMA Disaster Declaration 4440**
Flooding occurred after above normal precipitation. Roads were under water and emergency services interrupted. New Witten's Main St flooded and two homes were lost.	Included all counties in South Dakota and top ten natural disasters by FEMA. Record snowfall, persistent cold, and heavy rain resulted in spring flooding.	Heavy rainfall resulted in the worst flooding in a decade.	The Missouri River flood is one of the most notable events in SD history. In Oacoma, the river reached a record 9.6 feet above flood stage and levees were built to hold back water.	Heavy rainfall on frozen ground, led to flooding of agricultural lands and road washouts. Additional summer flooding resulted in a second declaration - 4463.
Surveys identified 3,000+ homes with damage statewide Damages over $35 million, including $9.3 million to public infrastructure	Prevented farmers from planting on thousands of acres Statewide damages of $87 million and two people lost their lives	Lyman County: Public assistance costs of $120,000, primarily due to flooded roads	Lyman County: Public assistance costs of $280,000 & $95,000 to Western Electric Cooperative	Lyman County: Public assistance of more than $1.5 million

Flooding in 1995 resulted in FEMA Disaster Declaration 1052. All of South Dakota had above normal precipitation from January through May, with many weather stations in the central and eastern portions of the state experiencing their all-time wettest Spring. Damage was caused by ground saturation and flooding due to very high residual groundwater tables from 1994, heavy winter snow and spring rain, and rapid snowmelt. Many roads were under water due to high groundwater saturation, causing interruption of emergency services. Damage also included power transmission and distribution facilities owned by rural electric cooperatives. In the area impacted by the flood, surveys identified over 3,000 homes with some type of damage, the majority caused by groundwater seepage of one to three inches into basements. In many areas the water table rose almost to the surface, saturating septic drain fields and preventing proper treatment of wastewater. The total damage estimate in the affected counties was over $35 million, including $9.3 million to public infrastructure.

Flooding in 1997 resulted in FEMA Disaster Declaration 1173, which was declared for all counties in South Dakota. At the time, the event was considered one of the top ten natural disasters ranked by FEMA relief costs. From November 1996 through February 1997, the weather across much of the state was cold and very wet, with record setting snowfall in many places. The persistent cold greatly limited snowmelt between storms, which caused snow to pile up from 10 to 24 inches deep. An early April blizzard added to the snow pack, and heavy

rain later in the month combined to further saturate the ground. Prairie potholes turned into lakes, causing many people to be evacuated from their homes and farms, and preventing farmers from planting thousands of acres of land. The flood caused over $87 million in damage statewide, and took the lives of two people.

Flooding in the spring and summer of 2010 was the worst in a decade, resulting in FEMA Disaster Declaration 1915. The event caused about $120,000 of public assistance costs throughout the county, primarily due to flooding of county and township roads.

The Missouri River flood of 2011 may have been the most notable flooding event ever in the recorded history of South Dakota, resulting in FEMA Disaster Declaration 1984. The flood resulted in approximately $280,000 of public assistance costs in Lyman County, plus over $95,000 of public assistance to the West Central Electric Cooperative. Extensive bank erosion occurred along the Missouri River in the Oacoma area, which affected the Cedar Shores Resort. The Missouri River at Oacoma reached a record 9.6 feet above flood stage on June 30th, and many people along the river, especially in Oacoma, had to build levees to hold back the water, with some locations being flooded.

Pictured: Flooding in Kennebec from 2019.

Flooding in 2019 had a major impact throughout the year, starting in March when heavy rain fell on frozen ground, which led to overland flooding of agricultural lands and inundation of many roads. This event resulted in FEMA Disaster Declaration 4440. Ice jams caused flooding along the White River throughout southern Lyman County. Additional flooding in the summer resulted in FEMA Disaster Declaration 4463. The total public assistance allocated to Lyman County due to flooding in 2019 was over $1.5 million.

Probability

Table C.2 shows that 32 flooding events have been recorded in Lyman County since the mid-1990s, but some of the events appear to have been a recording of ongoing flood conditions. Excluding these events, it appears there have been 14 separate flood events in Lyman County, or almost five every ten years. Based on this analysis, the probability of flooding occurring somewhere in the county in a given year can be considered moderate to high. **Table C.1** shows that several floods were significant enough to result in a disaster declaration. It is certain that flooding will continue to impact the area to some degree, no matter what mitigation actions are pursued.

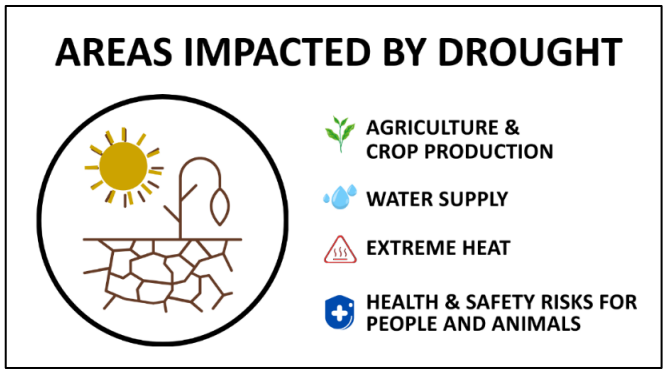
Drought

Description

Drought is a deficiency in precipitation over an extended period, usually a season or more, resulting in a water shortage causing adverse impacts on vegetation, animals, and/or people. It is a normal, recurrent feature of climate that occurs in virtually all climate zones. Human

factors, such as water demand and water management, can exacerbate the impact that drought has on a region. According to the survey conducted for this plan, drought is the second most serious hazard facing the county.

Droughts can occur at any time of the year, but the consequences are worse during the summer growing season, especially after dry winters. A small departure in normal precipitation during the months of June through August can have a significantly negative impact on crop production. The demand for water for multiple uses also impacts water availability. Rural water systems that were originally designed to supply water for people are now also being used for cattle and to fight wildfires, taxing the limits of the systems.



Drought in South Dakota is often accompanied by periods of extreme heat, which is defined by FEMA as a condition in which the air temperature hovers at least 10° Fahrenheit above the average high temperature for the region and lasts for several weeks. Drought and extreme heat often exist together and compound negative effects. According to the National Weather Service, among natural hazards, only the cold of winter takes a greater toll on human life. Between 1936 and 1975, nearly 20,000 people were killed in the United States by the effects of heat and solar radiation. Elderly people, small children, people with certain medical conditions, and those on certain medications are particularly susceptible to heat stress. The following table shows the likelihood of heat disorder given the combination of air temperature and relative humidity.

NWS Heat Index

Relative Humidity (%) \ Temperature (°F)	80	82	84	86	88	90	92	94	96	98	100	102	104	106	108	110
40	80	81	83	85	88	91	94	97	101	105	109	114	119	124	130	136
45	80	82	84	87	89	93	96	100	104	109	114	119	124	130	137	
50	81	83	85	88	91	95	99	103	108	113	118	124	131	137		
55	81	84	86	89	93	97	101	106	112	117	124	130	137			
60	82	84	88	91	95	100	105	110	116	123	129	137				
65	82	85	89	93	98	103	108	114	121	128	136					
70	83	86	90	95	100	105	112	119	126	134						
75	84	88	92	97	103	109	116	124	132							
80	84	89	94	100	106	113	121	129								
85	85	90	96	102	110	117	126	135								
90	86	91	98	105	113	122	131									
95	86	93	100	108	117	127										
100	87	95	103	112	121	132										

Likelihood of Heat Disorders with Prolonged Exposure or Strenuous Activity

Caution | Extreme Caution | Danger | Extreme Danger

Location

All areas of the county are equally likely to be impacted by drought.

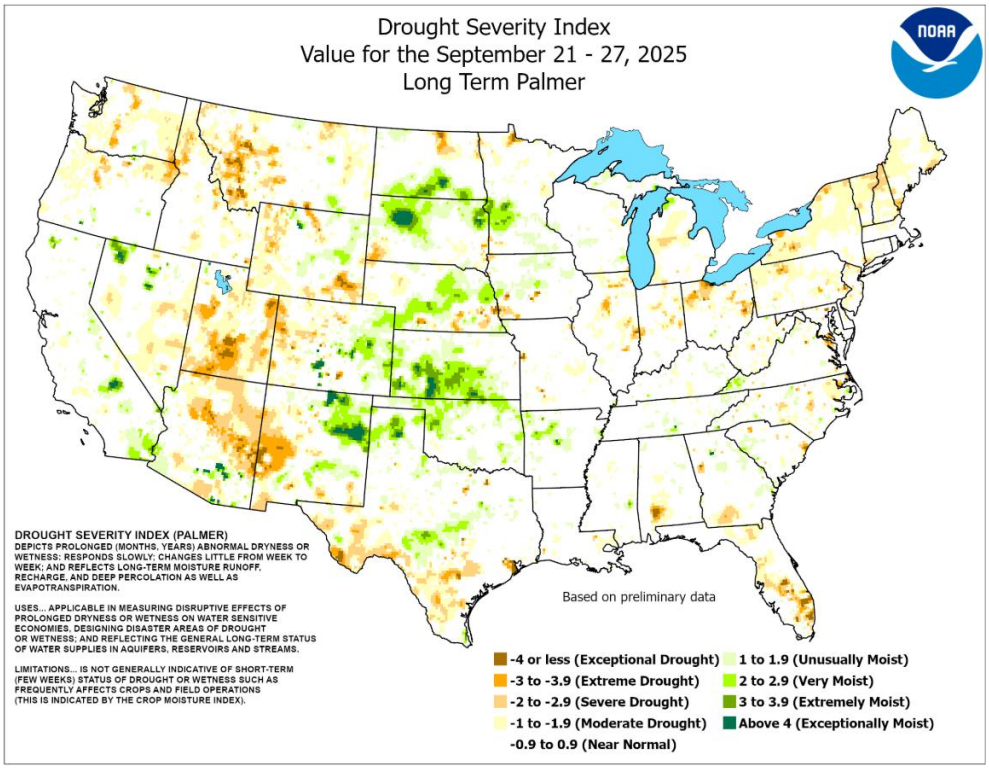
Extent

Drought severity, the most commonly used term for measuring drought, is a combination of the magnitude and duration of the drought. In terms of magnitude, since 1930 Lyman County has experienced 21 years in which precipitation was less than 75 percent of its average annual amount and nine years with precipitation less than two thirds of normal. In terms of duration, it is not unusual for Lyman County to experience periods of below normal precipitation that last for several months. During the 1930s, drought conditions persisted for multiple years. In an area that is so highly dependent on agriculture, the impact of a major drought can be significant. Although most agricultural producers now have crop insurance and agricultural practices today are more advanced, the impacts of drought can still be serious.

The U.S. Drought Monitor (USDM) has established the drought scale shown below, which is much like those that rate hurricanes and tornadoes. The "D-scale" speaks to the "unusualness" of a drought episode, with D1 conditions expected to occur about 10 to 20 percent of the time and D4 being much rarer, expected less than 2 percent of the time. Following the scale is the current drought severity index map of the United States.

Intensity:

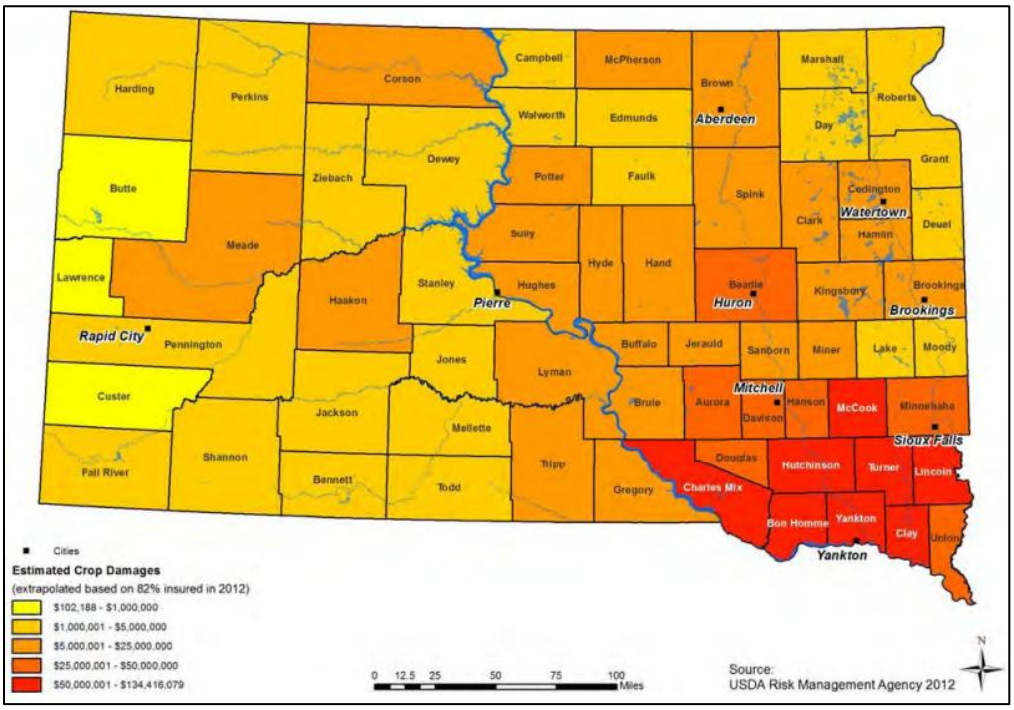
- D0 Abnormally Dry
- D1 Drought - Moderate
- D2 Drought - Severe
- D3 Drought - Extreme
- D4 Drought - Exceptional



History

Lyman County has experienced many severe droughts, the most significant of which occurred in the 1930s, the so-called dust bowl years. Some parts of the Great Plains experienced drought conditions for as many as eight consecutive years. The soil, depleted of moisture, was lifted by the wind into great clouds of dust so thick they concealed the sun for several days at a time. The severity of the drought was compounded by years of land management practices that left topsoil susceptible to the forces of the wind.

The drought of 1976 was one of the most severe in recent years, resulting in South Dakota's only drought emergency declaration to date. Drought in 1980 and 1981 affected the entire state of South Dakota and was rated as a 10-to-25-year event. The Drought in 2012 was so devastating that the State of South Dakota activated a Drought Task Force. The statewide impact on agricultural producers was tremendous. The figure below, as reproduced from the South Dakota Drought Mitigation Plan, shows the 2012 drought's impact statewide.



Probability

Table C.2 in **Appendix C** shows at least one drought record in Lyman County in ten of the years since 2000. Based on this, the probability of a significant drought occurring in the county in any given year is moderate. The probability of a truly severe drought impacting the county, such as occurred in 2012, is low, expected to occur no more than twice per ten years.

At the statewide level, the developers of the South Dakota Hazard Mitigation Plan cite tree ring research spanning a period of about 400 years indicating that multi-year droughts as significant as the 1930s drought occur on average every 57 years in South Dakota. Based on historic data, notable droughts have occurred somewhere in the state roughly every 12 years.

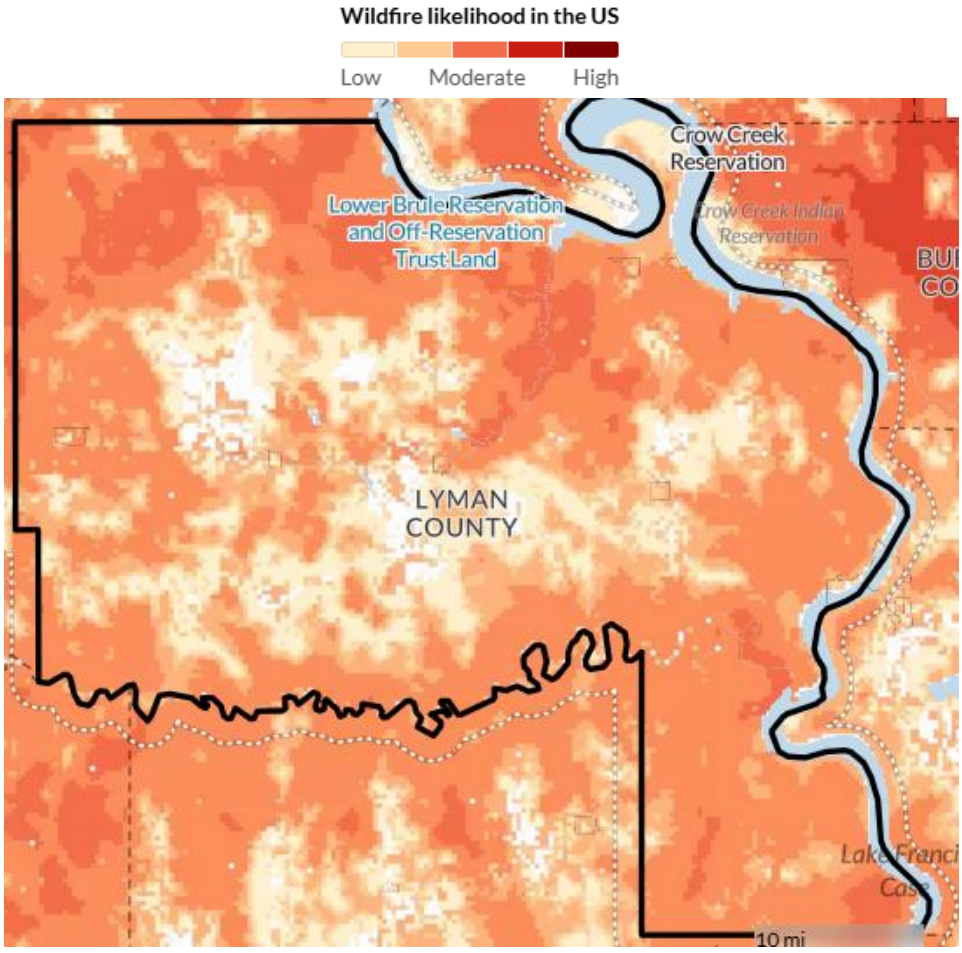
Wildfire

Description

Wildfires are uncontrolled conflagrations that spread freely through the environment. Such fires that occur near populated areas pose threats not only to natural resources, but also to human life and personal property. Wildfires are not as serious a concern in Lyman County as they are in other more forested parts of the country, but the opinion of the planning team is that the hazard does warrant some attention in this plan. According to the survey conducted for this plan, wildfire is the fifth most serious hazard facing the county.

Location

Wildfires are most likely to occur in large areas of extensive brush or unmanaged vegetation, including grassland, which makes up over 60 percent of Lyman County's land base. Grassland fires are quite dangerous because they tend to spread faster than forest fires and are thus difficult to attack. A secondary area of concern is the hills and draws along the Missouri River, which contain a significant - and increasing - amount of cedar trees and thick brush. Fires there are difficult to fight because of the uneven terrain. Another concern is controlled burns that get out of control, which can occur almost anywhere in the county. This map, from the U.S. Forest Service's Wildfire Risk to Communities website, shows where wildfires are most likely to occur in the county (it does not reflect the intensity of fire).



Extent

The following table shows the number of wildfires according to various size classes that have occurred in Lyman County from 2000 through 2024 as reported to the South Dakota Department of Public Safety [6]. It shows that most of the fires have been fairly small, most impacting no more than a few acres. Information is not available on the dollar amount of damage caused by any of the wildfires, or whether any injuries or deaths occurred.

Table 3.6 – Wildfires in Lyman County (2000 - 2024)

1 to 9 Acres	10 to 49 Acres	50 to 99 Acres	100 to 249 Acres	250 Acres or More	Average Annual Acres Burned
151	64	24	22	33	2,030

Source: South Dakota Department of Public Safety

History

Many wildfires have occurred in Lyman County, but nothing on a truly destructive scale. One notable wildfire in 2000 burned approximately 40 square miles of grassland between Kennebec and Lower Brule.

Probability

Wildfires affecting less than ten acres are likely to occur somewhere in Lyman County most years, but large-scale wildfires are much less common. **Table 3.6** shows 33 wildfires of at least 250 acres in size occurred between 2000 and 2024, thirteen of which were over 1,000 acres. Based on this period of analysis, the probability of a significant wildfire occurring each year can be considered high, but the likelihood of a wildfire causing major damage is low.

Community Assets

Hazards can affect all parts of the community, but their impact on certain community assets is particularly important to consider. In this section, the most important community assets and facilities in Lyman County are identified, including those that would play an important role in helping the communities prepare for and respond to a hazard event.

Government offices

- Lyman County Courthouse, Kennebec
- Lower Brule Tribal Office
- Kennebec City Office
- Oacoma City Office
- Presho City Office
- Reliance City Office

[6] Since the data is reported by volunteer fire departments, and not all wildfire incidents are reported to the Department, the table may not reflect all wildfires that have occurred in the county.

Emergency preparedness and response

- Lyman County Emergency Management Office, Kennebec
- Lower Brule Emergency Management Office
- Lyman County Sheriff's Office, Kennebec
- Bureau of Indian Affairs Police, Lower Brule
- Fire departments in Kennebec, Lower Brule, Presho, Reliance, and Vivian
- Lyman County Ambulance Service, Presho
- Missouri Valley Ambulance Service, Chamberlain
- Lower Brule Ambulance Service
- Lyman County Highway Department
- Disaster relief shelters in Kennebec, Lower Brule, Oacoma, Presho, Reliance, and Vivian (see p.62)
- Emergency shelter in Kennebec (see p.62)

Community facilities

- Kennebec Community Center
- Oacoma Community Center
- Reliance Legion Hall Community Center

Medical facilities

- Avera Clinic, Kennebec
- Stanley-Jones Memorial Clinic, Presho
- Indian Health Service clinic, Lower Brule

Educational facilities

- Lower Brule Community College, Lower Brule
- Lyman High School, Presho
- Lower Brule Tribal School, Lower Brule
- Lyman Middle School, Presho
- Lyman Elementary School, Kennebec

Important businesses

- Agtegra Cooperative, Kennebec
- Lyman County Grain and Feed
- Farmers Coop Elevator, Reliance
- Vivian Grain Elevator
- Al's Oasis retail complex, Oacoma

Other important facilities, resources and activities

- Lyman County Museum, Presho
- Lyman County Rodeo (held in summer at the Lyman County fairgrounds in Kennebec)

Hazard Impact Analysis

This section assesses the vulnerability of Lyman County and the participating jurisdictions to each of the hazards that have been profiled. Vulnerability is defined as the extent to which people and property are exposed to harm or damage created by a hazard. The method of determining vulnerability varies by the type of hazard and the availability of data, but each methodology is based on either potential for loss or actual losses. Following is a description of each specific methodology used.

