MARSHALL COUNTY
SOUTH DAKOTA

NATURAL HAZARD MITIGATION PLAN
(UPDATE)
EXPIRES:
//

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I: INTRODUCTION

CHANGES/REVISIONS TO INTRODUCTION:

- Changes were made in the language and the data used in this section and structure of the section. Tables were used to break down data provided about Marshall County.
- Maps and figures were used to illustrate Marshall County.
- Additional information was given surrounding BRIC.
- Demographic, economic and climate data was added to give additional details on the population of Marshall County.
- National Flood Insurance Participation was added to the Marshall County Municipalities Overview.

INTRODUCTION

Natural hazards can severely impact the health, welfare, and security of Marshall County residents. Residents are affected by storms, extreme temperatures, drought, flooding, tornados, high winds, and hail. Mitigation reduces the impact and costs of hazards. Marshall County, working with the South Dakota Office for Emergency Management, the Federal Emergency Management Agency (FEMA) and the Northeast Council of Governments (NECOG) prepared this Natural Hazard Mitigation Plan (plan) to guide natural hazard mitigation activities in the county.

This plan details the specific vulnerabilities and limits Marshall County has to natural hazards. Shifting the focus from reaction to prevention can reduce harm to life and property. This plan identifies solutions to reduce the impact of natural hazards. The ideas are based on the principle that hazard mitigation works. Many mitigation actions can be implemented for minimal cost.

Mitigation planning analyzes and identifies the specific risks and the impact on residents. Addressing hazards before they occur can reduce the impact. It can have minimal costs but can prevent higher costs in the future, even up to the loss of lives. Mitigation is preventative actions based on analyzing historical events and finding solutions to the challenges created, it is not an emergency response or preparedness.

The plan can and should be used with other types of planning processes to identify weaknesses and/or refocus emergency response. However, the focus of the plan is for local leaders to discuss and implement strategies that avoid future risks caused by natural hazards. This is not an emergency response or emergency management plan.

Section headings and subheadings follow the organization of the Local Mitigation Plan Review Tool. Several appendices accompany this plan. They contain surveys, technical data, and other relevant information.

AUTHORITY

In October of 2000, the Disaster Mitigation Act (DMA2K) was signed to amend the 1988 Robert T. Stafford Disaster Relief and Emergency Assistance Act. Section 322 (a-d) requires local governments, as a condition of receiving federal disaster mitigation funds, to have a Natural Hazard Mitigation Plan in place that:

1. Identifies hazards and their associated risks and vulnerabilities.

2. Develops and prioritizes mitigation projects; and
3. Encourages cooperation and communication between all levels of government and the public.

To be eligible for FEMA's Hazard Mitigation Grant Assistance Program, the disaster Mitigation Act of 2000 (DMA 2000) requires that local governments have a FEMA approved mitigation plan in place. Jurisdictions must demonstrate proposed mitigation projects have solid planning process where risks and capabilities of each community are assessed. Mitigation plans must be updated every five years to show progress has been made towards meeting mitigation goals and ensure the plan continues to be an effective mitigation tool to meet the needs of the county and communities.

PURPOSE OF THE PRE-DISASTER MITIGATION PLAN

The purpose of the Natural Hazard Mitigation plan is to fulfill federal, state, and local hazard mitigation measures and meet the planning needs of Marshall County. Consistent with FEMA guidelines, this plan identifies risks and solutions for pre- and post-disaster mitigation. Implementation of both the short- and long-range projects will reduce losses. The projects listed will reduce hazards' impact on the community. Jurisdiction agencies and officials can create public awareness of the impact of natural hazards. This plan is a guide to help prevent or reduce Marshall County's vulnerability to natural hazards.

PLAN USE

First, the plan should be used to help local officials implement programs and projects to reduce their community's vulnerability. Second, the plan should facilitate inter-jurisdictional coordination and collaboration related to mitigation planning and implementation. Third, the plan should develop or provide guidance for local emergency response planning. Finally, when adopted, the plan will bring communities in compliance with the Disaster Mitigation Act of 2000.

SCOPE

1. Provide opportunities for public input and participation in the mitigation plan.
2. Identify hazards and vulnerabilities within the county and local jurisdictions.
3. Combine risk assessments with public and emergency management ideas.
4. Develop goals based on the identified hazards and risks.
5. Review current mitigation measures for gaps and create projects to fulfill the goals.
6. Prioritize and evaluate each strategy/objective.
7. Review other plans for cohesion and incorporation with the Plan.
8. Establish guidelines for updating and monitoring the plan.
9. Present the plan to Marshall County and participating communities for adoption.

LOCAL GOALS

Community commitment begins with local involvement and is the basis for the Mitigation Plan. Priorities to stabilize the community's lifelines are at the top with a reduction in importance toward the bottom of the list.

- Protection of life before, during, and after a natural disaster by establishing safety and security for residents.
- Protection of emergency response capabilities (critical infrastructure) and establishing supplies of food, water, and shelter for affected residents.
- Establish and maintain communication and warning systems, establishing medical care and support processes for residents requiring emergency care.

- Protection of critical facilities and providing reliable energy sources.
- Government continuity by maintaining communications throughout and outside the area.
- Providing transportation in and out of the area.
- Protection of developed property, homes, businesses, industry, education, and culture of the community and by combining hazard loss reduction with the community's environmental, social, and economic needs.
- Protection of the environment and natural resources by mitigation measures.
- Protection against hazardous material exposure due to natural disasters.

GOALS OF MITIGATION PROGRAMS AS ESTABLISHED BY FEMA

- Eliminate or reduce long-term risk to life and property from natural hazards.
- Aid both the private and public sectors in understanding the risks and finding mitigation strategies to reduce those risks.
- Avoid risk of exposure to identified hazards.
- Minimize the impacts of risks when they cannot be avoided.
- Mitigate the impacts of damage due to identified hazards.
- Accomplish mitigation strategies so negative impacts are minimized.
- Provide a basis to fund projects that mitigate hazards; and
- Establish a regional platform to enable the community to take advantage of shared goals, resources, and the availability of outside resources.

WHAT IS HAZARD MITIGATION?

Hazard Mitigation is a plan of cost-effective actions taken to reduce vulnerability of people and property to natural hazards. There are three categories of hazard mitigation. This mitigation plan contains strategies from all three categories.

- Activities that keep the hazard away from people, property, and structures.
- Measures that keep people, property, and structures away from the hazard.
- Reduce the impact of hazards in the plan area.

Mitigation measures must be practical, cost effective, environmentally, and politically acceptable. Limiting the impact of natural hazards should not cost more than the damage. Mitigation measures can be specific or multi-functional. A storm shelter can be used for winter and summer storms as a cost-effective, multi-purpose use to mitigate against two hazards. Generators are used when the power goes out for reasons like storms, tornados, and high heat waves. Mitigation can be hazard specific. An ordinance to regulate elevation height of a home is a specific requirement to mitigate against flooding.

The best way to mitigate natural hazards is to protect capital investments before building. Incorporating mitigation into planning requires that planners, developers, residents, and municipal leaders use mitigation to prevent loss. Ordinances, building codes, zoning or other considerations can prevent vulnerabilities. Special consideration and planning should be given to the most susceptible areas. These mitigation measures cost little but have a significant impact on the effect of natural hazards. Once a capital asset is built, it can be too late to mitigate hazards.

Most government programs focus on response and preparedness and neglect mitigation. Implementation and results take time. Incorporation into government processes allows mitigation to be more integral in plans. Using data and analysis of area hazards, most

communities can prepare and reduce the impact. Effective mitigation management is key. This plan is the first step of the mitigation process.

This plan evaluates Marshall County's risks and vulnerabilities to natural hazards. It identifies projects for the local jurisdictions who participated. The suggested actions and implementation could reduce the impact of hazard events. This will only be achieved through coordination with emergency managers, political entities, public works officials, community planners and other individuals to implement this program.

Community Lifelines are mentioned throughout the plan and are the focus of FEMA's response to natural hazards. They allow FEMA to prioritize and concentrate actions to mitigate effects during a natural hazard. The priorities set by FEMA are a list of the basic services that communities need and how resources are prioritized before and after a natural hazard. The process of response becomes more efficient when stability is established through mitigation before a disaster.

Table 1.1: FEMA Community Lifelines	
Safety and Security	law enforcement/security, fire service, search and rescue, government services, community safety
Food, Water, and Shelter	food, water, shelter, agriculture
Health and Medical	medical care, public health, patient movement, medical supply chain, fatality management
Energy (Power and Fuel)	power grid, fuel
Communications	infrastructures, first responder communications, alerts, warnings, and messages, finance, 911 and dispatch
Transportation	highway/roadway/motor vehicle, mass transit, railway, aviation, maritime
Hazardous Materials	facilities, HAZMAT, pollutants, contaminants

Table 1.1 FEMA Community Lifelines listed on FEMA.gov.

