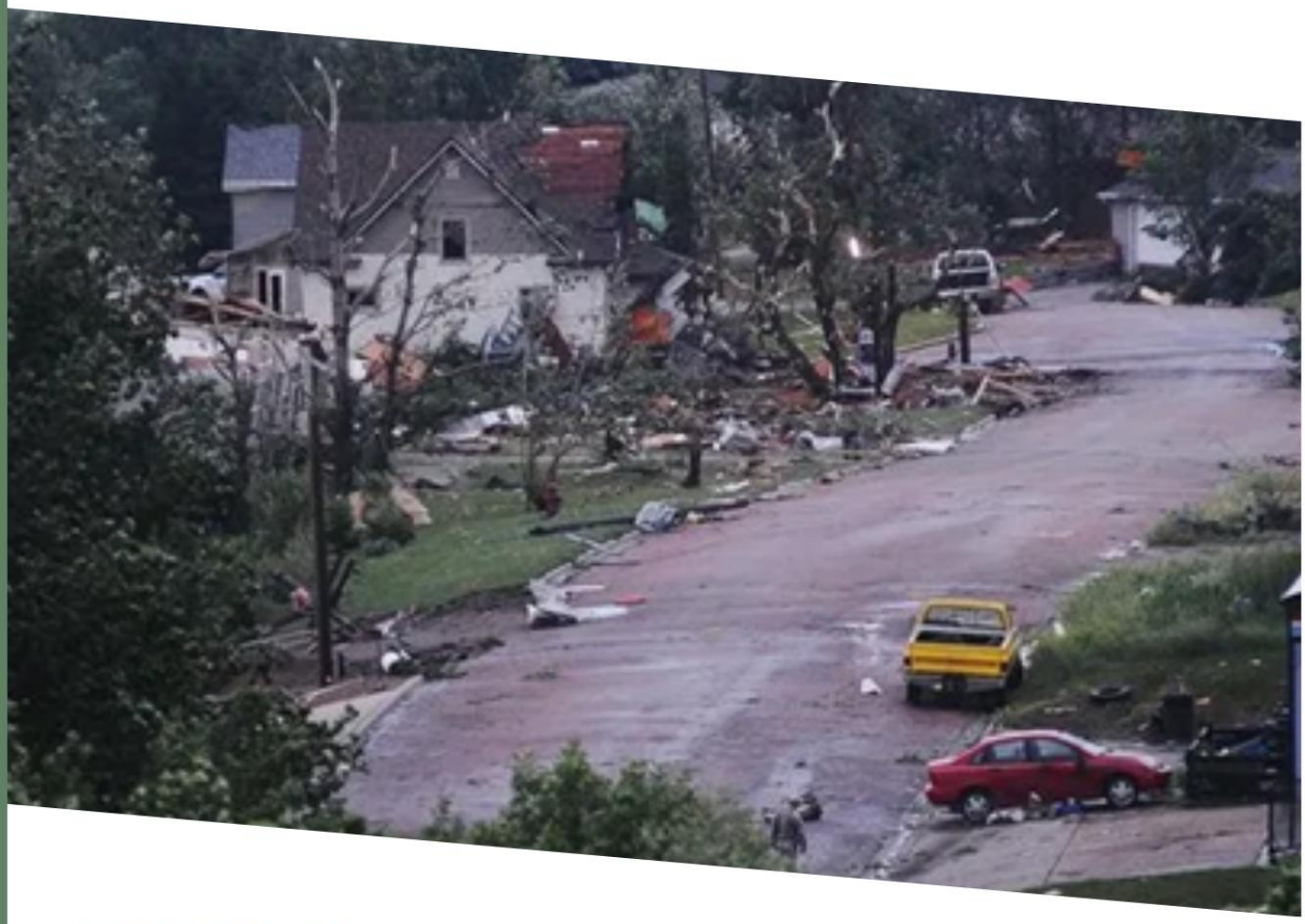
2025

HAZARD MITIGATION PLAN

Jerauld County, South Dakota



PREPARED BY:

Jerauld County Hazard Mitigation Planning Team

TECHNICAL ASSISTANCE PROVIDED BY:

Planning & Development District III
PO Box 687 | Yankton, SD

TABLE OF CONTENTS

2025 Jerauld County (SD) Hazard Mitigation Plan

CHAPTER I

Planning Process

PLANNING & DEVELOPMENT DISTRICT III

CHAPTER I
PLANNING PROCESS

Background

This plan is an update of the Jerauld County Hazard Mitigation Plan, which was approved by FEMA in November 2020. The purpose of the plan is to prevent or reduce losses to people and property that may result from future hazard events in Jerauld 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 Jerauld County in its efforts to mitigate against future disaster events.

This is a multi-jurisdictional plan. All the municipalities located within Jerauld 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 [1]:

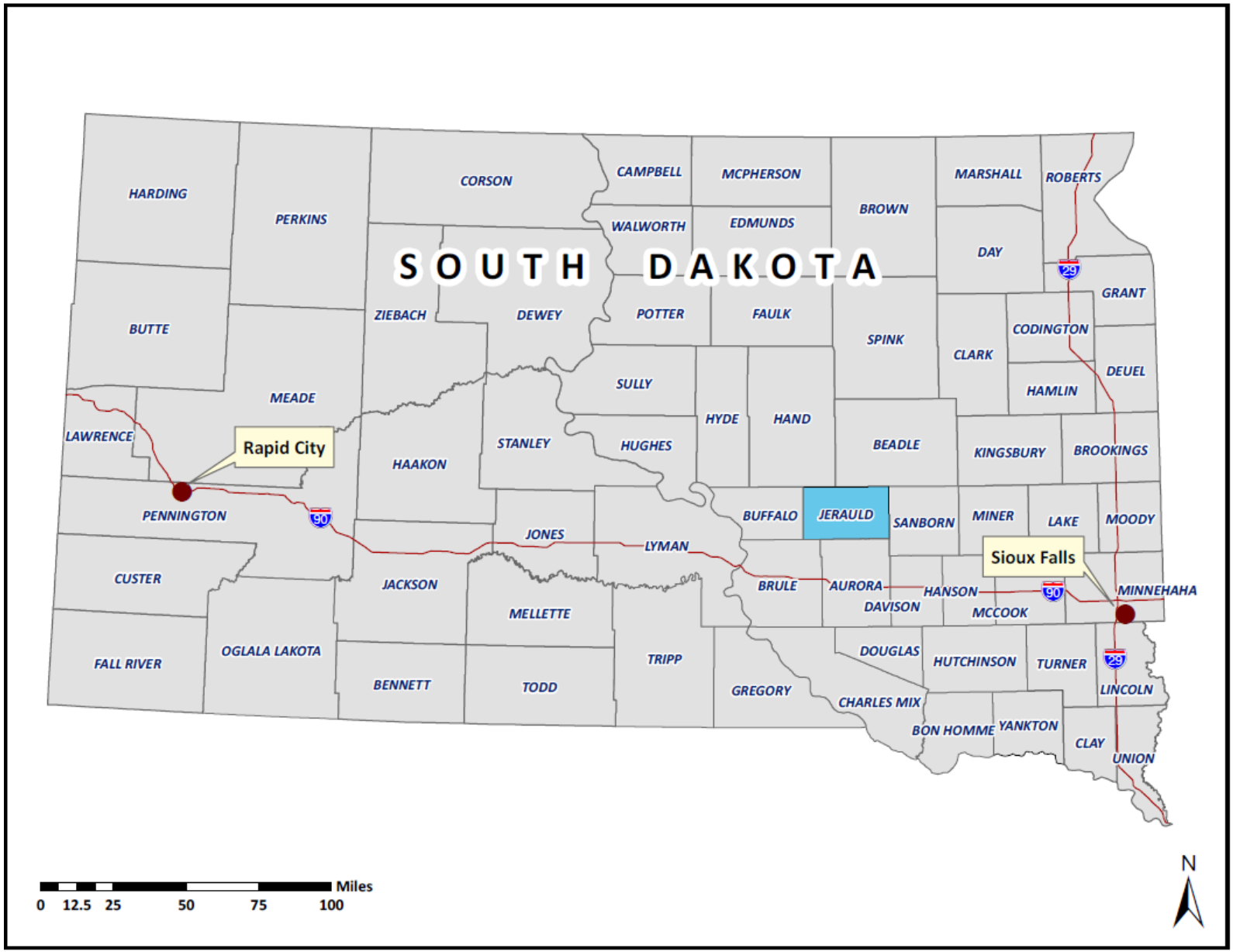
- Jerauld County
- Town of Alpena
- City of Wessington Springs

Production of the plan was the ultimate responsibility of the Jerauld 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 Jerauld County's current plan.

[1] The Town of Lane chose not to participate.

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 February 2025. Following this, Mr. Clem and the Jerauld 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:

- Central Electric Cooperative
- Mid-Dakota Rural Water System
- Wessington Springs School District
- Avera Weskota Memorial Hospital
- Wessington Springs *True Dakotan*
- Major employers, including LSI Jack Links
- Neighboring counties (Aurora, Beadle, Brule, Buffalo, Davison, Hand and Sanborn)

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 4/08/25	Mtg 2 5/06/25	Mtg 3 7/08/25
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	
Eric Schroeder	Jerauld County	Emergency Mgmt Dir	Guidance, Review	X	X	X
Charles Bergeleen	Jerauld County	County commission	Input, Review	X	X	X
Shane Mentzer	Jerauld County	County commission	Input, Review	X	X	X
Walt Hein	Jerauld County	County commission	Input, Review	X	X	X
DeVonne Losing	Jerauld County	County commission	Input, Review	X	X	X
Fred Krohmer	Jerauld County	County commission	Input, Review		X	X
Shannon Fagerhaug	Jerauld County	Auditor	Input, Data, Review	X	X	X
Dedrich Koch	Jerauld County	States attorney	Input, Review	X	X	X
Jason Weber	Jerauld County	Sheriff	Input, Review	X		
Jeff Kelsey	Alpena	Mayor	Input, Review		X	
Shawn Ochsner	Alpena	Finance officer	Input, Data, Review	X		
Linda Willman	Wessington Springs	Finance officer	Input, Data, Review	X	X	X
Philip Labore	Wessington Springs	Electric Superintendent	Input, Data, Review	X		
Lucas Van Engelenburg	Wessington Springs	Lineman	Input, Data, Review	X		
Mark Gran	Mid-Dakota Water System	Manager	Input, Data, Review	X	X	
Maria Howard	Weskota Hospital	Staff	Input, Review	X		
Stephanie Reasy	Weskota Hospital	Staff	Input, Review	X		
Michael Ormsmith	Wess Sprgs School District	Superintendent	Input, Review	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 to 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 [2], and a press release at the

[2] Posters were placed at the courthouse, city offices, grocery stores and other retail locations, apartment complexes in Wessington Springs, and the Wessington Springs school. Survey forms were also distributed to residents of the independent living apartments on the Avera Weskota Memorial Hospital campus.

start of the planning process included a QR code so 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 within the District III service area, which includes Jerauld County. Economic resiliency, including the role that hazard mitigation can play in helping communities maintain economic strength, is discussed at some length. Regional development priorities and demographic data from the CEDS was incorporated into this plan.
Jerauld County Comprehensive Plan	The environmental constraints section of the plan was used to identify areas suitable for development in the county.
Jerauld 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.
Jerauld County Local Emergency Operations Plan (LEOP)	Many parts of the plan, including the Utilities section and the Community Recovery and Mitigation section, were reviewed.
Wessington Springs Comprehensive Plan	The environmental constraints section of the plan was used to identify areas suitable for development within the city.
Wessington Springs Housing Study	The study presents socio-economic and demographic data and outlines potential housing development strategies for the community.
Facility Plan for the Water System in Wessington Springs	This document, which was developed by the City's engineering consultant, evaluates the community's water system and outlines various projects to upgrade the system.
Facility Plan for the Wastewater System in Wessington Springs	This document, which was developed by the City's engineering consultant, evaluates the community's sewer system and outlines various projects to upgrade the system.

Planning Meetings

Pictured: Jerauld County Courthouse in Wessington Springs

Several meetings were held to develop the plan, all of which took place at the Jerauld 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 Jerauld County Emergency Management Director.

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 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.

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 [3]. 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.

[3] The Town of Alpena representatives could not attend the final meeting. After the meeting, they were briefed on the meeting discussion.

Acknowledgements

The Planning & Development District III office would like to thank the members of the Jerauld 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 Auditor Shannon Fagerhaug and Emergency Management Director Eric Schroeder 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 Jerauld 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 Jerauld 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

Jerauld County is located in east central South Dakota (see **Figure 1.1**). The county covers 533 square miles in area, and its Census 2020 population was 1,663. Its population density is only 3.1 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 three incorporated municipalities located within the county - Alpena (pop 212), Lane (pop 47), and Wessington Springs (pop 771). The county seat is located in Wessington Springs. Another populated place in Jerauld County is the Spring Valley Hutterite Colony, which has approximately 125 residents [4]. **Figure 2.1** shows the county's communities and highway network.

Physical Characteristics

Jerauld County is very lightly settled, with most of the land consisting of cropland, grassland, and pastureland. The Wessington hills, which are aligned in a generally north-south direction near the center of the county, are the main natural feature of Jerauld County. The hills divide the mostly level eastern half of the county, which is where most of the crops are grown, from the rolling west, which is where almost all the grassland is located. Excessive slopes and rocky soils are rare, except along the Wessington hills and in the western half of the county.

[4] Hutterite Colonies are rural, agriculturally based communities occupied by descendants of German people who cling to many of their traditional ways. There are more than 400 Hutterite colonies located in the north-central United States and Canada.

Figure 2.1 – Jerauld County

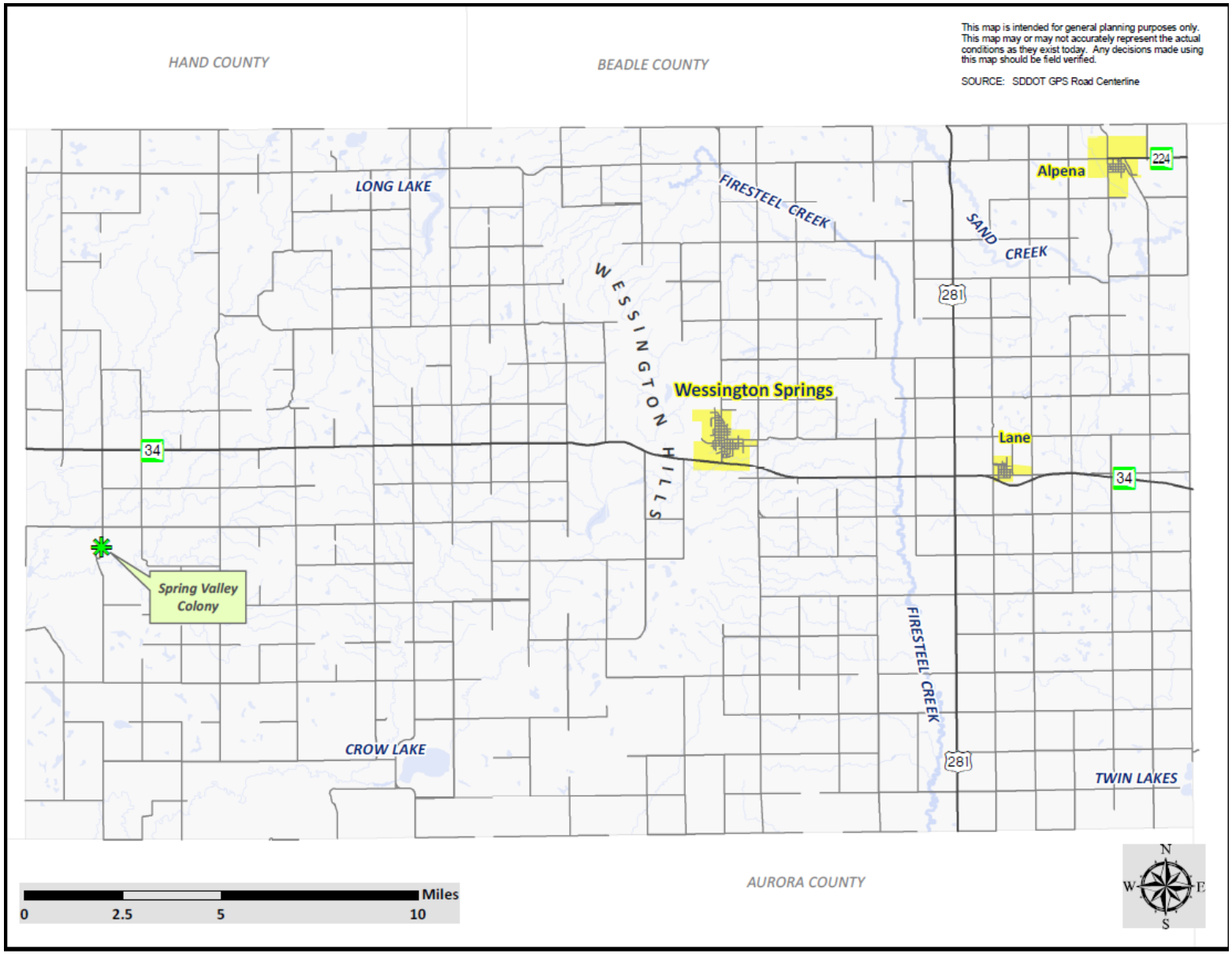


Table 2.1 provides a breakdown of the land cover in Jerauld County, which is shown graphically in **Figure 2.2** on the following page. The table is based off satellite imagery from the United States Geological Service's National Land Cover Database. As the table shows, the predominant types of land cover in the county are cropland, grassland, and pastureland, which together comprise over 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; cropland has had the greatest absolute increase, while developed land has shown the most relative growth.

Table 2.1 - Vegetative Land Cover

Cover Type	Sq Miles (1985)	Sq Miles (2023)	% Change	% Total Area
Cultivated Crops	185.8	205.9	10.8%	38.7%
Grassland	184.7	158.0	-14.5%	29.7%
Pasture/Hay	117.3	121.9	3.9%	22.9%
Wetlands	22.9	22.1	-3.7%	4.1%
Developed, Open Space	14.6	15.9	9.1%	3.0%
Developed Land (Low to High Intensity)	2.9	4.1	42.9%	0.8%
Open Water	2.4	2.7	10.4%	0.5%
Forested Land	2.1	2.2	3.8%	0.4%

Source: www.mrlc.gov/index.php

As in most of South Dakota, the climate of Jerauld 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 [5], while winter lows can drop below -20 degrees. Precipitation averages about 22 inches per year, much of which occurs during the spring and early summer. Following is climate data reported from the Wessington Springs weather station.