Potential Loss Methodologies

- FEMA digital Flood Insurance Rate Maps were used to identify 100-year flood zones in the county.
- FEMA's HAZUS loss estimation software was used to estimate potential losses from flooding in each community. HAZUS produces a flood polygon and flood-depth grid that represents the 100-year floodplain, with losses calculated using national baseline inventories (buildings and population) at the census block level. It is an especially helpful planning tool for communities that have not been mapped by the National Flood Insurance Program [7].
- The value of buildings within the county was used to estimate potential losses due to winter storms and summer storms (building exposure).
- Population density within the county was used to estimate potential losses due to winter storms and summer storms.
- Data on the population living in wildfire threat zones was used to estimate potential wildfire losses.

Actual Loss Methodologies

- The National Climatic Data Center's Storm Events Database was consulted for historical information regarding weather-related events (see **Table C.2** in **Appendix C**).
- Records from FEMA were reviewed for federal assistance provided to the county following major disaster declarations through FEMA's Public Assistance program.
- Data from the U.S. Dept of Agriculture Risk Management Agency was used to assess crop loss from natural hazards (see **Tables C.2 through C.6** in **Appendix C**).

[7] A limitation of HAZUS is its inadequacies with hydrologic and hydraulic modeling, especially in sparsely populated areas. Also, HAZUS uses default national databases that may not be applicable at the local level.

- Information from the National Drought Mitigation Center's Drought Impact Reporter was used to assess the local impact of droughts.

At the conclusion of the vulnerability assessment for each hazard, an attempt is made to determine how vulnerability might change in the future. Census data and population projections were used in this analysis, as well as data on the volume of building permits that have been issued in the county in recent years and discussion with local officials about general development trends within the county. Other factors, including the possible impact of climate change, were also considered.

At the end of the chapter, the county's vulnerability to each hazard is summarized. Vulnerability is characterized as either "Low", "Moderate", or "High", based on the results of the risk analysis.

Winter Storms

All areas of South Dakota are vulnerable to winter storms, and the consequences of such storms can be great. They can disrupt the power supply when electrical lines are brought down by high winds, trees falling, or extreme ice buildup. Everyday activities can be significantly disrupted when road conditions deteriorate because of snow cover or precipitation that freezes on road pavement. In extreme situations, roads can be closed because of accumulated snow for days or even weeks. Winter storms also can kill or injure livestock and can cause significant crop losses when they occur early in the growing season.

The rural areas of the county may be somewhat more vulnerable to winter storms than the towns. For example, transmission of electricity in rural areas is dependent on many miles of power lines located in open country that is highly susceptible to high wind events, especially when combined with freezing rain (high winds can snap power poles, and freezing rain and sleet forms ice on the lines, making them heavy and more susceptible to being blown down). Rural residents also are vulnerable if roads are blocked by snow for an extended period and they cannot travel into town for groceries, medical supplies, or other important items.

To assess the county's vulnerability to winter storms, the methodology that was used in the South Dakota Hazard Mitigation Plan was essentially followed for this plan. The following factors were considered:

- The number of prior winter storm events in the county
- Past damage amounts
- The county's building exposure
- Population density

Prior Events:

A total of 91 winter storm events, including blizzards, ice storms, heavy snow, and extreme cold events, are shown in the National Climatic Data Center's Storm Events Database for Lyman County through 2024 (see **Table C.2 in Appendix C**). In comparison, the average for

South Dakota counties is 104 winter storm events, indicating that Lyman County may be somewhat less prone to adverse winter weather than other counties in the state.

Past Damage Amounts:

Winter storms have the potential to cause significant amounts of damage. For instance, substantial damage due to major winter storms has been recorded for the West Central Electric Cooperative's infrastructure located within Lyman County. Many other winter weather events have caused significant amounts of damage in the county.

Winter storms can have a major impact on agricultural production. Farmers typically protect themselves from the impacts of adverse weather by insuring their crops against losses through multi-peril crop insurance, which is underwritten by the Risk Management Agency, a part of the U.S. Dept of Agriculture. **Table C.3** in **Appendix C** provides information on indemnity payouts for crop loss to Lyman County farmers due to various types of winter weather events between 2000 and 2023. During this period of analysis, winter weather-related payouts represented approximately 10% of all indemnity payouts in Lyman County.

Building Exposure:

The total value of buildings in Lyman County is approximately $387,530,000, according to the South Dakota Hazard Mitigation Plan, which ranks the county 44th among the state's 66 counties. The median figure for South Dakota counties is approximately $606,000,000. The county's building exposure can thus be considered low.

Population Density:

Lyman County is sparsely populated, with an average of just 2.2 people per square mile, less than the state figure of 11.7 people per square mile and far below the national figure of 93.8. Lyman County would have to be rated low in terms of population density.

Future Vulnerability

No development has occurred anywhere in Lyman County since the previous plan was approved to affect any of the jurisdictions' vulnerability to winter storms. Looking ahead, vulnerability to winter storms may actually decrease if the population continues to decline as expected.

One factor that could impact vulnerability is climate change. According to the South Dakota Hazard Mitigation Plan, the winter season is warming at a faster rate than any other season in South Dakota, but winter storms and blizzards will continue to be a severe weather hazard in the state. Warmer winter temperatures could mean more ice and freezing rain events, which would impact electrical utilities and communication systems, the transportation system, and livestock. An increase in the frequency of large snowfall events also is being experienced in the northern U.S. There remains some uncertainty in projections for the coming decades, but the rising trend of extreme precipitation events is something that needs to be considered.

Summer Storms

All areas of Lyman County are vulnerable to summer storms, especially those that are accompanied by tornadoes, lightning, or large hail. Typical damage from summer storms includes blown down power lines, crop damage from hail and high wind, property damage if a populated area is struck, and flooding as the result of heavy rain. Like the rest of the Great Plains, Lyman County is especially vulnerable to summer storms accompanied by high wind because the landscape is open and there is very little topographic relief to block the wind.

As with winter storms, the methodology that was used in the South Dakota Hazard Mitigation Plan to assess vulnerability to summer storms was followed for this plan. The following factors were considered:

- The number of prior summer storm events in the county
- Past damage amounts
- The county's building exposure
- Population density
- Housing stock characteristics in each community

Prior events:

For this analysis, only the number of tornadoes and major hail events (hail at least one inch in diameter) are considered, due to inconsistencies in how the other types of summer storms are recorded in the National Climatic Data Center's Storm Events Database [8]. A total of 39 tornadoes and 91 major hail events were recorded for Lyman County. In comparison, the average number of tornadoes for South Dakota counties is 28 and the average number of major hail events is 57, indicating that Lyman County may be somewhat more prone to experiencing severe summer weather than other counties in the state.

Past Damage Amounts:

Many summer storm events have caused significant damage in the county, as shown in **Table C.2**. Lyman County farmers are quite vulnerable to the impact of summer storms. **Table C.4** in **Appendix C** provides information on indemnity payouts for crop loss in the county due to severe summer weather between 2000 and 2023. During this period of analysis, summer storm-related payouts represented about 7% of all indemnity payouts in Lyman County.

Building Exposure:

The total value of buildings in Lyman County is approximately $387,530,000, according to the South Dakota Hazard Mitigation Plan, which ranks the county 44th among the state's 66 counties. The median figure for South Dakota counties is approximately $606,000,000. The county's building exposure can thus be considered low.

[8] The analysis goes back to 1960 for tornadoes and 2000 for hail events.

Population Density:

Lyman County is sparsely populated, with an average of just 2.2 people per square mile, less than the state figure of 11.7 people per square mile and far below the national figure of 93.8. Lyman County would have to be rated low in terms of population density.

Housing Stock Characteristics

Differences in the local housing stock were analyzed to help determine vulnerability at the community level. The table below shows that the housing stock in each community is older than the state average, and an assumption can be made that some of the older houses may not be as structurally sound as a newer home, putting the occupants at higher risk to a tornado or other high wind event. The impact on human life might be somewhat worse in Oacoma and Reliance, given the high percentage of mobile homes in those communities.

Table 3.7 – Housing Stock Characteristics

Community	Houses Built Before 1960	Houses Built Since 2000	Mobile Homes
Kennebec	51.9%	7.6%	0.0%
Lower Brule	3.0%	9.9%	8.4%
Oacoma	10.3%	26.6%	26.1%
Presho	55.5%	0.0%	5.5%
Reliance	32.5%	7.5%	27.5%
South Dakota	*26.4%*	*31.5%*	*6.4%*

Source: 2020 US Census (DP04 Selected Housing Characteristics)

Future Vulnerability

No development has occurred anywhere in Lyman County since the previous plan was approved to affect any of the jurisdictions' vulnerability to summer storms. Looking ahead, vulnerability to summer storms may in fact decrease if the population continues declining.

Regarding the impact of climate change, the South Dakota Hazard Mitigation Plan cites the Climate Science Special Report from 2017, which states that damage from convective weather hazards, such as severe thunderstorms and tornadoes, have undergone the greatest increase relative to other extreme weather since 1980. The plan states that the tornado season is getting longer and that an increase in potential days for severe thunderstorms is projected for the mid to late 21st century. The expected increase in the number of days above 95 degrees by midcentury could create conditions favorable to the formation of severe thunderstorms. There is some uncertainty in these projections, but severe thunderstorms and tornadoes will remain a hazard.

Flooding

Like all counties in South Dakota, Lyman County is vulnerable to flooding. Because of the specific nature of flooding, vulnerability will be analyzed first on a general county-level basis,

and then specifically for each community. Given the degree to which flooding is geographically based, this approach made the most sense to the planning team.

General Flood Vulnerability

According to the HAZUS analysis run for the South Dakota Hazard Mitigation Plan (see Table 3-45 of that plan), the potential building damage loss from flooding in Lyman County is $3,267,000, whereas the median figure for all South Dakota counties is about $2,800,000. The building damage loss ratio (the percent of the total building inventory value that could be damaged from flooding in any given year) of 1.5 percent is higher than the median value for South Dakota counties of 0.80 percent. The potential displaced population in Lyman County of 145 people is below the median value of state counties of about 255 people.

In addition to impacting buildings and other structures, a good deal of public infrastructure in the county is vulnerable to flooding. Flood damage often involves washed out or damaged roads and drainage culverts, often occurring in the spring after winters with heavy snow.

Flooding also has a major impact on agriculture. Spring flooding can delay farmers getting into their fields to plant, and later in the growing season it can damage crops. **Table C.5** in **Appendix C** provides information on indemnity payouts for crop loss in Lyman County due to flooding and excess moisture between 2000 and 2023. During this period of analysis, flood-related payouts represented about 15% of all indemnity payouts in Lyman County.

2019 was probably the worst year ever in terms of flooding's impact on South Dakota's agricultural producers. The state ranked first in the nation with almost 4 million acres of farmland prevented from being planted due to flooding, more than double the next nearest state. Although Lyman County was not impacted as much as many other counties in the state, approximately 38,000 acres of land in the county were not planted due to flooding in 2019, which was about 4% of land that would otherwise have been planted, ranking the county 38th in South Dakota. Approximately 21% of indemnity payouts between 2000 and 2023 due to excess moisture occurred in 2019.

Lyman County is also vulnerable to flooding due to dam failure, primarily because of the dams along the Missouri River, including the Oahe Dam, which is located upstream from Lyman County, and the Big Bend Dam. As mentioned earlier, it had once been thought that the system of dams on the Missouri River had essentially eliminated the threat of flooding along the river. However, flooding did occur along the Missouri in 2011, due to heavy snowmelt at the river's source in the Rocky Mountains and extremely high rainfall throughout the river's drainage basin in the spring of 2011. Mismanagement of dam releases - which can be considered a type of dam failure - exacerbated the situation. In the unlikely event that either the Oahe Dam or the Big Bend Dam completely failed, water would mostly inundate farmland along the river. However, failure of the Oahe Dam would also impact parts of the Lower Brule Community and failure of the Big Bend Dam would impact Oacoma. The primary impact in both communities would be to property; loss of life would be unlikely since the rise in water

levels would be gradual enough that people would have time to reach higher ground [9]. There is also flooding vulnerability associated with several smaller dams located within Lyman County that could cause economic loss if they failed (see **Figure 2.1**).

Local Flood Vulnerability

At the community level, vulnerability was determined by using FEMA's HAZUS loss estimation software to estimate potential losses during a 100-year flood event. Vulnerability was also assessed by using GIS software to overlay areas of flood risk on parcel data to determine the number of housing units at risk of flooding and the assessed value of residential dwellings and commercial buildings at risk. The following table summarizes the results of the analysis (note that both analyses may have included a small amount of land outside the communities, in which case some of the values in the table could be somewhat inflated).

Table 3.8 – Community Flood Loss Estimation

Community	Building Structural Damage	Debris Generated (Tons)	Households Displaced	People Needing Shelter	Housing Units at Risk	Assessed Value of Property at Risk
Kennebec	$1,517,000	1,228	13	6	52	$5,425,000
Presho	$429,000	825	8	1	9	$200,000
Vivian	$250,000	249	19	20	4	$329,000

Sources: FEMA HAZUS loss estimation software; Lyman County Director of Equalization

Future Vulnerability

No development has occurred in flood prone locations or anywhere else within Lyman County since the previous plan was approved to affect any of the jurisdictions' vulnerability to flooding. Looking ahead, vulnerability to flooding may decrease if the population continues to decline as expected.

One factor that may increase the county's vulnerability to flooding is the continuing conversion of wetlands and other marginal land to agricultural production. Farming these marginal lands can increase the probability and severity of flooding in certain areas as the land's natural capacity to absorb excess surface water is decreased. The primary impact is on rural roads and infrastructure. Precise statistics on the amount of road damage that flooding has caused over the years in Lyman County are not available, but future updates to this plan could explore this trend in more depth.

The nature and frequency of flooding also could be altered by climate change. The South Dakota Hazard Mitigation Plan notes a long-term trend of increasing annual precipitation across South Dakota, among the highest in the country, much of it occurring in the spring and fall seasons, and there is high confidence that precipitation extremes will increase in frequency and intensity that could exacerbate flooding.

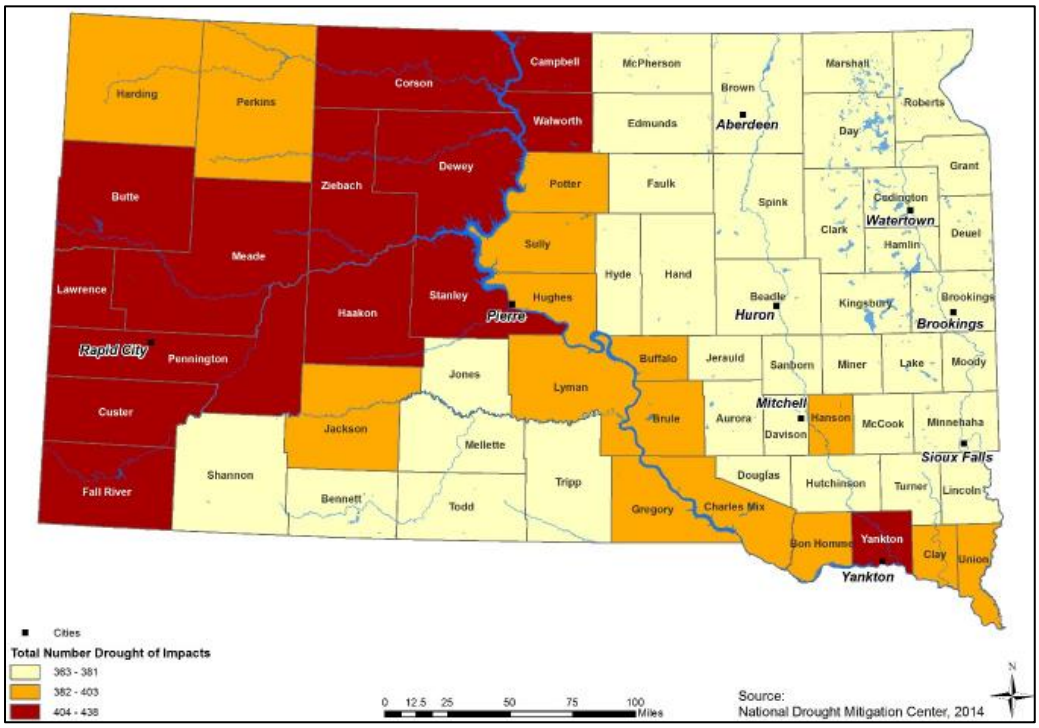
[9] The predicted inundation level is shown in the U.S. Army Corps of Engineers Big Bend Dam Inundation Study, but it is not available for reproduction in this plan.

Drought

Lyman County is quite vulnerable to drought. The biggest impact is on the agricultural sector, which is not surprising, given the county's heavy reliance on farming. Non-irrigated cropland is most susceptible to drought, and yield reductions due to moisture shortages can be aggravated by wind-induced soil erosion. Fortunately, most farmers in Lyman County have crop insurance, which helps lessen the financial impact of droughts and other natural disasters, and modern agricultural practices, such as no-till farming and the development of more drought-tolerant crops, can help farmers better withstand years of below average rainfall. **Table C.6** in **Appendix C** provides information on indemnity payouts for crop loss in Lyman County due to drought, heat, and hot wind events between 2000 and 2023. During this period of analysis, drought-related payouts accounted for just over 60% of all indemnity payouts in Lyman County, far more than any other type of hazard.

To determine which areas of the state are most vulnerable to the agricultural impacts of drought, the authors of the South Dakota Drought Mitigation Plan conducted an analysis comparing crop losses in each county to the total value of the county's crops. Crop value was taken from the 2012 Census of Agriculture, while crop loss was based on the Risk Management Agency's crop indemnity data for the period 2000 to 2014. The resulting loss ratio is the average annual loss divided by total crop value; the higher the ratio the higher the vulnerability. Lyman County's average annual loss from drought for the 2000 – 2014 period was $4,326,512, compared to a total crop value of $95,031,000, resulting in a loss ratio of 4.6%. In comparison, the average loss ratio figure for South Dakota counties was 3.1%, with four counties having a loss ratio over 10%. The authors of the South Dakota Drought Mitigation Plan assigned a "Moderate" vulnerability rating for Lyman County for this measure of drought vulnerability.

Vulnerability also was assessed by reviewing the South Dakota Drought Mitigation Plan's section on the National Drought Mitigation Center's Drought Impact Reporter. The Drought Impact Reporter analyzes drought impact information from a broad range of areas, including the social, economic, and environmental realms. As shown in the figure on the following page from the South Dakota Drought Mitigation Plan, Lyman County is in the lower range of counties in terms of the number of drought impacts.



Future Vulnerability

No development has occurred anywhere within Lyman County since the previous plan was approved to affect any of the jurisdictions' vulnerability to drought. Looking ahead, vulnerability to drought may increase if current land use trends continue and more marginal land in the county is brought into agricultural production. Climate change also may increase the frequency and severity of droughts. The expected increase in Lyman County's average annual temperature and the number of days over 95 degrees may lead to increased evaporation and drought frequency, which would compound water scarcity problems.

Wildfire

Wildfire risk in Lyman County was analyzed using two different sources. According to the U.S. Forest Service's Wildfire Risk to Communities website, Lyman County's overall wildfire risk is considered medium, higher than 67% of the counties in the United States and 65% of South Dakota's counties, although the risk in Kennebec and Oacoma is considered to be high. Information from the SILVIS Lab at the University of Wisconsin shows that a total of 712 housing units are located in the Wildland-Urban Interface, which are locations vulnerable to wildfires because of a combination of dense housing and vegetation. The 712 housing units at risk represent 46.1% of the total housing stock in Lyman County. For comparison, the statewide figure is 25.9%. The following table summarizes the overall risk in Lyman County.

Table 3.9 – Housing Stock in Wildfire Risk Zones in Lyman County

Houses At Risk	Median Housing Value in Lyman Co.	Total Value of Homes at Risk
712	$132,100	$94,055,200

Sources: silvis.forest.wisc.edu/data/wui-change; 2020 U.S. Census/American Community Survey

Future Vulnerability

No development has occurred in areas prone to wildfire or anywhere else within Lyman County since the previous plan was approved to affect any of the jurisdictions' vulnerability to wildfire. Looking ahead, vulnerability to wildfire may decrease if the population continues to decline as expected.

One factor that could increase wildfire vulnerability is the continued spread of cedar trees. These trees are spreading quickly in Lyman County, and efforts to control their spread have met with only limited success. The fuel load they represent could turn an otherwise routine brushfire into a very serious situation.

The possible impact of climate change also needs to be considered. The South Dakota Hazard Mitigation Plan cites a U.S. Forest Service study that indicates a likely increase in the annual window of high fire risk by 10 to 30%. The plan states that predictions past 2040 are largely speculative, but there will be an increase in the potential for drought and the number of days in any given year with flammable fuels, which may extend the fire season.

Risk Assessment Summary

In this section, the vulnerability of Lyman County and each of the participating jurisdictions to each of the hazards profiled is summarized. Maps are presented at the end of the section to augment the analysis, showing areas vulnerable to flooding; the graphic on page 36 showed areas where wildfire is most likely to occur. Vulnerability to winter storms, summer storms, and drought is not mapped, as those hazards are likely to impact all areas of the county more or less equally.

- **Winter Storms**

Lyman County's vulnerability to winter storms can be considered at least moderate. The authors of the South Dakota Hazard Mitigation Plan assigned Lyman a rating of Moderate when considering prior winter storm events in the county, the county's building exposure, and the county's population density. All areas of the county are vulnerable to winter storms. Major winter storms accompanied by heavy snow or freezing rain contribute to the vulnerability of county residents by making roads dangerous for travel. The isolation of residents living outside of Kennebec, Oacomca, Presho, and Reliance puts them at increased risk. If roads are blocked by snow for extended periods of time, residents outside these communities may not have access to groceries, medical supplies, or other essential items. Winter storms accompanied by high winds have the potential to damage residential and commercial property in the county, as well as infrastructure. A major concern is the vulnerability of rural electric power infrastructure, especially when winter storms are accompanied by high winds and freezing precipitation that can cause ice to build up on powerlines, which can then cause the lines and poles to come down. Elderly residents who

rely on home medical apparatus dependent on a constant supply of power are particularly vulnerable during these times and they are often less able to withstand extreme cold events.