MARSHALL COUNTY PROFILE

GEOGRAPHIC PROFILE

Marshall County was originally part of Day County and was created March 13, 1885, and was named for Marshall Vincent who was a homesteader near Andover, South Dakota. The first county election was July 23, 1885. It borders Brown, Day, Roberts Counties in South Dakota and Sargent and Richland Counties in North Dakota.

Table 1.2: Marshall County Fast Facts	
Geographic Area	• 886 square miles • 838 square miles of land • 48 square miles of water • Rolling hills with numerous lakes and ponds in the SE part of the county • Terrain slopes to the northeast • Eastern part: Coteau ds Prairies from north to south • Southeast: "prairie pothole" region with glacial lakes which only drain through evaporation or absorption into the ground • Western: flat with farms and wetlands
Waterways	• Crow Creek (tributary of the James River) • Wild Rice River (tributary of the Red River) • Most of the county is in the James River basin • Upper Crow Creek Drainage was constructed south of Britton in the min-1920s and ties into the Lower Creek Drainage in Brown County • Located in the James River Valley
Land Uses	• 60% of the county is cropland with the rest used as rangeland and pasture
Cities and Towns	• Incorporated: Britton, Eden, Lake City, Langford, Veblen, • Unincorporated: Amherst, Kidder, Newark, Hillhead, Marlow
Major Highways	• SD Highway 10 (east to west) through Britton and Lake City • SD Highway 27 (north to south) through Langford • SD Highway 25 (north to south) through Veblen, Hillhead, and Eden
Organization	• 5-member board of commissioners • Incorporated towns: served by a commission or board
Reservations	• Lake Traverse Indian Reservation (eastern part of the county)
Water Supplier	• BDM (Brown, Day, Marshall Rural Water)
Electric Supplier	• Otter Tail Power Company, Lake Region, Western Area Power Administration
Railroads	• Dakota Missouri Valley and Western (owned by the state of South Dakota) loading facilities are in Amhurst and Britton.

Table 1.2: Marshall County Wikipedia, 2020 Natural Hazard Mitigation Plan

The Keystone Pipeline crosses through Marshall County and was constructed in 2007-2008. The entire pipeline is 2,687 miles long and carries crude oil from Alberta, Canada

to Steele City, NE, where it splits — one arm ends in Illinois, the other goes through Oklahoma and into Houston and Port Arthur, Texas.

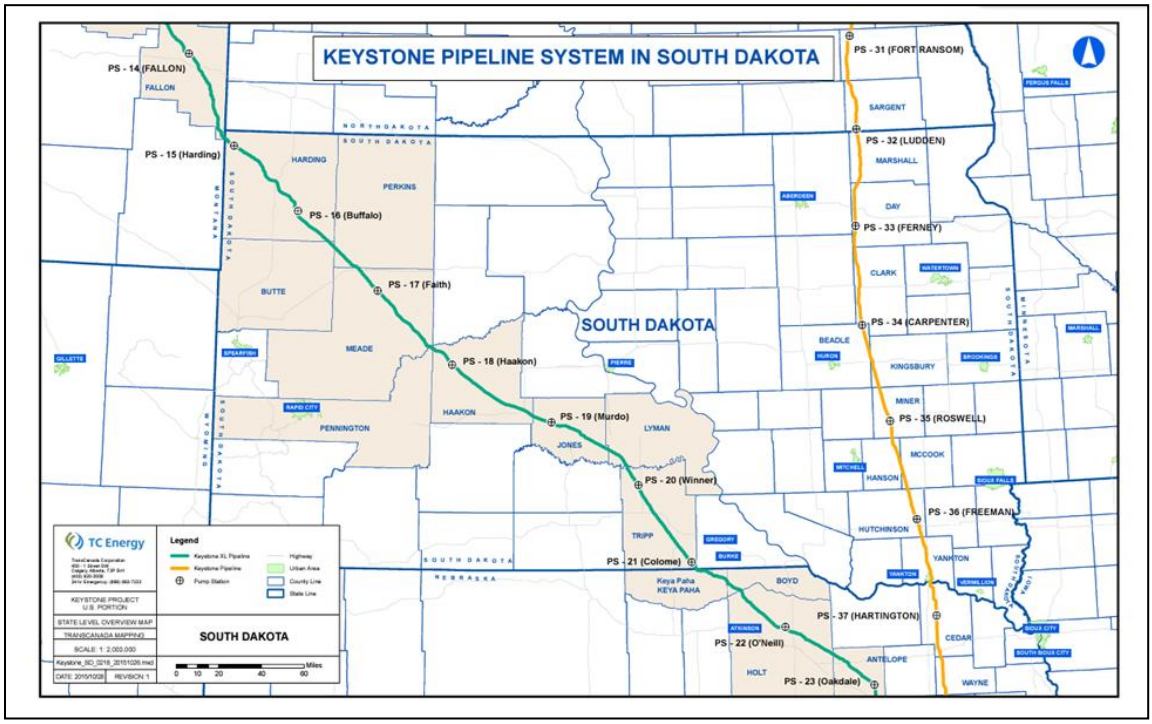


Figure 1.1: Map of Keystone pipeline in SD from TC Energy

The Keystone pipeline experienced a leak of 407,000 gallons of crude oil on November 16, 2017. The line was shut down as cleanup occurred, and the pipe was replaced. Investigation of the pipe showed that the damage likely occurred in 2008 while the pipeline was being constructed during the trenching, lowering in, installation of concrete weights, backfilling, or rough cleanup stages of the pipe installation. The red line represents the Keystone Pipeline as it runs through Marshall County.

Figure 1.2: Map of Marshall County pipeline (red)

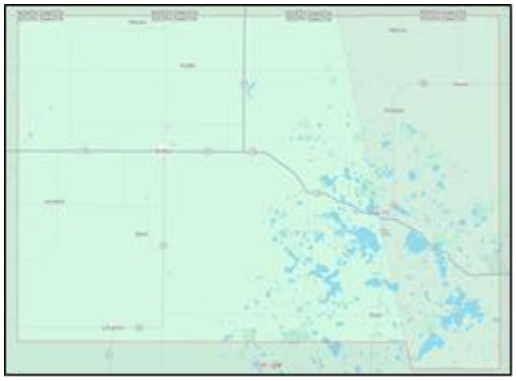


Figure 1.3: Map of Marshall County

Marshall County is situated in the northeast corner of South Dakota, along the North Dakota border. The Lake Traverse Reservation runs along the east side of the county. The county transitions from the Couteau des Prairies with numerous glacial lakes and sloughs to a western region which is predominately flat with rolling hills in the northeast.