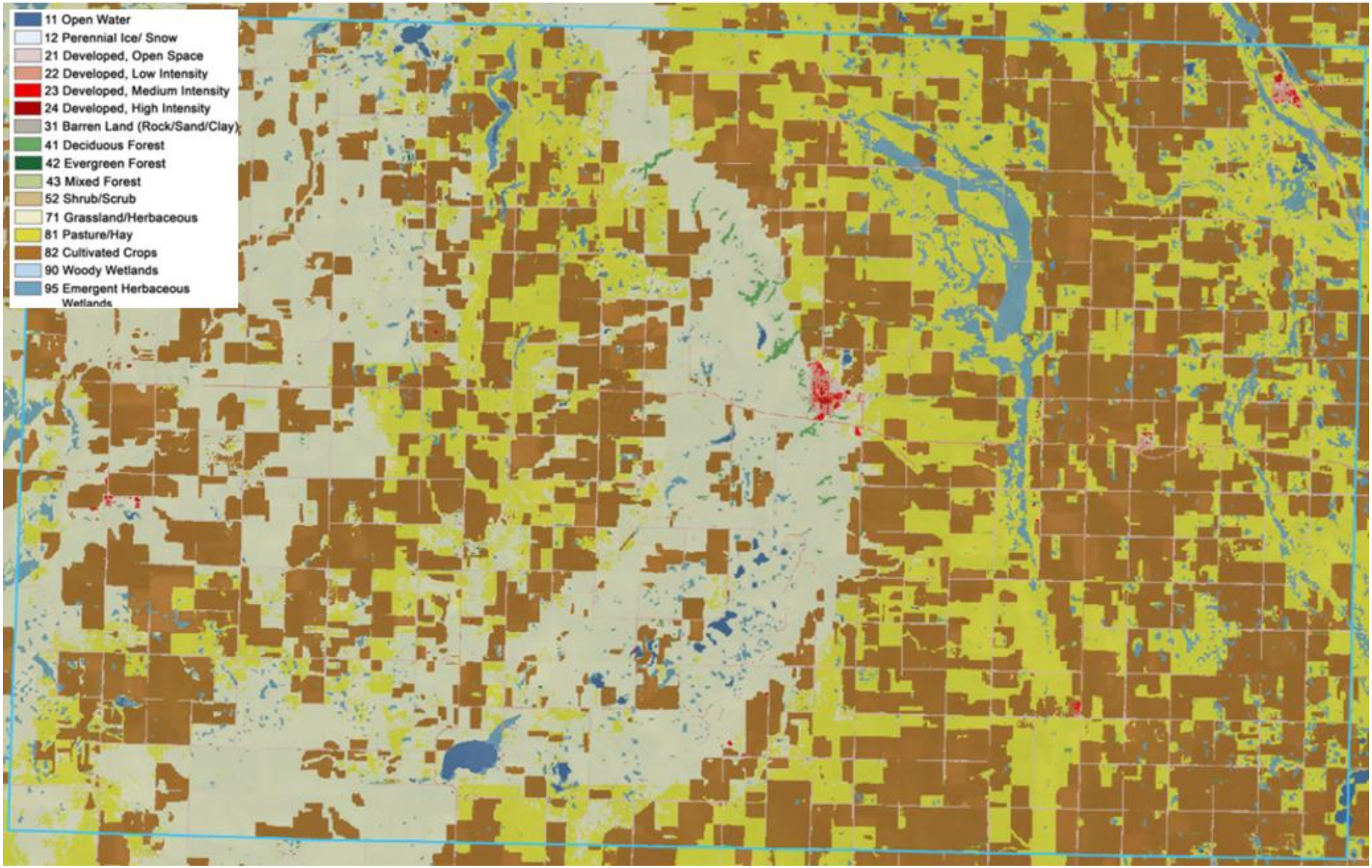
Table 2.2 - Monthly Climate Conditions in Jerauld County (1893 - 2013)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Ave High	25.9	30.9	42.8	58.8	70.5	79.7	86.4	84.7	75.4	61.1	43.4	30.2
Ave Low	7.0	11.5	22.4	36.0	47.3	57.1	62.7	60.4	50.9	38.8	24.5	12.6
Ave Precipitation	0.4	0.6	1.5	2.7	3.4	3.7	2.9	2.3	1.9	1.7	0.8	0.5

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

[5] 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 in which South Dakota is located, 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, Jerauld County is expected to experience 14 more days per year that reach above 95 degrees Fahrenheit (from 21 days to 35 days per year) and the average annual temperature is expected to increase from 49°F to 52°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, Jerauld County has been experiencing a steady population decline over the last several decades. The county's Census 2020 population of 1,663 is only 37 percent of the population that was recorded in 1950. As the table below shows, Jerauld 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 - Jerauld 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
4,476	4,048	3,310	2,929	2,425	2,295	2,071	1,663	1,612	1,453	1,324

Source: U.S. Census

Race and Age

The population of Jerauld County is quite homogenous in terms of race. The current 17.5% representation of American Indians in the county is a significant increase over the 2010 figure of 13.2%. The population is also quite old, which indicates that many of the young people are forced to leave the county to look for jobs and opportunities elsewhere.

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
Jerauld Co.	93.6%	0.1%	0.8%	0.5%	3.0%	0.0%	4.4%	20.9%	30.9%	50.5
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 Jerauld County are slightly below state and national figures, but poverty rates are somewhat lower. Educational attainment lags 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
Jerauld County	$66,607	9.1%	10.7%	10.5%	91.7%	16.8%	4.9%
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

The primary economic base of Jerauld County is agriculture. Much of the non-ag employment for people who work in the county is in education and health care, as well as retail trade. Industry and manufacturing are not significant, with the notable exception of the LSI Jack Links plant, which produces beef jerky and other meat products. The plant, located in Alpena, currently has approximately 1,200 workers, many of whom commute to work from outside the county. Tourism is significant during the fall hunting season when many people from outside the state come to hunt pheasants and other game.

Table 2.6 – Employment Sectors

	Jerauld County	South Dakota	United States
Agriculture, Forestry, Fishing, Mining	18.0%	6.4%	1.6%
Construction	2.2%	7.4%	6.9%
Manufacturing	8.8%	9.9%	9.9%
Wholesale Trade	4.5%	2.1%	2.2%
Retail Trade	12.8%	11.4%	11.1%
Transportation, Warehousing, Utilities	6.9%	4.4%	6.0%
Information	2.5%	1.5%	1.9%
Finance, Insurance, Real Estate	2.8%	6.0%	6.7%
Professional, Scientific, Management	5.7%	6.7%	12.6%
Education, Health Care, Social Assistance	22.7%	26.3%	23.1%
Arts, Entertainment, Recreation, Accommodation, Food Service	3.6%	8.8%	8.7%
Other Services	5.3%	4.3%	4.7%
Public Administration	4.2%	4.8%	4.6%

Source: American Community Survey 2022 1-Year Estimates

Vulnerable Populations

There are certain populations and social groups within Jerauld 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 Jerauld County has a low proportion of vulnerable people. The Centers for Disease Control Social Vulnerability Index shows Jerauld County with a rating of .1976 (0 being least vulnerable and 1 being most vulnerable), which indicates a low level of vulnerability. FEMA's Resilience and Planning Tool shows that the county's Community Resilience Challenges Index (CRCI) percentile is 26 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 Age, GINI (a measure of income inequality), and Lack of Civic Organizations.

The following table shows the percentage of the population in Jerauld County and each of the municipalities that fall into key metrics of social vulnerability, which is compared to the state and national average. One of the things that stand out is the high percentage of people over the age of 65 in the county, and especially in Wessington Springs. The high percentage of elderly people in Wessington Springs is presumed to be due to the Avera Weskota Memorial Hospital, which includes a large independent living apartment complex. The presence of this facility would also explain the high percentage of disabled people in Wessington Springs.

Table 2.7 – Social Vulnerability Indicators

Characteristic	Jerauld Co.	Alpena	Lane	Wess Sprgs	South Dakota	United States
People living in poverty	9.1%	14.5%	0.0%	12.7%	12.5%	12.6%
People with a disability	16.0%	14.0%	19.0%	30.5%	13.2%	13.4%
People without health insurance	5.4%	7.9%	28.6%	1.8%	8.1%	8.0%
Adults without a high school diploma	8.3%	12.0%	11.9%	8.2%	6.9%	10.4%
Population under 18	20.9%	30.0%	19.0%	15.2%	24.1%	21.7%
Population over 65	30.9%	21.1%	19.0%	43.0%	18.2%	17.3%
People with limited English proficiency	1.2%	5.3%	0.0%	0.0%	2.1%	8.4%
Households without internet subscription	15.4%	8.2%	37.5%	24.1%	13.0%	11.5%
Households without a vehicle	4.0%	1.2%	0.0%	9.2%	4.5%	7.5%

Source: American Community Survey 2022 1-Year Estimates

The margin of error for Alpena and Lane is well over 10% in some instances, due to their small size.

Infrastructure and Utilities

Transportation

Jerauld County's main transportation routes are US Highway 281 and SD Highway 34. There is one active railroad line in the county, which runs through the northeast corner of the county past Alpena. Wessington Springs opened a local airport southeast of the City in the fall of 2003; its asphalt runway is approximately 3,600 feet in length.

Utilities

Water service is provided throughout most of rural Jerauld County by the Mid-Dakota Rural Water System, which also serves the towns of Alpena and Lane. Wessington Springs currently has its own municipal water system, which is supplied by water from local artesian wells, but will be switching over to Mid-Dakota in 2026. Alpena and Wessington Springs operate their own wastewater collection and treatment systems, while all other residences in the county use individual septic tanks and drainfields.

Solid waste service is provided by the Tri-County Landfill, which operates a landfill located in Brule County. Most of the household waste generated within Jerauld County ends up at the landfill. Designated rubble sites are located outside Alpena and Wessington Springs.

Electric power is provided to rural county residents by the Central Electric Cooperative. NorthWestern Energy serves residents of Alpena and Lane, while Wessington Springs operates its only municipal system. Natural gas services are not available anywhere in the county, except for the LSI Jack Links plant in Alpena.

Services

Medical Services

The only medical facility in Jerauld County is the Avera Weskota Memorial Hospital in Wessington Springs. Its campus features a hospital, clinic, nursing home, and independent living apartments. The hospital has a generator for backup power. People needing serious medical attention can be transported to trauma-center hospitals in Sioux Falls or elsewhere.

Fire and Emergency Response

Fire departments are based in Alpena and Wessington Springs, each in conjunction with an ambulance service, and the Spring Valley Colony also has firefighting capabilities. The departments have basic firefighting and rescue equipment, and they respond to structural fires, wildland fires, and to accident situations. The departments also have some capabilities regarding hazardous material (hazmat) response, but a serious incident likely would require assistance from outside the county.

Education

The only school in Jerauld County is located in Wessington Springs. Education through the high school level is available for children living at the Spring Valley Hutterite Colony. Post-secondary education is not available in the county.

2025 Jerauld 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 Jerauld County become disaster resilient and keep county residents safe, and it answers the following questions: What are the hazards that could affect Jerauld 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.

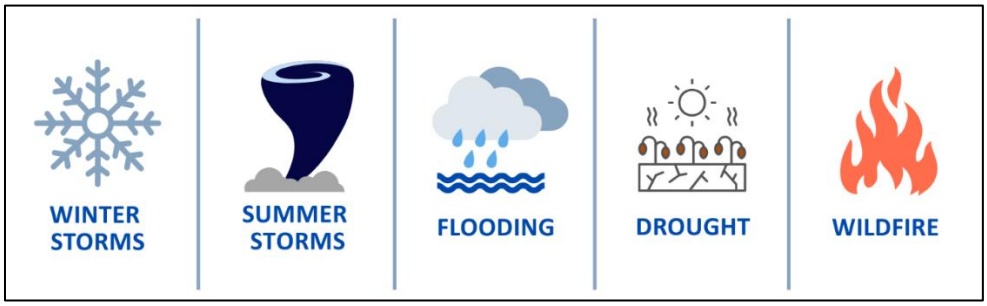
According to FEMA's mitigation planning guidance, the basic components of the risk assessment are: 1) identifying hazards that affect the community, 2) profiling the hazards, 3) conducting an inventory of community assets, and 4) analyzing impacts. This process measures the potential loss of life, personal 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 that there is only about a two percent chance that a quake of at least magnitude 5 will occur in Jerauld County in any 100-year period, and virtually no chance of a magnitude 6 or greater earthquake [6]. The largest magnitude earthquake recorded in the county was a 4.2 magnitude quake, which occurred in July 1946. Regarding landslides, a review of the United States Geological Survey's Landslide Incidence and Susceptibility Map shows virtually no chance of a significant landslide

[6] 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.

occurring in Jerauld County. 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 Jerauld 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 that are affected by each of 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 Jerauld 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 Jerauld 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 in ten years. Probability for some of the hazards was determined by reviewing the frequency of past hazard events in the Storm Events Database.

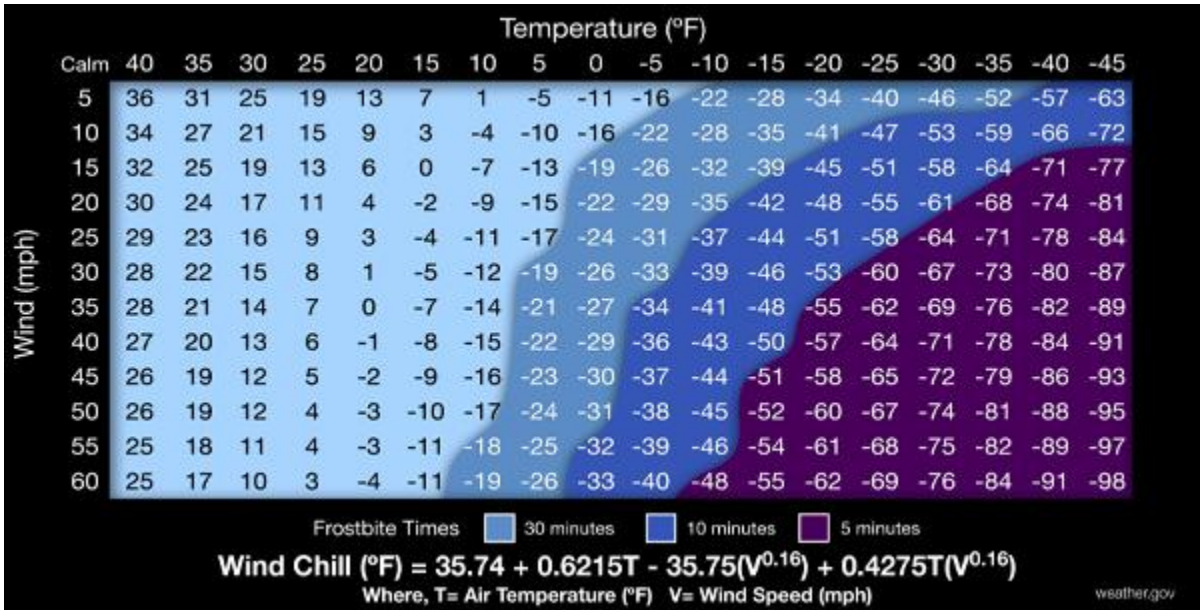
Winter Storm

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 most serious hazard facing the county.

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 Jerauld 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 Jerauld County can be quite substantial. In terms of snowfall, many winter storms in the county have dropped more than 10 inches of snow. 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**).

JERAULD COUNTY MAJOR WINTER STORM DISASTERS

1995	1995	2001	2005	2010
FEMA Disaster Declaration 1045	**FEMA Disaster Declaration 1075**	**FEMA Disaster Declaration 1375**	**FEMA Disaster Declaration 1620**	**FEMA Disaster Declaration 1887**
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.	One of the worst storms in SD, up to 15 inches of wet snow and high winds over 3 days impacted power, transportation, businesses, and schools.	Statewide winter storm that created more than $10 million in estimate statewide damages.	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.	Very damaging ice storm in January heavily impacted the local electric utility infrastructure.
Estimated statewide damages of $3.8 million & 1,700 power poles replaced	Approx. 30,290 households statewide lost power statewide & Estimated damages of more than $13 million	Jerauld County: $30,000 in public assistance costs & More than $25,000 in damages to rural electric infrastructure	Jerauld County: More than $20,000 in public assistance costs & $696,415 in damages to electric utility infrastructure	Jerauld County: $600,000 of damage to Central Electric Cooperative's infrastructure

In January 1995, an ice storm caused damage to electric power lines in 21 counties in South Dakota, resulting in FEMA Disaster Declaration 1045. Unusual foggy January weather resulted in a heavy crust of ice forming on many of the power lines in central South Dakota, including Jerauld County. The fog crust was three to five inches in diameter. 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 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.

One of the most serious winter storms to occur in the state happened between October 22 and 24, 1995, resulting in FEMA Disaster Declaration 1075, which was declared in January 1996. As the storm moved eastward across South Dakota, ice and five to 15 inches of wet snow formed on electric lines, poles, and trees. Winds associated with the storm caused lines to slap together and poles to snap, producing widespread power outages to large portions of rural South Dakota, including Jerauld County. The damage included broken poles, broken wires, and substation failures due to transmission line damage. The storm also forced major transportation delays because of snow accumulation on roadways and poor visibility. The combination of power outages and travel difficulty resulted in numerous cancellations and delays in school openings. Total statewide damage from the event was estimated at over $13 million, and approximately 30,290 households were affected by power outages.

A winter storm in 2001 resulted in FEMA Disaster Declaration 1375. Statewide, the event caused over $10,000,000 in estimated damages. In Jerauld County, there was approximately $30,000 in public assistance costs (including $12,370 in Wessington Springs), and over $25,000 in damage to rural electric infrastructure.

Another very serious winter storm to impact Jerauld 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 southeast South Dakota. The storm resulted in FEMA Disaster Declaration 1620. In the affected area, a total of 9,400 power poles were damaged, leaving approximately 56,000 people without electricity for varying amounts of time. In Jerauld County, the storm resulted in over $20,000 in public assistance costs in Wessington Springs and Alpena, and $696,415 of reported damage to electric utility infrastructure. Alpena and Wessington Springs were without power for five days.

A very damaging ice storm struck the area in January 2010, resulting in FEMA Disaster Declaration 1887. This event caused approximately $600,000 of damage to the Central Electric Cooperative's infrastructure in Jerauld County.