- **Summer Storms**

Lyman County's vulnerability to summer storms can be considered moderate. The authors of the South Dakota Hazard Mitigation Plan assigned Lyman a rating of Moderate when considering prior tornado events in the county, the county's building exposure, and the county's population density. All areas of the county are vulnerable to summer storms. Although the county's population density is low and infrastructure development is not extensive, a large amount of cropland in the county is vulnerable to the effects of hail and other violent summer weather. Vulnerability may be somewhat higher in Oacoma and Reliance, where approximately 25% of the housing stock consists of mobile homes, which can be overturned by winds of 60 to 70 miles per hour if they are not anchored properly. Residents of the Lower Brule community are also vulnerable, since much of the housing stock there lacks a basement.

- **Flooding**

The overall vulnerability of Lyman County to flooding can be described as moderate. According to the vulnerability analysis conducted for the South Dakota Hazard Mitigation Plan, Lyman's estimated flood loss is in the middle tier of counties. Much of the vulnerability is to cropland and to rural county roads, especially near the White River. Flood damage to households and businesses generally is not a major concern, with the exception of the Missouri River flood in 2011. Flooding in 2019 caused substantial road damage throughout the county, including two road segments along the White River that were lost to erosion, and two large culverts in Iona Township that were destroyed. Following is a summary of vulnerability in each of the communities:

Kennebec is vulnerable to flooding, as indicated in **Table 3.8**. The only mapped flood zone in Lyman County is located along Medicine Creek in Kennebec. Flooding in 2019 caused considerable damage to the KOA Campground, flooded several homes, and flooded SD Hwy 273 in Kennebec at the Medicine Creek crossing, forcing the road to be closed for a day.

Lower Brule is vulnerable to flooding due to the Missouri River. The Missouri River flood of 2011 did not impact the community, but if for some reason the Oahe Dam were to completely fail, water could inundate some residences on the outskirts of the community.

Oacoma is vulnerable to flooding. Although **Table 3.8** does not indicate any risk, a substantial amount of stormwater can descend into Oacoma from the hills immediately north of the community, which can cause temporary flooding in some locations. The community is also vulnerable to flooding due to the Missouri River. The Missouri River flood of 2011 damaged some roads, inundated the city park, and would have flooded private property except for a sandbagging effort that saved several residential properties and two sewage lift stations. Flooding in 2019 caused a minor

amount of damage to a few residential properties, one of which experienced sewage backup.

Presho is somewhat vulnerable to flooding, as indicated in **Table 3.8**. Flooding in 2019 caused major damage to several residential properties, the municipal airport, and the golf course, and caused some damage at the sewage lagoon.

Reliance is somewhat vulnerable to flooding. There is some risk associated with Reliance Lake, which has overflown into the Reliance sewage lagoon during periods of very high rain. Failure of the dam at Reliance Lake would inundate the lagoon, as well as farmland below the dam. Flooding in 2019 had some impact on the community, but not nearly as much as it did in Kennebec and Presho.

Vivian is somewhat vulnerable to flooding, as shown in **Table 3.8**. Flooding in 2019 caused a minor amount of damage to a couple of residential properties.

- **Drought**

Lyman County's vulnerability to drought can be considered at least moderate and is certain to continue for the foreseeable future. The impact is primarily to the agricultural sector, where serious losses have occurred. The South Dakota Hazard Mitigation Plan assigned a vulnerability rating of Moderate for Lyman County in terms of drought's impact to crops between 2000 and 2014. Residential and commercial impacts of drought are minor, as the water supply is considered reliable and secure. None of the water systems serving Lyman County residents has ever had difficulty delivering enough water to their customers.

- **Wildfire**

The overall vulnerability to wildfire in Lyman County can be considered moderate. Approximately 46% of the county's population lives in a location vulnerable to wildfire, well above the statewide figure of 26%. Although no truly destructive wildfire has ever been recorded in the county, there have been several fires since 2000 that burned over 1,000 acres. The continued spread of cedar trees is a factor that could increase the county's vulnerability to wildfire in some areas, especially in the rugged terrain along the Missouri River. The risk assessment conducted for the South Dakota Hazard Mitigation Plan assigned a rating of Low for Lyman County regarding aggregate wildland fire vulnerability.

Figure 3.1 – Kennebec

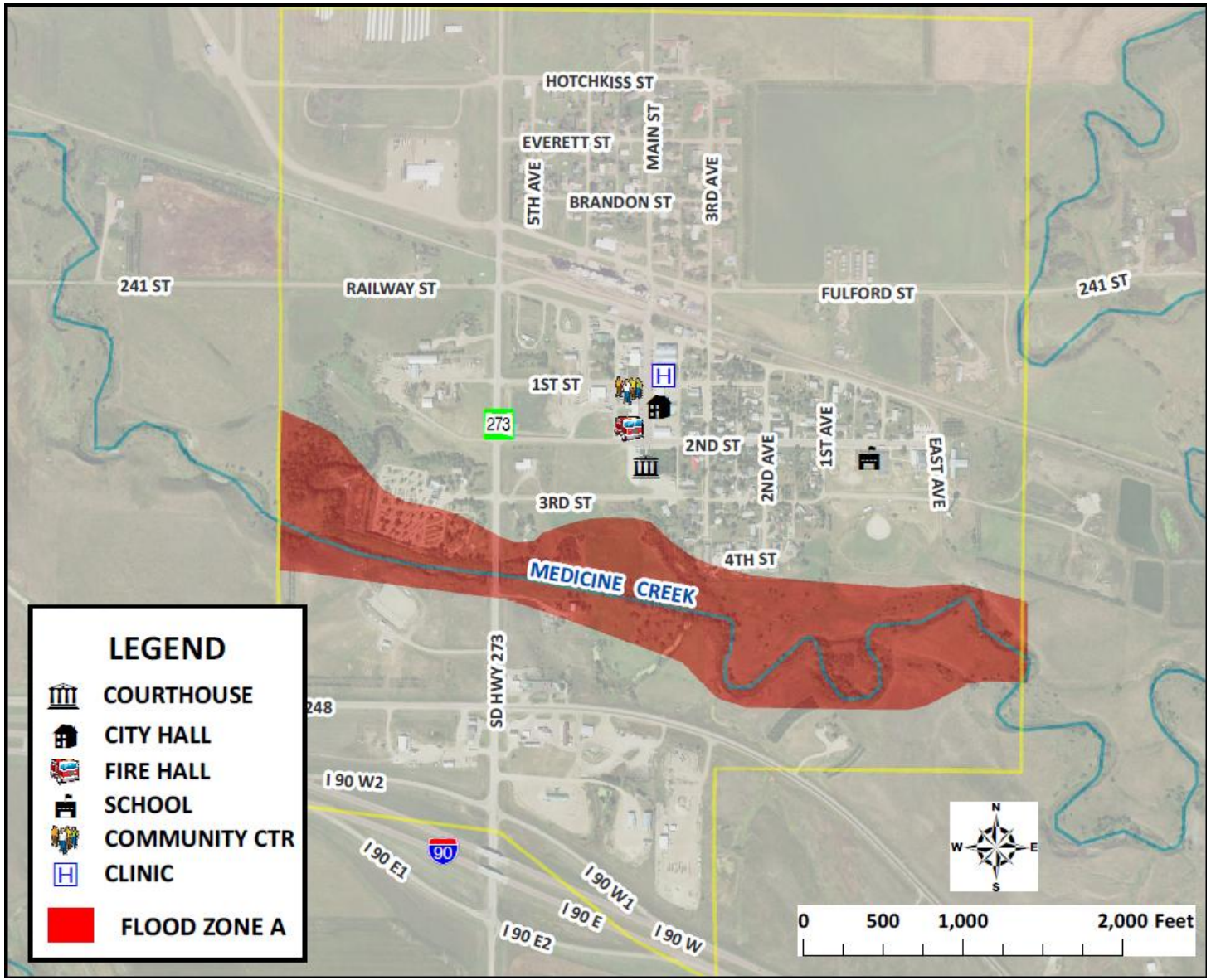


Figure 3.2 – Oacoma

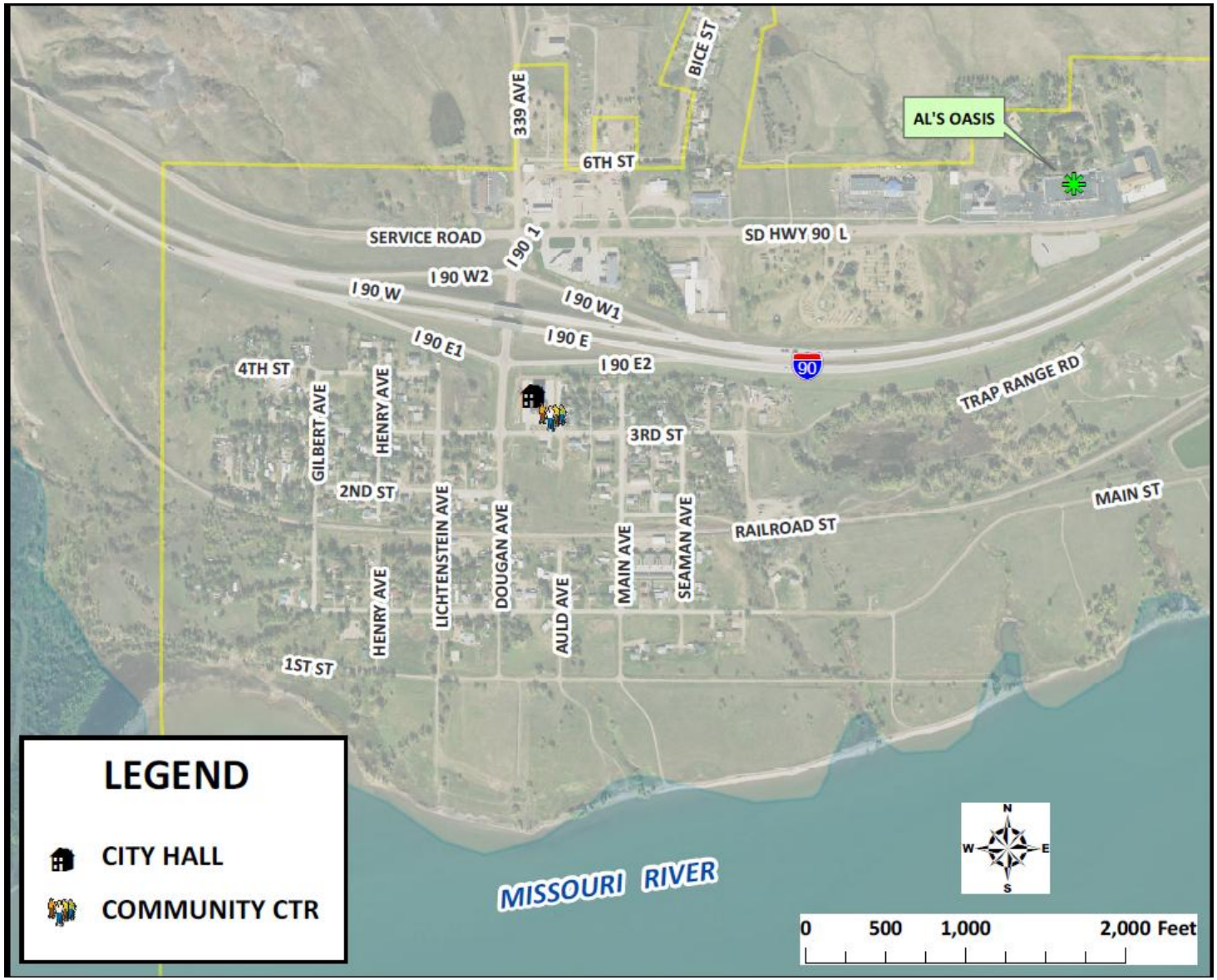


Figure 3.3 – Presho

Figure 3.4 – Reliance

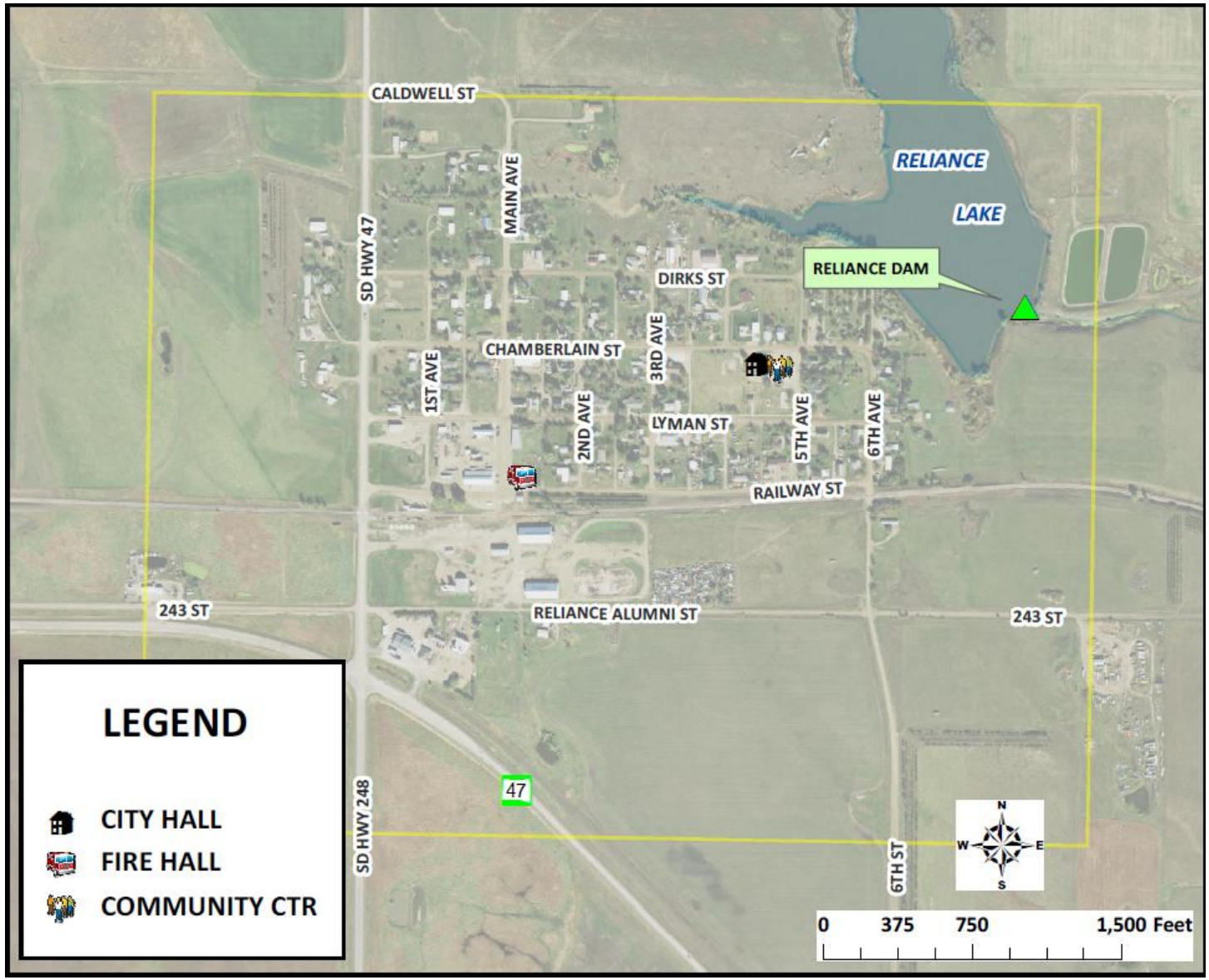


Figure 3.5 – Lower Brule

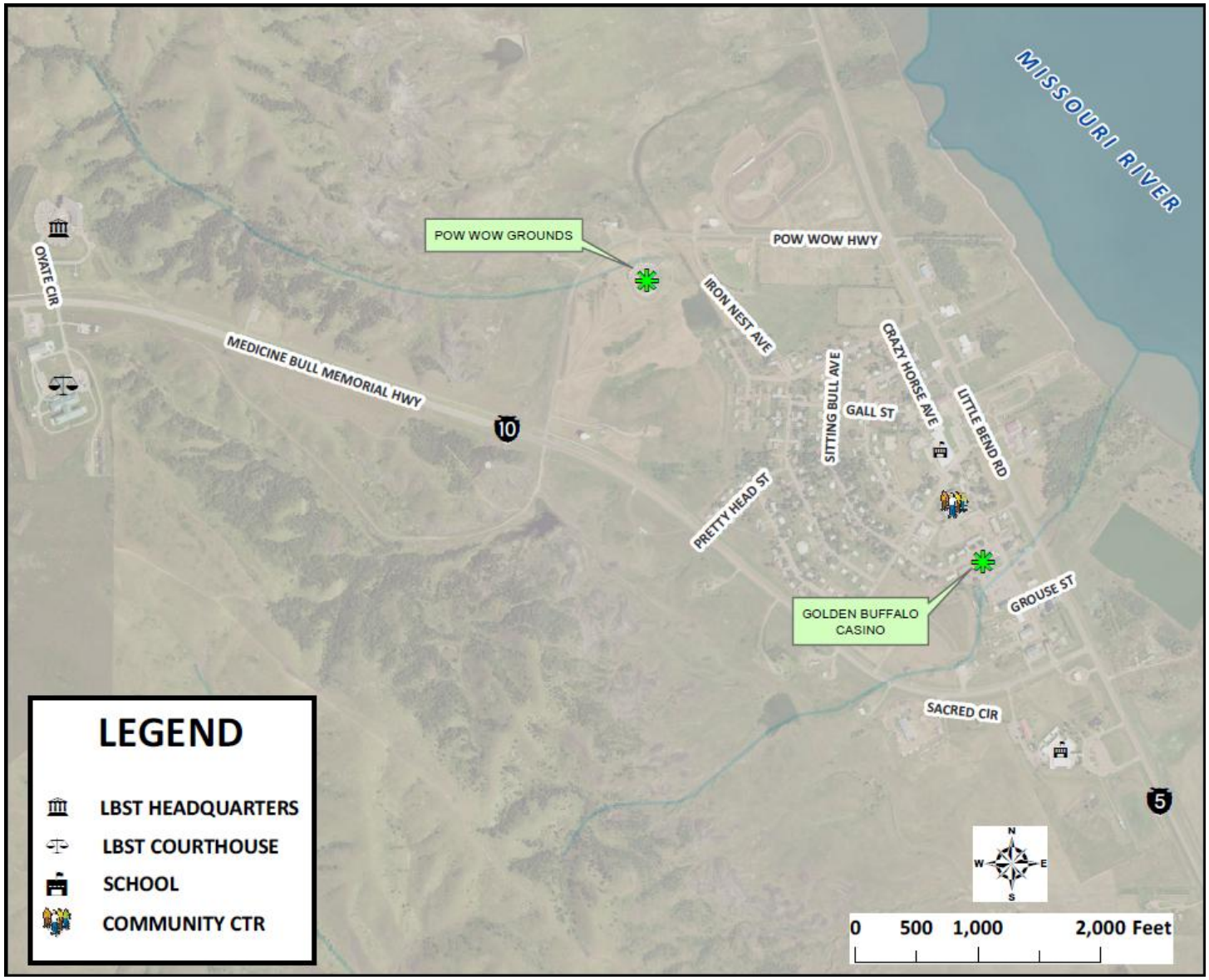
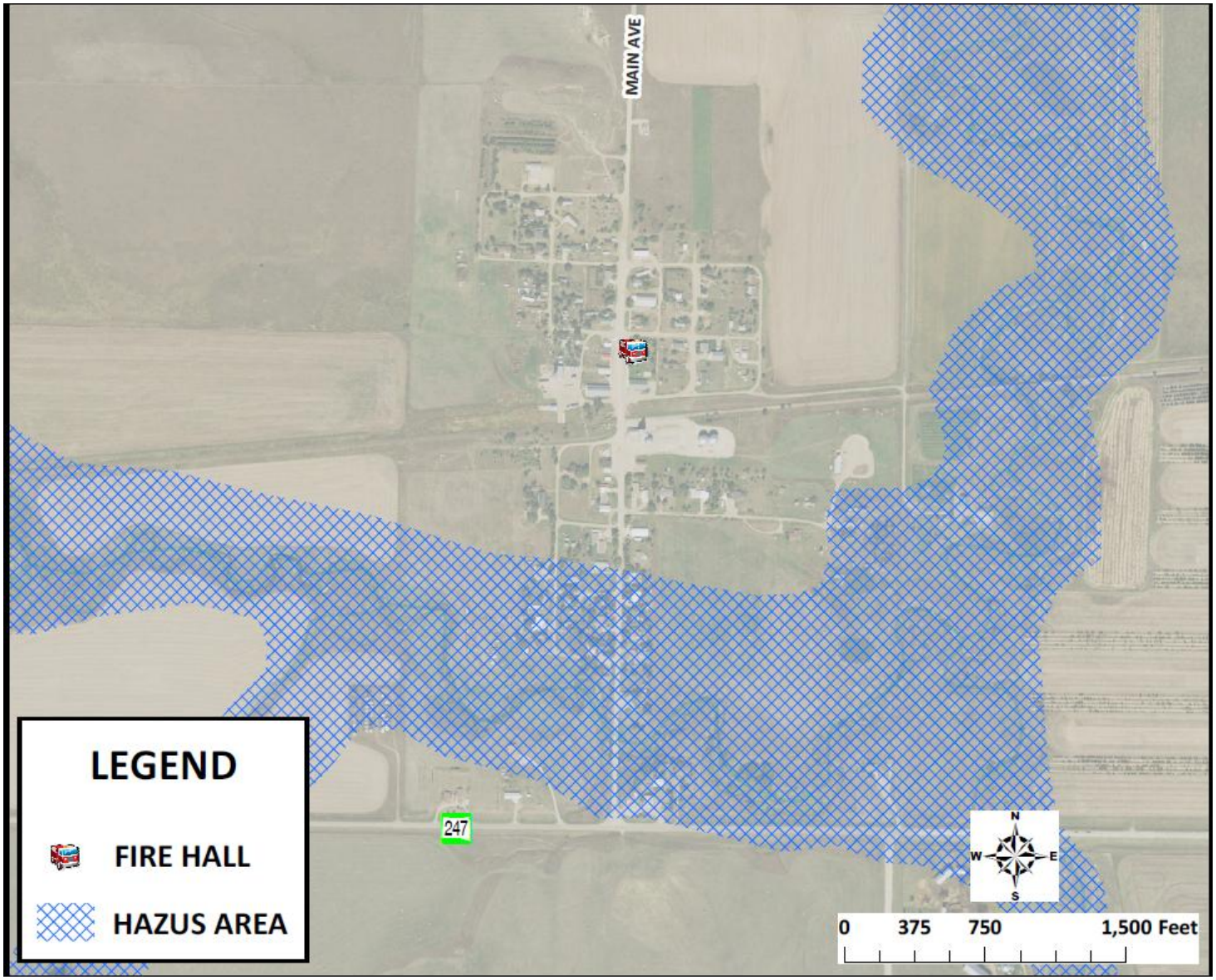


Figure 3.6 – Vivian



2025 Lyman County (SD)
Hazard Mitigation Plan

CHAPTER IV

Risk Mitigation Strategy

PLANNING & DEVELOPMENT DISTRICT III

CHAPTER IV
RISK MITIGATION STRATEGY

Background

The previous chapter described the types of hazards most likely to impact Lyman County and discussed the county's vulnerability to each of the hazards. This chapter describes the local resources and capabilities available to support hazard mitigation, identifies the hazard mitigation goals and objectives that the planning team decided upon, and then focuses on a presentation of the mitigation actions proposed to achieve the goals and objectives. **Table 4.5** at the end of the chapter provides information about each of the proposed actions.