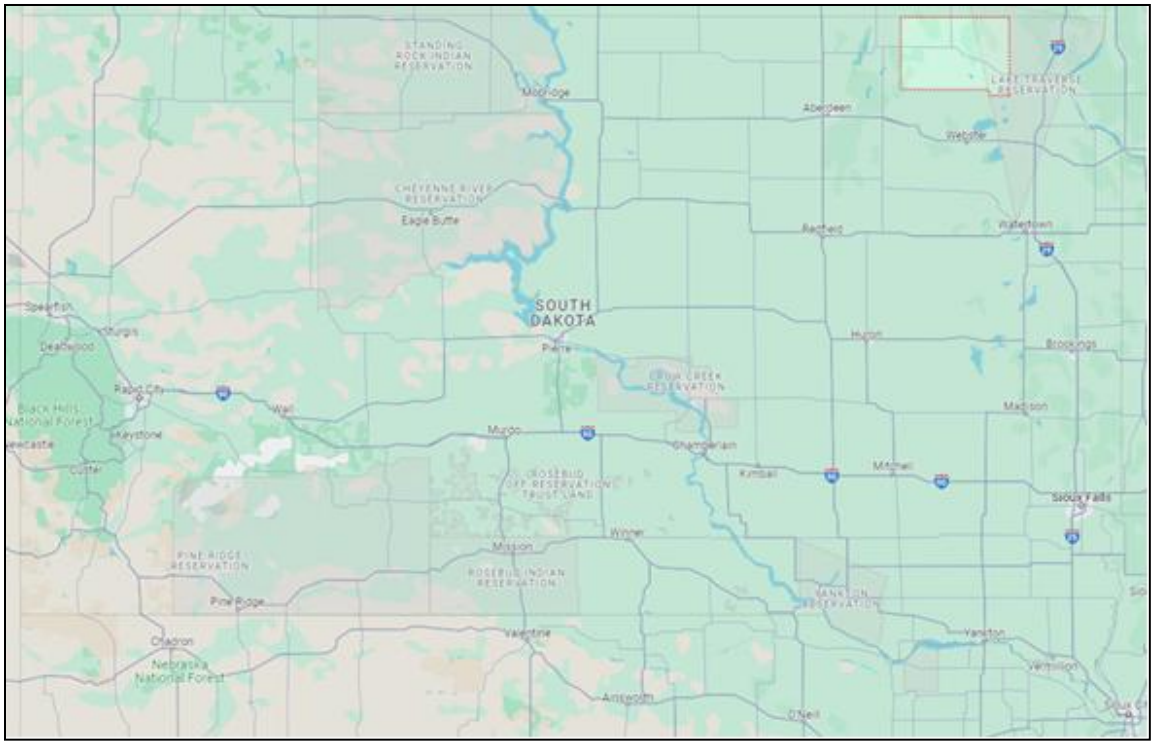


Figure 1.4: Map of South Dakota

POPULATION DEMOGAPHICS

According to the 2020 Census the County had a population of 4,306, a decline of 1 percent from the 2010 Census and a density of 4.86 people per square mile. Within Marshall County lies one city, Britton, which has a population of 1,215 in 2020. Four other incorporated communities lie within the County including: Eden (pop. 94); Lake City (pop. 45); Langford (pop. 283); and Veblen (pop. 317). One unincorporated municipality lies in Marshall County: Kidder (pop. 25)*. Besides the communities, Marshall County has 25 townships. According to the 2020 Census, the County is predominately white (89.36%) with a nearly 1-1 male (51.83%) to female (49.49%) ratio.

Table 1.3: Population in Marshall County Jurisdictions

City	2010 US Census Population	2020 Population per American Community Survey	Percent change from 2010 to 2020	Percent of the Marshall County Population
Britton	1,241	1,215	-2.10%	28.22%
Eden	89	94	5.62%	2.18%
Kidder (CDP)	57	25	-56.14%	0.58%
Lake City	51	45	-11.76%	1.05%
Langford	313	283	-9.58%	6.57%
Veblen	531	317	-40.30%	7.36%
Unincorporated	2,374	2,327	-1.98%	54.04%
Marshall County	**4,656**	**4,306**	**-7.52%**	**100.00%**

Table 1.3: Population if Marshall County Jurisdictions from 2020 Decennial Census

*** Kidder is an unincorporated town, but its population was counted by the census as a census designated place.*

Marshall County's demographics listed in Table 1.5, show nearly a quarter of the population is under 19 years old. 64.2% of the population is in the workforce. The county is predominantly white with 87.3% of the population, 0.2% African American, 2.8% American Indian, 8.0% Hispanic and 2.6% some other race.

Table 1.4: Marshall County Community Demographics	
Population per 2020 Census	4,306
People per Square Mile	4.86 people per square mile
Median Age of Residents	43.7
65+ Years Old Residents	491 (22.7%)
19 Years Old and Younger Residents	552 (23.4%)
Veterans	7.4%
Male to Female Ratio	Nearly 1:1
Family Size	3.32

Table 1.4: Marshall County Population Demographics from 2020 Decennial Census

Table 1.5 lists the 25 Marshall County Townships and their population in 2020. This chart includes organized townships only and not any unorganized locales in Marshall County and are not separated by the Census Bureau.

Table 1.5: Marshall County Township Population			
Township	**Population**	**Township**	**Population**
Buffalo	198	**Newport**	77
Dayton	22	**Nordland**	9
Dumarce	0	**Pleasant Valley**	107
Eden	100	**Red Iron Lake**	247
Fort	85	**Sisseton**	82
Hamilton	0	**Stena**	104
Hickman	36	**Veblen**	129
La Belle	107	**Victor**	43
Lake	71	**Waverly**	82
Lowell	82	**Weston**	4
McKinley	51	**White**	67
Miller	282	**Wismer**	32
Newark	44		

Table 1.5: Marshall County Township Population from 2020 Decennial Census

**Additional populations include the three Marshall County Hutterite colonies: Sunset Hutterite Colony, the Westport Hutterian Colony, and the Westwood Hutterite Colony.

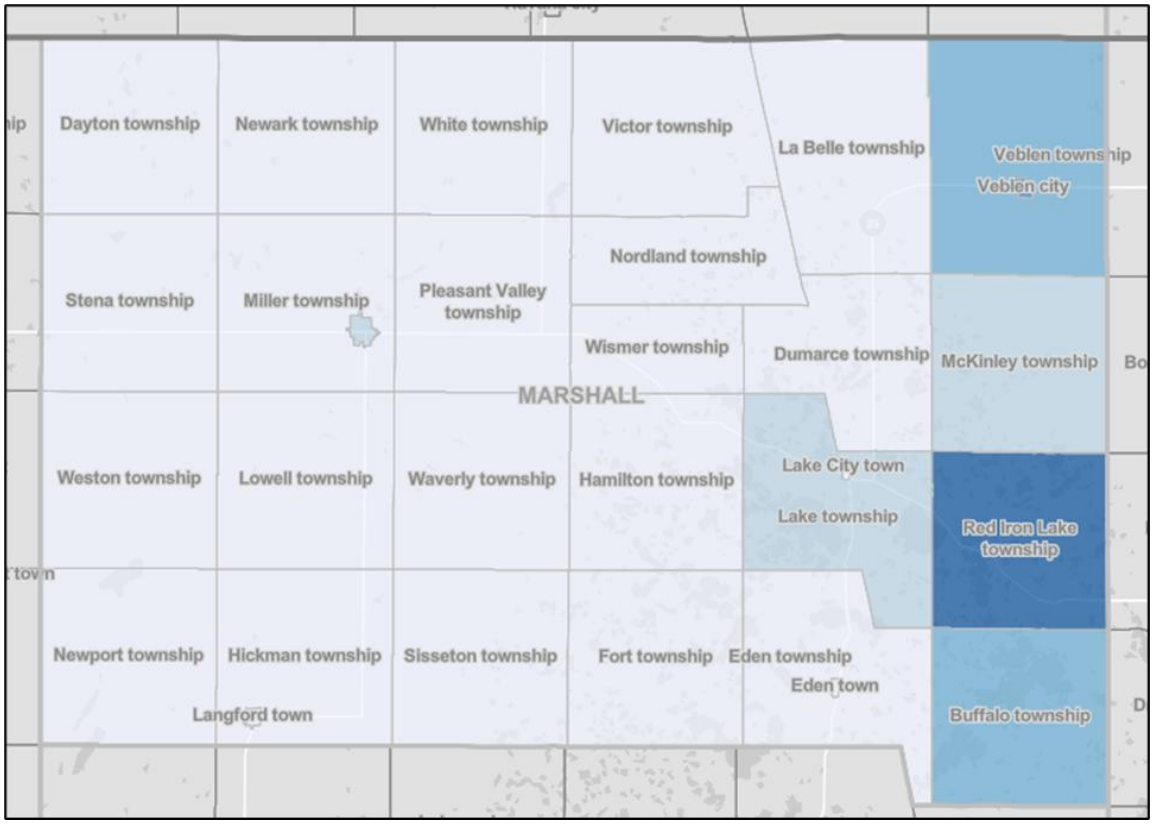


Figure 1.5: Marshall County township map

ECONOMIC PROFILE

Education, agriculture, and manufacturing are the most important industries in Marshall County. There has been growth in education, finance, and transportation, while agriculture has remained the same. Losses were in the arts and other services. There was an increase of 364 in Marshall County's workforce. Most of the residents within the County are of moderate income. Agriculture and agriculture-related businesses remain the major source of employment. In Britton, education, manufacturing, and retail are the most important industries. Growth has been in the manufacturing, transportation, arts, and education sectors since 2010. Britton had an increase of 50 people in the workforce. Table 1.6 details the specifics of Marshall County's economic statistics.