Probability

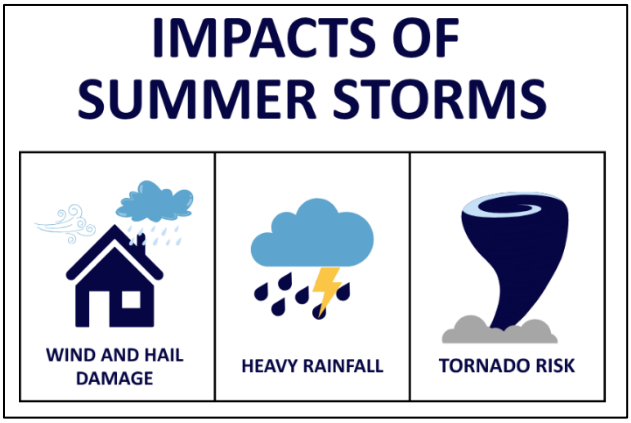
A total of 70 winter storm events, including blizzards, ice storms, heavy snow, and extreme cold events, have been recorded in Jerauld County since the mid-1990s, an average of over two per year (see **Table C.2 in Appendix C**). Therefore, based on the historic evidence, the

probability of a significant winter storm affecting Jerauld 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

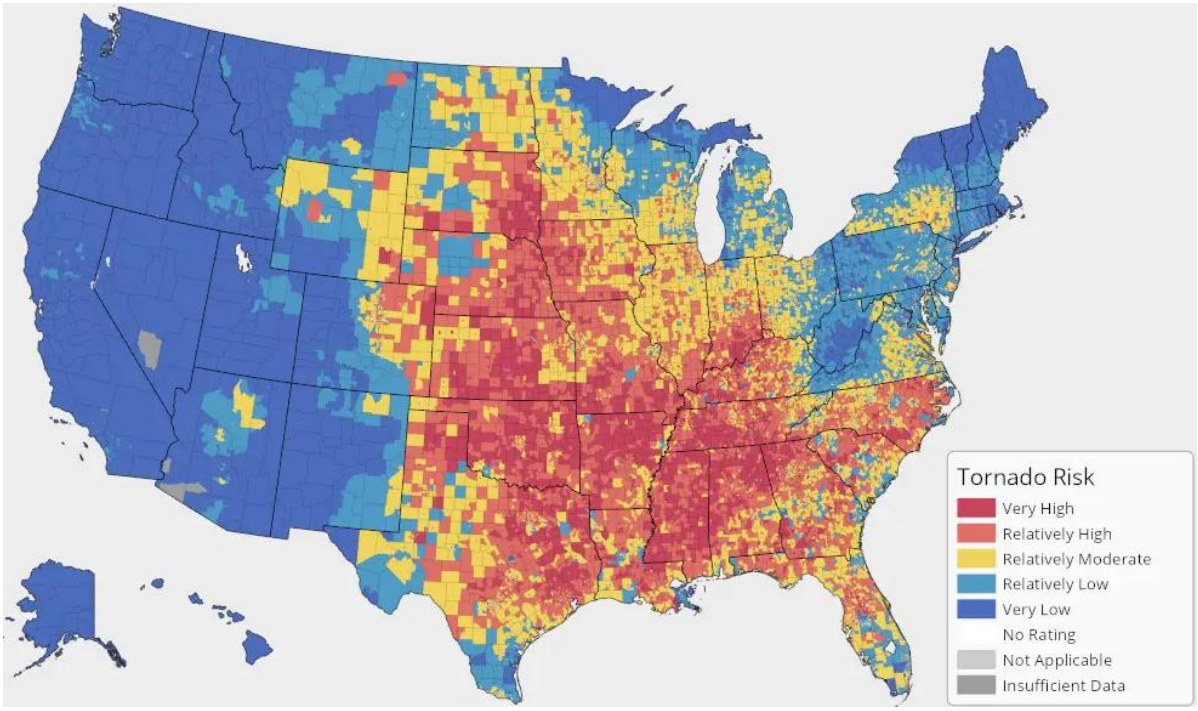
Description

Summer storms can include heavy rainfall, hail, tornadoes, and thunderstorm activity. These events usually are associated with unstable weather conditions. In Jerauld 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 Jerauld County reports some kind of hail damage to crops or property.



Tornadoes are the most dramatic type of summer storm experienced in Jerauld 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 second most serious hazard facing the county, behind only winter storms.

South Dakota is located near the northern edge of the core area of tornado activity in the United States, as shown in the image on the next page (it is difficult to tell at this scale, but Jerauld County is in the 'Relatively High' 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 Jerauld 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 more than 20 thunderstorms and high wind events that produced wind speeds over 60 knots, including two that were over 70 knots. **Table C.2** also shows more than 30 events with hail at least one inch in diameter, including six events with hail at least two inches in diameter, and four records of a tornado with a magnitude greater than F1 – three EF2 tornadoes and an EF4. 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 stripped; 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	Devasting 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 Jerauld County. **Table C.2** in **Appendix C** lists many other significant summer storms that have impacted the county. The most damaging tornado strike in Jerauld County occurred in June 2014 when a tornado damaged at least 43 homes in Wessington Springs, making at least 26 of them uninhabitable, and damaged or destroyed 12 businesses. The tornado also caused crop damage and damaged powerlines and power poles, resulting in power outages to the entire town. Damage to public infrastructure was approximately $1.2 million.

Pictured: The aftermath of the 2014 Wessington Springs tornado.

Probability

As shown in **Table C.2 in Appendix C**, a total of 78 summer storm events, including hailstorms, thunderstorms, lightning, and tornadoes, have been recorded in Jerauld County since 1960, an average of more than one per year. Fourteen of these storms involved a tornado. From this information, the probability of a summer storm affecting Jerauld County in a given year is high, although the probability of a storm causing significant damage (e.g., damaging hail or a tornado) can be considered low to moderate.

Flooding

Description

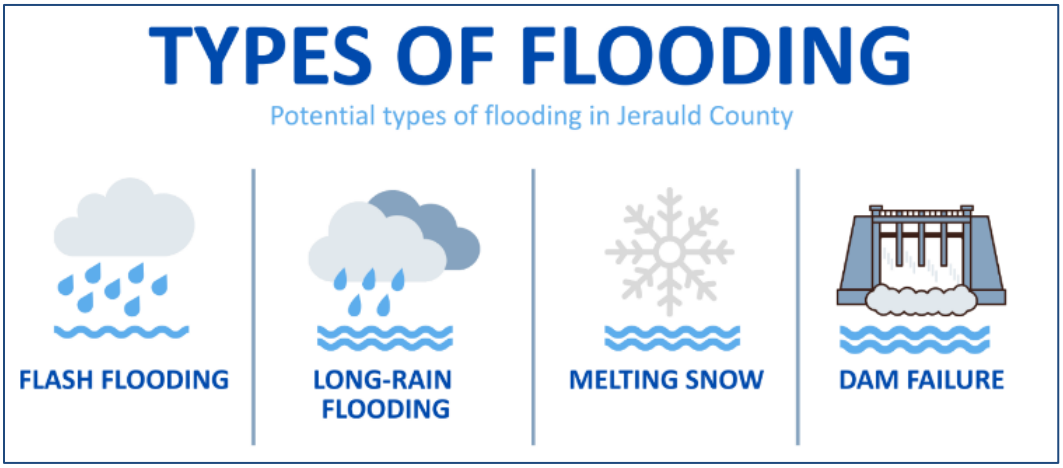
Floods are among the most serious and costly disaster events. In South Dakota, there are two main climatologic causes of flooding: runoff from rainfall and runoff from melting snow. The water from rainfall or melting snow flows overland until it reaches a nearby river or lake. If the river or lake cannot 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 landslides and earthquakes.

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. Since there are no high or significant hazard dams in Jerauld County, this is not an issue in the county.



Location

Many areas of Jerauld 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. Most of the flood prone area is located east of the Wessington hills, including land adjacent to Firesteel Creek.

Extent

Nothing beyond what would be considered minor flooding has ever been known to occur in Jerauld 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 flooding that occurred in Jerauld County in 2019 was notable for its severity and widespread impact,

causing some county and township roads in the eastern part of the county to be closed for over a month. 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.

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**).

JERAULD COUNTY MAJOR FLOODING DISASTERS

1993	1995	1997	2010	2019
FEMA Disaster Declaration 999	FEMA Disaster Declaration 1052	FEMA Disaster Declaration 1173	FEMA Disaster Declaration 1915	FEMA Disaster Declaration 4440
Flooding impacted 39 South Dakota counties. At the time, considered one of the top 10 natural disasters by FEMA.	Flooding occurred after above normal precipitation in South Dakota from January through May. Roads were under water and emergency services were interrupted.	Included all counties in South Dakota and one of top ten natural disasters by FEMA. Record snowfall, persistent cold, and heavy rain resulted in spring flooding.	Heavy rainfall, up to 6 inches, caused widespread flash flooding of county roads, residences, and fields. Additional flooding occurred later in 2010.	Heavy rainfall in March fell on frozen ground, leading to flooding of agricultural lands and numerous roads.
Statewide damages of $53,427,320, including $11,024,621 to public infrastructure	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	Jerauld County: Public assistance costs of $420,000	Jerauld County: Public assistance costs of $250,000

Flooding in 1993 resulted in FEMA Disaster Declaration 999, which impacted 39 counties in South Dakota. The flood caused $53,427,320 in damage throughout the state, and $11,024,621 of damage to public infrastructure. At the time, the disaster was considered one of the top ten natural disasters ranked by FEMA relief costs.

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 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 was over $35 million, which included $9.3 million in damage 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 the eastern part of the state was cold and very wet, with record snowfall in many places. The persistent cold limited snowmelt between storms, causing snow to pile up to 24 inches deep in places. An April blizzard added to the snowpack, 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, taking the lives of two people.

Flooding in 2010 in eastern South Dakota was the worst in a decade, resulting in FEMA Disaster Declaration 1915. Heavy rainfall of up to six inches caused widespread flash flooding of many county and township roads, residences, and fields. Damage was extensive in Jerauld County, with public assistance costs of about $420,000. Additional flooding occurred in the county later in 2010 and in 2011 (see **Table C.1**).

Flooding in 2019 had a major impact throughout the year in Jerauld County, starting in March when heavy rainfall fell on frozen ground, which led to considerable overland flooding of agricultural lands and inundation of numerous roads. This event resulted in FEMA Disaster Declaration 4440, with about $250,000 of public assistance costs in the county.

Probability

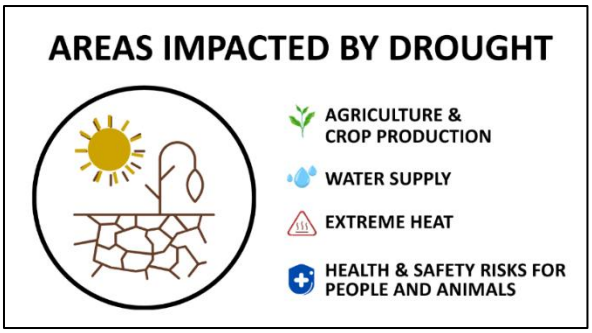
Table C.2 shows that eight flooding events have been recorded in Jerauld County since the mid-1990s, but some of the events appear to have been a recording of ongoing flood conditions. Excluding these events, it appears that there have been five separate flood events in Jerauld County since the mid-1990s, or less than two every ten years. Based on this analysis, the probability of flooding occurring somewhere in the county in a given year can be considered low. **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 drought. According to the survey conducted for this plan, drought is Jerauld County's third most serious hazard.

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.

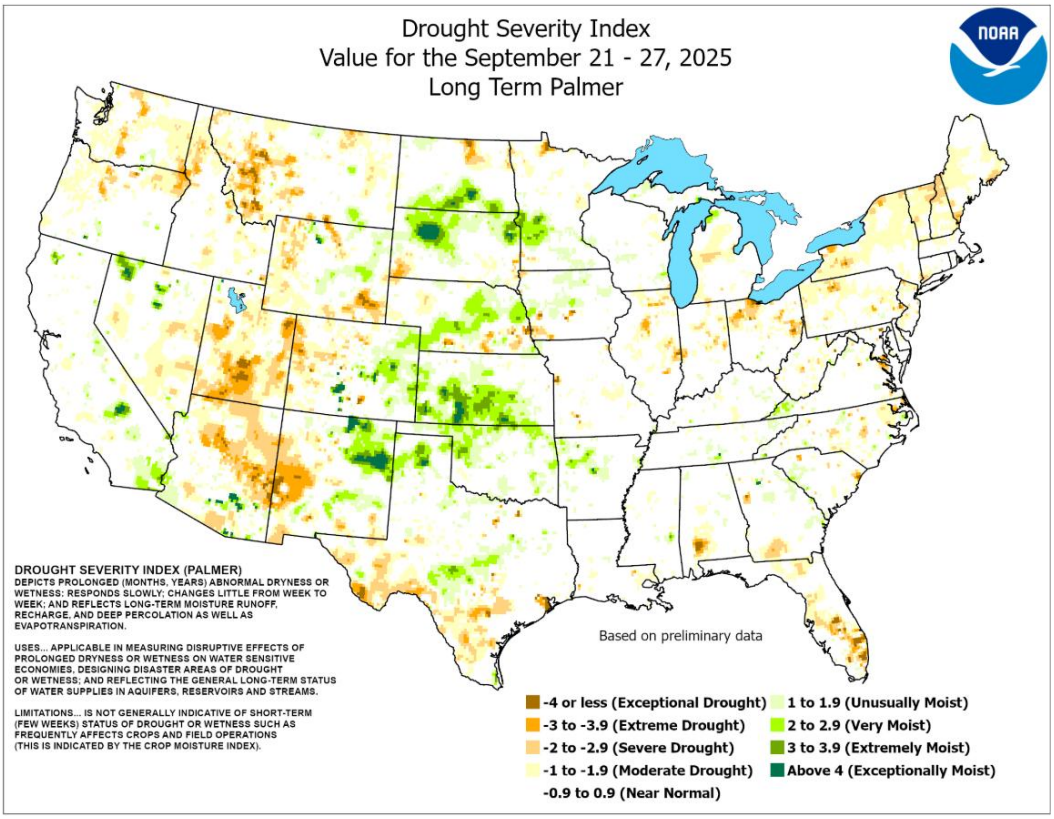
Extent

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, Jerauld County has experienced many years of below average annual precipitation, including some years in which precipitation was less than two thirds of normal. In terms of duration, it is not unusual for Jerauld 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:

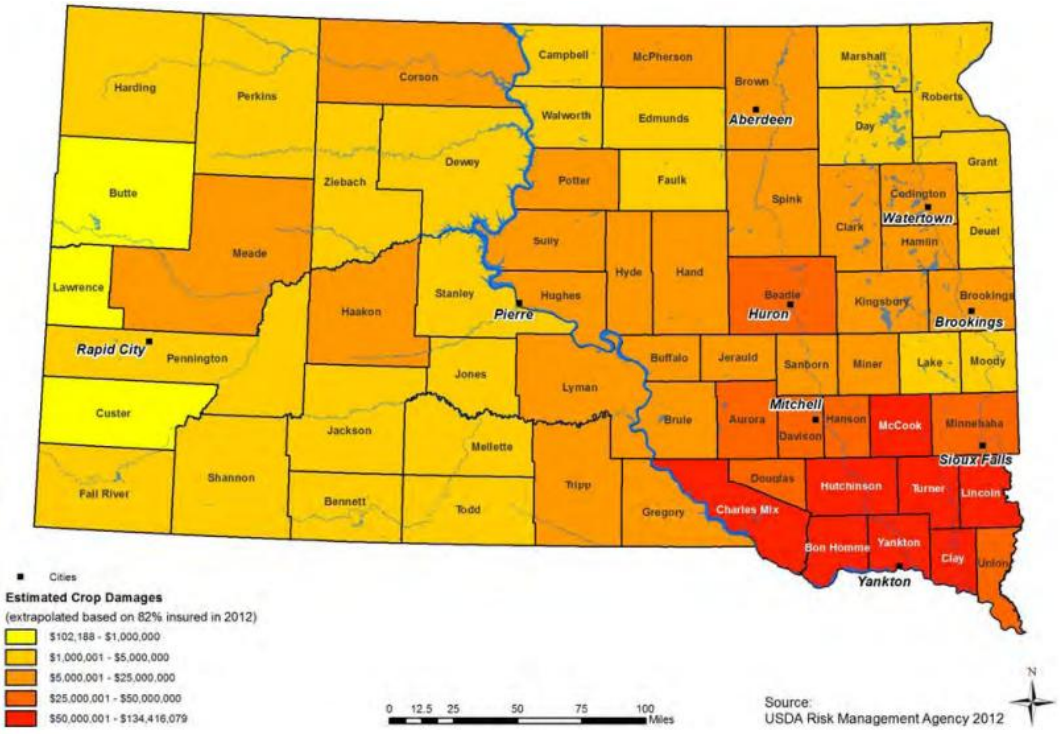
- D0 Abnormally Dry
- D1 Drought - Moderate
- D2 Drought - Severe
- D3 Drought - Extreme
- D4 Drought - Exceptional



History

Jerauld 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 Jerauld County in nine of the years since 1999. 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

historical records, notable droughts have occurred somewhere in the state on average about every 12 years.

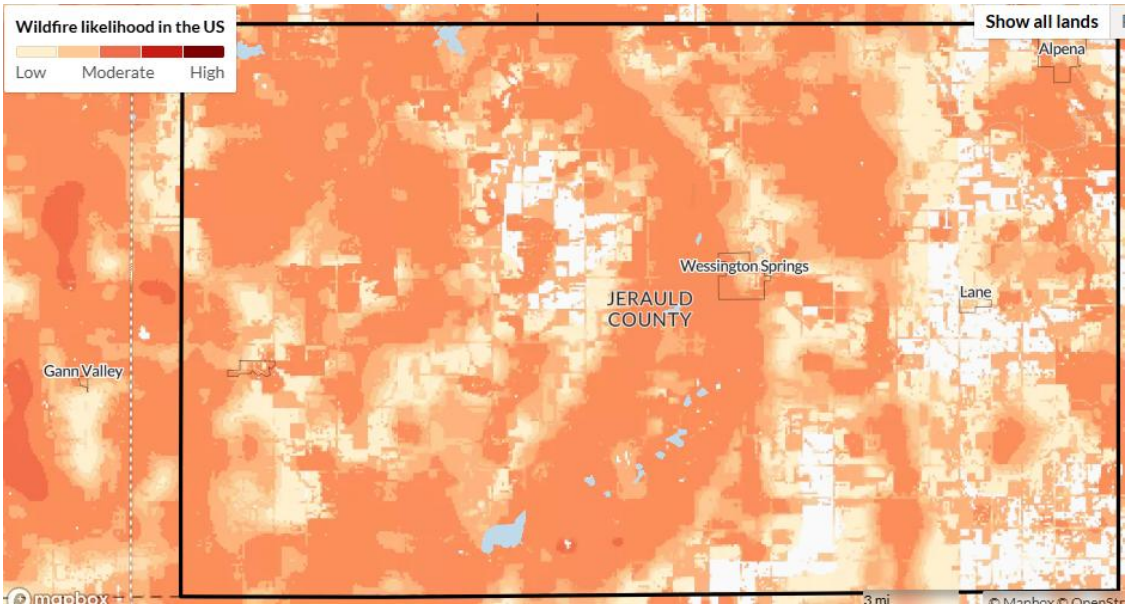
Wildfire

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 Jerauld 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 almost 30 percent of Jerauld County's land base and is especially prevalent in the western half of the county. Grassland fires are quite dangerous because they tend to spread faster than forest fires and are thus difficult to attack. 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 Jerauld County from 2000 through 2024 as reported to the South Dakota Department of Public Safety [7]. It shows that most of the fires have been fairly small, most

[7] 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.