Community Capabilities

Resources are available at the local level to support mitigation activities and efforts in Lyman County. For the purposes of this plan, these resources are divided into regulatory mechanisms and other capabilities.

Regulatory Mechanisms

Regulatory mechanisms and authorities to mitigate the various hazards that impact Lyman County are limited. For instance, none of the jurisdictions have adopted a building code ordinance. By South Dakota state law, any local unit of government that has not adopted building codes is required to follow the 2021 edition of the International Building Code, but there is no local enforcement mechanism in any of the jurisdictions. The following table summarizes the formal regulatory policies within Lyman County that can support the local mitigation strategy.

Table 4.1 – Regulatory Mechanisms

Item	Notes
Lyman County Burn Ban Ordinance (2016, amended in 2021)	This ordinance prohibits open burning when the National Weather Service has declared the South Dakota Grassland Fire Danger Index to be in the HIGH, VERY HIGH or EXTREME category. It also requires that the Lyman County Sheriff's Office or 911 dispatch be contacted prior to a controlled burn.
Kennebec Floodplain Management regulations	Regulates development within flood hazard areas (see **Table 4.2**).
Oacoma Zoning Ordinance	The ordinance, which is based on the City's comprehensive plan, controls where growth and development can occur within the city.
Reliance Zoning Ordinance	The ordinance, which is based on the Town's comprehensive plan, controls where growth and development can occur within the town.

Regulatory authority also exists within Lyman County to mitigate the impact of other hazards. For example, during times of severe drought, each community can enact regulations limiting residential and commercial water usage. To date, none of the communities has had to enact such regulations.

As shown in the following table, Lyman County, Kennebec, and Presho participate in the National Flood Insurance Program (NFIP). However, only Kennebec has been mapped. Lyman County and Presho do not have a Flood Insurance Rate Map and therefore do not promote and enforce NFIP requirements since there is nothing to enforce or regulate. Furthermore, since there are no Special Flood Hazard Areas for these two jurisdictions, they have no areas to regulate for substantial damage and improvement provisions. Training and information on NFIP for all these jurisdictions, including Kennebec, has not been passed down over the years as positions have turned over, which has resulted in a situation where current staff have little knowledge about the NFIP program. To address this issue, each jurisdiction has committed to improving its knowledge of and capacity to implement the NFIP program.

Table 4.2 – National Flood Insurance Program Participation

Jurisdiction	Current Effective Map Date	Reg-Emer Date	Appointed Designee	Floodplain Regulation Enforcement	Substantial Improvements Provisions
Lyman Co.	(NSFHA)	06/08/98	Auditor	There are no floodplain regulations to administer.	Not applicable
Kennebec	08/05/86	08/05/86	Finance officer	Requires floodplain development permit and floodproofing certificate.	Residential construction and substantial improvements must have the lowest floor elevated to or above base flood elevation.
Oacoma	*(The community does not participate in the NFIP program)*				
Presho	(NSFHA)	04/25/97	Finance officer	There are no floodplain regulations to administer.	Not applicable
Reliance	*(The community does not participate in the NFIP program)*				

Currently there are a total of seven active National Flood Insurance Program policies in Lyman County providing a total of $653,000 in coverage - one in Lyman County for $350,000 and six in Kennebec for $303,000. To date, a total of $392,829 in claims has been paid. Two properties have recorded repetitive losses in the county – a residential property in Lyman County (two claims totaling $226,225.75 paid) and a commercial property in Kennebec (two claims totaling $111,840.64 paid). No severe repetitive losses have ever been recorded in the county.

Other Capabilities

Other resources and capabilities exist within Lyman County to support the mitigation strategy, including administrative and technical resources, financial resources, and education

and outreach efforts, as well as physical assets. These capabilities are summarized in the following table and are discussed in further detail below.

Table 4.3 – Other Local Capabilities to Support Hazard Mitigation

	Lyman Co.	Kennebec	Oacoma	Presho	Reliance
ADMINISTRATIVE & TECHNICAL					
Emergency management staff	X				
Planning and zoning staff/board			X		X
Public works staff		X	X	X	
Floodplain management staff	X	X		X	
FINANCIAL					
Budgeting process	X	X	X	X	X
Levy/Project surcharge for specific purposes		X	X	X	
EDUCATION AND OUTREACH					
Severe Weather Awareness Week	X				
Emergency alerts/notification to cellphones	X				
Social media	X	X	X	X	
PHYSICAL ASSETS					
Relief shelter		X	X	X	X
Storm shelter	X	X			
Warning siren		X	X	X	X

Administrative and technical staff to support hazard mitigation in the county are limited. For instance, Lyman County has an emergency manager, but the position is only half time and there are no other emergency management staff to support the manager. Planning and engineering staff within the county are likewise limited.

The availability of financial resources is critical to the success of this plan. Since there are no specific local funding sources available to support hazard mitigation in Lyman County, the budgeting process is where the "rubber meets the road" if hazard mitigation is to be achieved. Therefore, the mitigation actions listed in **Table 4.5** should be considered when the jurisdictions begin developing their annual budgets. In this way, the plan will not become a mere wish list of ideas for which there is no practical funding mechanism. To help ensure this happens, the Emergency Management Director will continue reaching out to each community at least annually to discuss hazard mitigation, including the possibility of obtaining funds through FEMA or other sources for the projects they have identified.

Education and outreach to support hazard mitigation in Lyman County is limited, but efforts are being made. The Lyman County Emergency Management office participates in severe weather public awareness campaigns in conjunction with the State Office of Emergency Management and the National Weather Service and communicates regularly with local

officials regarding severe weather awareness and training opportunities. Hazard mitigation information is also available on the Lyman County Emergency Management webpage and on Facebook.

There are many physical assets in Lyman County that can help protect people prior to, during, or after a disaster event or other emergency situation. Outdoor sirens to warn people of impending severe weather are located in each community. Each siren is tested regularly and each has a backup source of power, but only some can be activated remotely. Public facilities that can serve as emergency shelter from a tornado or other severe weather include the basement of the courthouse in Kennebec. Facilities that can provide short-term relief following a disaster include the Kennebec elementary school gym, the Oacoma community center, the Lyman County high school gym in Presho, the Reliance Legion Hall, the Vivian fire hall, and the elementary school and community center in Lower Brule.

The ability of Lyman County, the Town of Kennebec, the Town of Oacoma, the City of Presho, and the Town of Reliance to enhance their mitigation capabilities is limited. None of the jurisdictions have the financial ability to hire specialized staff such as engineers to develop hydrology studies, professionals to enforce building codes, or grant writers to develop applications for hazard mitigation funds. However, through their membership in Planning & Development District III, each of these jurisdictions has become more familiar with hazard mitigation concepts, and their continued participation as this plan is updated in future years will allow them to further develop their knowledge and capabilities. District III staff, which have decades of experience working on various planning and community development activities within Lyman County, wrote the county's current hazard mitigation plan and have helped develop applications to fund hazard mitigation projects within the county.

Mitigation Goals and Objectives

For this plan update, there are no significant changes in Lyman County's hazard mitigation strategy. The community priorities have not changed, and the planning team decided to keep all the goals and objectives from the current mitigation plan. This decision was based in part on the results of the survey, but even more so on the fact that there has been no significant development anywhere in the county since the current plan was adopted and no changes in community vulnerability [10]. The following goals were identified:

- Minimize loss of life and injuries from hazards.
- Minimize damage to existing and future structures within hazard prone areas.
- Reduce losses to critical facilities, utilities, and infrastructure from hazards.
- Reduce impacts to the economy and the environment from hazards.

[10] The lack of development can be shown by the fact that a total of only 73 building permits were issued throughout Lyman County between 2010 and 2022, an average of fewer than six per year.

After the team had settled on the goals, they turned their focus to each of the hazards facing the County. Following are the specific mitigation objectives identified for each of the hazards:

Winter storm

- Reduce property and infrastructure losses due to winter storms.
- Ensure that people are adequately protected from the effects of winter storms.
- Minimize disruptions to the power distribution system.

Summer storm

- Reduce property and infrastructure losses due to summer storms.
- Ensure that people are adequately protected from the effects of summer storms.
- Ensure that people have adequate warning when violent weather threatens.

Flooding

- Reduce property and infrastructure losses due to flooding.
- Maintain the natural and man-made systems that protect people and property from floods.

Drought

- Reduce economic and environmental impacts due to drought.

Wildfire

- Reduce property, crop, and infrastructure losses due to wildfires.

Mitigation Action Plan

With the mitigation capabilities, goals, and objectives identified, the planning team began the process of selecting mitigation actions to accomplish the mitigation strategy. This followed up and built upon the earlier review of the progress being made to implement the actions listed in the county's current hazard mitigation plan. A list of the actions and a summary of the implementation status of each action is shown in the following table.

Table 4.4 – Progress on Implementing Previously Proposed Actions

Mitigation Action	Hazard	Current Status
LYMAN COUNTY		
Powerline burial.	Winter Storm	West Central Electric typically buries 20 to 30 miles of powerline each year throughout their territory, which includes Lyman County. A total of 47 miles of powerline within Lyman County are planned to be buried within the next four years.

Mitigation Action	Hazard	Current Status
Improvements to various county roads.	Flooding	Some progress has been made, but more work is needed.
Remove vegetation from Medicine Creek to allow better flow.	Flooding	No progress – lack of funds.
Improve or move roads along White River.	Flooding	A half mile segment was moved in 2021, but more work is needed.
Fix slide area on County Road 6 southwest of Oacoma.	Landslide	Completed.
Purchase generator for courthouse.	Winter Storm	No progress – lack of funds.
Construct a satellite fire station in Iona.	Wildfire	No progress, but no longer a priority.
TOWN OF KENNEBEC		
Remove vegetation from Medicine Creek to allow better flow.	Flooding	No progress – lack of funds.
Address drainage problems throughout town, including new culverts along Fulford Street.	Flooding	Some progress has been made, but more work is needed.
Upgrade warning siren.	Summer Storm	No progress – lack of funds.
Purchase generators for school and clinic.	Winter Storm	No progress – lack of funds.
Acquire snow removal equipment.	Winter Storm	No progress, but no longer a priority.
Purchase emergency radios for residents.	Multiple	No progress, but no longer a priority.
TOWN OF OACOMA		
Drainage study for the town.	Flooding	No progress – lack of funds.
Relocate water supply intakes.	Drought	The Town hired an engineering firm to assess the situation; the option recommended has an estimated cost of over $7 million.
Install additional culverts to improve drainage.	Flooding	No progress – lack of funds.
Purchase generator for community center.	Winter Storm	No progress – lack of funds.
Acquire warning siren for north side of town.	Summer Storm	Completed.
CITY OF PRESHO		
Generator for fire station.	Winter Storm	No progress – lack of funds.
Clean out Medicine Creek streambed within city limits.	Flooding	Progress has been made – some flooding still occurs, but the affected land is undeveloped greenspace.
Rubble site flood prevention.	Flooding	Completed.
Raise east end of airport runway to prevent flooding.	Flooding	No longer a priority, as airport location will be moving.
Water diversion away from lagoon.	Flooding	No progress – lack of funds.

The participants were encouraged to consider a broad range of mitigation actions, including measures designed to avoid, avert, or adapt to the hazards they face. To guide the jurisdictions in this process, a list of potential mitigation actions based on FEMA guidance was distributed to the team and they were reminded that they should focus on hazard mitigation as opposed to preparedness. The actions discussed and considered can be grouped into the following general categories:

- Plans and regulations: Government authorities, policies, or codes that influence building and development. Examples include:

- Adopting zoning regulations.
- Preserving open space.
- Reviewing and strengthening local flood ordinances.
- Adopting stormwater management regulations.
- Adopting National Building Code standards.
- Enacting measures to restrict non-essential water usage.

- Structure and Infrastructure Projects: Modifying existing infrastructure to remove it from a hazard area or construction of new structures to reduce impacts of hazards. Examples include:
  - Upgrading stormwater infrastructure, such as culverts and storm sewer piping.
  - Replacing overhead utility lines with underground lines.
  - Building tornado safe rooms.

- Natural Systems Protection: Actions that minimize damage and losses and also preserve or restore the functions of natural systems. Examples include:
  - Using low-lying areas as natural water retention ponds.
  - Restoring and preserving wetlands and stream corridors.
  - Forest and vegetation management.
  - Providing incentives for xeriscaping.

- Education and Awareness Programs: Programs to educate the public and decision makers about hazard risks and community mitigation programs. Examples include:
  - Developing a hazard mitigation public awareness program.
  - Participating in the StormReady program.
  - Participating in the Firewise Communities program.
  - Making presentations to school groups or neighborhood organizations.
  - Mailings to residents in hazard-prone areas.
  - Encouraging people to conserve water during droughts.

The final list of mitigation actions identified by the jurisdictions is shown in **Table 4.5**. The table contains the following information for each action:

- The local priority rating.
- The project lead primarily responsible for implementing the action.
- The estimated time frame needed to accomplish the action. Short term actions are those that can be completed within a few years, while Long term actions may take several years or more to accomplish due to cost or other factors.
- The estimated cost to implement the action.
- Resources that may be available to help fund the action.
- Notes and details about the proposed action.

Prioritizing the actions is important because not all of them can be pursued simultaneously, especially when costly projects are considered. Actions providing the most benefit in terms of cost are likely to be pursued first, while some lower priority actions may never be implemented. The prioritization process was informal and somewhat subjective, but a methodology based on the following criteria helped guide the process:

- Overall benefit - how many lives or how much property will be protected, and how much disruption will be prevented? Are there any critical facilities or important public infrastructure that will be protected?
- Financial feasibility - how expensive will the action be? Could the action qualify for grant or loan funding?
- Political feasibility – will the public support the action? Are there any groups or interests that may be opposed to the action and thus prevent it from being implemented?
- Technical feasibility – does the technology exist for the action to be implemented? Is the action likely to function as intended?
- Environmental feasibility - does the action have the potential to have an adverse impact on the environment?
- Legal feasibility – are there any legal issues that might prevent the action from being implemented?

Of these criteria, financial considerations are especially important, because neither Lyman County nor any of the other participating jurisdictions have much discretionary money available to fund mitigation activities. Given this reality, it is unlikely that any mitigation action requiring substantial financial resources could be implemented locally without grant assistance. Following are potential sources of outside funding to help the jurisdictions accomplish mitigation projects:

<u>FEMA grant programs</u>

- Hazard Mitigation Grant Program (HMGP)
- Flood Mitigation Assistance (FMA)
- Public Assistance Section 406 funds

<u>Other grant and loan programs/sources</u>

- US Economic Development Administration
- US Department of Agriculture Rural Development grant/loan program
- US Bureau of Reclamation WaterSMART program
- South Dakota Community Development Block Grant program
- South Dakota State Homeland Security Program
- South Dakota Dept. of Agriculture and Natural Resources
- South Dakota Dept. of Transportation
- Natural Resource Conservation Service
- Western States Wildland Urban Interface Grant Program
- High Hazard Potential Dam Program

Table 4.5 - Proposed Mitigation Actions

LYMAN COUNTY ACTIONS	HAZARD	PRIORITY	PROJECT LEAD	TIME	COST	FUNDING	NOTES
Continue participation in the National Flood Insurance Program	Flooding	High	Auditor	Ongoing	Minimal	Staff time	The auditor will contact the South Dakota floodplain coordinator to learn more about the NFIP program and participate in future training sessions.
Implement traffic control procedures to keep drivers off local roads when needed	Winter Storm	High	County commission	Mid	To be determined	Staff time	Some drivers detour off Interstate 90 when it is shut down due to bad weather and may become stuck on local roads. The County will work with the SD Hwy Patrol in this effort.
Improve drainage along county and township roads	Flooding	High	Highway Superintendent	Long	≈ $500,000	DOT; HMGP; Highway fund	The County may pursue grant funding if a project appears to be grant eligible. Roads in the vicinity of the White River are a priority.
Generator acquisition for the courthouse	Winter Storm	High	County commission	Mid	≈$100,000	HMGP	The generator will ensure that the courthouse can operate during power outages. The County may pursue grant funding.
Develop a prescribed burning plan with landowners	Wildfire	High	County commission	Mid	≈$25,000	WUIGP; General fund	This is intended to reduce the spread of cedar trees, which are spreading rapidly and increasing wildfire risk. The County will work with the towns in this effort.
Implement zoning in the County	Flooding Wildfire	Medium	County commission	Short	Minimal	Staff time	The County Commission is currently discussing this issue.
Construct a tornado shelter in Vivian	Summer Storm	Medium	County commission	Long	≈$300,000	HMGP; General fund	This is mostly for the benefit of travelers along Interstate 90.
Remove vegetation from Medicine Creek	Flooding	Medium	County commission	Mid	≈$100,000	DANR; General fund	This will allow better water flow and reduce the possibility of flooding.
Conduct outreach to educate people about water conservation	Drought	Medium	Emergency Mgmt Director	Short	Minimal	Staff time	The Lyman County emergency manager will work with the communities on outreach to the public, including school groups.
KENNEBEC ACTIONS	**HAZARD**	**PRIORITY**	**PROJECT LEAD**	**TIME**	**COST**	**FUNDING**	**NOTES**
Continue participation in the National Flood Insurance Program	Flooding	High	Finance Officer	Ongoing	Minimal	Staff time	The finance officer will reach out to the South Dakota floodplain coordinator to learn more about how to implement the City's floodplain regulations, including how to make substantial improvement determinations.
Generator acquisition for school	Winter Storm	High	Finance Officer & Lyman Co. School Superintendent	Mid	≈$50,000	HMGP; General fund	The generator will ensure that the school can operate during power outages. The Lyman County school district may pursue grant funding.

Remove vegetation from Medicine Creek	Flooding	High	Town board	Mid	≈$100,000	HMGP; General fund	The Town may pursue grant funding.
Upgrade stormwater infrastructure	Flooding	High	Public Works Director	Long	≈$500,000	DANR; HMGP	Improvements are needed to help improve drainage.
Upgrade warning siren	Summer Storm	High	Town board	Mid	≈ $30,000	HMGP; General fund	The Town may pursue grant funding.
Construct a tornado shelter or retrofit an existing structure	Summer Storm	Medium	Town board	Long	≈$300,000	HMGP	The Town may pursue grant funding for a standalone or multi-purpose structure.
Upgrade fire department capabilities	Wildfire	Medium	Fire chief	Mid	≈$75,000	AFG; General fund	The Town may pursue grant funding for training, equipment upgrades, or vehicle purchase.
Conduct outreach to educate people about water conservation	Drought	Medium	Town board	Short	Minimal	Staff time	The Town will work with the Lyman County emergency manager in this effort.
Develop a prescribed burning plan with landowners	Wildfire	Medium	Fire chief	Mid	≈$25,000	WUIGP; General fund	The Town will work with County staff in this effort.
OACOMA ACTIONS	**HAZARD**	**PRIORITY**	**PROJECT LEAD**	**TIME**	**COST**	**FUNDING**	**NOTES**
Generator acquisition for sewage lift station	Winter Storm	High	Public Works Director	Mid	≈$90,000	HMGP; DANR	The Town will be replacing the lift station and has been advised to acquire backup power for it. The Town may pursue grant funding.
Generator acquisition for water treatment plant	Winter Storm	High	Public Works Director	Mid	≈$30,000	HMGP; DANR	The generator will ensure that the treatment plant can operate during power outages The Town may pursue grant funding.
Conduct drainage study of the town	Flooding	High	Town board	Short	≈ $75,000	DANR; HMGP	The Town may pursue grant funding.
Upgrade stormwater infrastructure	Flooding	High	Public Works Director	Long	≈$500,000	DANR; HMGP	Improvements are needed to help improve drainage.
Relocate water supply intakes farther out into the Missouri River	Drought	High	Public Works Director	Long	≈ $5 Mil	DANR	This would mitigate drought by allowing the intakes to still function if water levels drop in the river. Town may pursue grant funding.
Generator acquisition for community center	Winter Storm	Medium	Town board	Mid	≈$75,000	HMGP; General fund	The generator will ensure that the community center can operate during power outages The Town may pursue grant funding.
Construct a tornado shelter	Summer Storm	Medium	Town board	Long	≈$300,000	HMGP	Primarily for travelers along Interstate 90 and those staying at nearby campgrounds.
Conduct outreach to educate people about water conservation	Drought	Medium	Town board	Short	Minimal	Staff time	The Town will work with the Lyman County emergency manager in this effort.
Develop a prescribed burning plan with landowners	Wildfire	Medium	Fire chief	Mid	≈$25,000	WUIGP; General fund	The Town will work with County staff in this effort.