Table 1.6: Marshall County 2020 Economic Profile	
Total Employment Establishments	• 143 Establishments
Education Attainment	• 89.3% with a high school diploma or GED or higher. • 23.3% with a bachelor's degree
Employment	• 64.2% of the population 16 and older is in labor force
Employment and Labor Force Status	• 64.2% of population in labor force
Top Five Industries	• Education, healthcare, and social assistance – 19.4% • Manufacturing – 14.5% • Agriculture, forestry, hunting, and mining – 13.4% • Retail – 9.8% • Construction – 8.9%
Workforce	• Management, businesses, science, and arts – 36.0% • Sales and Office – 19.7% • Natural resources, construction, maintenance – 15.1% • Service occupations – 14.9% • Production, transport, and material moving – 14.3%
Homeownership Rate	• 78.6%
Average Rent	• $690
Median Hours Worked per Week	• 40.8 hours per week
Housing Units	• 2,394 total • 1,702 occupied
Median Household Income	• $74,018
Household Status	• 1,669 Total Households in Marshall County • 2,394 Total Housing Units
Disability	• 10.7%

Table 1.6: Marshall County 2020 Economic Profile from 2020 Decennial Census

Table 1.7 shows income statistics for Marshall County, Britton, South Dakota, and the United States. Marshall County and Britton have lower unemployment than South Dakota and the United States. Marshall County's per capita income matches the United States and is higher than Britton and South Dakota. Unemployment and disabled populations are lower than South Dakota and the United States. Britton has a lower median income than Marshall County, South Dakota, and the United States.

Table 1.7: Income Statistics					
Area	**Median Family Income**	**Per Capita Income**	**Percentage Below Poverty**	**Unemployment **2020 Census***	**Disabled Populations**
Marshall County	$74,018	$39,313	12.1%	1.2%	10.7%
Britton	$69,375	$36,766	15.9%	1.0%	10.6%
South Dakota	$69,728	$37,618	12.5%	3.5%	13.2%
United States	$74,755	$41,804	12.6%	5.4%	13.4%

Table 1.7: Income Statistics data from 2020 Decennial Census

GOVERNANCE AND EMERGENCY SERVICES

Marshall County is governed by a five-member board of commissioners. The sheriff's office is in Britton, which is also the county seat. The Sheriff's Department has a staff of 13 members and oversees the county's jail. The new facility currently under construction will have 2 holding cells. Each incorporated town is served by a council or board. Ambulance services are provided by the county which provides medical services through the Marshall County Healthcare Center, a 20-bed facility with approximately 90 staff members, making it one of Marshall County's largest employers. The Marshall County Healthcare Center provides Marshall County with a Wellness Center, Clinic, Spruce Court (independent and assisted living center) and outpatient services. There are volunteer fire departments throughout the county at Britton, (North Marshall and Sunset) Eden, Langford, and Veblen.

Marshall County is in the process of upgrading and expanding their courthouse. The upgrades include: an 11,500 square foot addition for the sheriff's office and 911 dispatch, evidence storage and holding cells. There will also be a three-story elevator to allow access to the courthouse. The courthouse itself will be remodeled with an upgraded floor plan which will allow for better workflow for each department. Upgrades will also include improvements to the mechanical system of the building.

CLIMATE

Marshall County is in the James River Valley, known to have some of the largest temperature variances in the world, from a negative 50 degrees Fahrenheit in the winter to 120 degrees Fahrenheit in the summer. The average low in January is 2 degrees while the summer July high average is 83. The annual precipitation average is 42 inches of snow in the winter and 23 inches of rain in the summer months.

Table 1.8: Marshall County Climate	
Winter Temperature Averages	Low of 2.1 degrees
Summer Temperature Averages	High of 83 degrees
Snowfall	42 inches of snowfall annually Record snowfall: 22 inches in 24 hours
Rainfall	An average of 23.1 inches of rain annually
Sunny days	201 sunny days annually

Table 1.8: Marshall County Climate data from USAFacts.org

TRANSPORTATION

Transportation planning for streets and roads begins with understanding the relationship between land use and road network. Streets and roads function for mobility and land access. Interstate highways prioritize mobility while local roads prioritize land access to farms and residences. In between these two extremes, mobility and land access varies depending on the function of the road network.

Functional classification is the process of grouping streets and roads into classes according to the function they are intended to provide. Listed below is Marshall County's functional classification system. The classification is according to the rural systems classification as developed by the Federal Highway Administration.

1. Principal Arterials – serve longer strips statewide or interstate, carry the highest traffic volumes, connect larger urban areas, provide minimal land access, and include both interstate and non-interstate principal arterial highways.

2. Minor Arterials – interconnect the principal arterials, provide less mobility and slightly more land access, and distribute travel to smaller towns, and major resorts attracting longer trips.

3. Major Collectors – provide both land access and traffic circulation connecting areas not served by arterials and connect intercounty traffic generators like schools, shipping points, parks, and important mining and agricultural areas.

4. Minor Collectors – collect traffic from local roads and bring all developed areas within a reasonable distance of a collector road.

5. Local Roads – provide direct access to adjacent land and to the highest classified roads and serve short trips.

Marshall County is crossed by multiple highways. South Dakota Highway 10 runs east to west across the county through Britton and Lake City. South Dakota Highway 27 runs from north to south going through Langford. Veblen, Hillhead, and Eden are along South Dakota Highway 25 which runs from north to south.

Rural township roads show the effects of high flooding. Road maintenance and repair are impacted by flooding. There have been roads raised and reconstructed as the county works through flood impacted roads.

NATIONAL FLOOD INSURANCE PROGRAM PARTICIPATION

Two jurisdictions in Marshall County participate in the National Flood Insurance Program (NFIP) as of January 3, 2024: Britton and Langford. Marshall County and Veblen are not listed in the National Flood Program.

During the follow up about Marshall County's flood maps with Tom Birney from FEMA the maps are complete and updated. Marshall County is currently suspended due to failure to adopt the floodplain ordinance. Currently, FEMA and Marshall County are working with Marshall County's attorney to get them back on NFIP. FEMA is working to meet with Marshall County to move forward with the process to be a participant in NFIP.

Table 1.9 lists population, latitude and longitude, elevation, and NFIP status of communities in the county. Population statistics were from Census 2020. Location and elevation information are from Google Earth. NFIP status is from FEMA's Community Status Book.

Table 1.9: Marshall County Municipalities Overview				
Name *(Cities and Towns)*	**Pop. *(2020 American Community Survey)***	**Location**	**Elevation**	**NFIP *(National Flood Insurance Program)***
Britton	1241	44º 47’ 28.74” N 97º 45’ 03.47” W	1362 ft	Yes
Eden	89	45º 36’ 58.03” N 97º 25’ 08.03” W	1838 ft	No
Kidder (CDP)	57	45°52'57.99"N 97°42'48.37"W	1295 ft	No
Lake City	51	45º 43’ 28.08” N 97º 24’ 49.38 W	1866 ft	No
Langford	313	45º 36’ 09.15” N 97º 49’ 48.35” W	1372 ft	Yes
Veblen	531	45º 51’ 47.69” N 97º 17’ 14.49” W	1278 ft	No
Marshall County (Total – with Rural Areas)	4656	45°43'35.12"N 97°36'17.01"W	1848 ft	No

Table 1.9: Marshall County Municipalities Overview Data from Google Earth and 2020 Decennial Census

II: PREREQUISITES

CHANGES/REVISIONS TO PREREQUISITES:

- The plan participants table was revised to reflect new participants in the Marshall County Natural Hazard Mitigation Plan for 2022.
- The record of participation was updated.

ADOPTION BY LOCAL GOVERNING BODY

Requirement 201.6(c)(5)… *For multi-jurisdiction plans, has the governing body of each jurisdiction officially adopted the plan to be eligible for certain FEMA assistance?"*

> ***F2-a.*** *To receive approval, the participants must adopt the plan and provide documentation that the adoption has occurred.*

The Marshall County Commission oversees the update of the Marshall County Natural Hazard Mitigation Plan. The Commission has tasked the Marshall County Emergency Manager with the responsibility of ensuring that the Plan is compliant with Federal Emergency Management Agency (FEMA) Guidelines and corresponding regulations.

MULTI-JURISDICTIONAL PLAN PARTICIPATION

This is a multi-jurisdictional plan and serves Marshall County, and the five incorporated municipalities. Some municipalities elected not to participate in the planning process and update the 2020 Plan to the 2025 Plan. Participating local jurisdictions include Marshall County, Britton, Langford, and Veblen. Table 2.1 lists each municipality, if they were new, continuing, or non-participants. Municipalities that did not participate are covered by the plan but will not have a separate mitigation strategy from the County.

Table 2.1: Plan Participants

New Participants	Continuing Participants	Did Not Participate
	Marshall County	Eden
	Britton	Lake City
	Langford	
	Veblen	

The Marshall County Commission and participating municipalities passed resolutions to adopt the updated Plan. The Resolutions of Adoption are in Appendix A. The dates of adoption by resolution for the jurisdictions are summarized in Table 2.2. The townships are not participating entities because they are too small, in population and resources, to be capable of handling mitigation on their own and are served by the County.