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 Jerauld 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
72	32	10	10	3	161

Source: South Dakota Department of Public Safety

History

Some notable wildfires have occurred in Jerauld County, but nothing on a truly destructive scale. The largest fire to occur in the county in recent years burned 400 acres southwest of Wessington Springs in 2000.

Probability

Wildfires affecting less than ten acres are likely to occur somewhere in Jerauld County most years, but large-scale wildfires are much less common. **Table 3.6** shows only three wildfires over 250 acres in size occurred between 2000 and 2024. Based on this period of analysis, the probability of a significant wildfire can be considered low. The probability of wildfire causing serious damage also 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 Jerauld 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

- Jerauld County Courthouse, Wessington Springs
- Alpena City Office
- Lane City Office
- Wessington Springs City Office

Emergency preparedness and response

- Jerauld County Emergency Management Office, Wessington Springs
- Jerauld County Sheriff's Office, Wessington Springs
- Wessington Springs Police Department
- Alpena Fire Department
- Wessington Springs Fire Department
- Jerauld County Highway Department, Wessington Springs
- Disaster relief shelters in Alpena and Wessington Springs (see p.55)
- Emergency shelters in Alpena and Wessington Springs (see p.55)

Community facilities

- Alpena Community Center
- Jerauld County Ag Building, Wessington Springs

Medical facilities

- Avera Weskota Memorial Hospital, Wessington Springs

Educational facilities

- Wessington Springs school (K-12)

Important businesses

- LSI Jack Links, Alpena
- Alpena Cooperative, Alpena
- Agtegra Cooperative, Alpena
- CHS Farmers Alliance, Wessington Springs
- Agtegra Cooperative, Wessington Springs
- Wilbur-Ellis Agribusiness, Lane

Other important resources and activities

- Wessington Springs Foothills Rodeo (held in summer on Jerauld County 4-H Grounds)
- Music in the Garden (held in summer at Shakespeare Garden in Wessington Springs)

Hazard Impact Analysis

This section assesses the vulnerability of Jerauld 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'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 [8].

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

- 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 risk 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 consulted for federal assistance provided to Jerauld 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.3 through C.6** in **Appendix C**).
- 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 70 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 Jerauld 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 Jerauld 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, the November 2005 ice storm caused almost $700,000 in damage to Central Electric Cooperative infrastructure within Jerauld 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 Jerauld 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 5% of all indemnity payouts in Jerauld County.

Building Exposure:

The total value of buildings in Jerauld County is approximately $292,480,000, according to the South Dakota Hazard Mitigation Plan, which ranks the county 55th 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:

Jerauld County is sparsely populated, with an average of just 3.1 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. Jerauld County would have to be rated low in terms of population density.

Future Vulnerability

No development has occurred anywhere in Jerauld 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 Jerauld 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, Jerauld 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 [9]. A total of 14 tornadoes and 31 major hail events were recorded for Jerauld 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 Jerauld County may be less prone to experiencing severe summer weather than other counties in the state.

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

Past Damage Amounts:

Many summer storm events have caused significant damage in the county, as shown in **Table C.2**. Jerauld 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 Jerauld County due to severe summer weather between 2000 and 2023. During this period of analysis, summer storm-related payouts represented approximately 4% of all indemnity payouts in the county.

Building Exposure:

The total value of buildings in Jerauld County is approximately $292,480,000, according to the South Dakota Hazard Mitigation Plan, which ranks the county 55th 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:

Jerauld County is sparsely populated, with an average of just 3.1 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. Jerauld 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 local 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 powerful summer storm, such as a tornado or other high wind event. The impact on human life might be worse in Alpena and Lane, 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
Alpena	66.5%	5.3%	17.6%
Lane	62.5%	12.5%	12.5%
Wessington Springs	48.9%	5.7%	5.2%
South Dakota	*26.4%*	*31.5%*	*6.4%*

Source: 2020 US Census (DP04 Selected Housing Characteristics)

Future Vulnerability

No development has occurred anywhere in Jerauld 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 in the state.

Flooding

Like all counties in South Dakota, Jerauld 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 that was run for the South Dakota Hazard Mitigation Plan, the potential building damage loss from flooding in Jerauld County is $591,000, 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 0.3 percent is one of the lowest among South Dakota counties, well below the median value of 0.8 percent. Likewise, the potential displaced population in Jerauld County of 77 people is well below the state median value of 255 people.

In addition to impacting buildings and other structures, a good deal of public infrastructure throughout the county is vulnerable to flooding. Flood damage frequently involves washed out or damaged roads and drainage culverts, often occurring in the spring, especially following 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 Jerauld County due to flooding and excess moisture between 2000 and 2023. During this period of analysis, flood-related payouts represented about 27% of all indemnity payouts in Jerauld 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 Jerauld County was not impacted as much as many other counties in the state, approximately 36,000 acres of land in the county were not planted due to flooding in 2019, which was 14% of land that would otherwise have been planted, ranking the county 38th in South Dakota. Over 42% of indemnity payouts between 2000 and 2023 due to excess moisture occurred in 2019.

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
Alpena	$48,700	52	17	0	19	$2,091,000
Lane	$0	0	1	0	0	$0
Wess Springs	$27,500	14	6	0	0	$0

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

Flood risk was also analyzed using the RiskFactor website, which uses a probabilistic flood model that shows any location's risk of flooding from rain, rivers, tides, and storm surges. According to the RiskFactor analysis, there is only minor flood risk in each of the communities. Fewer than 1% of residential properties in Alpena are at risk and only about 3% of residential properties in Lane and Wessington Springs are at risk.

Future Vulnerability

No development has occurred in flood prone locations or anywhere else within Jerauld 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 vulnerability 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 Jerauld 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.

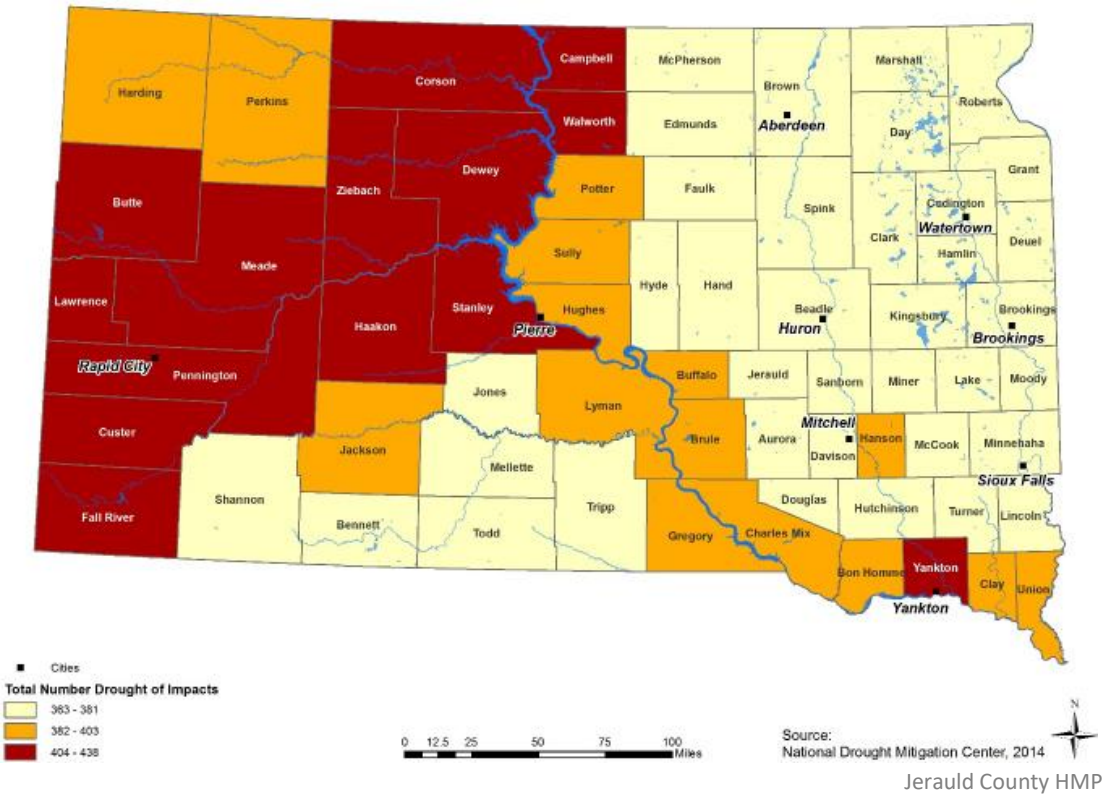
Drought

Without question, Jerauld County is vulnerable to drought, with the biggest impact being in the agricultural sector. 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 Jerauld County have crop insurance, which lessens the financial impact of droughts. Modern agricultural practices, such as no-till farming and the development of drought-tolerant crops, also help farmers withstand years of low rainfall. **Table C.6** in **Appendix C** provides information on indemnity payouts for crop loss in Jerauld 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 59% of all indemnity payouts in Jerauld 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. Jerauld County's average annual loss from drought for the 2000 – 2014 period was $1,867,807, compared to a total crop value of $62,010,000, resulting in a loss ratio of 3.0%. In comparison, the average loss ratio figure for South Dakota counties was 3.1%. The authors of the South Dakota Drought Mitigation Plan assigned a "Low" vulnerability rating for Jerauld 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 below from the South Dakota Drought Mitigation Plan, Jerauld County is in the lower range of counties in terms of the number of drought impacts.



Future Vulnerability

No development has occurred anywhere within Jerauld 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 Jerauld 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 Jerauld County was analyzed using two different sources. According to the U.S. Forest Service's Wildfire Risk to Communities website, Jerauld County's overall wildfire risk is considered medium, higher than 60% of the counties in the United States and 51% of South Dakota's counties, although the risk in Wessington Springs is considered to be high. Information from the SILVIS Lab at the University of Wisconsin shows that a total of 39 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 39 housing units at risk represent 4.1% of the total housing stock in Jerauld County. For comparison, the statewide figure is 25.9%. The table below summarizes the overall risk in Jerauld County.

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

Houses At Risk	Median Housing Value in Jerauld Co.	Total Value of Homes at Risk
39	$117,600	$4,586,400

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 Jerauld 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 the 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 Jerauld 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 34 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**

Jerauld County's vulnerability to winter storms can be considered at least moderate. The authors of the South Dakota Hazard Mitigation Plan assigned Jerauld 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 Wessington Springs or Alpena 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**

Jerauld County's vulnerability to summer storms can be considered moderate. The authors of the South Dakota Hazard Mitigation Plan assigned Jerauld 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 Alpena and Lane, both of which have a relatively high percentage of mobile homes, which can be overturned by winds of 60 to 70 miles per hour if they are not anchored properly. In Alpena 18% of the housing stock consists of mobile homes and in Lane the percentage is 13%; the statewide figure is 6%.

- **Flooding**

The overall vulnerability of Jerauld County to flooding can be described as low to moderate. According to the vulnerability analysis conducted for the South Dakota Hazard Mitigation Plan, Jerauld's estimated flood loss is among the lowest in the state. Much of the vulnerability

is to cropland and to rural county roads. Flooding in 2019 had a significant impact on the county, especially in Alpena, Franklin, and Blaine Townships in the eastern part of the county. One of the hardest hit roads was 392nd Avenue south of Alpena, which was closed off and on for a total of about 40 days. Following is a summary of vulnerability in each of the communities:

Alpena is vulnerable to flooding. As shown in **Table 3.8**, the total value of property vulnerable to flooding in the community is over $2 million. The flood prone areas are mostly undeveloped open space, although some residential property is at risk, particularly in the southwest part of town. The RiskFactor analysis found only a minor amount of residential flood risk in the community. Flooding in 2019 caused some road damage here, but no significant property damage.

Lane does not appear to be very vulnerable to flooding, although the HAZUS software did identify flood-prone areas outside the town. The RiskFactor analysis found only a minor amount of residential flood risk in the community. Flooding in 2019 caused a minor amount of basement flooding.

Wessington Springs does not appear to be very vulnerable to flooding, although the HAZUS software did identify a flood prone area along a wooded ravine just south of the community and another area northeast of town. Low level flooding does occasionally impact the city, especially when water runs off the Wessington hills following heavy precipitation events. The RiskFactor analysis found only a minor amount of residential flood risk in the community. Flooding in 2019 caused some road damage in Wessington Springs, but no significant property damage.

- **Drought**

Jerauld County's vulnerability to drought can be considered at least moderate and is certain to continue for the foreseeable future. The impact is primarily on the agricultural sector, where serious losses have occurred. The South Dakota Hazard Mitigation Plan assigned a vulnerability rating of Low for Jerauld County in terms of drought's impact to crops between 2000 and 2014. The eastern half of the county with its heavier reliance on row crops may be somewhat more vulnerable than the western half, where grazing predominates. Residential and commercial impacts of drought are minor; even during the severe drought of 2012 there were no water use restrictions anywhere in the county.

- **Wildfire**

The overall vulnerability to wildfire in Jerauld County can be considered moderate, although it may be somewhat higher in the Wessington Springs area. Approximately 4% of the county's population lives in a location vulnerable to wildfire, well below the statewide figure of 26%. No truly destructive wildfire has ever been recorded in the county. The risk assessment conducted for the South Dakota Hazard Mitigation Plan assigned a rating of Low for Jerauld County regarding aggregate wildland fire vulnerability.

Figure 3.1 – Alpena

Figure 3.2 – Lane

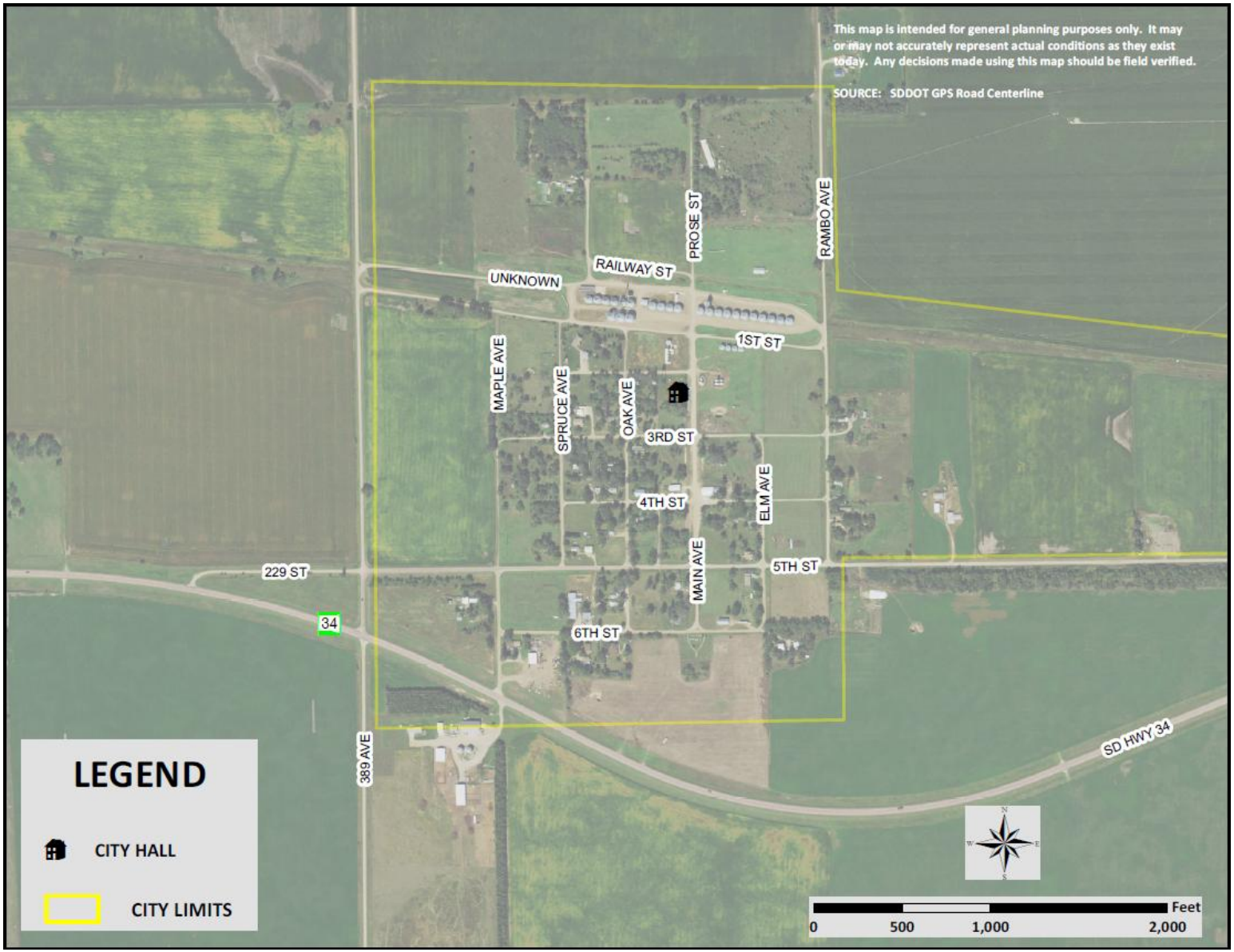
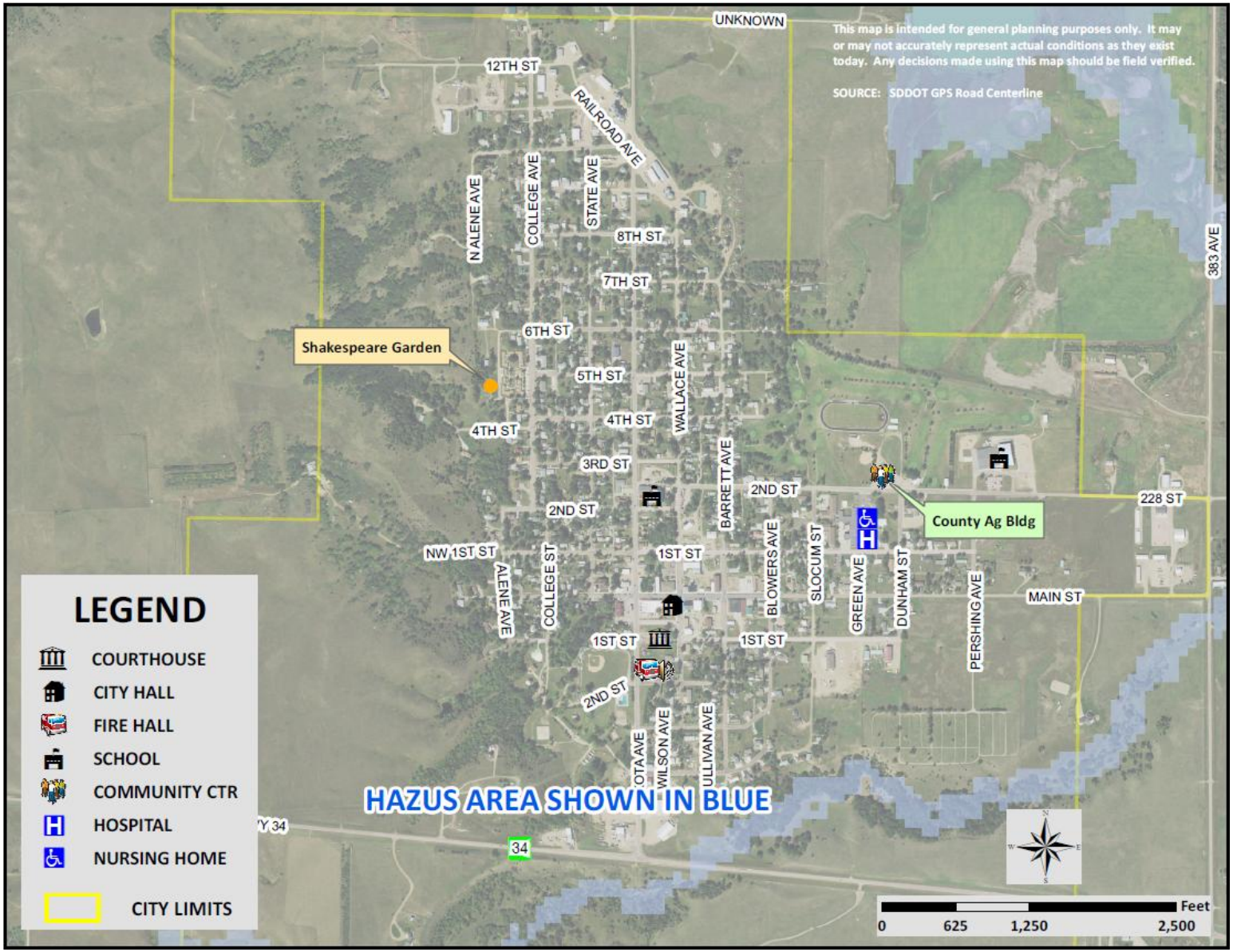


Figure 3.3 – Wessington Springs



2025 Jerauld 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 Jerauld 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 Jerauld 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 Jerauld 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 Jerauld County that can support the local mitigation strategy.