PRESHO ACTIONS	HAZARD	PRIORITY	PROJECT LEAD	TIME	COST	FUNDING	NOTES
Continue participation in the National Flood Insurance Program	Flooding	High	Finance officer	Ongoing	Minimal	Staff time	The finance officer will contact the South Dakota floodplain coordinator to learn more about the NFIP program and participate in future training sessions.
Water diversion away from sewage lagoon	Flooding	High	Public Works Director	Mid	≈$250,000	DANR	Stormwater runoff occasionally gets into the lagoon. The City may pursue grant funding.
Continue maintenance of water wells	Flooding	High	Public Works Director	Ongoing	Minimal	General fund	The wells were abandoned when the City joined the rural water system. This will reduce flood risk.
Construct a tornado shelter or retrofit an existing structure	Summer Storm	Medium	City council	Long	≈$300,000	HMGP	The City may pursue grant funding.
Generator acquisition for fire station	Winter Storm	Medium	Fire chief	Long	≈$100,000	AFG; HMGP	The generator will ensure that the fire station can operate during power outages. The City may pursue grant funding.
Conduct outreach to educate people about water conservation	Drought	Medium	City council	Short	Minimal	Staff time	The City will work with the Lyman County emergency manager in this effort.
Develop a prescribed burning plan with landowners	Wildfire	Medium	Fire chief	Mid	≈$25,000	WUIGP; General fund	The City will work with County staff in this effort.
RELIANCE ACTIONS	**HAZARD**	**PRIORITY**	**PROJECT LEAD**	**TIME**	**COST**	**FUNDING**	**NOTES**
Generator acquisition for Legion Hall	Winter Storm	High	Town board	Mid	≈$50,000	HMGP; General fund	The Town may pursue grant funding.
Generator acquisition for sewage lift stations	Winter Storm	High	Public Works Director	Mid	≈$75,000 (each)	HMGP; DANR	The generator will ensure that the sewage lift stations can operate during power outages. The Town may pursue grant funding for either or both of the lift stations.
Replace clay sewer lines	Flooding	High	Public Works Director	Long	≈$500,000	DANR	Will reduce groundwater infiltrating the sewage system, reducing flood risk. The Town may pursue grant funding.
Construct a tornado shelter or retrofit an existing structure	Summer Storm	High	Town board	Long	≈$300,000	HMGP	The Town may pursue grant funding.
Conduct outreach to educate people about water conservation	Drought	Medium	Town board	Short	Minimal	Staff time	The Town will work with the Lyman County emergency manager in this effort.
Develop a prescribed burning plan with landowners	Wildfire	Medium	Fire chief	Mid	≈$25,000	WUIGP; General fund	The Town will work with County staff in this effort.

Potential Resources for Funding Assistance:

AFG FEMA Assistance to Firefighters Grant Program
HMGP FEMA Hazard Mitigation Grant Program
WUIGP Wildland Urban Interface Grant Program
DANR South Dakota Dept of Agriculture and Natural Resources
DOT South Dakota Dept of Transportation

2025 Lyman County (SD)
Hazard Mitigation Plan

CHAPTER V

Plan Maintenance

PLANNING & DEVELOPMENT DISTRICT III

CHAPTER V
PLAN MAINTENANCE

Background

Plan maintenance is a continuous process that requires long-term commitment and focused effort. The process involves evaluating the plan's effectiveness at achieving its goals, updating the plan as needed to keep it current, and making sure it is integrated into other local planning mechanisms. These activities provide the foundation for an ongoing mitigation program and will ensure that the plan remains relevant and effective. This chapter addresses how Lyman County officials intend to implement the plan so that it remains a dynamic, useful tool for mitigating against the impacts of future hazard events.

Public Participation

The plan can be accessed on the Lyman County, Town of Kennebec, Town of Oacoma, and City of Presho websites, and a hard copy is available for review at the Lyman County courthouse and in each city office. Going forward, Lyman County and each of the participating jurisdictions will continue their efforts to make the public more informed about the plan. Outreach efforts will likely evolve over time as different methods are used to get greater public participation in the mitigation planning process. Activities may include any of the following:

- Meetings of the Lyman County Local Emergency Planning Committee.
- Press releases and social media posts.
- Surveys to get feedback from the public about mitigation priorities.
- Community visits by the Lyman County Emergency Management Director to discuss mitigation planning (local schools, civic meetings, etc.).

Any comments and suggestions received from the public through any of the forums described above will be included in the public outreach section of the plan.

Monitoring, Evaluating, and Updating the Plan

The Lyman County Emergency Management Director is ultimately responsible for implementing this plan. The director will work under the direction of the Lyman County Commission and with the support of the Lyman County Local Emergency Planning Committee (LEPC) to ensure that the plan's mitigation strategy is carried out, coordinating his/her activities with other county departments or the other participating jurisdictions as needed.

The jurisdictions also will play a critical role in carrying out the action plan by identifying and prioritizing the actions they want to pursue, allocating resources for their implementation, and applying for funding assistance as needed.

An important part of implementing the plan is plan monitoring and evaluation, which will be performed by the Lyman County Emergency Management Director with the support of the LEPC. The plan will be evaluated at least annually by the LEPC, and it may also be reviewed at other times as the need arises, such as following a significant hazard event or as federal funding for hazard mitigation becomes available.

All major elements of the plan – the planning process, the risk assessment, and the mitigation strategy - will be evaluated. Following are the specific criteria that will be used to measure whether the plan is achieving its goals:

Planning Process

- Could anything from the initial planning process be done more efficiently?
- Has the public become more aware of the plan? How can public participation improve?
- Have there been any public outreach activities to promote awareness of the plan?

Risk Assessment

- Have any recent disaster events impacted any of the jurisdictions?
- Should any hazards be added or removed from the plan?
- Have there been any changes in the nature or magnitude of risks?
- Has any new development occurred that might impact risk?
- Are new data sources for any of the hazards available?
- Do any new critical facilities or infrastructure need to be added to the community asset list?

Mitigation Strategy

- Is the mitigation strategy being carried out as expected? How many of the proposed mitigation actions have been completed or are in progress?
- Have there been any changes in mitigation priorities in any of the jurisdictions?
- Are there any new mitigation actions to consider? Should existing actions be revised or removed from the plan?
- Have parts of the plan been integrated into other planning mechanisms?
- Have any jurisdictions adopted new policies, plans, or regulations that could support the plan?
- Has NFIP participation changed in the participating jurisdictions?
- Is progress being made in education and outreach? How many outreach events have taken place?

Future updates to this plan may occur at any time in response to a change in any of the criteria identified above. However, barring a significant change in any of these factors, Lyman County will begin the process of updating this plan approximately two years prior to the plan's expiration date. Led by the Emergency Management Director, the process will consist of the following general steps:

- Apply for funding assistance to update the plan
- Funding assistance obtained
- Hire contractor to write the plan
- Organize planning team
- Begin soliciting public participation and input
- Hold meetings of planning team to develop the plan
- Make draft of the plan available for public review and comment
- Submit plan for State review
- Revise plan as needed based on reviewer comments
- Plan submitted by State to FEMA
- Revise plan as needed based on reviewer comments
- Jurisdictional adoption of approved plan

Plan Integration

The Lyman County Hazard Mitigation Plan is the backbone for hazard mitigation planning within the county, but to remain useful the plan cannot exist in a vacuum. It is designed to work with the planning mechanisms and development regulations that exist within the county, and local officials and policy makers should therefore be familiar with this plan. Neither this plan nor any of the others will work effectively if they contain contrary goals or policy recommendations. Following is a description of the process by which integration will occur into the local planning mechanisms [11].

- Lyman County Comprehensive Plan and Zoning Ordinance – if the County does decide to implement zoning, the Planning & Development District III office will work with the Lyman County planning commission to develop a comprehensive plan and then the ordinance. The comprehensive plan will include a section on environmental constraints within the county, into which relevant information acquired through the development of this plan will be integrated. This process will also inform the zoning ordinance, which will be based on the comprehensive plan. For example, if this plan identifies certain areas as unsuitable for development due to environmental hazards, this should be reflected in the zoning ordinance.
- Lyman County Highway Plan – the highway plan is developed by the Lyman County Highway Superintendent. It includes a table of significant county road projects scheduled to occur for the next five years. The South Dakota Dept of Transportation

[11] The City of Presho has no planning mechanisms or policies.

requires that the highway plan be updated annually and approved by the county commission. The highway superintendent will be able to utilize information learned during the development of this plan to identify and plan for road projects that may be eligible for FEMA funding, such as those that involve drainage improvements to mitigate flooding.

- Kennebec Floodplain Management Regulations - the Kennebec floodplain administrator will review the floodplain management regulations annually or as needed after a significant flood event. This review process will help ensure the regulations do not conflict with anything in this plan regarding development in areas at risk of flooding.
- Oacoma Comprehensive Plan and Zoning Ordinance – the Planning & Development District III office developed the comprehensive plan and zoning ordinance working with the town planning board. The Town and District III will integrate relevant information acquired through the development of this plan into the environmental constraints section of the comprehensive plan when it is next updated. The zoning ordinance will also be modified if needed. For example, if this plan identifies certain areas as unsuitable for development due to environmental hazards, this should be reflected in the zoning ordinance. The Town of Oacoma will be contacting the District III office to begin updating the comprehensive plan and zoning ordinance.
- Reliance Comprehensive Plan and Zoning Ordinance – the Planning & Development District III office developed the comprehensive plan and zoning ordinance working with the town planning board. The Town and District III will integrate relevant information acquired through the development of this plan into the environmental constraints section of the comprehensive plan when it is next updated. The zoning ordinance will also be modified if needed. For example, if this plan identifies certain areas as unsuitable for development due to environmental hazards, this should be reflected in the zoning ordinance. The Town of Reliance will be contacting the District III office to begin updating the comprehensive plan and zoning ordinance.

The best example to date of the county's current mitigation plan being incorporated into other planning mechanisms occurred during the most recent update of the Comprehensive Economic Development Strategy (CEDS) for the Planning & Development District III region, which includes Lyman County. In particular, the risk analysis and mitigation strategy of the plan were utilized as the CEDS was updated in 2024.

Each jurisdiction, including the City of Presho, will also use this plan to help them as they prepare their annual budget each year. The process will be essentially the same in each jurisdiction, beginning with a review of the plan at the outset of the budgeting process, which typically begins in the summer. Each jurisdiction will especially note their list of proposed mitigation actions in **Table 4.5**. Those that are interested in seeking funds for a specific project listed in the table will be able to utilize knowledge gained during the development of this plan, including FEMA grant deadlines and the grant eligibility of specific types of mitigation projects, as they develop their budgets.

To expand on these efforts, each community should continue to participate in future updates to this plan. This will continue to expose them to the basic concepts of hazard mitigation, which may be the only practical way for some of the jurisdictions to expand their capabilities. An important part in this process will be played by the Lyman County Emergency Management Director, who will continue to reach out to each community at least annually to review their hazard mitigation needs and priorities.

2025 Lyman County (SD)
Hazard Mitigation Plan

APPENDICES

- Appendix A: Outreach Effort
- Appendix B: Documentation of Meetings
- Appendix C: History of Previous Hazard Occurrences
- Appendix D: References

PLANNING & DEVELOPMENT DISTRICT III

APPENDIX A: Outreach Effort

A major effort was made to solicit input into this plan. Outreach included press releases that were printed in the Chamberlain *Central Dakota Times*, information posted on community websites and social media, and surveys that were made available to the public. This section documents the outreach effort.

Press Release in Chamberlain *Central Dakota Times* Prior to First Meeting:

Hazard Mitigation Meeting

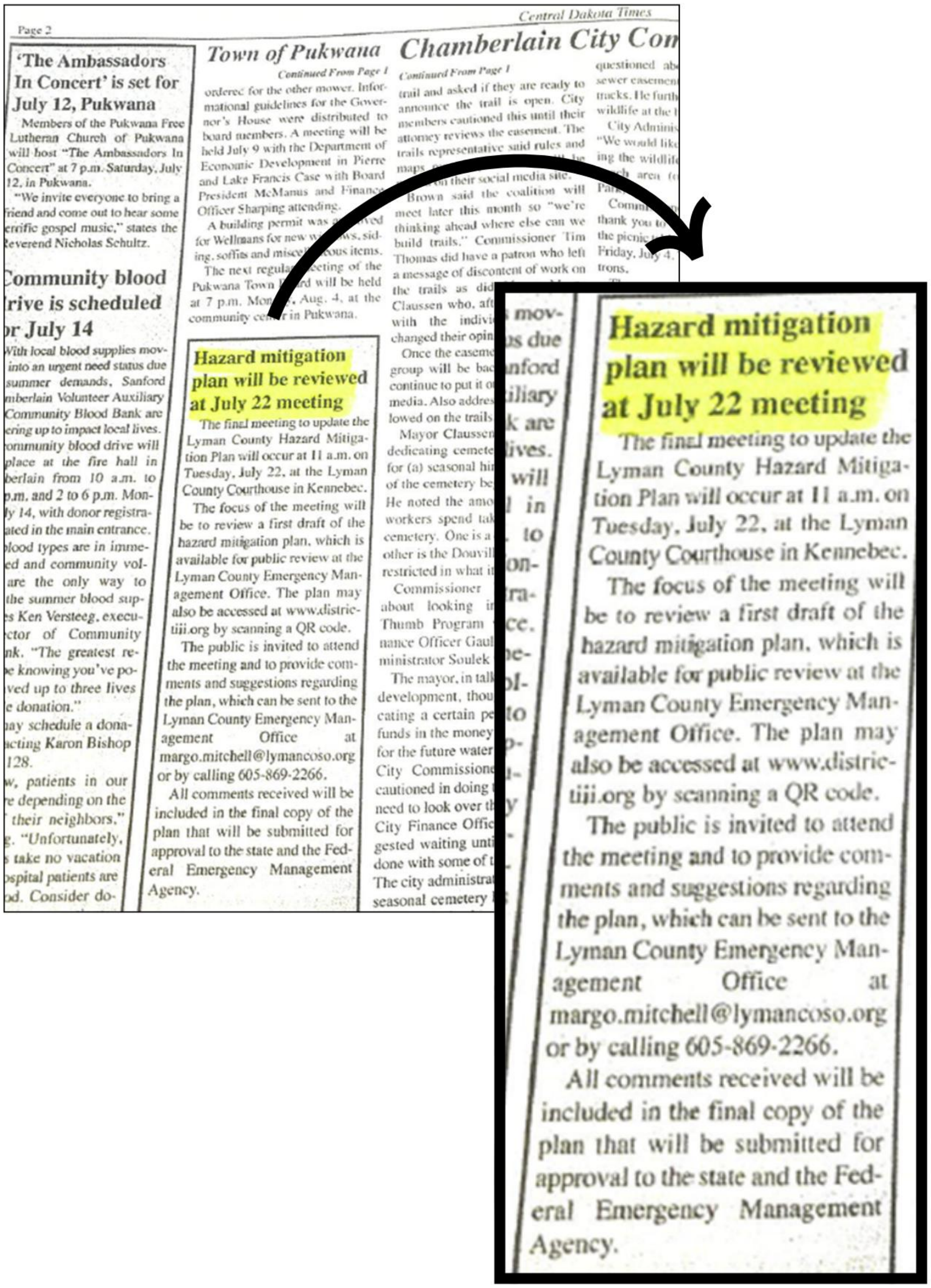
Blizzards, tornadoes and floods are a few of the natural hazards that strike this part of the country. Events like this have the potential of causing thousands of dollars annually in damage to property. To lessen the impact of these disasters in the future, Lyman County is beginning the process of updating its current Hazard Mitigation Plan.

A series of meetings, which are open for the public to attend, will occur this year to obtain input as the plan is developed. **The first meeting will be held at the Lyman County Courthouse on April 22, 2025 at 1 p.m.** Agenda items for this kickoff meeting will include a discussion of hazard mitigation concepts, a review of the county's current hazard mitigation plan and a discussion about the planning process going forward.

Another way to contribute to the planning process is to fill out a survey. A hard copy of the survey may be obtained at the Lyman County Emergency Management Office, by going to www.districtiii.org or by scanning this QR code:

For more information, please contact the Lyman County Emergency Management Office at margo.mitchell@lymancoso.org or by calling 605-869-2266. You can also contact John Clem at 800-952-3562 or by e-mail at John.Clem@districtiii.org.

Press Release in Chamberlain *Central Dakota Times* Before Final Meeting:



Page 2 — Central Dakota Times

'The Ambassadors In Concert' is set for July 12, Pukwana

Community blood drive is scheduled for July 14

Town of Pukwana

Chamberlain City Commission

Hazard mitigation plan will be reviewed at July 22 meeting

The final meeting to update the Lyman County Hazard Mitigation Plan will occur at 11 a.m. on Tuesday, July 22, at the Lyman County Courthouse in Kennebec.

The focus of the meeting will be to review a first draft of the hazard mitigation plan, which is available for public review at the Lyman County Emergency Management Office. The plan may also be accessed at www.districtiii.org by scanning a QR code.

The public is invited to attend the meeting and to provide comments and suggestions regarding the plan, which can be sent to the Lyman County Emergency Management Office at margo.mitchell@lymancoso.org or by calling 605-869-2266.

All comments received will be included in the final copy of the plan that will be submitted for approval to the state and the Federal Emergency Management Agency.

Survey Poster

PUBLIC PARTICIPATION NEEDED!

LYMAN COUNTY

HAZARD MITIGATION PLAN PUBLIC SURVEY

The Lyman County Office of Emergency Management is in the process of updating the County's Hazard Mitigation Plan. Hazard mitigation planning helps local leaders better understand risks from natural hazards, promoting the development of long-term strategies to reduce the effects of disaster-related events and their negative impact on people, property, and environment. Lyman County is seeking feedback from stakeholders and the public to incorporate into the plan.

WHAT IS A HAZARD MITIGATION PLAN & WHY IS IT IMPORTANT?

A hazard mitigation plan is the representation of the jurisdiction's commitment to reduce risks from natural hazards, such as flooding, severe summer and winter weather, drought, and wildfires. The plan serves as a guide for local decision makers as they commit resources to reducing the effects of natural hazards, and it creates a framework for Lyman County to reduce negative impacts from future disasters on lives, property, and the local economy. Efficient hazard mitigation planning can significantly reduce the physical, financial, and emotional losses caused by natural disasters.

TAKE THE SURVEY

www.districtiii.org

PUBLIC PARTICIPATION IN HAZARD MITIGATION PLANNING

Public participation in the Lyman County Hazard Mitigation Plan is an opportunity for county residents to evaluate a variety of potential hazards affecting the county and it is important to the overall success of the plan. Once approved, the plan will make Lyman County and the participating municipalities eligible to apply for FEMA hazard mitigation funding.

PHONE: (605) 869-2266
EMAIL: MARGO.MITCHELL@LYMANCOSO.ORG

Survey Form with Responses

LYMAN COUNTY HAZARD MITIGATION SURVEY (*RESPONSES IN RED TYPE*)

The Lyman County Office of Emergency Management is in the process of updating the County's Hazard Mitigation Plan. Hazard mitigation planning helps local leaders better understand risks from natural hazards and promotes the development of long-term strategies to reduce the effects of disaster-related events. Lyman County is seeking feedback from stakeholders and the public to incorporate into the plan. We would greatly appreciate it if you would complete the survey. Participation is voluntary and anonymous.

GENERAL HOUSEHOLD INFORMATION

First, we would appreciate any information you are willing to share with us about your household. This information will remain confidential and is for survey use only.

1. What county do you live in? **LYMAN COUNTY (ALL)**

2. What town do you live in? **KENNEBEC 7; OACOMA 6; PRESHO 9; RELIANCE 9; OTHER 6**

3. How long have you lived in South Dakota?

   Less than 1 year **3**
   1-5 years **1**
   6-10 years **1**
   More than 10 years **32**

4. Do you own or rent your home?

   Own **30**
   Rent **7**

5. Do you own/rent a:

   Single-family home **26**
   Apartment **3**
   Manufactured home **6**
   Other: **2**

NATURAL HAZARD INFORMATION

6. During the past 5 years, in the county you currently reside in, have you or someone in your household directly experienced a natural disaster? This could be a flood, severe windstorm, wildfire, or other type of natural disaster. Yes: **12** No: **24**

7. How concerned are you about the following natural disasters affecting your county? (Check the corresponding box for each hazard)

Natural Disaster	Very Concerned	Somewhat Concerned	Neutral	Not Very Concerned	Not Concerned		Weighted Results
Drought	16	8	6	1	1		37
Dust Storm	2	6	12	6	5		-6
Earthquake	1	1	6	8	16		-37
Flood	5	9	6	8	4		3
Landslide/Debris Flow	1	2	4	9	16		-37
Wildfire	8	14	7	2	2		24
Windstorm	11	12	4	4	1		28
Severe Winter Storm	10	16	4	3	0		33
Tornado	12	16	4	1	0		39
Extreme Heat	6	14	7	2	3		18
Other: _____							

8. Prior to receiving this survey, were you aware of your county's hazard mitigation plan?

Yes: **17** No: **18**

COMMUNITY VULNERABILITIES AND HAZARD MITIGATION STRATEGIES

To assess community risk, we need to understand which community assets may be vulnerable to natural hazards in the region. Vulnerable assets are those community features, characteristics or resources that may be impacted by natural hazards. The next set of questions will focus on vulnerable assets in your community. It will also cover your preferred strategies to mitigate risk to those assets.

9. Community assets are features, characteristics or resources that either make a community unique or allow the community to function. For the following categories, what do you see as being vulnerable in your community?

Human (Loss of life and/or injuries) **21**
Economic (Business closures and/or job losses) **19**
Infrastructure (Damage or loss of bridges, utilities, schools, etc.) **20**
Cultural/Historic (Damage or loss of libraries, museums, fairgrounds, etc.) **5**
Environmental (Damage or loss of forests, rangeland, waterways, etc.) **12**
Government (Ability to maintain order and/or provide public amenities and services) **11**

10. What specific types of community assets are most important to you? (Check the corresponding box for each asset)

Community Assets	Very Important	Somewhat Important	Neutral	Not Very Important	Not Important		Weighted Results
Elder-care facilities	10	12	10	0	0		32
Schools (K-12)	21	4	5	0	1		44
Hospitals	14	10	8	0	0		38
Major bridges	10	9	10	1	1		26
Fire/police stations	18	10	2	0	2		42
Museums/historic buildings	6	5	13	5	2		8
Major employers	11	8	8	3	0		27
Small businesses	20	9	3	0	0		49
City Hall/Courthouse	12	8	9	1	0		31
Parks	6	13	7	2	1		21
Other: _____							

11. Many activities can reduce your community's risk from natural hazards. Please check the box that best matches your opinion of the following strategies to reduce risk and loss associated with natural disasters.