Eden and Lake City were not participants in the 2020 Mitigation Plan, and they were not participants in the 2025 Mitigation Plan. Both jurisdictions are small in population and have limited resources. Both will be covered under the County's mitigation plan.

Table 2.2: Dates of Plan Adoption by Jurisdiction	
Jurisdiction	**Date of Adoption**
Marshall County	
Britton	
Eden	
Langford	
Lake City	
Veblen	

All jurisdictions were involved in the plan update to the extent they wanted to participate. Representatives from each municipality and the County attended the planning meetings and provided valuable perspective on the changes required. All representatives took part in group risk assessments and provided comments. Following each meeting representatives informed the respective councils and presented an update. The risk assessment worksheets were used to complete the Natural Hazard Mitigation Plan. These worksheets performed the basis for the projects listed in the mitigation portion of the plan and are in Appendix C. **In Table 2.3 the Record of Participation shows the requirements of participating communities and the communities that met that participation requirement.**

Table 2.3 Record of Participation						
Nature of Participation	**Marshall County**	**Britton**	**Eden**	**Lake City**	**Langford**	**Veblen**
Attended Meetings or work sessions (a minimum of 2)	☒	☒	☐	☐	☒	☒
Submitted inventory and summary of reports and plans relevant to hazard mitigation.	☒	☒	☐	☐	☒	☒
Submitted Risk Assessment Worksheet.	☒	☒	☐	☐	☒	☒
Submitted description of what is at risk (including local critical facilities and infrastructure)	☒	☒	☐	☐	☒	☒
Submitted a description or map of local land-use patterns (current and proposed/expected)	☒	☒	☐	☐	☒	☒
Developed goals for the community.	☒	☒	☐	☐	☒	☒
Developed mitigation actions with an analysis/explanation of why the actions were selected.	☒	☒	☐	☐	☒	☒
Prioritized actions that emphasize relative cost-effectiveness.	☒	☒	☐	☐	☒	☒
Reviewed and commented on draft Plan.	☒	☒	☐	☐	☒	☒
Hosted opportunities for public involvement (time for public comment at a minimum of two council meetings after giving a progress report on the Plan update)	☒	☒	☐	☐	☒	☒

III. PLANNING PROCESS

CHANGES/REVISIONS TO PLANNING PROCESS:

- The section was updated to list new participants.
- Record of Review documents was updated.
- Table for a List of Representatives Involved in the Plan added to list representatives who were part of the plan for each jurisdiction.
- Plan Resources table added to list resources used in the plan and planning process.
- Marshall County Mitigation Meetings table added to list meetings where the plan was discussed and open for public review and comment.
- Public Involvement was added to this part of the plan and information about the survey used to elicit public comment is listed here.
- The Record of Participation was added to this section to better illustrate the participants in the planning process.
- Public Involvement was added to this section to illustrate the public's involvement in the planning process.
- Added a table listing neighboring counties that were contacted for plan input.

DOCUMENTATION OF THE PLANNING PROCESS

Requirement 201.6(c)(1)… *Does the plan document the planning process, including how it was prepared and who was involved in the process for each jurisdiction."*

A1-a*. The plan must describe the current planning process.*

A1-b*. The plan must list the representatives from each of the participants in the current plan that will seek approval and how they participated in the planning process.*

Planning for the 2025 Natural Hazard Mitigation Plan Update began at the Marshall County Commission Meeting at the Marshall County Courthouse November 10, 2022. At that meeting, discussions were held to approve the grant funding of the Plan and for NECOG to write the Natural Hazard Mitigation Plan. Public planning meetings began August 5, 2024, at the North Marshall Fire Department Community Room. Invitations to attend the planning meetings were sent to neighboring counties' emergency managers for input in the planning process. A steering committee was formed from those who attended the public meetings. Public notices were included in the public meetings of the participants' jurisdictions. A copy of the minutes and discussions is included in the plan as Appendix B. A list of times and dates of the meetings are below:

August 5, 2024, 1 p.m. at the North Marshall Fire Department
September 9, 2024, 1 p.m. at the North Marshall Fire Department
November 12, 2024, 1 p.m. at the North Marshall Fire Department

Public planning meetings were at the North Marshall Fire Department Community Room. Commission and City Council meetings of participating jurisdictions informed the public about the Natural Hazard Mitigation Plan update. Representatives from participating jurisdictions worked through the 2020 Plan, noting deficiencies, corrections, and updates that were needed. Additional information was included to ensure that the new requirements were met. The updates were completed through three work meetings with the planning committee. These meetings were advertised at each jurisdiction's public meetings. The date of each meeting was set at the previous meeting. These methods of

notifying the public were determined by the steering committee as the best way to create public awareness and involvement in.

The plan author participated and followed the guidelines set in the FEMA G318 training and the FEMA Multi-Hazard Mitigation Guidance and Planning Tool as a basis for the plan update. This training provided guides for the planning update and meetings. Parts of the 2020 plan that did not meet FEMA's new guidelines were eliminated or adjusted to meet the new requirements. New updated requirements were included in the new plan update. Participating jurisdictions were given a copy of the mitigation strategy and were instructed to review all goals and projects to determine if changes were needed. Plan representatives were asked to discuss the mitigation strategy at council or commission meetings to determine if projects should be left in the plan, removed or were complete. Plan participants were also asked if recent developments created or changed risks. The meeting minutes and agendas for each of the meetings were published in the local newspaper or paper of record.

SELECTION OF THE STEERING COMMITTEE [§201.6(c)(1)]

The Marshall County Emergency Manager and Northeast Council of Governments led the Natural Hazard Mitigation Plan update. Local jurisdictions were represented by mayors, commissioners, city council members and/or finance officers who attended the meetings. County department heads also participated. The committee members took the information from the work sessions back to their jurisdiction and discussed the progress of the plan at their council meetings. BDM Rural Water was an external contributor for the 2025 Marshall County Mitigation Plan. Ottertail Power has participated in the past but is now included in the State Hazard Mitigation plan.

Representatives from local jurisdictions such as commission and council members and/or finance officers who attended were instrumental in the planning process by providing additional information when needed. Attendees reviewed the drafts and provided comments after the Northeast Council of Governments initiated changes to the 2020 plan. Each of the participating local jurisdiction had a member of their council represent the municipalities' interest in the plan.

Participating jurisdictions were given a copy of the mitigation strategy and were instructed to review all goals and projects to determine if changes were needed. Plan representatives were asked to discuss the mitigation strategy at council or commission meetings to determine if projects should be left in the plan, removed or were complete. Plan participants were also asked if recent developments created or changed risks. The meeting minutes and agendas were published in the local newspaper or paper of record.

The representatives were asked to share the plan progress at their council meetings and ensure that those attending the meetings were aware that they were invited to make comments on and participate in the process of updating the plan. The municipalities put the plan update on the agenda and allowed people to comment. Comments provided by residents at the city council meetings were collected and incorporated into the plan. Table 3.1 lists the representative and the jurisdictions that were involved in the planning process.

Table 3.1 Marshall County Natural Hazard Mitigation Planning Committee	
Logan Roehr	**Marshall County Emergency Management**
Megan Biel	**Marshall County Auditor**
Erin Collins-Miles	**Marshall County Zoning**
Jennifer Athey	**Britton Finance Officer**
George Flanery	**Britton Public Works**
Orrie Jesz	**Town of Langford**
Dustin Hofland	**City of Veblen** **Marshall County Highway Department**
Darin Roehr	**BDM Rural Water System**
Non-participating jurisdictions included Eden and Lake City.	

The representatives were asked to share the plan progress at their council meetings and ensure that those attending the meetings were aware that they were invited to make comments on and participate in the process of updating the plan. The municipalities put the plan update on the agenda and allowed people to comment. Comments provided by residents at the city council meetings were collected and incorporated into the plan.

Table 3.2 is a list of the officials who, as of the writing of this plan, were members on the boards and commissions for the Marshall County jurisdictions of the plan. They provided input at public meetings for the plan.

Table 3.2: List of Representatives Involved in the Plan	
Marshall County	
Matthew Schuller	Commission Chairman
Kevin Jones	Commission Vice Chair
Douglas Medhaug	Commissioner
LeRon Knebel Sr.	Commissioner
Lynda Luttrell	Commissioner
Britton	
Clyde Fredrickson	Mayor
Brian Beck	Council Member
Cristy Davidson	Council Member
Lindsey Kimber	Council Member
Norman Mack	Council Member
Austin Sasker	Council Member
Shane Storley	Council Member
Eden	
Dan Poss	President
Chad Fagerlund	Trustee
Mitchell Samson	Trustee
Lake City	
Chad Olson	Mayor
Marty Anderson	Commissioner
Amanda Olson	Commissioner
Langford	
Orrie Jesz	Mayor
Chad Hardy	Council Member
Jordan Hupke	Council Member
Veblen	
Chuck Baus	Mayor
Kerry Anderson	Council Member
Bradley Cody	Council Member
Tom Henning	Council Member
Kristin Hofland	Council Member
***Commissioners, council members, and other elected officials and non-elected officials of cities, towns and counties change often. These names are the most recent office/position holders.	