Table 4.1 – Regulatory Mechanisms

Item	Notes
Jerauld County Zoning Ordinance	The ordinance, which is based on the Jerauld County Comprehensive Plan, controls where growth and development can occur within the county.
Jerauld County Burn Ban Ordinance	This ordinance prohibits open burning during very dry periods. They are issued by the Jerauld County Emergency Management Office acting under the authority of the county commission.
Wessington Springs Zoning Ordinance	The ordinance, which is based on the City's comprehensive plan, controls where growth and development can occur within the city.

Regulatory authority also exists within Jerauld 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, Jerauld County, Alpena, and Wessington Springs participate in the National Flood Insurance Program (NFIP). However, there are no Flood Insurance Rate Maps for any of the jurisdictions and therefore none of them promote and enforce NFIP requirements since there is nothing to enforce or regulate. Since there are no Special Flood Hazard Areas for any of the jurisdictions, there are no areas to regulate for substantial damage and improvement provisions. Training and information on NFIP has not been passed down over the years as positions have turned over, resulting 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
Jerauld Co.	(NSFHA)	06/08/98	Auditor	There are no floodplain regulations to administer	Not applicable
Alpena	(NSFHA)	06/08/98	Town board member	There are no floodplain regulations to administer	Not applicable
Lane	*(The community does not participate in the NFIP program)*				
Wessington Springs	(NSFHA)	01/03/84	Finance Officer	There are no floodplain regulations to administer	Not applicable

Currently there is one active National Flood Insurance Program policy in Jerauld County providing $350,000 in coverage, but no claims have been paid to date. No repetitive losses or severe repetitive losses have ever been recorded in the county.

Other Capabilities

Other resources and capabilities exist within Jerauld County to support the mitigation strategy. This includes administrative and technical resources, financial resources, and education and outreach efforts, as well as physical assets, which are summarized in the following table and discussed in further detail below.

Table 4.3 – Other Local Capabilities to Support Hazard Mitigation

Type	Capability	Jerauld County	Alpena	Lane	Wess Springs
ADMINISTRATIVE & TECHNICAL	Emergency management staff	**X**			
	Planning and zoning staff/board	**X**			**X**
	Public works staff		**X**		**X**
	Floodplain management staff	**X**	**X**		**X**
	Electrical system staff				**X**
FINANCIAL	Budgeting process	**X**	**X**	**X**	**X**
	Project surcharge for specific purposes				**X**
EDUCATION & OUTREACH	Severe Weather Awareness Week	**X**			
	Social media	**X**	**X**		**X**
PHYSICAL ASSETS	Relief shelter	**X**	**X**		**X**
	Storm shelter	**X**	**X**		**X**
	Warning siren		**X**	**X**	**X**

Administrative and technical staff to support hazard mitigation in the county are limited. For instance, Jerauld 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 Jerauld 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 Jerauld County is limited, but efforts are being made. The Jerauld 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 Jerauld County, Alpena, and Wessington Springs Facebook pages.

Pictured: The LSI Jack Links facility in Alpena..

There are many physical assets in Jerauld 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, each has a backup source of power, and each can be activated remotely by local officials or from the 911 dispatch center in Huron. Public facilities that can serve as emergency shelter from a tornado or other severe weather include the basement of the county courthouse in Wessington Springs and LSI Jack Links in Alpena. Facilities that can provide short-term relief following a disaster include the Alpena Community Center and the County Ag building in Wessington Springs, both of which have a backup generator.

The ability of Jerauld County, the Town of Alpena, and the City of Wessington Springs 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 Jerauld 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 Jerauld 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.

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.
- Minimize development in areas that are prone to flooding.
- Maintain the natural and man-made systems that protect people and property from floods.

[10] The lack of development is shown by the fact that a total of only 33 building permits were issued throughout Jerauld County between 2010 and 2022, an average of fewer than three per year.

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
JERAULD COUNTY		
Powerline burial.	Winter Storm	The Central Electric Cooperative continues to convert overhead powerlines to underground in Jerauld County as funding permits. As of the end of 2023, a total of 110 miles are underground, which is about 23% of the total lines in the county.
Drainage improvement projects along county roads (clean waterways, replace culverts, raise roads).	Flooding	The County has used Rural Access Infrastructure Fund program funds to make some improvements.
Require people wanting to do controlled burns to first contact proper authorities.	Wildfire	Although the County has taken no statutory action, compliance is better now, due in part to public outreach.
TOWN OF ALPENA		
Storm drainage improvements on east side of town.	Flooding	The Town hired an engineering firm to develop a flood study of the community, which was recently completed.
Storm drainage improvements along Pine Avenue.	Flooding	The Town hired an engineering firm to develop a flood study of the community, which was recently completed.
Build/install a tornado safe room.	Summer Storm	No longer a priority, since LSI Jack Links has made its facility available to the community.
TOWN OF LANE		
Build/install a tornado safe room.	Summer Storm	No progress - lack of funds.
Drainage improvements.	Flooding	No progress - lack of funds.

Mitigation Action	Hazard	Current Status
CITY OF WESSINGTON SPRINGS		
Continue relocating overhead utility lines underground.	Winter Storm	No progress - lack of funds.
Develop hydrology and hydraulics study for community.	Flooding	The study has been completed.
Address drainage issues along 1st Street SE and State Street.	Flooding	Work is in progress that will improve stormwater drainage in the area.
Address drainage at sewer lagoon.	Flooding	The City is in the process of upgrading the lagoon, which will help address the drainage problems there.

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 Jerauld 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:

FEMA grant programs

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

Other grant and loan programs/sources

- 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

Table 4.5 - Proposed Mitigation Actions

JERAULD 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.
Acquire generator for courthouse	Winter Storm	High	Emergency Mgmt Director	Mid	≈ $60,000	HMGP; Courthouse Security Grant Program	The proposed 85-kW generator will ensure that the courthouse can operate during power outages. The existing 50-kW generator is not sufficient to run the heating & cooling system. The County will continue to pursue grant funding.
Participate in the StormReady Program	Summer Storm	High	Emergency Mgmt Director	Short	Minimal	Staff time	The Emergency Management Director will make inquiries into the program.
Improve drainage along county and township roads	Flooding	High	Highway Superintendent	Long	≈ $500,000	DOT; HMGP	Actions could include replacing or upgrading culverts, elevating roadways, or cleaning out roadside ditches. The area in the vicinity of Sand Creek near Alpena is a priority (see **Fig 2.1**). The County may pursue grant funding if a project appears to be grant eligible.
Acquire drone for search and rescue operation	Flooding Winter Storm	High	Sheriff	Mid	≈$20,000	Homeland Security Grant	This non-mitigation action will better prepare the county for rescuing victims of various types of disasters, including flooding and winter storms. The drone would be based out of the Sheriff's office and available for use by the County and each community.
Update the comprehensive plan	Flooding Wildfire	Medium	County commission	Short	≈ $5,000	General fund	The plan was developed in 1998 and has not been significantly modified since. Updating the plan will help prevent potential development in hazard prone locations.
Put up snow fences along county roads	Winter Storm	Medium	Highway Superintendent	Long	≈ $10,000	DOT; General fund	The fences will limit blowing and drifting snow over roads. The County will look into the feasibility of this option.
Install warning siren at Spring Valley Colony	Summer Storm	Medium	Emergency Mgmt Director	Mid	≈ $30,000	HMGP; General fund	The County may consider pursuing grant funding.
Participate in the Firewise Program	Wildfire	Medium	Emergency Mgmt Director	Short	Minimal	Staff time	Mostly for the western part of the county, but the towns will also be given an option to participate. The Emergency Management Director will look into the program.
Conduct outreach to educate people about water conservation	Drought	Medium	Emergency Mgmt Director	Short	Minimal	Staff time	The Jerauld County emergency manager will work with the towns on public outreach, including school groups.
Educate farmers on soil and water conservation practices	Drought	Medium	Emergency Mgmt Director	Short	Minimal	Staff time	The Jerauld County emergency manager will work with county extension office staff on outreach to local farmers.

ALPENA ACTIONS	HAZARD	PRIORITY	PROJECT LEAD	TIME	COST	FUNDING	NOTES
Continue participation in the National Flood Insurance Program	Flooding	High	Town board member	Ongoing	Minimal	Staff time	In July 2025 the town board appointed a board member to serve as the floodplain administrator. This individual will contact the South Dakota floodplain coordinator to learn more about the NFIP program.
Participate in the StormReady Program	Summer Storm	High	Finance officer	Short	Minimal	Staff time	The finance officer will work with the County Emergency Management Director.
Make stormwater improvements to the west side of town	Flooding	High	Town board	Mid	≈ $250,000	DANR; HMGP	A project has been proposed centered on Willow Ave that will include storm sewer inlets & piping, replacing culverts and reshaping ditches. The Town intends to pursue grant funding.
Acquire generator for the city shop	Winter Storm	High	Town board	Mid	≈ $30,000	HMGP	The generator will ensure that the city shop can operate during power outages. The Town may pursue grant funding.
Upgrade fire department capabilities	Wildfire	High	Fire chief	Mid	≈ $100,000	AFG; WUIGP; General fund	The Town may pursue grant funding for training, equipment upgrades, or vehicle purchase.
Construct tornado shelter	Summer Storm	Medium	Town board	Long	≈ $300,000	HMGP	The Town may pursue grant funding for a standalone or multi-purpose structure.
Conduct outreach to educate people about water conservation	Drought	Medium	Town board	Short	Minimal	Staff time	The Town will work with the Jerauld County emergency manager on outreach to the public, including school groups.
Participate in the Firewise Program	Wildfire	Medium	Fire chief	Short	Minimal	Staff time	The Town will work with the Jerauld County emergency manager to implement this program.
WESSINGTON SPRINGS 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.
Acquire generator for the street shop	Winter Storm	High	City council	Mid	≈ $30,000	HMGP	The generator will ensure that the street shop can operate during power outages. The City may pursue grant funding.
Upgrade electrical distribution system	Winter Storm	High	Electric system superintendent	Long	≈ $250,000	HMGP; Electric fund	The City has identified locations where power lines could be buried. The City intends to pursue grant funding if a project appears to be cost effective.
Install warning siren on west side of town	Summer Storm	High	City council	Mid	≈ $30,000	HMGP; General fund	The existing warning sirens are hard to hear on the western side of town. The City may pursue grant funding.
Conduct hydrology study of community	Flooding	High	City council	Mid	≈ $75,000	DANR; HMGP	Once the City moves to the Mid-Dakota Water System, the city's water wells will be capped. How to handle the

							excess groundwater that will result must be studied. The City may pursue grant funding.
Upgrade fire department capabilities	Wildfire	High	Fire chief	Mid	≈ $100,000	AFG; WUIGP; General fund	The City may pursue grant funding for training, equipment upgrades, or vehicle purchase.
Update the comprehensive plan	Flooding Wildfire	Medium	City council	Short	≈ $5,000	General fund	The plan was developed in 2001 and has not been significantly modified since. Updating the plan will help prevent potential development in hazard prone locations.
Construct tornado shelter	Summer Storm	Medium	City council	Long	≈ $300,000	HMGP	The City may pursue grant funding for a standalone or multi-purpose structure.
Conduct outreach to educate people about water conservation	Drought	Medium	City council	Short	Minimal	Staff time	The City will work with the Jerauld County emergency manager on outreach to the public, including school groups.
Participate in the Firewise Program	Wildfire	Medium	Fire chief	Short	Minimal	Staff time	The City will work with the Jerauld County emergency manager to implement this program.

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 Jerauld 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 Jerauld 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 Jerauld County, Town of Alpena, and City of Wessington Springs websites, and a hard copy is available for review at the Jerauld County courthouse and in each city office. Going forward, Jerauld 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 Jerauld 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 Jerauld 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 Jerauld County Emergency Management Director is ultimately responsible for implementing this plan. The director will work under the direction of the Jerauld County Commission and with the support of the Jerauld 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 [11]. 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 Jerauld 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?

[11] After many years of inactivity, the Jerauld County LEPC was reorganized in 2025.

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, Jerauld 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 Jerauld 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 [12].

- Jerauld County Comprehensive Plan and Zoning Ordinance – the Planning & Development District III office developed the comprehensive plan and zoning ordinance working with the Jerauld County planning commission. The County 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. Jerauld County will be contacting the District III office to begin updating the comprehensive plan and zoning ordinance.
- Jerauld County Highway Plan – the highway plan is developed by the Jerauld County Highway Superintendent. It includes a table of significant county road projects

[12] The Town of Alpena has no planning mechanisms or policies.

scheduled to occur for the next five years. The South Dakota Dept of Transportation 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.

- Wessington Springs Comprehensive Plan and Zoning Ordinance – the Planning & Development District III office developed the comprehensive plan and zoning ordinance working with the city planning board. The City 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. Wessington Springs will be contacting the District III office to begin updating the comprehensive plan and zoning ordinance.
- Wessington Springs Housing Study - the Planning & Development District III office produced the study, working with the Wessington Springs planning board. The City and District III will integrate relevant information acquired through the development of this plan into the housing study when it is next updated.

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 Jerauld 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 Town of Alpena, 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 Jerauld 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 Jerauld County (SD) Hazard Mitigation Plan

APPENDICES

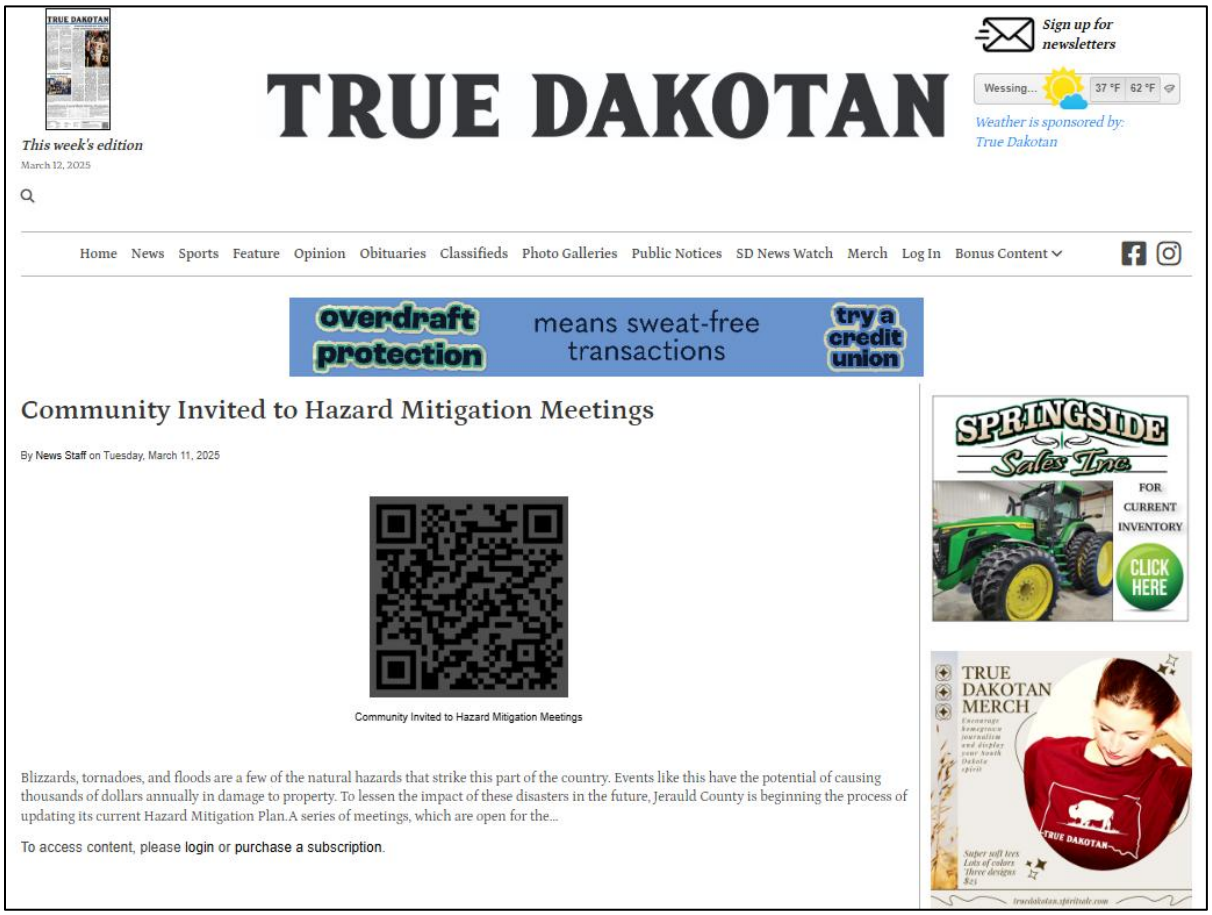
- Appendix A: Outreach Effort
- Appendix B: Documentation of Meetings
- Appendix C: History of Previous Hazard Occurrences
- Appendix D: References

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 Wessington Springs *True Dakotan*, 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 Wessington Springs *True Dakotan* Prior to First Meeting:



TRUE DAKOTAN

This week's edition
March 12, 2025

Sign up for newsletters

Wessing... 37 °F 62 °F

Weather is sponsored by: True Dakotan

Home News Sports Feature Opinion Obituaries Classifieds Photo Galleries Public Notices SD News Watch Merch Log In Bonus Content

overdraft protection means sweat-free transactions try a credit union

Community Invited to Hazard Mitigation Meetings

By News Staff on Tuesday, March 11, 2025

Community Invited to Hazard Mitigation Meetings

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, Jerauld County is beginning the process of updating its current Hazard Mitigation Plan.A series of meetings, which are open for the...