Community- wide Strategies	Strongly Agree	Agree	Neutral/ Not Sure	Disagree	Strongly Disagree		Weighted Results
I support implementing government rules and regulations to reduce risk	3	9	18	0	1		13
I support a non-governmental approach to reducing risk	3	8	17	1	0		13
I support policies to prohibit development in areas subject to natural hazards	2	12	14	2	0		14
I support the use of tax dollars (local, state, or federal) to compensate landowners for not developing in areas subject to natural hazards	1	8	10	8	3		-4
I support the use of tax dollars to reduce risks and losses from natural disasters	5	17	8	0	0		27
I support steps to safeguard the local economy following a disaster event	9	15	7	0	0		33
I support improving the disaster preparedness of local schools	10	12	8	0	0		32
I support the disclosure of natural hazard risks during real estate transactions	9	8	12	1	0		25
I support cooperation among public agencies, citizens, non-profit organizations and businesses	13	11	7	0	0		37
I would be willing to make my home more disaster-resistant	6	14	12	0	0		26

12. Planning for natural hazards can help lessen the impact of these events. The following statements will help determine residents' priorities in planning for natural hazards in your county. Please tell us how important each one is to you.

Statements	Very Important	Somewhat Important	Neutral	Not Very Important	Not Important		Weighted Results
Protecting private property	16	11	4	0	0		43
Protecting critical facilities (e.g., transportation networks, hospitals, fire stations)	23	7	1	0	0		53
Protecting utilities and infrastructure	22	7	2	0	0		51
Protecting historic and cultural landmarks	6	12	11	2	0		22
Enhancing the function of natural features (e.g., streams, wetlands)	7	15	6	2	1		25
Strengthening emergency services (e.g., police, fire ambulance)	19	10	1	1	0		47

APPENDIX B: Documentation of Meetings

This appendix includes the following items:

- Signup sheets from the planning team meetings.
- Minutes from each of the participating jurisdictions' meetings as they discussed the mitigation actions they wanted to include in the plan.

SIGNUP SHEET – FIRST PLANNING TEAM MEETING:

Lyman County Hazard Mitigation Planning Meeting

April 22, 2025

NAME	REPRESENTING & Mileage
Shane Neiderwerder	West Central Electric co-op 10
Beau Johnson	County commissioner 18
Lawrence Thompson	County Commissioner 30
Kelli Houchin	County Auditor —
Ryan Huffman	County commission 21
Gary Dominiack	Oacoma 26
Bryan Mahot	Oacoma 26
Margo Mitchell	Lyman EM 0
Brent Kolstad	SDOEM 240
Stacie Gran	DOE 0
Walter Floyd	Any Super. 0
Jaica Kenzy-Adamson	Oacoma 26
Timothy Feliciano	County Commissioner 28
Shannon Vierect	District III
Eric AMBROSON	DISTRICT III
John Clem	District III

SIGNUP SHEET – SECOND PLANNING TEAM MEETING:

Lyman County Hazard Mitigation Planning Meeting

May 27, 2025

NAME	REPRESENTING & Mileage
Kelli Houchin	Lyman Aud 0
Ryan Huffman	Lyman County Commission 21
Dean Johnson	Lyman County Commission 18
Lawrence Thompson	Lyman Co Commission 32
Timothy Feliciano	Lyman Co Commissioner 28
Zane Reis	Lyman Co Commission 30
Stacy Gran	DOE
Charlie Gran	Kennebec
Ruth Herman	Reliance - 15
Shelly Long	Kennebec, 9
Melissa Stalker	Presho - 9
Walter Floyd	Lyman County
Johan Uthe	City of Presho 9miles
Cody Uthe	City of Presho 9miles
[illegible]	Kennebec 11mi.
[illegible]	Kennebec 15mi.
Angela Ehlers	Presho 20miles
Kit Talich	WCEC 42 miles
Gary Dominack	Oacoma 25 mi.
Margo Mitchell	Lyman EM
Shannon Viereck	District III
John Olson	Planning District III

SIGNUP SHEET – FINAL PLANNING TEAM MEETING:

Lyman County Hazard Mitigation Planning Meeting

July 22, 2025

NAME	REPRESENTING	Miles Traveled
Kalli Houchin	Lyman Auditor	0
Gary Dominiack	Odoma	30
Taica Kenzy-Adamson	Oacoma	30
Margo Mitchell	Lyman EM	0
Avery Thompson	Lyman Co Commissioner	
Ben Johnson	Lyman Co Commissioner	
Timothy Feliciano	Lyman Co. Commissioner	
Zane Reis	Lyman Co Commissica	30
Keith Herman	Reliance	15
John Clem	Planning District III	

LYMAN COUNTY MINUTES

The Lyman County Commissioners met in regular session in the Conference Room in the Courthouse at Kennebec, South Dakota, June 10, 2025, at 8:30 a.m. with the following members present: Chairman Zane Reis, Beau Johnson, Ryan Huffman, Lawrence Thompson, Timothy Feliciano and Auditor Kalli Houchin. Also present was Alta Copeland.

CALL TO ORDER:
Chairman Reis called the meeting to order with the pledge to the flag.

ADOPT AGENDA:
Motion by Johnson, second by Feliciano to adopt the agenda. All voting aye.

APPROVE MINUTES:
Motion by Huffman, second by Thompson to approve the minutes of May 27, 2025. All voting aye.

APPROVE BILLS:
Motion by Feliciano, second by Johnson to pay the following bills. All voting aye. **(DELETED)**

AUDITOR'S ACCOUNT & ROD REPORTS:
Motion by Thompson, second by Johnson to approve the following May 2025 reports. All voting aye.

AUDITOR'S ACCOUNT: Cash on hand: $1,377.04; Checks in Treasurer's possession less than 3 days old: $16,284.22; Credit Card Sales: $1,4229.75; BankWest Checking: $30,918.72; BankWest Savings: $2,398,324.84; 1st Dakota Bank CD's: $1,866,294.90; First Fidelity CD's: $719,246.62 for a total of **$5,033,876.09**. **General Fund**: $2,989,911.69; **Special Revenue Funds**: Road & Bridge Assigned: $444,131.56; Secondary Road Restricted: $19,065.23; 911 Fund: $539.84; Fire: $134,998.80; Emergency Management: $33,874.01; Domestic Abuse: $5,920.00; 24/7 Sobriety: $24,901.16; Register of Deeds M&P: $68,804.81; Rural Access Infrastructure: $352,788.94; **TIF**: $161,624.74 **Trust & Agency Funds**: $797,315.31. Of this amount the following entities received: State of SD: $62,370.18; School Districts: $604,648.75; Cities & Towns: $59,179.76; Townships: $15,836.46; SC Water District: $413.74; WR/LJ Water District: $3,349.04; Vivian Sanitary Dist.: $158.24; Lyman County Ambulance District: $22,420.20 for a total of **$768,376.37.**

REG. OF DEEDS FEES: $4,448.50 less $102.00 sent to SDACO for the Reg. of Deeds Modernization & Preservation Fund.

DEPUTY AUDITOR:
Auditor Houchin informed the board that she had hired someone for the Deputy Auditor/HR Director position. Motion by Huffman, second by Johnson to approve hiring Meggan Brodrecht as Deputy Auditor/HR Director at a rate of $38,437.50 a year (less $60.00 for the first six months for probationary period) effective June 3rd. All voting aye. Motion by Feliciano, second by Thompson to change and update BankWest signature cards and online web banking capabilities to add Deputy Auditor Meggan Brodrecht to the Lyman County Treasurer Select Checking Plus and Preferred MMDA effective June 10, 2025. All voting aye.

AFLAC DENTAL:
Auditor Houchin discussed differences between Delta Dental and a proposed plan for Aflac Dental for insurance. Discussed were cost and plan differences between Delta Dental and Aflac Dental. Board consensus is to remain with Delta Dental.

COUNTY WEBSITE:
Auditor Houchin discussed companies reaching out regarding updating the county website and changes with the Department of Justice regarding ADA Compliance. Houchin informed the board that the current website is ADA compliant, may look a little outdated but is functional for the purposes of the County. Board consensus is to keep the current website as there are no current issues with the website.

HAZARD MITIGATION PLAN PROJECTS:
Projects for the Hazard Mitigation Plan Update were discussed. Motion by Huffman, second by Avery to approve the following projects for the Hazard Mitigation Plan: Consider implementing Zoning in the County; Generator acquisition for the courthouse; Implement traffic control procedures to keep drivers off local roads when I-90 is closed; Continue participation in the National Flood Insurance Program; Improve drainage along county and township roads; Remove vegetation from Medicine Creek to allow better flow; Improve roads in the vicinity of the White River; Continue and enhance prescribed burning plan with landowners to reduce the spread of cedar trees; Construct a tornado shelter in Vivian (primarily for travelers). All voting aye.

HWY/WEED DEPT:
Supt. Walt Nagel was present. Motion by Feliciano, second by Johnson to approve an approach permit for Larry Haak in the SW1/4 of Section 8, Township 105, Range 76. All voting aye. Discussion was held regarding Tribal Roads and County Roads. Information regarding previous agreements between the Lower Brule Sioux Tribe and Lyman County and any easements recorded in the Register of Deeds office will need to be looked into further. Alta Copeland discussed the designation of the potential Minimum Maintenance roads and the effect if would have on landowners as well as history of roads from Dorman and Kennebec Townships. Also discussed was graveling, blading, mowing, work on County Road 19 and culverts on County Road 9. Nagel left the meeting.

CORRESPONDENCE:
Auditor Houchin informed the board that the Courthouse Risk Assessment with Rick Miller will take place on Tuesday, June 24th at 10:30 a.m.

EXECUTIVE SESSION:
10:09 a.m. Motion by Johnson, second by Thompson to enter into executive session per SDCL 1-25-2 (1) to discuss personnel matters. All voting aye.
10:32 a.m. Chairman Reis declared the board out of executive session. No action was taken.

ADJOURNMENT:
Motion by Huffman, seconded by Johnson to adjourn until June 24, 2025 at 8:30 a.m. All voting aye.

_____ ATTEST: _____
Zane Reis, Chairman — Kalli Houchin
Lyman County Commission — Lyman County Auditor

KENNEBEC MINUTES

The Kennebec Town Board of Trustees met in a scheduled session on June 10, 2025, at the Main Street Plaza Suite 5. Present; Jared Schelske; Colleen Venter, Lindsey Oldenkamp, and Brian Miller. Also, Present were Charlie Gran, Town Superintendent, Shelly Long, Finance Officer. Not present Tom Hills.

CALL TO ORDER: Meeting was called to order by Chairman Schelske at 7:01 pm.

PLEDGE OF ALLEGIANCE: Lead by Chairman Schelske.

MOTIONS: All motions are approved unanimously unless otherwise noted.

ADOPT AGENDA: Motion by Miller, second by Venter to adopt the agenda.
CONFLICT OF INTEREST: None.
APPROVAL OF MINUTES: Motion by Venter, second by Miller to approve May 6, 2025, regular meeting minutes

CLAIMS: Motion by Oldenkamp, second by Venter to approve Income and expenses as presented.

May 2025 INCOME (***DELETED***)

May 2025 CLAIMS (***DELETED***)

Licenses & Permits:
Special Permit & Building permit: Motion by Oldenkamp, second by Miller to approve a special permit for Spiking permit for Kennebec Alumni at the Community Center on June 14th, 2025.
And Building Permit for Marlene Reuman

Motioned by Oldenkamp and second by Venter to approve the Canvassing of the 2025 Election results with Hunter Schindler receiving 46 votes and Jared Schelske receiving 17.

OLD BUSINESS:
Motioned by Venter, seconded by Miller to approve giving $10K to the Kennebec Elementary Playground for updates and new playground equipment.

NEW BUSINESS
Charlie Gran and Shelly Long gave the board the Possible Hazard Mitigation Projects/Actions and Surveys for the upcoming year.

Adjournment: Motion by Oldenkamp, second by Venter to adjourn the meeting at 7:50pm.

NEXT MEETING: Monday July 14th, 2025 at 7:00 p.m.

_____ _____

Jared Schelske; Chairman, Town Board of Trustees Attest: Shelly Long, Finance Officer

OACOMA MINUTES

The Oacoma Town Board met in regular session at 7:00 P.M. on June 2, 2025, in Meeting Room #2 at the Oacoma Community Center. Board members present were Gary Dominiack, President; Richard Kirkpatrick, Vice President; Robin Hutmacher; and Angie Zeman. Absent: Justin Rabern. Also present were Jaica Kenzy-Adamson, Finance Officer; and Coledon and Brianna Eimers.

MINUTES
Motion by Zeman, second by Kirkpatrick, to approve the minutes of the regular meeting on May 19, 2025. Motion carried.

PUBLIC COMMENTS
Time was reserved for public comments pursuant to SDCL 1-25-1.
Coledon Eimers was present to discuss driveway access to a lot he is interested in purchasing. Dominiack stated he and Bryan Mahrt visited the projected area and agreed to the placement of a gravel street. The city will do the dirt work and maintain up to the lot line.

RESOLUTION 2025-04
Dominiack discussed the resolution being a necessary part of the loan funds received for the Downtown Lift Station Project. Motion by Hutmacher, second by Kirkpatrick, to Adopt Resolution 2025-04: RESOLUTION GIVING APPROVAL TO THE ISSUANCE BY THE TOWN OF OACOMA, SOUTH DAKOTA, OF ITS CLEAN WATER SALES TAX REVENUE BOND, SERIES 2025, IN AN AMOUNT NOT EXCEEDING $1,657,000, TO FINANCE, DIRECTLY AND INDIRECTLY, CONSTRUCTION OF IMPROVEMENTS TO THE WASTEWATER SYSTEM OF THE TOWN; APPROVING THE FORM OF LOAN AGREEMENT AND SALES TAX BOND; AUTHORIZING THE SALE OF SAID SALES TAX BOND; PLEDGING SALES TAX REVENUES FOR SERVICING DEBT ISSUED HEREUNDER; AND THE MANNER OF EXECUTION AND ISSUANCE OF SAID BOND. (Resolution published separately.)

HAZARD MITIGATION PROJECTS
Dominiack presented an updated potential hazard mitigation projects/actions for the members to review. Discussion to add or remove any items was held. Motion by Zeman, second by Hutmacher, to approve the list of possible hazard mitigation projects/actions as is. Motion carried.

PLANNING AND DEVELOPMENT DISTRICT III
Motion by Kirkpatrick, second by Zeman, to approve the Extension to Joint Cooperative Agreement with Planning and Development District III for 2026 with annual dues of $718. Motion carried.

PERSONNEL
Dominiack congratulates Marco Castillo for passing his Wastewater Treatment Class I exam. Motion by Hutmacher, second by Kirkpatrick, to increase the hourly wage rate for Utilities Technician, Marco Castillo, by $0.25 effective May 8, 2025. Motion carried. The new wage rate will be $23.25.

Lot R-9-A
Discuss was held regarding selling Lot R-9-A to Lake Francis Case Development. The town would sell the lot LFCD for $21,000 with the intent of placing a governor's house on it. Motion by Zeman, second by Hutmacher, to approve the selling of Lot R-9-A for $21,000 to Lake Francis Case Development with the intent of a governor's house. Motion carried.

OTHER DISCUSION
Dominiack mentioned that during the City-Wide Clean-up the old outhouses near the ball fields were removed.

PAY BILLS
The following bills were approved for payment: (DELETED)

ADJOURNMENT
Motion by Kirkpatrick, second by Rabern, to adjourn. Motion carried. The next regular meeting is scheduled for Monday, June 16, 2025, beginning at 7:00 P.M. in Meeting Room #2 at the Oacoma Community Center.

Gary Dominiack, President

Jaica Kenzy-Adamson, Finance Officer
Published once on June 11, 2025, at a cost of $__ and may be viewed free of charge at https://www.sdpublicnotices.com/.

PRESHO MINUTES

Pursuant to due call and notice thereof, a Regular Meeting of the Common Council of the City of Presho, South Dakota was held at Presho City Hall in said City on Monday, July 7, 2025, at 7:00 p.m. Mayor Angela Ehlers and the following Council members were present: Austin Berry, Betsy Brodrecht, Carl Brakke, Kimm Schweitzer, Emily Freeman and Grady Floyd. City staff present: Animal Control Officer Austin Berry & Pool Manager Kelli Tassler and Pat McNaughton, Chamber Director. Finance Officer Melissa Slaba and John Uthe, Public Works Superintendent.

Call to Order: Meeting was called to order by Mayor Ehlers at 7:00 p.m.

Public Input: No public input was received.

Conflict of Interest: None noted

Motions: All motions are approved unanimously unless otherwise noted.

Additions to Agenda: New business: Hazard Mitigation; Building Permit.

Adopt Agenda: Motion by Berry, second by Floyd, to adopt the amended agenda. Motion carried.

Approval of Minutes: Motion by Schweitzer, second by Freeman to approve the June 2, 2025, regular meeting minutes. Motion carried.

Approve Report of Cash Transactions: Motion by Brakke, second by Schweitzer to approve the report of cash transactions for the month of June, 2025. Motion carried.

Accounts Payable: Motion by Brakke, second by Freeman to approve payment of the following claims (*DELETED*)

Public Forum: None noted.

Chamber Report: Pat McNaughton, Chamber Director reported the Amateur Basketball Tournament is finished and closed for this year. The Chamber will use earned funds to update the chamber website with Tyrelle Brakke. The Chamber held their city wide rummage sale; working on plans for next year. The first Music 'N More in the Park was rained out and moved to Jet Lanes. The next concert was held Thursday, July 10th with Emry Kaiser performing. The final concert will be August 7th with the Farmwives of Lyman County performing. The lifeguards will have a dunk tank and inflatables. There will be a free-will offering supper with funds donated to the pool. The Chamber will host a golf tournament on Friday, July 18th. Talked about going back to caps for hunting season to sell. Working on raising funds for blue lights for the Pine Tree in Merchant Park. The tree will be a Memorial Tree.

Street & Water Department Reports: John Uthe, Public Works Superintendent, reported he has been hauling metal to Pierre. Talked with RP&H (Gail Raymond) on concrete work at Floyd residence. Motion by Brakke, second by Berry to make an application payment #1 in the amount of $57,237.30 for the 2nd street project. Motion passed with Floyd absent. Motion by Brakke, second by Berry to proceed with the storm sewer drain project at West 4th Street to intersect with main street with preferred vendor Gail Raymond (RP&H Construction). Motion passed. Floyd absent. Motion by Berry, second by Schweitzer, the city will be responsible for mowing the ditches on the north side of Highway 248 within city limits. Motion passed. Floyd absent.

Pool Report: Kelli Tassler, Pool Manager, reported the pool was open for 16 days with a total of 452 swimmers. The lifeguards held a glow-in-the-dark pool party on July 7th as a fundraiser. They will have car was on Friday, July 25th: $15/per car; $20 for extreme dirty. The guards will hold a sand volleyball tournament on Saturday, July 26th with teams for ages 12-18 and 18+. They will have a dunk tank at the final Music 'N More in the park event on August 7th. The pool will be open from 1pm to 6pm on Saturday and Sunday.

Animal Control Report: Austin Berry, Animal Control Officer, reported he put up a new fence and will be adding a wooden gate to the animal pound outside of the city shop.

Library: Avany Langdeau, Librarian, provided a written report. The library board recommended Amy McClanahan to replace Melissa Slaba on the board for a two-year term. Motion by Brakke, second by Berry to approve McClanahan on the library board. Motion passed. Floyd absent.

OLD BUSINESS:

Executive Session: Sewer Project Legal Issue: Motion by Brodrecht, second by Berry to enter into executive session at 7:03 pm to discuss SDCL 1-25-2.3 Legal Counsel. Mayor Ehlers declared out of executive session at 7:38 pm. Motion by Brakke, second by Freeman to proceed with legal action regarding the construction issues with the wastewater project on main street. Motion approved.

Airport Update: Signed the agreement for the Master Plan.

NEW BUSINESS:

Spiking Permit: Motion by Brodrecht, second by Schweitzer to approve the spiking permit for the Presho Volunteer Fire Department Street Dance on July 26th. Motion approved. Floyd absent.

Building Permit - Muirhead: Motion by Schweitzer, second by Freeman to approve Scott & Julie Muirhead building permit. Motion approved. Floyd Absent.

Building Permit - Brakke: Motion by Brodrecht, second by Berry to approve Carl Brakke building permit. Motion approved with Brakke abstaining. Floyd absent.

Hazard Mitigation: Discussed the Hazard Mitigation Project list. Council members have no objections.

Adjournment: Mayor Ehlers declared meeting adjourned at 9:10 pm.

Next Regular Meeting: August 4, 2025 at 7:00 p.m.

/s/ MAYOR: Angela Ehlers
/s/ FINANCE OFFICER: Melissa Slaba

RELIANCE MINUTES

The Town of Reliance held their regular town board meeting **June 2, 2025** @ 7:00 PM. Beth Herman, Dale Lulf, Mike Hoffer, Jr., Shane Reis, Emily Easton, and Scott Schaefer were present.

Motion was made by Hoffer, second by Lulf, to approve read minutes of May 5, 2025, carried.

No new business was added to the agenda.

No attorney was appointed at May meeting. The town has found out that Kody Kryss is no longer working for Riter Rogers, LLP and Emily Easton came to introduce herself to the Town Board.

Motion was made by Dale Lulf, second by Mike Hoffer to appoint Emily Eason as the new town attorney, carried.

Emily Easton introduced herself to the Town of Reliance. She asked board to bring her up to speed with town nuisances and gave options how to move forward. Beth will provide info to her and two letters will be sent out in the next month on past nuisances. The board took a brief break to drive Ms. Easton around Reliance to show her nuisances in question and the town of Reliance in general. Ms Easton shared info on what other small towns do and shared some different ways of approaching nuisances to have success in cleaning them up. She will be working with Beth on current nuisances and how to move forward to enforcing specifically nuisances. The board thanked her for taking the time to come to the board meeting.

Board asked where things were at with building permit for Jesse Schindler. Beth informed that she has sent an email but will reach out with a call or text to see if he will be submitting said permit.

Discussion was given on gravel for streets especially Railway and Dirks by Jeff Williamson and Dam. Scott will get some gravel in town and will get it put down.

Discussion was given on dumpster. Scott said it is definitely being used this year and container had been dumped two times already.

Shane informed property of Bruce Hanson has been purchased by RACD and Fire Department will be bringing it down for a training. Reis also informed board that Todd Mills had purchased lot on 6th Avenue between Casey Hupp and Keith Bloomquiest. Fire Department will help with cleanup of this property as well.