TECHNICAL REVIEW OF EXISTING DOCUMENTS

Requirement 201.6(b)(3))… *Does the plan describe the review and incorporation of existing plans, studies, reports and technical information?*

> ***A4-a****. The plan must document what existing plans, studies, reports, and technical information were reviewed and how they were incorporated, if appropriate, in the development/update of the plan.*

Existing plans, studies, reports, and technical information were reviewed and incorporated where applicable. Each community was asked for the documents they had but many of

the smaller communities do not have them. The 2020 Mitigation Plan was a resource for the 2025 Mitigation plan. The plan author reviewed the documents in Table 3.3 although not all were used. Each community received a copy of the plan to determine if changes were needed. The resources listed in Table 3.4 were used to inform the plan in addition to the technical documents. These resources include plans from other jurisdictions, websites with information about the hazards and regulations in Marshall County.

Table 3.3: Record of Review (Summary): Local Jurisdiction							
Program / Policy / Technical Documents	**Marshall Co.**	**Britton**	**Eden**	**Lake City**	**Langford**	**Veblen**	**NOTES**
Comprehensive Plan	✓	✓	NP	NP	NP	NP	
Capital Improvements Plan	NA	✓	NP	NP	NP	NP	
Flood Damage Prevention Ordinance*	In progress	✓	C	C	✓	C	Marshall County is working with FEMA to finalize NFIP participation. Flood maps are complete. All other jurisdictions complete.
Floodplain Management Plan*	In Progress	✓	C	C	✓	C	Marshall County is working with FEMA to finalize NFIP participation. Flood maps are complete. All other jurisdictions complete.
Flood Insurance Studies/Hydrology Studies*	In Progress	✓	C	C	✓	C	Marshall County is working with FEMA to finalize NFIP participation. Flood maps are complete. All other jurisdictions complete.
Transportation Plan/Bridge and Highway	✓	✓	C	C	C	C	All jurisdictions are covered by the county.
Emergency Operations Plan	✓	C	C	C	C	C	All jurisdictions are covered by the county.
Zoning Ordinance	✓	✓	C	C	C	C	
Building Code	✓	✓	C	C	✓	✓	
Drainage Ordinance	✓	✓	C	C	C	C	
Critical Facilities maps	✓	✓	C	C	C	C	
Existing Land Use maps	✓	✓	C	C	✓	✓	
Elevation Certificates	✓	✓	C	C	C	C	
State Hazard Mitigation Plan	✓	✓	✓	✓	✓	✓	All jurisdictions are covered by the state plan.
HAZMAT	✓	C	C	C	C	C	
Bridge Plan	✓	C	C	C	C	C	
Community Operations Plan	✓	C	C	C	C	C	
HAZUS	NA	NA	NP	NP	NP	NP	

NA	: the plan does not apply the jurisdiction
NP	: the jurisdiction does not have this program/policy/technical document
O	: the jurisdiction has the program/policy/technical document, but did not review/incorporate it in the mitigation plan
C	: the jurisdiction is regulated under the County's policy/program/technical document
✓	: the jurisdiction reviewed the program/policy/technical document

** As of XXXXXX Marshall County has been working with FEMA to approve and implement a flood plain ordinance and flood maps. As of the writing of this plan, they are currently in process of working with FEMA to finalize the NFIP status.

Table 3.4: Plan Resources	
Plan Name	**Location of Use in Plan**
South Dakota Hazard Mitigation Plan	Hazard Profile
***Marshall County Hazard Mitigation Plan* (2020)**	Marshall County Profile, Hazard Profile
Marshall County Zoning	Development Trends
Britton Ordinances	Hazard Profile
Marshall County Flood Prevention Ordinance	***Reviewed previous one, have not had an official updated flood prevention ordinance for updated maps
Headwaters Economics	Marshall County Profile, Hazard Profile
Marshall County Flood Maps*	***Reviewed previous one, have not had an official updated flood prevention ordinance for updated maps
Capital Improvements Plan – Britton	Mitigation Actions
Flood Damage Prevention Ordinance and Management Plan – Marshall County, Britton, Langford and Veblen	***Reviewed previous one, have not had an official updated flood prevention ordinance for updated maps
Flood Insurance Studies	Hazard Profile
Marshall County Emergency Operations Plan	Hazard Profile
NOAA Storm Events Database	Hazard Profile
Fifth National Climate Assessment	Development Trends
NIDIS (Drought.gov)	Hazard Profile
U.S. Air Quality Index (Airnow.gov)	Hazard Profile
E.P.A. (epa.gov/enviroatlas)	Hazard Profile
USAToday (usatoday.com/storytelling/news/investigation/rainfall-lookup/)	Hazard Profile
CDC (CDC.gov)	Development Trends, Vulnerability
National Climate Assessment	Hazard Profile
National Risk Index	Development Trends, Vulnerability
Climate Explorer	Hazard Profile
National Levee Database	Hazard Profile
Risk Factor (riskfactor.com)	Hazard Profile
Census Data (Census.gov)	Marshall County Profile, Hazard Profile
FEMA.gov	Marshall County Profile, Hazard Profile
Google	Hazard Profile
NPMS Public Viewer Marshall County Pipelines	Marshall County Profile
ClimRR	Hazard Profile
State of South Dakota Mitigations Project Map	Marshall County Profile, Hazard Profile
USAFacts.com	Marshall County Profile, Hazard Profile
***Plans that were reviewed but not incorporated into the plan are marked with an asterix.**	

2020 NATURAL HAZARD MITIGATION PLAN REVIEW

The planning team reviewed and analyzed each section of the plan, and each section was revised as needed as part of the update process. The plan author also used the Local Multi-hazard Mitigation Planning Guidance (dated April 2019) and the Local Mitigation Plan Review Tool to update the plan.

While the entire plan was evaluated infomaton was updated. Participants were asked to focus on the mitigation strategy and risk assessment. A review of the plan occurred during several two-hour work sessions and at City Council and Commission meetings held at the several locations and times on the following dates listed in Table 3.5.

Table 3.5: Marshall County Mitigation Meetings

Date	Location	Meeting Type	Advertisement	Stakeholders Represented
11/9/2022	Marshall Co.	County Commission	Public Notice	Public, County Representatives
11/8/2022	Veblen, SD	City Council	Public Notice	Public, City Representatives
11/8/2022	Langford SD	City Council	Public Notice	Public, City Representatives
11/8/2022	Britton SD	City Council	Public Notice	Public, City Representatives
10/24/2023	Marshall Co.	County Commission	Public Notice	Public, County Representatives
08/05/2024	Britton SD	Planning Meeting	Email, Notices	Planning Committee
09/09/2024	Britton SD	Planning Meeting	Email, Notices	Planning Committee
11/12/2024	Britton SD	Planning Meeting	Email, Notices	Planning Committee

Agendas are required to be posted 24 hours in advance of a meeting at the principal office of the jurisdiction and on the jurisdiction's website. The agenda must be visible, readable and accessible.

Sign in sheets and meeting notes are in Appendix B for reference.

PUBLIC INVOLVEMENT [§201.6(b)(1)]

Requirement 201.6(b)1))… *Does the plan document how the public was involved in the planning process during the drafting state and prior to plan approval?*

> ***A3-a.*** *The plan must document how the public had an opportunity to be involved in the current planning process, and what that participation entailed, including how underserved communities and vulnerable populations within the planning area were provided an opportunity to be involved.*

The public was provided several opportunities at Commission and Council meetings to comment on the plan during the drafting stage of the plan update. State law requires that public meetings allow for public comment as described in SDCL 1-25-1.

> …The public body shall reserve at every regularly scheduled official meeting a period for public comment, limited at the public body's discretion, but not so limited as to provide for no public comment. At a minimum, public comment shall be allowed at regularly scheduled official meetings which are designated as regular meetings by statute, rule, or ordinance.