To access content, please login or purchase a subscription.

SPRINGSIDE Sales Inc. FOR CURRENT INVENTORY CLICK HERE

TRUE DAKOTAN MERCH

Press Release in Wessington Springs *True Dakotan* Before Final Meeting:

TRUE DAKOTAN

This week's edition
July 3, 2025

Sign up for newsletters

Weather is sponsored by: True Dakotan

Home News Sports Feature Opinion Obituaries Classifieds Photo Galleries Public Notices SD News Watch Merch Log In Bonus Content

Live in Brandon, SD
CLICK TO VIEW LOTS & LISTINGS

Community Invited to Final Jerauld Co. Hazard Mitigation Plan Meeting

By News Staff on Tuesday, July 1, 2025

Community Invited to Final Jerauld Co. Hazard Mitigation Plan Meeting

The final meeting to update the Jerauld County Hazard Mitigation Plan will occur July 8 at 8:30 a.m. at the Jerauld County Courthouse.

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 Jerauld County Emergency Management Office. The plan can also be accessed at www.districtiii. org by scanning the QR code above.

The public is invited to attend the meeting or to provide comments and suggestions regarding the plan, which can be sent to the Jerauld County Emergency Management Office at em@jerauldsd. com or by calling 605 5399301.

All comments received will be included in the final copy of the plan that will be submitted for approval to the State and FEMA.

First Annual RED, WHITE AND BOOZE Golf Tournament
JULY 5, 2025 • 10 A.M. TEE OFF
4-PERSON SCRAMBLE • DRINK SPECIALS!
$50/PERSON or $200/TEAM
Stop by or call 605-539-1944 to sign up

SPRINGSIDE Sales Inc.
FOR CURRENT INVENTORY
CLICK HERE

Posting on Jerauld County website Prior To Final Meeting:

Survey Poster

PUBLIC PARTICIPATION NEEDED!

JERAULD COUNTY

HAZARD MITIGATION PLAN PUBLIC SURVEY

The Jerauld 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. Jerauld 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 Jerauld 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 Jerauld 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 Jerauld County and the participating municipalities eligible to apply for FEMA hazard mitigation funding.

PHONE: (605) 539-1311
EMAIL: JASONWEBER@JERAULDSD.COM

Survey Form with Responses

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

The Jerauld 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. Jerauld 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? **JERAULD COUNTY (ALL)**

2. What town do you live in? **WESS SPRGS 22; LANE 1; OTHER 2; NO ANSWER 13**

3. How long have you lived in South Dakota?

   Less than 1 year: **1**
   1-5 years: **4**
   6-10 years: **2**
   More than 10 years: **31**

4. Do you own or rent your home?

   Own: **34**
   Rent: **4**

5. Do you own/rent a:

   Single-family home **37**
   Duplex / Twin home
   Apartment
   Condominium/townhouse
   Manufactured home **1**

NATURAL HAZARD INFORMATION

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: 11** **No: 26** **No Answer: 1**

6. 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	19	13	4	2	0		49
Dust Storm	5	17	8	6	2		17
Earthquake	0	2	4	14	18		-48
Flood	4	12	5	12	5		-2
Landslide/Debris Flow	1	5	4	18	10		-31
Wildfire	17	14	3	3	1		43
Windstorm	18	11	7	1	1		44
Severe Winter Storm	21	14	1	2	0		54
Tornado	11	16	6	4	1		51
Extreme Heat	0	1	0	0	0		32
Other: Severe Hail	0	1	0	0	0		1

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

Yes: 10 **No: 28**

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.

8. 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) **23**
Economic (Business closures and/or job losses) **30**
Infrastructure (Damage or loss of bridges, utilities, schools, etc.) **30**
Cultural/Historic (Damage or loss of libraries, museums, fairgrounds, etc.) **11**
Environmental (Damage or loss of forests, rangeland, waterways, etc.) **18**
Government (Ability to maintain order and/or provide public amenities and services) **17**

9. 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	28	7	2	1	0		62
Schools (K-12)	34	2	2	0	0		70
Hospitals	36	2	0	0	0		74
Major bridges	20	12	5	0	1		50
Fire/police stations	37	0	0	0	1		72
Museums/historic buildings	2	23	8	5	0		22
Major employers	19	15	2	0	2		49
Small businesses	28	9	1	0	0		65
City Hall/Courthouse	25	10	3	0	0		60
Parks	12	15	11	0	0		39
Other: Ambulance	1	0	0	0	0		2
Other: Shelters	1	0	0	0	0		2

10. 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 to reduce risk	4	15	16	3	0		20
I support a non-governmental approach to reducing risk	6	15	14	3	0		24
I support a mix of both governmental and non-governmental approaches to reducing risk	8	22	7	0	0		38
I support policies to prohibit development in areas subject to natural hazards	6	18	12	2	0		28
I support the use of tax dollars (local, state, or federal) to compensate landowners for not developing in areas subject to natural hazards	3	9	16	6	0		9
I support the use of tax dollars to reduce risks and losses from natural disasters	9	14	13	2	0		30
I support protecting historic and cultural structures	7	13	17	1	0		26
I would be willing to make my home more disaster-resistant	9	21	8	0	0		39
I support steps to safeguard the local economy following a disaster event	9	25	4	0	0		43
I support improving the disaster preparedness of local schools	18	18	2	0	0		54
I support the disclosure of natural hazard risks during real estate transactions	10	19	7	1	0		38

11. 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	23	9	5	1	0		54
Protecting critical facilities (e.g., transportation networks, hospitals, fire stations)	32	5	1	0	0		69
Preventing development in hazard areas	10	20	7	1	0		39
Enhancing the function of natural features (e.g., streams, wetlands)	19	11	7	1	0		48
Protecting historic and cultural landmarks	10	13	13	1	1		30
Protecting and reducing damage to utilities and infrastructure	26	9	3	0	0		61
Strengthening emergency services (e.g., police, fire ambulance)	29	8	1	0	0		66
Disclosing natural hazard risks during real estate transactions	15	14	7	1	1		41
Promoting cooperation among public agencies, citizens, non-profit organizations and businesses	19	10	8	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:

Jerauld County Hazard Mitigation Planning Meeting

April 8, 2025

NAME	REPRESENTING & Mileage
Mark Coram	MORWS 0
Shane Mentzer	Jerauld Co Commission .5 miles
Walt Hein	Jerauld Co Commission .25 mi
Shawn Ochsner	Town of Alpena 18 miles
Maria Howard	Avera Weskota Memorial Hospital .25 mi
Linda Wellmann	City of Wessington Spgs 4 Blocks
Shannon Fagerhaug	Jerauld Co. 18 miles
Melanie Young	Town of Alpena 18miles
Eric Schroeder	Wess Springs Fire Dept. 1 mile
Philip LaBare	Wess Springs City .5
Charles Bogeleen	Jerauld County
Stephanie Reasy	Avera Weskota .5 miles
Lucas VanEngelenburg	City of Wess Springs .5 miles
MICHAEL ORMSMITH	WS School District .5 miles
Dedrick Koch	Jerauld Co States Atty 25 miles
Jason Weyer	Jerauld Co Sheriff
John Clem	Planning District III
Shannon Vicreck	Planning District III
Eric Ambroson	Planning District III

SIGNUP SHEET – SECOND PLANNING TEAM MEETING:

Jerauld County Hazard Mitigation Planning Meeting

May 6, 2025

NAME	REPRESENTING	Mileage
Linda Wilbur	City of Wessington Springs	0
Jeff Kelsey	Alpena	18
Mark A Green	MDRWS	.1 miles
Charles Bergeteen	WS	.1 miles
Walt Hein	~~WS~~ Jerauld Co	.1 mi
Fred Yoshovec	Jerauld Co	6 miles
[signature]	Jerauld Co	25 m
Shane Mentzer	Jerauld Co	
Eric Schroeder	Jerauld Co. EM + WSFD	0
Shannon Eggerhang	Jerauld County	0 3miles
Melanie Lasing	Alpena	18 miles
John Clem	District III	
Shannon Viereck	District III	

SIGNUP SHEET – FINAL PLANNING TEAM MEETING:

Jerauld County Hazard Mitigation Planning Meeting

July 8, 2025

NAME	REPRESENTING
John Clem	Planning District III
[illegible]	City of Wessington Springs
[illegible]	JR County
[illegible]	Jerauld Co
[illegible]	Jerauld Co.
Eric Schroeder	Emergency Manager Jerauld Co.
Shane Mentzer	Jerauld County
Shannon Fagerhaug	Jerauld County
Fred Krohmer	Jerauld County
[illegible]	States Attorney - Jerauld Co.

JERAULD COUNTY MINUTES

The Jerauld County Board of Commissioners held their regular monthly meeting on Tuesday, June 3rd, 2025, at 9:00 am. Chairperson DeVonne Losing called the meeting to order with Commissioner Charles Bergeleen, Commissioner Fred Krohmer, Commissioner Walt Hein and Commissioner Shane Mentzer in attendance. States Attorney Koch was also present for the meeting.

Chairperson Losing led the Pledge of Allegiance.

Moved by Bergeleen, seconded by Krohmer, all members voted aye. Motion carried to approve the agenda.

A conflict of interest was declared by Chairperson Losing regarding the monthly fuel bid and the annual propane bid awards. A second conflict of interest was declared by Commissioner Krohmer regarding the approval of the revised Alcohol Beverage License Application.

Ryan Jensen, Summer Rec Programs, was available for public comment to update the board on the progress for the 4-H ballfield. The program received grants awarded from Springs Area Community Club and Central Electric Coop for cement work around the field. That project will start in the next few days. The poles for the battling cage have been set. The program will get an estimate of the completed projects and report back to the board.

Moved by Bergeleen, seconded by Krohmer, all members voted aye. Motion carried to approve the minutes of the May 6th regular meeting.

Auditor's Account with Treasurer: County Funds – $6,347,607.65; Funded Depreciation (for Hospital use only) - $3,440,230.98; Custodial Funds - $442,838.91 = $10,230,677.54 total

Moved by Mentzer, seconded by Bergeleen, all members voted aye. Motion carried to allow the following claims: (*DELETED*)

In accordance with SDCL 28-13-41, Jerauld County had two people receiving poor relief for the month of May.

The commissioner board met with Stephanie Reasy, Administrator/CEO of Avera Weskota Memorial Medical Center to review the 2025-2026 Capital Budget. Moved by Bergeleen, seconded by Mentzer, all members voted aye. Motion carried to approve the 2025-2026 Capital Budget for Avera Weskota Memorial Medical Center.

Maria Schwader, SDDLA, was present to report closing comments and findings from the CY2022-CY2023 Jerauld County Audit. Any recommendations by Ms. Schwader will be implemented as this year progresses.

Sheriff Weber met with the board to discuss personnel. Moved by Mentzer, seconded by Hein, all members voted aye. Motion carried to meet in executive session at 9:30 am per SDCL 1-25-2(1) to discuss personnel. Chairperson Losing declared executive session over and to resume in regular session at 9:45 am. The board updated Sheriff Weber on one of the audit findings, concerning the Sheriff Department. Sheriff Weber agreed to work on adapting as recommended.

Brian Kolousek, Highway Superintendent, was present to discuss road and bridge. The board discussed the gravel needs and weak spots on county roads. The new motorgrader is working out well. Brian spoke with the board about his 2026 budgeting requests.

The board opened sealed bids submitted for propane to be delivered to the Jerauld County Courthouse, Jerauld County Highway Department, and Jerauld County Ag Building from July 1, 2025 thru June 30, 2026 as follows:

CHS Farmers Alliance @ $1.34/gallon
Alpena Coop Service @ $1.43/gallon
Agtega @$1.49/gallon

Moved by Krohmer, seconded by Hein, Losing abstained from voting, all other members voted aye. Motion carried to award the bid to CHS Farmers Alliance.

Deb Fastnacht, Ambulance Director, was available to discuss the Ambulance. Deb reported that the changes had been completed on the Ambulance Policy Handbook. She will forward an electronic version to the commissioners and they will sign off at the next meeting. The Ambulance Board had recommended to increase the refusal fee from $100.00 to $200.00 to assist with staff coverage on those calls. The commission board agreed with that change. The board discussed Deb's office hours. She said that she will plan to be at the office Monday, Tuesday, Thursday and Friday from 1:00-5:00 pm and on Wednesday from 9:00 am-1:00 pm. The board asked that she post those hours on her door. The board asked that all applications turned in to Deb be brought to the board before approval or denial. Deb discussed her 2026 budgeting requests with the board.

The board reviewed the changes to the Alcoholic Beverage License Application as requested by the SD Dept of Revenue. Moved by Mentzer, seconded by Bergeleen, Krohmer abstained from voting, all other members voted aye. Motion carried to approve the revised application and send it back to the SD Dept of Revenue.

Auditor Fagerhaug reported that the Emergency Manager plans to travel to Pierre one day in June for a free training. Moved by Krohmer, seconded by Mentzer, all members voted aye. Motion carried that in accordance with SDCL 7-7-25 & 7-7-26 necessary expenses be allowed for June meetings.

Auditor Fagerhaug presented a request to use Jerauld County highways for aerial application operations. Moved by Mentzer, seconded by Bergeleen, all members voted aye. Motion carried to approve the request.

Eric Schroeder, Emergency Manager, was available to meet with the board. The board reviewed the list of Hazard Mitigation Projects/Actions for Jerauld County. Moved by Mentzer, seconded by Hein, all members voted aye. Motion carried to approve all projects/actions listed for Jerauld County as included in the 2025 Hazard Mitigation Plan. A list of those items will be on file at the Auditor's office. Eric reported that he had received a request from SDSU to circulate information on Mesonet Stations. The request comes in hopes to increase the number of stations available to areas that are not currently reporting. The board recommended a call to the paper. EM Schroeder and Commissioners Bergeleen and Krohmer attended the third meeting for the Firesteel Creek Watershed Project. A list of project ideas within Jerauld County was discussed. The board was asked to sign an agreement on providing sponsor assistance and leadership through the process. Moved by Bergeleen, seconded by Mentzer, all members voted aye. Motion carried to sign the agreement. The board asked that EM Schroeder meet with Alpena Fire Chief and Sheriff Weber to review the current Burn Ban for any changes.

The board completed a walk-though of the Jerauld County Clinic. They met with staff and gathered information on updates that are priority to the clinic. The board then met with Ann Scheel to go through the requests. Staff at the clinic believe that the doors and windows are of highest priority. Ann presented the quote from Heartland Glass Company for repairing and updating the doors. Moved by Bergeleen, seconded by Hein, all members voted aye. Motion carried to approve the quote for the repairs and to schedule the job as soon as possible.

Auditor Fagerhaug presented two waivers for use of county Ag Building chairs for events. Moved by Mentzer, seconded by Hein, all members voted aye. Motion carried to approve the waivers.

At this time, the board reviewed the current Ambulance district boundaries and held discussion on options for funding. The board will make final decisions at the July meeting.

The courthouse will be closed on Thursday, June 19th in observance of Juneteenth holiday and closed on Friday, July 4th in observance of Fourth of July holiday.

The next regular meeting will be held Tuesday, July 8th starting at 9:00 am.

Moved by Hein, seconded by Bergeleen, all members voted aye. Motion carried to adjourn at 3:15 pm.

DeVonne Losing, Chairperson
Attest: Shannon Fagerhaug, Auditor
Published once at the total approximate cost of _____.

ALPENA MINUTES

Alpena Town Board met in regular session on Wednesday, June 11, 2025 at 5:30 pm at the Alpena Community Center. Mayor Kelsey and Trustees Knittel, Viktora and Muilenburg were present as well as Finance Officer Shawn Ochsner. Trustee Jurgens was absent.

Mayor Kelsey called the meeting to order. Motion was made and seconded to approve the minutes from the previous meeting – approved unanimously. Financial report was reviewed. Motion made and seconded to approve the report as presented – approved unanimously. Discussion was held on purchasing certificates of deposit to earn interest on general funds. Motion was made, seconded and unanimously approved to purchase two fifty thousant dollar, 7 month CD's at an interest rate of 4.05% APR from American Bank & Trust.

A motion was made, seconded and unanimously approved to allow the following claims for payment: (*DELETED*)

Discussion was held on Hazard Mitigation Projects and the Hazard Mitigation Grant. Motion was made, seconded and unanimously approved to participate in the Hazard Mitigation Plan, as well as, participate in the StormReady Community Program, in addition to applying for Hazard Mitigation Grant Funds to be used in support of the following potential projects, including but not limited to - Aquiring a Generator for the City Shop; Building a tornado safe room; Improving Drainage along Willow Ave; Cleaning Ditches and Culverts; Fire Department Training and upgrading Fire Department Capabilities – Muilenburg – aye; Knittel – aye; Viktora – aye. Motion carried 3 to 0.

Discussion was held on the process of selling property. Attorney Bottum stated and recommended to declare the property surplus, have it appraised and have a public auction. Discussion was held on finalizing the concrete, the installation of the new slide and replacing the fence around the slide using as much of the same fencing and slats as possible. Motion was made, seconded and unanimously approved to move forward with the finalization of the swimming pool project. Discussion was held on purchasing a new pool vaccuum, and putting a new cord on the old dolphin. Motion was made and seconded to purchase a new one and add a cord to the existing one for backup – approved uanimously.

Discussion was held on a special event license and liability insurance for the Tractor Pull and Car Show. Motion was made, seconded and unanimously approved to add a Special Event and Extended Liability Endorsement onto the current policy.

In other business, the TIF dissolution was discussed. Any and all purchases must be preapproved by the City Council. Solar covers for the swimming pool were reviewed. There are no cost prohibitive options for a pool cover. DANR conducted an inspection of the Restricted Use Facility and the report was reviewed. The site is operating in an overall satisfactory compliance manner, according to the report.