Board would like to thank crew of C & B Equipment, from Chamberlain, for donating time fixing playground area at park by museum. The donation of time was very much appreciated.

Discussion was given on estimate given from Comstock for $20,000 replace town hall roof. With this being the only estimate given Dale Lulf moved and Mike Hoffer gave second to hire Comstock Construction to get roof completed.

Discussion was given on furnace/air conditioning system in the town hall. Motion was made by Mike Hoffer, second by Dale Lulf to have Chilson Heating install new air conditioning/heating system.

Beth discussed flushing sewer lines for the Town of Reliance. It has been 6 years since Brad Manning Digging did the flushing. Borah Septic Flush has recently purchased Mannings business and has presented quote for total cleaning for approximate $8500. Motion by Dale Lulf, Second by Mike Hoffer to Borah Septic to flush sewer lines.

Beth reported she attended May Hazard Mitigation meeting in Kennebec with John Clem. The board would like to keep the following items on the list for possible projects for Reliance Generator, Construct Tornado Shelter, and Replace clay sewer lines.

JD Hanson talked to board member about donating a permanent burn pit at camping site location. Board said that would be great.

The board discussed fixing a few more culvert issues in town. They will reach out to Brad Rassmussen and have him come look at the culverts in question. The culvert in front of Jerry Marsh residence and in between the park and Jeff Williamson.

Board wanted to make sure town members were aware that GF&P is still working at capturing beavers.

Motion made by Hoffer, second by Lulf to approve paying the bills, carried.

With no more business motion was made by Lulf, second by Hoffer to adjourn, carried.

General Fund $283,004.12 + $21,712.20 Revenue - $8212.68 Expenses = $296,503.64. Equipment Fund Capital Outlay = $50,000. 3% Sales Tax $42,81.22 + $803.41 Revenue = $43674.63 Sewer Fund $142,693.61 + $2686.50 Revenue - $78.52 - Expenses = $145,201.59, Sewer Fund Capital Outlay = $77,500, Total Funds $612,879.86.

APPENDIX C: History of Previous Hazard Occurrences

This section provides details about hazard events that have impacted Lyman County in the past, beginning with a table showing the major disaster declarations in which Lyman County was part of the designated disaster area. The next several pages are a comprehensive list of weather-related hazard events recorded in the county from the National Climatic Data Center's Storm Events Database. The section ends with several tables showing crop loss to Lyman County farmers.

Major Disasters

Table C.1 lists all the events since 1970 that resulted in a major disaster declaration in which Lyman County was part of the designated area.

Table C.1 – Major Disaster Declarations Affecting Lyman County

Dec #	Declaration Date	Type	Primary Damage Impact
3015	Jun 1976	Drought	
764	May 1986	Severe Storms, Flooding	
1045	Mar 1995	Severe Winter Storm	
1052	May 1995	Flooding	
1156	Feb 1997	Severe Winter Storm	
1173	Apr 1997	Severe Flooding	
1774	Jul 2008	Severe Storms, Flooding	Roads and bridges
1886	Mar 2010	Severe Winter Storm	Emergency Protection
1915	May 2010	Flooding	Roads and bridges
1984	May 2011	Flooding	Roads
4233	Jul 2015	Severe Storms, Tornadoes	Utilities
4440	Jun 2019	Severe Winter Storm; Flooding	Roads and bridges
4463	Sep 2019	Severe Storms, Flooding	Roads and bridges
4467	Oct 2019	Severe Storms, Tornadoes, Flooding	Roads and bridges

Sources: www.fema.gov/disasters/grid/state-tribal-government/72; www.fema.gov/data-feeds/openfema-dataset-public-assistance-funded-projects-summaries-v1

Significant Hazard Events

Table C.2 is a list of significant hazard events reported for Lyman County from 1960 through 2024, as recorded in the National Climatic Data Center's Storm Events Database. The National Climatic Data Center receives storm data from the National Weather Service, which gets information from a variety of sources, including county, state and federal emergency management officials, local law enforcement officials, National Weather Service damage surveys, the insurance industry, and the general public.

The Storm Events Database is useful, but it does have limitations. One problem is that records for certain hazard events, including winter storms and blizzards, only go back to the 1990s. Another issue is that damage amounts in some cases are estimates and for certain types of events, such as winter storms, the data is tracked by forecast zone and thus does not lend itself to analysis at the county level. The database also contains a preponderance of records from the last few decades. This is due to an inconsistency in data reporting over the years and does not indicate an increase in the frequency of events affecting the county.

The table includes the following information about the events:

- Type of event.
- Descriptive information - details are provided for some of the more noteworthy events back to the 1990s.
- Magnitude - the magnitude of tornadoes, hail, thunderstorm winds, and high wind events is given. For events occurring since 2000 the speed is represented by either the highest measured wind gust (M) or the highest estimated wind gust (E). Note that speeds are shown in knots - multiply figure by 1.15 to get approximate speed in miles per hour.
- Property and crop damage - the National Weather Service uses all available data from the sources identified above in compiling the damage amounts, but the figures should be considered as broad estimates. In many cases, damage amounts are unknown.

Table C.2 – History of Significant Hazard Events in Lyman County

Date	Event Type	Event Description	Mag	Prop Damage ($1,000s)	Crop Damage ($1,000s)
6/26/1960	Tornado		F1	3	
7/25/1960	Tornado		F2	25	
6/21/1962	Tornado		F1		
9/3/1963	Hail		3.00 in.		
7/21/1967	Hail		1.75 in.		
5/25/1969	Hail		1.75 in.		
7/10/1969	Tornado		F1		
5/30/1970	Hail		1.75 in.		

Date	Event Type	Event Description	Mag	Prop Damage ($1,000s)	Crop Damage ($1,000s)
6/4/1971	Tornado		F2		
6/6/1971	Tornado		F0		
7/9/1971	Hail		2.75 in.		
7/9/1971	Tornado		F3		
7/9/1971	Tornado		F3		
7/30/1972	Tornado		F0		
7/1/1973	Hail		1.00 in.		
5/19/1974	Thunderstorm Wind				
5/20/1974	Hail		4.50 in.		
7/2/1974	Thunderstorm Wind		52 kts.		
6/19/1975	Hail		1.75 in.		
4/13/1976	Thunderstorm Wind		61 kts.		
5/18/1977	Thunderstorm Wind		71 kts.		
9/8/1977	Thunderstorm Wind				
7/9/1979	Hail		1.00 in.		
7/14/1979	Thunderstorm Wind				
6/26/1980	Thunderstorm Wind		52 kts.		
7/3/1980	Thunderstorm Wind		65 kts.		
8/13/1980	Thunderstorm Wind		52 kts.		
8/20/1980	Thunderstorm Wind				
6/23/1981	Hail		1.00 in.		
7/20/1982	Tornado		F0		
7/20/1982	Tornado		F0		
7/20/1982	Tornado		F0		
7/20/1982	Tornado		F0		
8/23/1982	Thunderstorm Wind				
7/18/1983	Thunderstorm Wind		65 kts.		
8/18/1983	Thunderstorm Wind		56 kts.		
8/26/1983	Thunderstorm Wind		54 kts.		
7/25/1984	Thunderstorm Wind		70 kts.		
5/28/1985	Hail		1.00 in.		
5/28/1985	Tornado		F0		
7/16/1985	Hail		1.75 in.		
7/16/1985	Thunderstorm Wind		62 kts.		
7/17/1985	Thunderstorm Wind		69 kts.		
9/2/1985	Thunderstorm Wind		52 kts.		

Date	Event Type	Event Description	Mag	Prop Damage ($1,000s)	Crop Damage ($1,000s)
5/8/1986	Tornado		F0		
6/6/1986	Thunderstorm Wind		56 kts.		
8/6/1986	Hail		2.50 in.		
8/6/1986	Thunderstorm Wind				
7/6/1987	Tornado		F0		
7/6/1987	Tornado		F0		
7/6/1987	Tornado		F0		
7/6/1987	Tornado		F0		
7/6/1987	Tornado		F0		
7/6/1987	Tornado		F0		
7/6/1987	Tornado		F0		
7/6/1987	Tornado		F1		
7/6/1987	Tornado		F1	3	
7/9/1987	Tornado		F1	3	
7/20/1987	Hail		1.50 in.		
8/2/1987	Thunderstorm Wind		54 kts.		
8/5/1987	Tornado		F0		
8/5/1987	Tornado		F0		
8/5/1987	Tornado		F0		
8/5/1987	Tornado		F1		
8/5/1987	Tornado		F2	250	
5/25/1988	Hail		1.75 in.		
6/12/1988	Thunderstorm Wind				
6/11/1990	Thunderstorm Wind		52 kts.		
6/16/1990	Hail		1.75 in.		
8/2/1991	Hail		1.00 in.		
6/16/1992	Thunderstorm Wind		61 kts.		
6/4/1994	Thunderstorm Wind	Winds destroyed a tin shed and overturned a camper, injuring an occupant. Numerous tree branches were broken.	61 kts.	50	
1/17/1996	Blizzard				
1/24/1996	Heavy Snow				
1/28/1996	Extreme Cold				
2/1/1996	Extreme cold				
2/10/1996	High Wind		57 kts.		
2/26/1996	Heavy Snow				
3/24/1996	Blizzard				
4/17/1996	Thunderstorm Wind		52 kts.		

Date	Event Type	Event Description	Mag	Prop Damage ($1,000s)	Crop Damage ($1,000s)
4/24/1996	High Wind		70 kts.		
4/25/1996	High Wind		60 kts.		
5/18/1996	Hail		1.75 in.		
7/5/1996	Hail		1.00 in.		
7/7/1996	Hail		1.00 in.		
7/7/1996	Thunderstorm Wind		52 kts.		
7/20/1996	Thunderstorm Wind		61 kts.		
8/1/1996	Hail		1.75 in.		
10/29/1996	High Wind		58 kts.		
11/16/1996	Heavy Snow				
11/19/1996	Winter Storm				
12/14/1996	Heavy Snow				
12/16/1996	Blizzard				
1/3/1997	Winter Storm				
1/9/1997	Blizzard				
1/15/1997	Blizzard				
2/3/1997	Winter Storm				
3/21/1997	Flood				
4/1/1997	Flood				
4/4/1997	Blizzard				
5/1/1997	Flood				
6/3/1997	Flood				
6/20/1997	Hail		2.75 in.		
6/20/1997	Thunderstorm Wind	Several supercell thunderstorms moved southeast along a strong warm front across southern Stanley, Jones, Hughes, Lyman, and Buffalo counties. Hail up to the size of baseballs and winds gusting to 80mph damaged and destroyed thousands of acres of crops, and caused substantial property damage. The most extensive damage occurred in the areas of Draper, Vivian, Presho, and Kennebec where there was a 20 mile long and 4 mile wide path of destruction.	70 kts.		
11/2/1997	High Wind		50 kts.		
3/6/1998	Heavy Snow				
7/2/1998	Hail		1.75 in.		
11/9/1998	Blizzard				
5/6/1999	High Wind		50 kts.		
5/9/1999	Hail		1.50 in.		
5/9/1999	Thunderstorm Wind		56 kts.		
5/9/1999	Tornado		F0		

Date	Event Type	Event Description	Mag	Prop Damage ($1,000s)	Crop Damage ($1,000s)
5/9/1999	Flash Flood				
6/7/1999	Hail		1.50 in.		
7/18/1999	Hail		1.25 in.		
7/18/1999	Thunderstorm Wind		53 kts.		
2/19/2000	Wildfire	Due to extremely dry and windy conditions, a fire burned about 40 square miles of grassland between Kennebec and Lower Brule. The fire threatened a ranch but changed directions before anyone had to be evacuated.			
4/5/2000	High Wind		55 kts. M		
4/19/2000	High Wind		56 kts. M		
6/14/2000	High Wind		56 kts. M		
7/9/2000	Hail		1.75 in.		
9/3/2000	Hail		1.75 in.		
11/7/2000	Blizzard				
11/11/2000	Winter Storm				
12/10/2000	Heavy Snow				
12/16/2000	Blizzard				
12/28/2000	High Wind		51 kts. M		
1/29/2001	Winter Storm				
2/7/2001	Winter Storm				
2/24/2001	Winter Storm				
4/22/2001	Winter Storm				
6/9/2001	Thunderstorm Wind		52 kts. E		
6/18/2001	Hail		1.25 in.		
11/26/2001	Winter Storm				
2/11/2002	High Wind		53 kts. M		
3/14/2002	Winter Storm				
4/23/2002	High Wind		50 kts. M		
6/1/2002	Drought				
6/20/2002	Hail		2.00 in.		
6/24/2002	Thunderstorm Wind		61 kts. E		
7/7/2002	Thunderstorm Wind		52 kts. E		
7/24/2002	Hail		1.75 in.		
7/24/2002	Thunderstorm Wind		52 kts. E		
7/24/2002	Tornado		F0		
7/26/2002	Thunderstorm Wind		52 kts. E		
8/11/2002	Hail		1.75 in.		
8/21/2002	Hail		1.75 in.		

Date	Event Type	Event Description	Mag	Prop Damage ($1,000s)	Crop Damage ($1,000s)
11/29/2002	High Wind		50 kts. E		
1/15/2003	Heavy Snow				
6/9/2003	Hail		1.75 in.		
6/11/2003	Hail		4.50 in.		
6/11/2003	Thunderstorm Wind		78 kts. MG		
6/11/2003	Tornado		F0		
6/11/2003	Tornado		F0		
6/11/2003	Tornado		F0		
6/11/2003	Flash Flood				
6/24/2003	Thunderstorm Wind		61 kts. EG		
7/1/2003	Hail		1.75 in.		
7/1/2003	Flash Flood				
7/4/2003	Thunderstorm Wind		52 kts. EG		
7/5/2003	Thunderstorm Wind		52 kts. EG		
7/8/2003	Thunderstorm Wind		52 kts. EG		
11/3/2003	Heavy Snow				
11/12/2003	High Wind		50 kts. EG		
11/22/2003	Heavy Snow				
2/29/2004	Heavy Snow				
3/1/2004	Heavy Snow				
3/10/2004	High Wind		51 kts. MG		
5/11/2004	Thunderstorm Wind		51 kts. MG		
7/10/2004	Thunderstorm Wind		52 kts. EG		
7/27/2004	Thunderstorm Wind		52 kts. EG		
8/1/2004	Hail		1.25 in.		
8/1/2004	Thunderstorm Wind		52 kts. EG		
8/7/2004	Thunderstorm Wind		53 kts. MG		
8/15/2004	Thunderstorm Wind		52 kts. EG		
8/30/2004	Hail		1.00 in.		
10/29/2004	High Wind		50 kts. MG		
1/4/2005	Heavy Snow				
3/10/2005	High Wind		58 kts. MG		
5/13/2005	Flood				
5/17/2005	Thunderstorm Wind		52 kts. EG		
6/7/2005	Thunderstorm Wind		59 kts. MG		
11/8/2005	High Wind		57 kts. MG		

Date	Event Type	Event Description	Mag	Prop Damage ($1,000s)	Crop Damage ($1,000s)
11/27/2005	Blizzard	Snow began across most of central and north central South Dakota in the late afternoon and early evening hours of the 27th with significant snowfall accumulations occurring by the time the snow ended later in the day on the 28th. Strong northwest winds with gusts to 70 mph caused widespread blizzard conditions. Many roads, including Interstate-90, were closed due to the treacherous travel conditions, and several accidents were reported. Snowfall amounts included 11 inches near Presho and 21 inches at Kennebec.			
3/12/2006	Winter Storm				
3/20/2006	Winter Storm				
5/28/2006	Thunderstorm Wind		67 kts. MG		
6/1/2006	Drought				
6/14/2006	Thunderstorm Wind		61 kts. EG		
7/1/2006	Drought				
7/15/2006	Extreme heat	A record high of 112 degrees was set at Kennebec.			
7/28/2006	Extreme heat				
8/1/2006	Drought				
8/4/2006	Hail		1.25 in.		
8/9/2006	Hail		1.75 in.		
8/9/2006	Thunderstorm Wind		61 kts. EG		
8/20/2006	Hail		1.75 in.		
9/1/2006	Drought				
10/1/2006	Drought				
11/1/2006	Drought				
12/1/2006	Drought				
12/29/2006	Heavy Snow				
1/1/2007	Drought				
1/8/2007	High Wind		50 kts. EG		
2/1/2007	Drought				
2/24/2007	Winter Storm				
3/2/2007	Blizzard				
4/3/2007	Extreme cold				
6/6/2007	Thunderstorm Wind		52 kts. MG		
6/12/2007	Flash Flood				
7/17/2007	Thunderstorm Wind		52 kts. EG		
7/27/2007	Wildfire	A grassland fire 5 miles east and 2 miles south of Presho burned nearly 100 acres of hay and prairie grass.			
8/6/2007	Hail		1.00 in.		
8/6/2007	Thunderstorm Wind		61 kts. EG		

Date	Event Type	Event Description	Mag	Prop Damage ($1,000s)	Crop Damage ($1,000s)
1/29/2008	Extreme cold				
4/10/2008	Blizzard				
7/16/2008	Hail		2.75 in.		
7/16/2008	Thunderstorm Wind		52 kts. EG		
7/28/2008	Hail		1.75 in.		
7/30/2008	Hail		2.00 in.		
8/4/2008	High Wind		50 kts. MG		
8/13/2008	Hail		1.50 in.		
10/26/2008	High Wind		56 kts. MG		
11/6/2008	Blizzard				
12/13/2008	Blizzard				
12/14/2008	Extreme cold				
12/21/2008	Extreme cold				
2/11/2009	Flood	The White River rose above flood stage of 15 feet near Oacoma on February 11th. The river crested at 17.6 feet on February 13th before it fell below flood stage on the 15th.		5	
2/25/2009	Winter Storm				
2/27/2009	Heavy Snow				
3/30/2009	Blizzard				
4/4/2009	Winter Storm				
6/23/2009	Thunderstorm Wind		56 kts. MG		
6/26/2009	Thunderstorm Wind		56 kts. MG		
8/3/2009	Hail		1.75 in.		
8/3/2009	Thunderstorm Wind		54 kts. MG		
8/12/2009	Hail		1.50 in.		
12/23/2009	Blizzard				
1/6/2010	Blizzard				
1/7/2010	Extreme cold				
1/22/2010	Winter Storm				
3/8/2010	Flood				
4/13/2010	High Wind		58 kts. MG		
5/24/2010	Hail		1.00 in.		
5/24/2010	Thunderstorm Wind		52 kts. EG		
6/22/2010	Thunderstorm Wind		70 kts. EG		
7/3/2010	Thunderstorm Wind		70 kts. EG		
7/6/2010	Hail		1.25 in.		
7/10/2010	Hail		1.00 in.		

Date	Event Type	Event Description	Mag	Prop Damage ($1,000s)	Crop Damage ($1,000s)
7/10/2010	Flash Flood				
7/21/2010	Thunderstorm Wind		52 kts. EG		
7/23/2010	Hail	During the late afternoon and early evening hours, thunderstorms developed over portions of central South Dakota, severa of which quickly became severe. In particular, one very strong supercell thunderstorm moved southeastward across portions of Stanley, Jones, and Lyman counties. One of the hardest hit locations was the community of Vivian, where extremely large hail, destructive winds, and a brief tornado were reported. A record setting hailstone was ultimately discovered in Vivian, measuring 8.0 inches in diameter, 18.625 inches in circumference, and weighing 1.9375 pounds.	8.00 in.		
7/23/2010	Thunderstorm Wind		63 kts. MG		
7/23/2010	Tornado		EF0		
8/3/2010	Thunderstorm Wind		54 kts. MG		
9/14/2010	Hail		1.75 in.		
9/22/2010	Hail		1.00 in.		
10/26/2010	High Wind		54 kts. MG		
12/30/2010	Blizzard				
1/1/2011	Blizzard				
2/2/2011	Extreme cold				
2/16/2011	Flood	The White River fluctuated above and below flood stage for several days causing minor flooding to occur. The river gage southwest of Oacoma along Highway 47 crested at 21.4 feet or 6.4 feet above flood stage. Flooding of agricultural land occurred.			
2/20/2011	Blizzard				
3/2/2011	Flood	Minor flooding occurred along the White River. The river gauge southwest of Oacoma along Highway 47 crested at 16.9 feet or 1.9 feet above flood stage. Flooding of agricultural land occurred.			
4/14/2011	Winter Storm				
5/8/2011	Hail		1.75 in.		
5/8/2011	Thunderstorm Wind		70 kts. EG		
5/8/2011	Tornado		EF0		
6/6/2011	Thunderstorm Wind		61 kts. EG		
6/12/2011	Flood	Record snow melt along with much above normal May and June precipitation in the upper Missouri River basin resulted in record high releases on the Oahe Dam upstream. Due to the high releases, the Missouri River at Oacoma and Chamberlain rose to above the flood stage of 65 feet on June 12th, reaching a record of 74.6 feet on June 30th. Many people along the river, especially in Oacoma, had to build levees to hold back the rising water, and some locations were flooded. The flooding continued into July.			
6/20/2011	Flash Flood	Heavy rainfall of 5 to 7 inches brought flash flooding to eastern Lyman county. Many roads were flooded with some washed out. Two women died in two separate vehicles after driving into			