It was during this legally required comment period that the public could provide comments. Mitigation Planning was listed on the required notices for the City Council and County Commission meetings. Notices for public meetings require a minimum of time, date, and location, and were posted in accordance with SDCL 1-25.1.1:

> 1-25-1.1. …Each political subdivision shall provide public notice, with proposed agenda, which is visible, readable, and accessible for at least an entire, continuous twenty-four hours immediately preceding any official meeting, by posting a copy of the notice, visible to the public, at the principal office of the political subdivision holding the meeting. The proposed agenda shall include the date, time, and location of the meeting. The notice shall also be posted on the political subdivision's website upon dissemination of the notice if a website exists. For any special or rescheduled meeting, the information in the notice shall be delivered in person, by mail, by email, or by telephone, to members of the local news media who have requested notice. For any special or rescheduled meeting, each political subdivision shall also comply with the public notice provisions of this section for a regular meeting to the extent that circumstances permit.

There were several work sessions and public hearings to involve the public, however, no one from the public commented on the plan or helped with the update. The public was notified through the local newspaper, social media, and the county website that the plan draft was being placed online for review and comment. Even though no one from the public showed up to comment on the plan update, discussion occurred among the council members, engineers, finance officers, city engineers and/or attorneys (when relevant), and staff. This was documented in the meeting minutes and published in the paper or record as required by law. The plan was made available to county and city officials for comments and updates. Comments were also made from the public through the survey conducted by the County. The survey and list of comments is in Appendix E. The Planning Committee approved the use of a survey to elicit public comments. The survey, available online and on paper, had 34 responses.

SURVEY

A public survey was conducted during the plan update. Surveys were distributed through the Emergency Management Facebook page and distributed at meetings. Most responses came from Britton residents (19). Rural Marshall County (8) was next followed by Veblen (5) and Langford (2). Most of the respondents were 45-64 (44%), then those who were 19-44 (38%), and the demographic with the least was 65 and over (19%).

Hazards were ranked in the order that they were most likely to happened:1: strong winds, 2: severe winter weather, 3: thunder/lightning/hail, 4: drought, 5: tornado, 6: flood and 7: wildfire. 56% of residents had a natural hazard negatively affected them in the last ten years. 5.9% had a disaster that negatively affected them more than ten years ago.

When asked what they were affected by most (41.2%) said winter weather, strong winds (38.2%), severe summer storms (26.5%) followed by tornado (8.8%), flood (5.9%) and drought (2.9%). 32.4% have not been affected by a natural disaster in the last ten years. 20 residents had damage to personal property (58.8%), 9 had to take an alternative route to school (26.5%), 2 (5.9%) had injuries occurred due to a hazard and 1 (2.9%) was displaced for more than 3 days. 12 (35.3%) hadn't been affected by a natural hazard in the last 10 years. Most residents had safe places to go to in the event of a tornado (33 – 97.1%) only 1 person did not have a safe place to go (2.9%). Most residents (21 - 61.8%)

said there was a need for a storm shelter in their area while 38% (13) said that there was no need for a storm shelter. When asked if they knew where storm shelters were in their area 35% said no, 41% said yes and 24% said they didn't have one. When asked about alternative sources of power, exactly half of residents do and the other half do not.

Residents were asked about resources that residents had to deal with natural hazards. One of the questions was where they could go in the event of a tornado. The majority (30) of respondents have a basement. Two residents had friends they could shelter with. When asked about the type of heating they have access to in the event of power loss, 17 responded. 5 had fireplaces, 11 had backup generators, and one had a cell.

Residents were also asked how long they could go without power. One person said none, 2 said 1 day, 11 said from 2-7 days with an average of 3. Two people said they could go for 10 days, and another said two weeks. Others were unsure or until they ran out of propane. One response said it depended on the time of year. Responses were also collected about what residents thought could be done to mitigate for hazards. Many residents said they were unsure what could be done. Others stated a texting/calling service, public meetings to understand hazard plans, and educating local leaders on them.

Most respondents highlighted educating the public to natural hazard risks and resources available. Another listed fixing Britton's roads so emergency vehicles could easily navigate them. Shelters, controlling water runoff and getting plows out as soon as possible to help with snow removal were listed. Services to assist homeowners with winterization and power line burials were a topic along with eliminating hazardous branches. Some respondents were unsure of what additional actions could be taken.

NEIGHBORING JURISDICTION PARTICIPATION [201.6(b)(2)]

Requirement 201.6(b)(2))… *Does the plan document an opportunity for neighboring communities local and regional agencies involved in hazard mitigation activities, and agencies that have the authority to regulate development as well as businesses, academia, and other private and non-profit interests to be involved in the planning process.*

> ***A2-a****. The plan must provide documentation of an opportunity for stakeholders to be involved in the current planning process.*

After the plan was drafted it was posted on the Marshall County Website, City of Britton website, and emailed to all participants and to the emergency managers in the neighboring counties of: Roberts, Brown, and Day counties in South Dakota and Richland and Sargent County, North Dakota. All recipients listed in Table 3.6 received a copy of the plan draft and were allowed 32 days to comment.

Table 3.6: Neighboring Emergency Managers			
Neighboring County	**Emergency Manager**	**Response Received**	**Comments**
Day County	Bryan Anderson	No	None
Roberts County	Zach Serocki	No	None
Brown County	Scott Meints	No	None
Richland County, ND	Brett Lambrecht	No	None
Sargent County, ND	Wendy Willprecht	No	None

IV. RISK ASSESSMENT

CHANGES/REVISIONS TO RISK ASSESSMENT:

- All figures in this section were updated, as necessary.
  - Analyzing Development Trends
  - Unique or Varied Risk
- Removed redundant language in the hazard profile section and removed hazards listed that had no occurrences in the hazard area.
- Added Dense Smoke as a hazard due to increasing smoke advisories in the area.
- Condensed hazard descriptions into each hazard section.
- Added a table of Presidential Disaster Listings.
- Added Overview County Flood and NFIP Repetitive loss properties table under flood.
- Added information on mitigation projects completed in Marshall County.
- NFIP requirements were added to this section.
- A section on climate change was added to this section as a hazard.

IDENTIFYING HAZARDS

A summary of natural hazard occurrences in Marshall County since 2013 is in Appendix D. Although there are many websites for hazard data, the primary sources were: the National Oceanic Atmospheric Administration (NOAA), the National Weather Service in Aberdeen, South Dakota State Fire Marshall's office, National Inventory of Dams, FEMA, and the United States Drought Monitor. Additional resources were provided from the newspaper *The Marshall County Journal* and are listed in Table 3.4 in the planning process section. These sources accumulate information over time, yet there are instances where the data is incomplete. The plan writer extrapolated based on the reputable available data and planning committee input.

Although the accumulation of occurrences is broad, a complete list does not exist due to the remoteness of the area. For example: one can assume that although there was hail in Marshall County, there would be damage, even if it was just minor insurance claims. NOAA does not always account for this type of damage. Also, there are other organizations that are more detailed for certain hazards. The National Drought Monitor gathers facts about drought. This specificity allows more detail with the data.

One example where official information is not complete is fire occurrences. The NOAA website listed zero wildfire occurrences in the last 10 years. The State Fire Marshal, Doug Hinkle, was contacted to verify that information. He explained that the state's information is more accurate and is obtained from reports submitted by the local fire departments who respond to the events. Sometimes, fire departments do not file reports with the state. Although the information provided by the State Fire Marshal's office is not entirely complete either, it is more accurate than NOAA's data and was used in the plan.

Other examples of difficulty obtaining accurate information about Marshall County hazards through NOAA were drought, lightning, and extreme temperatures. Although these are common in Marshall County, there was little to no data about these events and damages. One thing to note: in South Dakota, the weather is generally accepted as constantly changing. One statement common to the area is: "if you don't like the weather, wait five minutes." This idea illustrates the resilience of residents and the acceptance of rapidly changing and unpredictable weather conditions.

HAZARD PROFILE – IDENTIFYING HAZARDS

Requirement 201.6 (c)(2)(i): *Does the plan include a description of the type, location and extent of all natural hazards that can affect the jurisdiction. Does the plan include information on previous occurrences of hazard events and on the probability of future hazard events?*

> ***B1-a****. The plan must include a description of all natural hazards that can affect the jurisdiction(s) in the planning area and their assets, such as dams, located outside the planning area.*

The geographic location of each natural hazard is addressed in the update. Most hazards are widespread and can occur anywhere in the County. A history of hazard occurrences over the last ten years is in Appendix D. Table 4.1 identifies the Latitude and Longitude of the jurisdictions, population, elevation, and number occupied homes according to the 2020 US Census. To illustrate the growth in Marshall County and the increased risk, occupied housing units and the difference over the last 10 years is included.