Motion was made and seconded to adjourn – approved unanimously. The next regularly scheduled board meeting will be held on Wednesday, July 9, 2025 at 5:30 pm at the Alpena Community Center.

Jeff Kelsey, Mayor
ATTEST: Shawn Ochsner, Finance Officer

WESSINGTON SPRINGS MINUTES

The City Council of the City of Wessington Springs met in regular session at the Office of the Finance Officer at 7:00 P.M. on Monday, June 2nd, 2025, with the following members being present: Meg Forrest, Kari Fagerhaug, Pat Fastnacht, Shawn Tobin, Cheri Maxwell and Mayor Ryan Knipfer presiding. Also, in attendance was Linda Willman, Finance Officer. Councilman Layton Schimke was absent.

Meeting was opened with a pledge of allegiance.

Fagerhaug motioned, seconded by Forrest to approve the agenda as presented. Ayes: 5 Nays: 0 M/C.

Conflicts of Interest: none stated.

Fastnacht motioned, seconded by Tobin to approve the May City Council meeting minutes. Ayes: 5 Nays: 0 M/C.

Fagerhaug motioned, seconded by Forrest to approve the May treasurer's report as presented. Ayes: 5 Nays: 0 M/C.

Pay request #2 for the 2nd Street Project was presented to the Council in the amount of $256,008.47 payable to H & W Construction. Forrest motioned, seconded by Fastnacht to approve the pay request as presented and authorize the mayor to sign the pay request for payment and form to be submitted for funding reimbursement. Ayes: 5 Nays: 0 M/C.

The SD Public Insurance forms were presented to the Council for approval and signatures. Fagerhaug motioned, seconded by Fastnacht, to authorize the mayor to sign the documents. Ayes: 5 Nays: 0 M/C

Forrest motioned, seconded by Fastnacht, and with all Council members voting aye to approve the following bills for payment. (*DELETED*)

Mayor Ryan Knipfer stated it was the time and place for public comment.

Camden Hofer of SPN Engineering, met with the Council to discuss the Water and lagoon Projects and the DANR finance options. Following the discussion, Fastnacht motioned, and Forrest seconded to approve the following resolution. (*DELETED*)

Brad Lawrence representing Brosz engineering met with the Council to give them an update on the 2nd Street Project. Fagerhaug motioned seconded by Maxwell to solicit costs for constructing a new 8" water main on 2nd Street NE from Wallace to Barrett. Brosz Engineering is to develop the list of bid items for the work and bring back a formal Construction Change Order for the same at the next meeting, contingent upon the contractor's bid on the work meeting the budgetary parameters set forth at the meeting for a cost estimate of ± $32,250. Ayes: 5 Nays: 0 M/C

Phil LaBore and Brett Lambert met with the Council.
A proposal of $57,140 from Great Plains Structures was received for repairs on the water tower. It was decided to include the repairs in the water project.

A motion was made by Fagerhaug, seconded by Forrest to accept the quote of $2.82 for E-10 and the quote of $2.69 for diesel from Total Oil. Ayes: 5 Nays: 0 M/C.

The Safety Benefits Workman's Compensation audit report was presented to the Council. Fagerhaug motioned, seconded by Fastnacht to approve the recommended changes reported in the report. Ayes: 5 Nays: 0 M/C

A quote for $42,943 was received from HydroKlean for monoform repairs of four manholes. Fastnacht motioned seconded by Forrest to approve the quote of $42,943 from HydroKlean for the monoform repairs of the manholes. Ayes: 5 Nays: 0 M/C

Blake Willman representing the Sons of American Legion met with the Council to ask permission to close Main Street for the July 12th, 2025 SAL Poker Run. Fagerhaug motioned, seconded by Fastnacht to approve the closure of Main Street in front of Pin Twisters for the SAL Poker Run and event. Ayes: 5 Nays: 0 M/C

Mayor Ryan Knipfer announced this was the time and place for the public hearing for the Special Event Liquor License for the Pour House dba Slippery's for a poker run to be held on Sunday, June 8th, 2025. No interested parties were in attendance. Fagerhaug motioned, seconded by Tobin to approve the Special Events License as presented. Ayes: 5 Nays: 0 M/C

Terri Mebius and Patty Keeton representing the Park & Recreation Committee to discuss projects in the park. Kari Fagerhaug and Meg Forrest will be the Council contacts for the Pool and Pat Fastnacht and Shawn Tobin will be the Council contacts for the park. The also wanted to let the Council know that Patty Keeton, Elton and Julie Kaus are also part of the Park & Recreation committee.

Eric Schroeder, Jerauld County Emergency Management Manager met with the Council to discuss the Fire Steel Watershed Project and the Flood Mitigation program.

A discussion was held on the leasing of the land around the airport, and the sewer lagoons. Fagerhaug motioned, seconded by Forrest, to approve the following resolutions regarding the lagoon and airport land leases. (*DELETED*)

The 2023 audit prepared by Schoenfish & Co. Inc was presented to the Council for review. Fagerhaug motioned, seconded by Fastnacht to approve the audit as presented with the recommendations and authorized the Mayor to sign the audit forms. Ayes: 5 Nays: 0 M/C

A discussion was held on the update to the Jerauld County Hazard Mitigation Plan. Forrest motioned, seconded by Tobin to include the following projects in the Jerauld County Hazard Mitigation Plan: the comprehensive plan, generator acquisition for street shop, bury power lines, build tornado safe room, acquire warning sirens for western side of town, develop a hydraulics and hydrology report to study the consequences of capping the water wells, participation in the National Flood Insurance Program, upgrade fire department capabilities with more training, vehicle/equipment upgrades, etc. Ayes: 5 Nay: 0 M/C

Fastnacht motioned, seconded by Tobin to approve the Special Events Malt Beverage from the Wessington Springs Fire Department for the Rodeo on July 4th & 5th, 2025 at the Rodeo Grounds. Ayes: 5 Nays: 0 Motion carried.

A discussion was held on the front footage for the 2026 budget.

Fagerhaug motioned, seconded by Maxwell to approve the expenses for the SDML Budget Training in Sioux Falls on June 25th, 2025, Officials Workshop in Pierre on July 16th, 2025 and the Heartland Summer Conference of July 15th, 2025. Ayes: 5 Nays: 0 M/C.

Fagerhaug motioned with Forrest seconding to enter into executive session pursuant to SDCL 1-25-2(1) for personnel at 9:00 PM. The council reconvened into regular session at 9:41 PM.

Fagerhaug motioned, seconded by Maxwell to give Allie Diehl a $0.75 raise for completing her 6 month probation period to be retroactive to her 6-month anniversary date of March 31st, 2025 Ayes: 5 Nays: 0 M/C

Fastnacht motioned, seconded by Schinke to adjourn the meeting. Ayes: 5 Nays: 0 M/C

_____ ATTEST: _____

Ryan Knipfer, Mayor Linda Willman, Finance Officer

APPENDIX C: History of Previous Hazard Occurrences

This section provides details about hazard events that have impacted Jerauld County in the past, beginning with a table showing the major disaster declarations in which Jerauld 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 Jerauld County farmers.

Major Disasters

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

Table C.1 – Major Disaster Declarations Affecting Jerauld County

Dec #	Declaration Date	Type	Primary Damage Impact
3015	Jun 1976	Drought	
764	May 1986	Severe storms; Flooding	
999	Jul 1993	Flooding; Severe storms; Tornado	
1045	Mar 1995	Severe winter storm	
1052	May 1995	Severe storms; Flooding	
1075	Jan 1996	Ice storm	
1156	Feb 1997	Severe winter storm; Blizzard	
1173	Apr 1997	Severe storms; Flooding	
1375	May 2001	Severe storms	
1620	Dec 2005	Severe winter storm	
1702	May 2007	Severe storms; Tornado; Flooding	
1887	Mar 2010	Severe winter storm	Utilities
1915	May 2010	Flooding	Roads and bridges
1938	Sep 2010	Severe storms; Flooding	Roads and bridges
1984	May 2011	Flooding	Roads
4186	Jul 2014	Severe storms; Tornado; Flooding	Roads and bridges
4233	Jul 2015	Severe storms; Tornado; Flooding	Utilities
4440	Jun 2019	Severe winter storm; 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 Jerauld 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 Jerauld County

Date	Event Type	Event Description	Mag	Prop Damage ($1,000s)	Crop Damage ($1,000s)
6/3/1966	Hail		2.00 in.		
8/8/1969	Hail		2.50 in.		
7/2/1974	Thunderstorm Wind		65 kts.		
6/3/1975	Tornado		F1	25	
6/10/1978	Hail		1.75 in.		
7/4/1978	Thunderstorm Wind		78 kts.		
5/18/1984	Tornado		F0		
5/18/1984	Tornado		F0		
6/22/1984	Tornado		F0		

Date	Event Type	Event Description	Mag	Prop Damage ($1,000s)	Crop Damage ($1,000s)
5/8/1985	Tornado		F0		
4/26/1991	Hail		1.75 in.		
5/28/1991	Hail		2.75 in.		
5/15/1992	Tornado		F0		
5/15/1992	Tornado		F0		
6/12/1994	Hail		1.75 in.	50	50
1/17/1996	Blizzard	A blizzard spread across the area from the west. Snow 3 to 12 inches deep was accompanied by 50 to 60 mph winds and very cold temperatures. The wind chill dropped to around -70. Roads and many businesses and schools were shut down. The total destruction of at least 3 homes by fire was due in part to the inability of firefighters to travel across blocked roads. Several accidents occurred and other vehicles slid into ditches or became stranded.			
1/24/1996	Heavy Snow				
1/29/1996	Extreme cold	Wind chill readings as cold as 80 below zero occurred as winds over 30 mph combined with temperatures of 10 below to 30 below zero. Many vehicles failed to start, but the main impact was financial with greatly increased heating energy use, and purchase of supplies and services to ensure furnace operation.			
2/10/1996	High Wind		58 kts.	10	
3/24/1996	Blizzard	Snow accumulating 3 to 8 inches was accompanied by winds over 50 mph at times, producing widespread whiteout conditions. Numerous vehicles slid into ditches and many people were stranded in vehicles. There were some rollovers and other accidents.		10	
4/25/1996	High Wind		62 kts.		
7/7/1996	Hail	A swath of hail 2 to 3 miles wide caused crop damage which was total in much of the area. The hail accumulated as much as a foot in places. The hail, which was accompanied by damaging winds, also broke windows and damaged vehicles.	1.75 in.	100	2,000
7/7/1996	Thunderstorm Wind	Thunderstorm winds caused damage to trees, farm buildings, power lines, and crops. Two barns were destroyed. Large trees were uprooted just south of Lane.	62 kts.	100	100
10/29/1996	High Wind		57 kts.		
11/14/1996	Ice Storm	Several periods of freezing rain caused widespread damage and paralyzed travel. Widespread damage occurred to electrical poles and lines, leaving thousands without power for up to four days. Numerous accidents occurred. Tree damage was widespread with tree debris blocking several roads and siedwalks. Some farm buildings and other small structures were damaged by the weight of ice and snow on roofs.		10	
12/14/1996	Heavy Snow				
12/16/1996	Blizzard				
1/4/1997	Blizzard				
1/9/1997	Blizzard				
1/15/1997	Extreme cold	Temperatures a few degrees below zero accompanied by wind gusts over 40 mph created wind chills as cold as 70 below zero. Drifting snow and areas of low visibility in blowing snow also occurred in open areas.			
2/3/1997	Heavy Snow				

Date	Event Type	Event Description	Mag	Prop Damage ($1,000s)	Crop Damage ($1,000s)
3/12/1997	Flood				
4/1/1997	Flood				
4/6/1997	High Wind		63 kts.	10	
12/30/1997	High Wind		50 kts.		
3/31/1998	Heavy Snow	Snowfall of 6 to 16 inches occurred over a large area, causing some damage to power lines resulting in power outages.			
6/10/1998	Hail		1.75 in.	50	
8/24/1998	Hail		1.75 in.		
11/10/1998	Blizzard	Snow accumulating 4 to 14 inches combined with winds gusting as high as 60 mph caused zero visibilities in snow and blowing snow, drifting snow, and damage to trees and power lines with resultant power outages. Some of the power outages lasted over 2 days. Most roads were closed and many people were stranded in vehicles after the sudden onset of the heavy snow.		20	
1/1/1999	Winter Storm				
11/1/1999	Drought	Generally dry weather that began in August continued through November. Dry surface and soil conditions became quite pronounced in November. Water levels fell, especially in small streams and lakes. Damage to winter wheat crops was feared. The area experienced the third driest fall (September through November) period on record. Unusually warm weather during the month contributed to the drying. The most noticeable manifestation of the dry conditions was the large number of grass fires across the area. While damage was mainly limited to the grasslands, considerable manpower and expense was needed to fight the fires.			
12/1/1999	Drought				
1/10/2000	High Wind		52 kts. E		
2/1/2000	Drought	Dry weather that prevailed during the fall continued in February, Dry surface and soil conditions remained quite pronounced. Water levels continued to fall slowly. especially in wetlands, small streams, and lakes. Above normal temperatures contributed to further drying. Grass fires were again a problem in some areas.			
3/1/2000	Drought				
4/1/2000	Drought				
4/5/2000	High Wind		56 kts. E	17	
6/3/2000	Hail		1.50 in.		
6/3/2000	Thunderstorm Wind		69 kts. E	50	
7/11/2000	Thunderstorm Wind		61 kts. E	50	
8/5/2000	Hail		1.75 in.		
8/5/2000	Thunderstorm Wind		57 kts. E	10	
9/6/2000	Thunderstorm Wind		61 kts. E		
11/6/2000	Winter Storm				
11/11/2000	Winter Storm				
12/16/2000	Blizzard				
12/28/2000	Blizzard				

Date	Event Type	Event Description	Mag	Prop Damage ($1,000s)	Crop Damage ($1,000s)
1/13/2001	Winter Storm				
1/29/2001	Blizzard				
2/7/2001	Winter Storm				
2/24/2001	Winter Storm				
11/26/2001	Heavy Snow	Most areas of southeast South Dakota received at least 8 inches of snow. The snowfall closed many schools and businesses, closed some government offices, and severely hampered transportation. The wet and heavy nature of the snow made it difficult to clear away.			
2/11/2002	High Wind		50 kts. E		
3/14/2002	Winter Storm				
7/24/2002	Hail		1.50 in.		
8/3/2002	Thunderstorm Wind		61 kts. E	20	
8/21/2002	Lightning				
6/16/2003	Thunderstorm Wind		61 kts. E	5	
6/24/2003	Thunderstorm Wind	Thunderstorm winds damaged numerous structures. The roofs and siding of several homes were damaged, and the roof of a camping bath house was blown off. A picnic shelter and a baseball grandstand were destroyed, as were lumber yard structures. The brick wall of a high school was damaged. The storm overturned and heavily damaged a camper and a van. Several other vehicles were heavily damaged by tree or other debris, including at least two inside destroyed small garages. The walls of a church were damaged when moved slightly by the wind. There was widespread tree damage, including numerous trees blown down. Power lines were blown down, resulting in power outages. Several windows were broken.	78 kts. E	1,000	
6/24/2003	Tornado	A tornado destroyed trees and crops before crossing the county line from Jerauld into Sanborn County.	F1	10	
11/22/2003	Winter Storm				
5/19/2004	Hail		1.25 in.		
8/1/2004	Thunderstorm Wind		61 kts. E		
8/3/2004	Lightning				
8/3/2004	Thunderstorm Wind		69 kts. E	10	
10/30/2004	High Wind		50 kts. E		
3/10/2005	High Wind		54 kts. E	50	
5/7/2005	Thunderstorm Wind		61 kts. E	5	
6/7/2005	Thunderstorm Wind		61 kts. E		
8/3/2005	Hail		1.75 in.		
9/18/2005	Hail		1.75 in.	30	
11/8/2005	High Wind		52 kts. E		
11/27/2005	Ice Storm	Heavy freezing rain coated roads, and power lines with ice up to 3 inches thick throughout SE South Dakota. Many roads were shut down for extended periods. Most schools and businesses were forced to close. Many miles of power lines and thousands of poles were brought down, resulting in power outages to thousands of households. In some rural areas, power was out		1,000	

Date	Event Type	Event Description	Mag	Prop Damage ($1,000s)	Crop Damage ($1,000s)
		for more than two weeks. Many people took shelter wherever they could. Damage to power poles and lines was so great that repairs required assistance from crews from eight states.			
11/28/2005	Blizzard	Snowfall from 4 to 15 inches combined with winds gusting over 50 mph to produce blizzard conditions. Heaviest snowfall was near and west of the James River, in the area where a severe ice storm immediately preceded the blizzard. Several reports of 6 to 8 foot drifts were received. Travel was made impossible in many areas as roads were closed for extended periods. Most schools and businesses not already closed because of the ice storm were forced to close. The winds during the blizzard continued to bring down power lines and poles, most of which had been coated and weighted down by ice in the area hit by the ice storm.		100	
3/12/2006	Winter Storm				
7/18/2006	Drought				
8/1/2006	Drought				
8/10/2006	Thunderstorm Wind		61 kts. E		
9/16/2006	Hail	Large hail damaged siding on a home and dented vehicles.	2.75 in.	5	
12/30/2006	Winter Storm				
2/28/2007	Heavy Snow				
3/1/2007	Blizzard				
4/10/2007	Heavy Snow				
4/10/2008	Blizzard				
4/25/2008	Heavy Snow				
11/6/2008	Blizzard				
12/14/2008	Blizzard				
12/20/2008	Blizzard				
3/30/2009	Blizzard	Snowfall of 8 to 12 inches, accompanied by northerly winds gusting over 45 mph, produced blizzard conditions that brought travel and commerce to a standstill. Numerous businesses, schools, and roads were closed; and many roads not officially closed were impassable. The town of Wessington Springs received 10 inches of snow.			
4/4/2009	Blizzard				
6/16/2009	Hail		3.00 in.		
7/9/2009	Hail		1.50 in.		
12/23/2009	Blizzard	Prolonged snowfall produced heavy accumulations over southeast South Dakota, ranging up to over 20 inches in several areas. The snowfall took place from two days before to the day after Christmas. The snowfall was accompanied by increasing north to northwest winds which caused widespread blizzard conditions on Christmas day and the start of the next day.			
1/6/2010	Blizzard	Snowfall of 3 to 7 inches, previously existing snow cover, and northwest winds gusting to over 40 mph produced widespread blizzard conditions, with visibilities less than a quarter mile. New snowfall included 7 inches at Wessington Springs. Schools and businesses were closed, and travel became impossible in much of the area. The wind combined with cold temperatures to produce wind chills colder than 35 below zero during the latter			