Date	Event Type	Event Description	Mag	Prop Damage ($1,000s)	Crop Damage ($1,000s)
		a washed out portion of a road. The accidents happened 9 miles north of Reliance on BIA 10 just north of the intersection with Highway 47.			
6/22/2011	Flood				
6/30/2011	Thunderstorm Wind		58 kts. MG		
7/1/2011	Flood				
7/9/2011	Hail		1.75 in.		
7/15/2011	Extreme heat				
7/21/2011	Thunderstorm Wind		61 kts. EG		
7/27/2011	Thunderstorm Wind		61 kts. EG		
8/1/2011	Flood				
8/2/2011	Thunderstorm Wind		52 kts. MG		
8/11/2011	Thunderstorm Wind	80 mph winds downed several grain bins, and knocked a few semis off of Interstate 90. The winds also downed some power lines and poles.	78 kts. EG		
9/20/2011	High Wind		54 kts. MG		
10/7/2011	High Wind		51 kts. MG		
2/28/2012	Blizzard				
4/15/2012	High Wind		67 kts. MG		
5/5/2012	Hail		1.50 in.		
5/10/2012	High Wind		55 kts. MG		
6/7/2012	Thunderstorm Wind		50 kts. MG		
6/13/2012	Hail		1.75 in.		
7/17/2012	Hail		1.00 in.		
7/19/2012	Thunderstorm Wind		52 kts. EG		
7/20/2012	Hail		1.00 in.		
7/20/2012	Thunderstorm Wind		52 kts. EG		
7/24/2012	Drought	A persistent upper level ridge of high pressure over the central U.S. allowed hot and dry air to hold its grip across the region. By July, severe drought conditions had expanded northward into South Dakota. Crops began to show stress, and cattle sell-offs occurred across the region. Range and pasture conditions were poor to very poor, with fire danger remaining a big issue. The severe drought continued into August.			
8/1/2012	Thunderstorm Wind		59 kts. MG		
8/1/2012	Drought	Drought was generally listed as severe to extreme for the area, and was being compared to the worst of the dust bowl years, though not yet over as long a time period. Stress on crops continued, even though August was less hot than July. Crop damage was quite evident. Many local governments had water use restrictions in place.			
9/1/2012	Drought	Drought conditions continued over all of southeast South Dakota. Rainfall for the month varied from around half to less than a quarter of normal. Stress on crops that prevailed over the growing season became even more evident with the start of harvest. Local governments continued to use water use			

Date	Event Type	Event Description	Mag	Prop Damage ($1,000s)	Crop Damage ($1,000s)
		restrictions in an effort to prevent serious water supply problems.			
10/1/2012	Drought				
10/17/2012	High Wind		67 kts. MG		
10/18/2012	High Wind		61 kts. MG		
11/1/2012	Drought				
12/1/2012	Drought	Drought conditions continued over all of southeast South Dakota in December. The effects of the drought on farmers and ranchers continued. Hunting was also affected, with low pheasant numbers, and disease in the deer population.			
12/9/2012	Blizzard				
1/1/2013	Drought				
2/1/2013	Drought				
2/10/2013	Blizzard				
3/1/2013	Drought				
4/1/2013	Drought				
4/8/2013	Winter Storm	14 inches of snow was recorded at Kennebec.			
5/1/2013	Drought				
5/27/2013	Hail		1.75 in.		
5/27/2013	Thunderstorm Wind		75 kts. EG		
6/12/2013	Thunderstorm Wind		50 kts. MG		
6/21/2013	Thunderstorm Wind		65 kts. MG		
6/22/2013	Thunderstorm Wind		56 kts. MG		
7/7/2013	Thunderstorm Wind		53 kts. MG		
7/20/2013	Thunderstorm Wind		58 kts. MG		
8/7/2013	Hail		1.25 in.		
8/7/2013	Thunderstorm Wind		52 kts. EG		
12/3/2013	Winter Storm				
12/7/2013	Extreme cold				
1/5/2014	Extreme cold				
1/16/2014	High Wind		53 kts. MG		
1/20/2014	High Wind		52 kts. MG		
1/26/2014	High Wind		61 kts. MG		
3/31/2014	Blizzard				
4/28/2014	Flood	Heavy rains of 3 to 4 inches fell across parts of southern Lyman County, resulting in the flooding of several roads between Interstate 90 and the White River south of Kennebec. No travel was advised on a road two miles south of Kennebec.			
6/16/2014	Hail		1.00 in.		
6/21/2014	Thunderstorm Wind		61 kts. EG		

Date	Event Type	Event Description	Mag	Prop Damage ($1,000s)	Crop Damage ($1,000s)
3/3/2015	Blizzard				
3/29/2015	High Wind		51 kts. MG		
5/28/2015	Hail		1.00 in.		
6/9/2015	Thunderstorm Wind		52 kts. EG		
6/19/2015	Thunderstorm Wind		90 kts. MG		
6/20/2015	Thunderstorm Wind	100 mph winds or higher caused severe damage to several buildings in Lower Brule and downed many trees. The roof of the courthouse sustained damage, and light poles at the football field were bent over. The Red Cross set up shelter for displaced people.	87 kts. EG		
6/22/2015	Thunderstorm Wind		61 kts. EG		
7/2/2015	Thunderstorm Wind		70 kts. EG		
7/12/2015	Thunderstorm Wind		50 kts. MG		
7/25/2015	Thunderstorm Wind		52 kts. EG		
7/27/2015	Thunderstorm Wind		52 kts. EG		
8/22/2015	High Wind		51 kts. MG		
9/7/2015	Hail		1.00 in.		
9/7/2015	Thunderstorm Wind		63 kts. MG		
9/16/2015	Thunderstorm Wind		52 kts. MG		
10/11/2015	High Wind		63 kts. MG		
11/18/2015	High Wind		62 kts. MG		
11/30/2015	Heavy Snow				
12/1/2015	Heavy Snow				
12/15/2015	Winter Storm				
12/25/2015	Winter Storm				
2/7/2016	High Wind		58 kts. MG		
2/19/2016	High Wind		56 kts. MG		
5/24/2016	Thunderstorm Wind		53 kts. MG		
5/26/2016	Hail		1.00 in.		
6/22/2016	Hail		1.75 in.		
7/6/2016	Thunderstorm Wind		73 kts. MG		
7/19/2016	Extreme heat				
7/26/2016	Hail		1.75 in.		
7/26/2016	Flash Flood	Heavy rain of 4 inches caused flash flooding of secondary roads and standing water in fields northeast of Presho.			
8/10/2016	Thunderstorm Wind		56 kts. EG		
8/14/2016	Thunderstorm Wind		56 kts. EG		
9/4/2016	Thunderstorm Wind		52 kts. EG		
9/8/2016	Hail		1.25 in.		

Date	Event Type	Event Description	Mag	Prop Damage ($1,000s)	Crop Damage ($1,000s)
11/5/2016	Wildfire	Very warm, dry, and breezy conditions contributed to a wildfire five miles northeast of Reliance that burned 750 acres. Firefighters from seven fire departments along with several farmers helped extinguish the fire. Some structures were threatened, and a three-mile stretch of SD Hwy 47 had to be closed for over five hours.			
12/16/2016	Heavy Snow				
12/18/2016	Extreme cold				
12/25/2016	High Wind		63 kts. MG		
1/24/2017	Heavy Snow				
3/7/2017	High Wind		57 kts. MG		
6/6/2017	Drought	An extremely dry May caused a severe drought by June. The South Dakota Drought Task force was activated, and CRP lands were opened up for grazing and haying.			
6/11/2017	Hail		2.50 in.		
6/21/2017	Thunderstorm Wind		54 kts. MG		
7/1/2017	Drought	Hot and dry conditions throughout July led to the continuation and expansion of drought across central and northeast South Dakota. By the end of July, extreme drought developed across parts of Lyman County. July was a hot month, accelerating the deteriorating conditions. Average monthly temperatures were from 3 to 5 degrees above normal, with a high of 107 degrees recorded at Kennebec.			
7/5/2017	Thunderstorm Wind		66 kts. MG		
7/17/2017	Thunderstorm Wind		63 kts. MG		
7/25/2017	Thunderstorm Wind		56 kts. EG		
8/1/2017	Drought				
8/12/2017	Hail		1.50 in.		
8/21/2017	Hail		1.50 in.		
8/21/2017	Thunderstorm Wind		56 kts. EG		
9/1/2017	Drought				
10/1/2017	Drought				
12/4/2017	Blizzard				
12/11/2017	High Wind		51 kts. MG		
12/13/2017	High Wind		54 kts. MG		
12/26/2017	Extreme cold				
12/31/2017	Extreme cold				
1/1/2018	Extreme cold				
1/21/2018	Heavy Snow				
2/8/2018	Heavy Snow				
2/18/2018	Heavy Snow				
3/5/2018	Blizzard				

Date	Event Type	Event Description	Mag	Prop Damage ($1,000s)	Crop Damage ($1,000s)
3/16/2018	Winter Storm				
4/13/2018	Blizzard	Life threatening conditions developed during this rare mid-April blizzard. Businesses and schools were closed, and I-90 was closed. Livestock losses were substantial as the storm hit during calving season. Total snowfall of 17 inches was measured at Kennebec and 12 inches at Presho.			
5/17/2018	Thunderstorm Wind		57 kts. MG		
5/24/2018	Hail		1.00 in.		
6/5/2018	High Wind		56 kts. EG		
6/8/2018	Thunderstorm Wind		62 kts. MG		
6/11/2018	Thunderstorm Wind		52 kts. EG		
6/21/2018	Flood	Heavy rain in southwest South Dakota from June 17 thru 20 caused flooding along the White River from Kadoka to the confluence of the Missouri River. The river rose about half a foot above flood stage at Oacoma for a short time on June 21st. Minor flooding of agricultural land occurred.			
6/27/2018	Hail		1.75 in.		
6/27/2018	Thunderstorm Wind		61 kts. EG		
6/27/2018	Flash Flood	Flash flooding from heavy rains occurred near Oacoma, with parts of roads underwater.			
7/18/2018	Hail		1.75 in.		
8/4/2018	Hail		1.00 in.		
8/6/2018	Hail		1.75 in.		
8/6/2018	Thunderstorm Wind		69 kts. MG		
8/23/2018	Thunderstorm Wind		54 kts. MG		
8/25/2018	Thunderstorm Wind		57 kts. MG		
8/27/2018	Hail		3.50 in.		
10/3/2018	High Wind		54 kts. MG		
1/18/2019	Heavy Snow				
1/27/2019	High Wind		63 kts. MG		
2/16/2019	Heavy Snow				
3/2/2019	Extreme Cold				
3/13/2019	Blizzard				
3/14/2019	Flood	A large ice jam formed along the White River around the Highway 47 Bridge. Water backed up behind the ice, causing hundreds of acres of agricultural land to be flooded. The high water inundated several outbuildings and neared a home along Highway 47. The river crested just shy of 25 feet on March 19th. With the continued snow melt, additional rises were recorded, resulting in a second crest of 20.5 feet and a flow of 37,900 cfs on March 25th, the 3rd highest flow on record at the location.			
3/26/2019	Flood				
4/1/2019	Flood				
4/11/2019	Blizzard				

Date	Event Type	Event Description	Mag	Prop Damage ($1,000s)	Crop Damage ($1,000s)
5/22/2019	Flood				
5/26/2019	Flood				
6/30/2019	Hail		1.00 in.		
7/3/2019	Hail		1.75 in.		
7/5/2019	Thunderstorm Wind		52 kts. MG		
7/20/2019	Thunderstorm Wind		56 kts. MG		
8/2/2019	Flash Flood				
8/6/2019	Hail		2.75 in.		
8/6/2019	Thunderstorm Wind		70 kts. EG		
8/9/2019	Thunderstorm Wind		61 kts. EG		
8/9/2019	Tornado		EF0		
8/15/2019	Hail		1.50 in.		
8/15/2019	Thunderstorm Wind		52 kts. MG		
8/17/2019	Hail		1.75 in.		
8/17/2019	Thunderstorm Wind		61 kts. EG		
9/10/2019	Hail		1.00 in.		
11/29/2019	Winter Storm				
12/1/2019	Winter Storm				
1/17/2020	High Wind		54 kts. MG		
6/6/2020	Thunderstorm Wind		66 kts. MG		
6/7/2020	Hail		1.50 in.		
6/7/2020	Thunderstorm Wind		70 kts. EG		
6/14/2020	High Wind		61 kts. MG		
6/20/2020	Hail		1.75 in.		
7/5/2020	Thunderstorm Wind		63 kts. MG		
7/6/2020	Thunderstorm Wind		72 kts. MG		
7/31/2020	Thunderstorm Wind		50 kts. MG		
8/8/2020	Thunderstorm Wind		52 kts. EG		
8/27/2020	Thunderstorm Wind		50 kts. MG		
10/24/2020	Heavy Snow				
10/31/2020	High Wind		51 kts. MG		
12/23/2020	High Wind		56 kts. MG		
1/14/2021	High Wind		61 kts. MG		
2/6/2021	Extreme cold				
3/14/2021	Heavy Snow				
3/29/2021	High Wind		57 kts. MG		

Date	Event Type	Event Description	Mag	Prop Damage ($1,000s)	Crop Damage ($1,000s)
4/12/2021	High Wind		50 kts. MG		
5/23/2021	Thunderstorm Wind		74 kts. MG		
6/1/2021	Drought				
7/1/2021	Drought				
7/5/2021	Thunderstorm Wind		50 kts. MG		
8/1/2021	Drought				
8/6/2021	Thunderstorm Wind		62 kts. MG		
8/27/2021	Thunderstorm Wind		53 kts. MG		
9/1/2021	Drought				
9/19/2021	High Wind		51 kts. MG		
10/1/2021	Drought				
10/13/2021	High Wind		54 kts. MG		
11/11/2021	High Wind		56 kts. MG		
11/13/2021	High Wind		70 kts. MG		
12/5/2021	High Wind		50 kts. EG		
12/9/2021	Heavy Snow				
12/15/2021	High Wind		56 kts. MG		
1/4/2022	High Wind		53 kts. MG		
1/5/2022	Extreme cold				
2/22/2022	Extreme cold				
3/1/2022	Drought				
4/1/2022	Drought				
4/13/2022	High Wind		55 kts. MG		
4/22/2022	High Wind		57 kts. MG		
5/1/2022	Drought				
5/12/2022	Hail		1.75 in.		
5/29/2022	Hail		1.00 in.		
6/11/2022	Thunderstorm Wind		50 kts. MG		
6/12/2022	Tornado		EFU		
6/20/2022	Thunderstorm Wind		50 kts. MG		
6/29/2022	Thunderstorm Wind		59 kts. MG		
7/3/2022	Thunderstorm Wind		61 kts. MG		
7/5/2022	Thunderstorm Wind		60 kts. MG		
7/18/2022	Excessive Heat				
8/2/2022	Thunderstorm Wind		54 kts. MG		
8/5/2022	Thunderstorm Wind		65 kts. EG		

Date	Event Type	Event Description	Mag	Prop Damage ($1,000s)	Crop Damage ($1,000s)
8/5/2022	Excessive Heat				
8/24/2022	Thunderstorm Wind		52 kts. MG		
10/1/2022	Drought				
10/13/2022	High Wind		56 kts. MG		
11/1/2022	Drought				
11/9/2022	Ice Storm				
12/1/2022	Drought				
12/13/2022	Heavy Snow				
12/14/2022	Blizzard				
12/21/2022	Blizzard/Extreme Cold				
1/2/2023	Heavy Snow				
1/30/2023	Extreme cold				
2/14/2023	High Wind		50 kts. MG		
2/22/2023	Heavy Snow				
2/24/2023	Extreme cold				
3/1/2023	High Wind		53 kts. MG		
3/31/2023	Blizzard				
4/3/2023	Heavy Snow				
4/29/2023	High Wind		51 kts. MG		
6/20/2023	Drought				
6/23/2023	Hail		1.25 in.		
6/24/2023	Thunderstorm Wind		71 kts. MG		
7/1/2023	Drought				
7/18/2023	Hail		1.50 in.		
7/18/2023	Thunderstorm Wind		87 kts. MG		
7/26/2023	Thunderstorm Wind		56 kts. MG		
8/4/2023	Hail		1.25 in.		
8/4/2023	Thunderstorm Wind		73 kts. MG		
8/21/2023	Excessive Heat				
9/2/2023	Excessive Heat				
9/4/2023	Thunderstorm Wind		51 kts. MG		
10/13/2023	Flood	Cedar Creek near Presho briefly rose above the 12 foot flood stage due to heavy rain in the area. Floodwaters impacted low-lying pasture lands.			
10/13/2023	High Wind		50 kts. MG		
12/4/2023	High Wind		54 kts. MG		
12/25/2023	Blizzard				

Date	Event Type	Event Description	Mag	Prop Damage ($1,000s)	Crop Damage ($1,000s)
1/12/2024	Extreme cold				
2/8/2024	Flood				
2/14/2024	Heavy Snow				
3/3/2024	High Wind		50 kts. MG		
4/1/2024	Heavy Snow				
4/16/2024	Thunderstorm Wind		52 kts. MG		
5/5/2024	High Wind		50 kts. MG		
5/24/2024	High Wind		54 kts. MG		
6/20/2024	Flash Flood				
7/13/2024	Excessive Heat				
7/14/2024	Thunderstorm Wind		66 kts. MG		
7/25/2024	Excessive Heat				
7/27/2024	Excessive Heat				
7/29/2024	Thunderstorm Wind		52 kts. EG		
8/2/2024	Excessive Heat				
10/5/2024	High Wind		52 kts. MG		
10/29/2024	Drought				
11/1/2024	Drought				
11/19/2024	High Wind		56 kts. MG		

Source: National Climatic Data Center Storm Events Database (www.ncdc.noaa.gov/stormevents)

Crop Loss

As described earlier, farmers typically protect themselves from the impacts of adverse weather by insuring their crops against losses through multi-peril crop insurance, which is underwritten by the Risk Management Agency. The tables on the next few pages provide data on indemnity payouts to Lyman County farmers for crop loss due to natural hazard events from 2000 through 2023. **Table C.3** shows indemnity payouts due to winter weather events. During the 2000 – 2023 period of analysis, winter weather-related payouts represented approximately 10% of all indemnity payouts in Lyman County.

Table C.3 – Crop Loss Due to Winter Weather

Year	Frost	Freeze	Cold Winter	Cold Wet Weather
2000			$155,822	
2001			$4,202,998	$28,013
2002	$10,574	$211,722	$89,626	$111,771
2003	$25,565	$21,562	$3,111	$2,750
2004	$7,937	$60,425	$79,665	$23,805
2005	$14,243	$71,608	$10,937	$655
2006	$37,602	$14,487	$38,011	
2007	$694	$18,010	$322,766	
2008		$8,187	$448,281	$21,634
2009	$88,810	$241,960	$969,580	$260,055
2010	$7,313		$153,578	$19,572
2011	$13,988	$201,400	$368,693	$210,327
2012	$2,592		$53	
2013	$23,093		$1,360,444	$30,889
2014	$44,840	$90,927	$287,656	$289,503
2015	$31,743	$18,931	$3,071,086	$16,198
2016	$7,415	$10,873	$50,847	$28,547
2017		$99,193	$415,683	$119,354
2018	$50,328	$10,910	$34,703	$134,372
2019		$8,479		$892,696
2020		$9,395	$2,025	$167,269
2021			$67,692	
2022				$3,998
2023		$11,247	$476,334	$411,364
Average Annual Payout	**$15,281**	**$46,221**	**$525,400**	**$115,532**

Source: USDA Risk Management Agency (www.rma.usda.gov/data/cause.html)

Table C.4 shows indemnity payouts due to severe summer weather. During the 2000 – 2023 period of analysis, summer storm-related payouts represented approximately 7% of all indemnity payouts in Lyman County.

Table C.4 – Crop Loss Due to Severe Summer Weather

Year	Hail	High Wind	Tornado
2000	$4,658	$74,606	
2001	$94,795		
2002	$21,204	$17,150	
2003	$101,866	$4,716	
2004		$211,065	
2005	$2,904	$35,601	
2006	$153	$138,695	
2007		$56,760	
2008	$144,564	$208,958	
2009	$65,968		
2010	$636,000	$29,337	
2011	$235,658	$61,046	
2012	$1,291,954	$43,176	
2013	$443,754	$1,140,402	
2014	$108,312	$818	
2015	$277,683	$28,888	
2016	$138,409	$391,781	
2017	$1,464,948	$62,249	
2018	$2,817,919	$4,503	
2019	$941,310		
2020	$200,700		
2021	$5,210	$85,332	
2022	$5,422	$742,698	
2023	$547,355	$30,082	
Average Annual Payout	**$397,948**	**$125,902**	**$0**

Source: USDA Risk Management Agency (www.rma.usda.gov/data/cause.html)

Table C.5 shows indemnity payouts due to flooding and excess moisture. During the 2000 – 2023 period of analysis, flood-related payouts represented about 15% of all indemnity payouts in Lyman County.

Table C.5 – Crop Loss Due to Flooding and Excess Moisture

Year	Flooding	Excess Moisture
2000		$128,380
2001		$814,871
2002		$5,215
2003		$153,797
2004		$237,488
2005	$17,736	$812,872
2006		
2007		$585,301
2008		$1,345,816
2009		$1,361,315
2010	$12,273	$4,346,664
2011		$4,044,267
2012		$264,482
2013		$363,277
2014		$1,384,723
2015		$104,084
2016		$79,776
2017		$7,185
2018		$860,637
2019	$12,963	$5,352,379
2020		$1,749,691
2021		$44,061
2022		$898,327
2023		$525,491
Average Annual Payout	**$1,791**	**$1,061,254**

Source: USDA Risk Management Agency (www.rma.usda.gov/data/cause.html)

Table C.6 shows indemnity payouts due to drought, heat, and hot wind events. During the 2000 – 2023 period of analysis, drought-related payouts accounted for just over 60% of all indemnity payouts in Lyman County, far more than any other type of hazard [12].

Table C.6 – Crop Loss Due to Drought, Heat, and Hot Wind

Year	Drought	Heat	Hot Wind
2000	$1,039,736	$11,235	
2001	$546,896	$22,804	
2002	$9,304,102	$48,958	
2003	$2,211,763	$77,051	
2004	$3,261,774	$708	
2005	$1,354,239	$287,778	$34,543
2006	$7,739,684	$15,024	$99,035
2007	$1,393,804	$460,002	$5,825
2008	$619,977	$11,405	$124,169
2009	$764,616	$2,723	
2010	$72,347	$2,368	$16,332
2011	$2,587	$108,851	$60,136
2012	$11,881,713	$103,514	
2013	$13,358,337	$16,131	
2014	$802,473		
2015	$5,287,472	$142	
2016	$840,552	$299,122	$2,497
2017	$8,207,636	$67,875	$3,668
2018	$525,580	$21,651	
2019			
2020	$600,595		
2021	$14,609,672	$387,294	
2022	$5,546,245	$116,137	
2023	$8,671,295	$430,508	
Average Annual Payout	**$4,110,129**	**$103,803**	**$14,425**

Source: USDA Risk Management Agency (www.rma.usda.gov/data/cause.html)

[12] Drought is the costliest natural hazard statewide for South Dakota farmers. From 2000 through 2017, drought payouts accounted for approximately 50% of all indemnity payouts in the state.

APPENDIX D: References

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