Date	Event Type	Event Description	Mag	Prop Damage ($1,000s)	Crop Damage ($1,000s)
		part of the storm. This extreme cold continued into the next day, Friday, January 8th.			
1/7/2010	Extreme cold	Persistent north/northwest winds combined with very cold air to produce wind chill values that dropped to 35 below zero.			
5/24/2010	Thunderstorm Wind		56 kts. E	10	
7/21/2010	Thunderstorm Wind		61 kts. E		
7/30/2010	Flash Flood	Heavy rainfall, unofficially reported at up to 9.50 inches, caused widespread flooding of roads, fields, and basements. Several roads were washed out. Most houses in the town of Wessington Springs received water damage. several bridges were damaged		100	
8/3/2010	Flash Flood				
10/26/2010	High Wind		52 kts. E		
12/10/2010	Blizzard	Snowfall ranging from 2 to 8 inches was accompanied by sustained winds reaching 40 mph at times, with gusts as high as 55 mph. The snowfall, strong winds, and existing snow cover resulted in widespread blizzard conditions. Travel was impossible in much of the area, and businesses and schools were forced to close.			
12/31/2010	Blizzard	Snowfall of 6 to 10 inches and winds gusting to over 40 mph produced widespread blizzard conditions. Roads were closed and many businesses were forced to close as travel became difficult to impossible.			
1/1/2011	Blizzard				
2/1/2011	Extreme cold	North/northwest winds averaging 15 to 30 mph combined with temperatures dropping below zero to produce wind chills of 35 to 40 below zero.			
2/20/2011	Heavy Snow				
3/17/2011	Flood				
4/15/2011	Heavy Snow				
7/15/2011	Extreme heat				
7/26/2011	Thunderstorm Wind		61 kts. E		
2/13/2012	Heavy Snow				
2/28/2012	Heavy Snow				
4/15/2012	High Wind		57 kts. M		
6/13/2012	Hail		1.75 in.		
6/26/2012	Extreme heat				
7/1/2012	Drought	Drought conditions became established over the area. Stress on crops increased with no relief during the month. Hot weather added to the stress. Crop damage became certain. Severe non-ag water supply problems were not observed, but the long term dry conditions raised fears for the future.			
7/2/2012	Extreme heat				
7/15/2012	Extreme heat				
7/18/2012	Extreme heat				
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			

Date	Event Type	Event Description	Mag	Prop Damage ($1,000s)	Crop Damage ($1,000s)
		damage was quite evident. Many local governments had water use restrictions in place.			
8/1/2012	Extreme heat				
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 restrictions in an effort to prevent serious water supply problems.			
10/1/2012	Drought				
10/17/2012	High Wind		50 kts. M		
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	Variable snowfall of 2 to 8 inches, northwest winds gusting to 45 mph, and snow cover existing before the storm in part of the area, produced blizzard conditions with visibilities below a quarter mile in blowing snow in many areas. The low visibilities and drifting snow forced some businesses to close, and also forced several school closings on Monday February 11th.			
3/1/2013	Drought				
4/1/2013	Drought				
4/9/2013	Winter Storm	An extended period of precipitation began with freezing rain and freezing drizzle producing light ice accumulations, then changing to sleet and then snow, with sleet and snow accumulations reaching over 13 inches at Wessington Springs. The winter precipitation made travel very difficult, resulting in schools and businesses being forced to close.			
5/26/2013	Hail		1.25 in.		
12/3/2013	Winter Storm	Snow, heavy in areas, accumulated up to 8 inches from the evening of December 3rd through the afternoon of December 4th. Difficult travel conditions forced delayed openings or early closings of some schools and businesses on December 4th.			
1/16/2014	High Wind		50 kts. E		
1/26/2014	High Wind		50 kts. E		
6/18/2014	Hail		1.50 in.		
6/18/2014	Tornado	A tornado severely damaged the roof of a farm building and caused tree damage.	EF1	15	
6/18/2014	Tornado	A tornado destroyed a farm building and caused tree damage, with trees splintered and debarked.	EF2	20	
6/18/2014	Tornado	A tornado destroyed a farm building, damaged trees, and caused an unknown amount of crop damage.	EF2	25	
6/18/2014	Tornado	A tornado severely damaged a farm building by causing the collapse of its roof. The tornado also caused tree damage, snapping several off at the trunk. An unknown amount of crop damage was also suspected.	EF1	50	

Date	Event Type	Event Description	Mag	Prop Damage ($1,000s)	Crop Damage ($1,000s)
6/18/2014	Tornado	A tornado severely damaged two family farms, including destroying a farmhouse as the family took shelter in their basement. A couple in the house suffered minor injuries.The tornado also damaged trees, power poles, and power lines; and caused an unknown amount of crop damage.	EF4	300	
6/18/2014	Tornado	A tornado damaged at least 43 homes in Wessington Springs, making at least 26 of them uninhabitable. The tornado also destroyed at least 3 businesses and damaged 9 others. The tornado also caused considerable damage to power lines, power poles, and trees, resulting in power outages to the entire town. Vehicles and signs were also damaged. The damage included an estimated 1.2 million dollars in damage to public infrastructure. There were no reported fatalities and one minor injury. The tornado also caused an unknown amount of damage to corn and soybean crops.	EF2	5,200	
12/15/2014	Winter Storm				
6/20/2015	Thunderstorm Wind		52 kts. EG		
7/23/2015	Hail		1.75 in.		
8/9/2015	Hail		1.75 in.		
11/30/2015	Winter Storm				
12/25/2015	Winter Storm				
1/16/2016	Extreme Cold				
2/19/2016	High Wind		55 kts. MG		
5/25/2016	Hail		1.00 in.		
6/10/2016	Extreme heat				
7/19/2016	Extreme heat				
11/17/2016	Winter Storm				
12/17/2016	Extreme cold				
1/24/2017	Winter Storm				
6/11/2017	Thunderstorm Wind		56 kts. EG		
6/22/2017	Hail		1.75 in.		
7/21/2017	Hail		1.00 in.		
12/25/2017	Extreme cold				
12/31/2017	Extreme Cold	Low temperature at Wessington Springs was -20.			
1/11/2018	Extreme cold				
1/15/2018	Extreme cold				
2/10/2018	Extreme cold				
3/5/2018	Blizzard				
4/13/2018	Blizzard	Life threatening conditions developed, as a mix of rain, sleet and snow changed to all snow. Brutal winds gusting over 40 mph whipped visibility to less than a quarter mile at times. Businesses and schools were closed. Travel was not recommended for a two day period. Total snowfall of 14 inches measured at Wessington Springs.			
7/3/2018	Extreme heat				

Date	Event Type	Event Description	Mag	Prop Damage ($1,000s)	Crop Damage ($1,000s)
7/8/2018	Extreme heat				
7/11/2018	Extreme heat				
8/4/2018	Hail		1.75 in.		
1/1/2019	Extreme Cold				
3/13/2019	Flood	Flooding resulted in damage to public infrastructure including county and township roads and culverts		250	
3/14/2019	Blizzard				
4/11/2019	Blizzard				
6/1/2019	Flood				8,980
6/29/2019	Extreme Heat				
7/20/2019	Thunderstorm Wind		61 kts. EG		
9/12/2019	Flood				34
11/29/2019	Winter Storm				
12/1/2019	Winter Storm				
12/28/2019	Blizzard	Light mixed precipitation resulted in a minor glaze of ice accumulation, then heavy snowfall (12 inches at Wessington Springs) and high wind resulted in white out conditions. Snow drifts to several feet were common.			
1/17/2020	Blizzard				
1/18/2020	Cold/wind Chill				
2/12/2020	Blizzard				
8/8/2020	Thunderstorm Wind		61 kts. EG	5	2
8/30/2020	Hail		1.50 in.		
12/23/2020	Blizzard				
1/14/2021	High Wind		56 kts. MG		
2/14/2021	Extreme Cold				
3/14/2021	Winter Storm				
6/1/2021	Drought				818
7/1/2021	Drought				870
8/1/2021	Drought				202
9/1/2021	Drought				
10/1/2021	Drought				
10/9/2021	Hail		1.75 in.		60
10/9/2021	Thunderstorm Wind	Thunderstorm winds damaged siding on a house in Alpena.	56 kts. EG	5	
11/1/2021	Drought				
11/11/2021	High Wind		50 kts. MG		
12/1/2021	Drought				
12/31/2021	Cold/wind Chill				
1/1/2022	Cold/wind Chill				

Date	Event Type	Event Description	Mag	Prop Damage ($1,000s)	Crop Damage ($1,000s)
1/6/2022	Extreme Cold				
2/22/2022	Cold/wind Chill				
4/1/2022	Drought				
4/6/2022	High Wind		53 kts. MG		
4/7/2022	High Wind		55 kts. MG		
4/12/2022	High Wind		55 kts. MG		
4/14/2022	High Wind		59 kts. MG		
4/22/2022	Hail		2.25 in.		
4/23/2022	High Wind		50 kts. MG		
5/12/2022	Thunderstorm Wind	A highly unstable environment generated scattered storms with damaging winds. With many fields unplanted, a huge amount of dirt was lofted into the leading edge of the storms, which took on the characteristics of a haboob reducing visibility to near zero. Winds from 70 to 100 mph devastated much of southeast South Dakota, causing extensive tree and structural damage and many injuries. Vehicles were blown off several roads, shutting down traffic on Interstates 29 and 90. Power was disrupted in a widespread area, with estimates of over 45,000 customers impacted at one time. Many schools were closed due to damage and power issues. The storm resulted in a Presidential Disaster Declaration for damage to public infrastructure at an estimated cost of 6.7 million dollars across 20 counties and two reservations.	65 kts. MG		
5/29/2022	Thunderstorm Wind		50 kts. MG		
6/13/2022	Thunderstorm Wind		65 kts. MG		
7/3/2022	Thunderstorm Wind	Four large metal grain bins were destroyed by thunderstorm wind gusts.	61 kts. EG	100	440
7/5/2022	Thunderstorm Wind		61 kts. MG		
8/2/2022	Thunderstorm Wind		69 kts. MG		67
8/5/2022	Excessive Heat				
9/20/2022	Drought				
10/1/2022	Drought				
11/1/2022	Drought				
12/1/2022	Drought				
12/14/2022	Blizzard				
12/21/2022	Blizzard/Extreme Cold				
1/1/2023	Drought				
2/1/2023	Drought				
2/14/2023	High Wind		52 kts. MG		
2/21/2023	Blizzard				
2/23/2023	Cold/wind Chill				
3/1/2023	Drought				
4/1/2023	Drought				

Date	Event Type	Event Description	Mag	Prop Damage ($1,000s)	Crop Damage ($1,000s)
6/13/2023	Drought				
7/1/2023	Drought	Severe drought conditions improved to moderate conditions during late July. Crop damage is an estimate from insured losses.			2,980
7/25/2023	Thunderstorm Wind		54 kts. MG		
7/26/2023	Excessive Heat				
7/30/2023	Hail		1.25 in.		19
8/21/2023	Excessive Heat				
9/2/2023	Heat				
10/17/2023	High Wind		51 kts. MG		
12/25/2023	Blizzard				
1/12/2024	Extreme Cold				
1/20/2024	Cold/wind Chill				
1/26/2024	Dense Fog				
3/24/2024	Winter Storm				
4/6/2024	High Wind		37 kts. MS		
7/13/2024	Heat				
7/14/2024	Thunderstorm Wind		54 kts. MG		
8/2/2024	Heat				
8/25/2024	Excessive Heat				
10/29/2024	Drought				
11/1/2024	Drought				
11/20/2024	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 Jerauld 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 5% of all indemnity payouts in Jerauld County.

Table C.3 – Crop Loss Due to Winter Weather

Year	Frost	Freeze	Cold Winter	Cold Wet Weather
2000	$893	$0	$6,490	$0
2001	$0	$0	$798,011	$4,563
2002	$13,069	$10,444	$25,390	$30,773
2003	$6,880	$5,044	$41,016	$0
2004	$77,798	$27,126	$4,693	$2,479
2005	$5,262	$2,316	$7,914	$1,204
2006	$0	$0	$1,957	$0
2007	$0	$7,771	$52,848	$0
2008	$0	$847	$2,489	$688
2009	$0	$320,816	$480,057	$37,974
2010	$0	$0	$2,898	$72,519
2011	$2,169	$0	$8,821	$111,564
2012	$0	$4,203	$2,100	$4,995
2013	$0	$0	$249,982	$249,671
2014	$0	$2,244	$287,619	$8,550
2015	$0	$8,780	$496,645	$0
2016	$0	$10,081	$5,598	$28,801
2017	$0	$165,975	$106,612	$14,490
2018			$2,918	$96,211
2019				$209,642
2020			$42,246	$214,966
2021	$5,283		$9,369	
2022			$75,532	$13,879
2023				$10,311
Average Annual Payout	**$4,640**	**$23,569**	**$112,967**	**$46,387**

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 4% of all indemnity payouts in Jerauld County.

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

Year	Hail	High Wind	Tornado
2000	$533,245	$19,942	
2001	$1,862		
2002	$746		
2003	$4,761	$2,697	
2004		$12,347	
2005	$190,153	$12,478	
2006	$2,868	$8,375	
2007		$2,749	
2008	$227,506	$14,396	
2009	$671,519		
2010			
2011		$6,816	
2012	$37,149	$8,780	
2013	$19,315	$1,603	
2014	$4,375	$6,308	$6,308
2015	$141,199		
2016	$2,468	$70,904	
2017	$83,336	$12,805	
2018	$179,419	$4,318	
2019	$601	$110,763	
2020		$2,642	
2021	$428,296		
2022	$453,190	$301,518	
2023	$19,025		
Average Annual Payout	**$125,043**	**$23,704**	**$263**

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 27% of all indemnity payouts in Jerauld County.

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

Year	Flooding	Excess Moisture
2000		$406,320
2001		$1,798,593
2002		$55,638
2003		$36,800
2004		$99,052
2005		$170,733
2006	$54,536	$6,340
2007		$698,752
2008		$602,622
2009		$403,421
2010		$2,063,876
2011		$2,922,511
2012		$95,175
2013		$233,524
2014		$2,719
2015		$11,287
2016		$611,493
2017		$2,960
2018		$364,609
2019		$9,405,420
2020		$1,890,400
2021		$28,940
2022		$296,875
2023		$6,546
Average Annual Payout	**$2,272**	**$925,609**

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 59% of all indemnity payouts in Jerauld County, far more than any other type of hazard [13].

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

Year	Drought	Heat	Hot Wind
2000	$1,495,513	$3,369	
2001	$578,561	$19,657	
2002	$5,164,721	$81,593	
2003	$1,523,204	$68,851	
2004	$112,003	$454	
2005	$1,080,708	$230,357	
2006	$5,613,119	$459,717	
2007	$239,517	$27,503	
2008	$317,355	$21,916	
2009	$210		
2010	$1,847		
2011	$6,738		
2012	$5,823,023	$204,807	$7,121
2013	$695,244		
2014	$363,757		
2015	$665,099		
2016	$272,255	$97,048	
2017	$6,641,402	$62,512	$12,805
2018	$233,539	$23,061	$4,318
2019	$2,816		
2020	$42,350	$6,051	
2021	$2,619,240	$264,792	
2022	$9,496,889	$813,365	
2023	$3,473,083	$647,083	
Average Annual Payout	**$1,935,925**	**$126,339**	**$1,010**

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

[13] 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

PRINT REFERENCES

- Jerauld County Comprehensive Plan and Zoning Ordinance. Planning & Development District III. 1998.
- Jerauld County Highway Plan. Jerauld County Highway Department. 2024.
- Jerauld County Local Emergency Operations Plan. Jerauld County Emergency Management Office. 2025.
- Wessington Springs Comprehensive Plan and Zoning Ordinance. Planning & Development District III. 2001.
- Wessington Springs Housing Study. Planning & Development District III. 2016.
- Facility Plan for the Water System in Wessington Springs. SPN & Associates. 2024.
- Facility Plan for the Wastewater System in Wessington Springs. SPN & Associates. 2011.
- Central Electric Cooperative Construction Work Plan.
- Comprehensive Economic Development Strategy. Planning & Development District III. 2024.
- Electrical Transmission and Distribution Mitigation: Loss Avoidance Study Nebraska and Kansas FEMA-1674-DR-KS and FEMA-1675-DR-NE. Federal Emergency Management Agency. 2008.
- Local Mitigation Planning Handbook. FEMA. March 2013.
- Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards. FEMA. January 2013.
- State of South Dakota Hazard Mitigation Plan. South Dakota Office of Emergency Management/Wood Environment & Infrastructure Solutions. 2019.
- State of South Dakota Enhanced Hazard Mitigation Plan. South Dakota Office of Emergency Management. 2024.
- South Dakota Drought Mitigation Plan. South Dakota Drought Task Force/South Dakota Office of Emergency Management. 2015.
- South Dakota's Five-Year Floodplain Management Work Plan. South Dakota Office of Emergency Management. 2005.
- South Dakota Electric Cooperatives Mutual Aid Plan. South Dakota Rural Electric Association. 2008.

ELECTRONIC REFERENCES

- Census data: data.census.gov/cedsci/profile
- Building permit data: socds.huduser.gov/permits/
- Land cover information: www.mrlc.gov/index.php
- Climate extremes: www.weather.gov/fsd/climatearchive
- Climate projections: headwaterseconomics.org/tools/neighborhoods-at-risk/tool-about/
- Major disaster declarations and emergency declarations in South Dakota: www.fema.gov/disasters/grid/state-tribal-government/
- Public assistance amounts following declared disasters: www.fema.gov/data-feeds/openfema-dataset-public-assistance-funded-projects-summaries-v1
- Storm event records: www.ncdc.noaa.gov/stormevents/choosedates.jsp?statefips=46, SOUTHDAKOTA
- Crop loss records: www.rma.usda.gov/data/cause.html
- Tornado frequency: hazards.fema.gov/nri/tornado
- Flood insurance information: www.fema.gov/policy-claim-statistics-flood-insurance
- National Flood Insurance Program participation: www.fema.gov/cis/SD.html
- Flood risk: riskfactor.com
- 2019 flooding impact: fb.org/market-intel/prevent-plantings-set-record-in-2019-at-20-million-acres
- Drought impact: droughtreporter.unl.edu/map/
- Wildfire risk: wildfirerisk.org/explore/
- Wildfire risk: headwaterseconomics.org/apps/economic-profile-system
- Wildfire risk: silvis.forest.wisc.edu/data/wui-change/
- Earthquake history in South Dakota: www.sdgs.usd.edu/publications/maps/earthquakes/earthquakes.htm
- Earthquake magnitude: en.wikipedia.org/wiki/Richter_magnitude_scale
- Landslide information: landslides.usgs.gov/hazards/nationalmap/
- Resilience: experience.arcgis.com/experience/0a317e8998534c30a9b2d3861c814d42/
- Building code adoption status: stantec.maps.arcgis.com/apps/MapSeries/index.html?appid=a053ac48343c4217ab4184bc8759c350
- Social vulnerability: data.cdc.gov/Vaccinations/Social-Vulnerability-Index/ypqf-r5qs