Table 4.1: Marshall County Municipalities Overview

Name *(Cities and Towns)*	Pop. - *2010 Census*	Pop. - *2020 Census*	Diff. in Pop.	Location	Elev.	Occupied Units in Hazard Area (2010)	Occupied Units in Hazard Area (2020)	Diff - Housing Units (2010 to 2020)
Britton	1241	1215	-26	44º 47’ 28.74” N 97º 45’ 03.47” W	1362 ft	597	579	-18
Eden	89	94	5	45º 36’ 58.03” N 97º 25’ 08.03” W	1838 ft	56	103	47
Lake City	51	45	-32	45º 43’ 28.08” N 97º 24’ 49.38 W	1866 ft	19	29	10
Langford	313	283	-30	45º 36’ 09.15” N 97º 49’ 48.35” W	1372 ft	233	186	-47
Veblen	531	317	-214	45º 51’ 47.69” N 97º 17’ 14.49” W	1278 ft	164	196	32
Unincorporated	2374	2327	-47	45°43'35.12"N 97°36'17.01"W	1848 ft	1489	1319	-170
Marshall County	4656	4306	-350	45°43'35.12"N 97°36'17.01"W	1848 ft	2558	2412	-146

Table 4.1: Data from US Census Bureau Decennial Census 2020 and Google Earth

The scope of the hazards, information on previous occurrences, and the probability of future events for each hazard is in Table 4.2 and the data is in Appendix D. While the planning committee reviewed all hazard events from the last 100 years, the list of some hazards was extremely long. The information provided is not a complete history of natural hazards, but an overview of the last ten years and is summarized here. New occurrences that happened since the previous plan were added. As climate change continues to impact the area with more and increasingly severe trends, recording weather events becomes more important to mitigation. The complete 10-year history can be found in Appendix D.

Table 4.2: Probability of Events Occurring in Marshall County				
Event	**Probability**	**# of Events**	**# of Years**	**Source**
Dam Failure as rated by the National Inventory of Dams	Low	3 of 27: significant down hazard	10	National Inventory of Dams
Wildfire	100%	211 events	10	SD State Fire Marshall
Drought	20%	2 events in 6 months over 2 years	10	NOAA/Drought Monitor
Flood	30%	3 events on 96 days over 3 years	10	NOAA
Flash Floods	20%	2 events on 2 days over 2 years	10	NOAA
Total flood events	50%	5 events lasting 98 days over 5 years	10	NOAA
Hail	100%	53 events on 9 Days over 6 years	10	NOAA
High Winds	100%	17 events	10	NOAA
Thunderstorm Winds	100%	37 events on 21 Days over 9 years	10	NOAA
Funnel Cloud/Tornado	60%	6 events on 6 days over 6 years	10	NOAA
Extreme Temperatures – Cold/Heat	100%	31 days of cold/2 days of Heat over 10 years	10	NOAA
Winter Weather/Blizzards/ Ice Storms/Winter Storms	100%	79 events	10	NOAA
Dense Smoke and Dust Occurrences	10%	1 year with 1 event	10	NOAA

Table 4.2 data from NOAA, SD State Fire Marshall, NID detailed in Appendix D.

Table 4.2 lists hazards in Marshall County and their probabilities. Hazard probabilities are based on events that occurred in the last 10 years. The hazard rating of dam failure is low to significant, meaning there can be significant hazard to downstream areas if the dam breaches. Of twenty-seven dams, there are three with a significant down hazard rating.

Weather patterns can increase in magnitude and frequency due to climate change and its effects on weather patterns. According to Laura Edwards, State of South Dakota Climatologist, weather extremes will become more common as climate change shifts the average temperatures upwards. The swings from high to low precipitation will not be as gradual. Winters will become warmer on average as the climate continues to shift.

SUMMARY OF VULNERABILITY

Table 4.3 is a list of natural hazards produced from the FEMA worksheets completed by each local jurisdiction located in Marshall County. Representatives from each community completed the worksheet for their location. Representatives of Marshall County completed the worksheet for county-wide risks. The risk assessment worksheets were used to complete the Natural Hazard Mitigation Plan. These worksheets performed the basis for the projects listed in the mitigation portion of the plan and are in Appendix C. Table 4.3 lists the natural hazards of concern in Marshall County.

Table 4.3: Natural Hazards Categorized by Likelihood of Occurrence		
High Probability	**Low Probability**	**Unlikely to Occur**
Extreme Cold	Drought	Dam Failure
Extreme Heat	Flash Flood	Earthquake**
Freezing Rain/Sleet/Ice	Flood	Ice Jam
Hail	Tornado	Landslide
Heavy Rain		Subsidence
Heavy Snow		Urban Fire
Lightning		Wildfire
Rapid Snow Melt	*****Earthquakes are marked with an asterisk because they occur but are so small that the effects are minimal. Mitigation measures specifically for earthquakes are not a priority.**	
Strong Winds		
Thunderstorm		
Utility Interruption		

Every possible hazard was evaluated and identified depending on the likelihood of occurrence in each jurisdiction. Hazards that happen at least once a year were in the High Probability column; hazards that had occurred and could occur in the future but not yearly were placed in the low probability column; and hazards that have never occurred before and are unlikely to happen were placed in the Unlikely to Occur column.

Only the High Probability and Low Probability hazards will be evaluated further in the plan. Hazards were identified in several ways including: observing development patterns, interviews from towns and townships, public meetings, Natural Hazard Mitigation Plan work sessions, previous disaster declarations, consulting the South Dakota State Hazard Mitigation Plan and research of the history of hazard occurrences in Marshall County. Public input on natural hazards was conducted through a survey. A report on the responses to the survey is included in Appendix E. Vulnerability to hazards were assessed in a similar way and the responses are listed in Table 4.4.

For simplicity of the mitigation plan, hazards were grouped based on their likelihood of occurrence at the same time. Wildfire is combined with urban fire. Freezing Rain is combined with sleet, snow, and heavy snow. Heavy Rain is combined with lightning, funnel clouds, tornadoes and thunderstorms. Flooding is combined with flash floods.

Due to the natural landscape, similarities, and the widespread nature of these hazards most parts of Marshall County have the same hazard profile and probability of hazard occurrence. Each jurisdiction has their own vulnerabilities to natural hazard occurrences due to their resources and rural nature.

Table 4.4: Overall Summary of Vulnerability by Jurisdiction						
Natural Hazards Identified	**Marshall Co.**	**Britton**	**Eden**	**Lake City**	**Langford**	**Veblen**
Dam Failure	L	NA			M	NA
Drought	L	M			H	L
Earthquakes	NA	NA			NA	NA
Extreme Cold	H	M			M	M
Extreme Heat	M	M			M	M
Flash Flood	H	L			H	M
Flood	M	M			H	M
Freezing Rain/Sleet	H	H			M	H
Hail	M	M			M	M
Heavy Rain	H	M			M	M
Heavy Snow	H	M			M	H
Ice Jam	L	NA			M	L
Landslides	L	NA			NA	NA
Lightning	M	M			NA	M
Rapid Snow Melt	M	M			H	M
Strong Winds	H	M			M	H
Subsidence	NA	L			NA	NA
Thunderstorms	M	L			M	H
Tornadoes	L	M			L	H
Urban Fire	H	NA			NA	L
Utility Disruption	M	L			H	L
Wildfire	L	L			L	L
NA:	Not applicable; not a hazard to the jurisdiction					
L:	Low risk; little damage potential (minor damage to less than 5% of the jurisdiction)					
M:	Medium risk; moderate damage potential (causing partial damage to 5-10% of the jurisdiction and irregular occurrence)					
H:	High risk; significant risk/major damage potential (for example, destructive, damage to more than 10% of the jurisdiction and regular occurrence)					

MARSHALL COUNTY PRESIDENTIAL DISASTERS

Requirement 201.6(c)(2)(i)… *Does the plan include a description of the type, location, and extent of all natural hazards that can affect the jurisdiction? Does the plan also include infomaton on the previous occurrences of hazard events and on the probably of future hazard events?*

> ***B1-d.*** *The plan must include information on previous hazard events for each hazard that affects the planning area.*

Marshall County has been included in twenty-one Presidential Disaster Declarations. Fourteen included flooding. Nine of the flood disasters were based on summer storms and three on winter storms. Marshall County had disaster declarations for nine summer storms and five winter storms. One disaster declaration was an ice storm, and one was due to drought. Most types of weather events such as extreme cold and heat, freezing rain/sleet, hail, heavy rain and snow, lightning, strong winds, and thunderstorms are county-wide and impact large areas of the population.

The widespread nature of the presidential disasters shows the entire county is vulnerable. Flooding impacts residents by flooding homes and roads and covering fields, making it difficult if not impossible to plant or harvest crops and feed livestock. Roads covered in water are a concern due to the inaccessibility of some areas of the county for residents and emergency services. Winter and summer storms can damage homes and crops. Extreme heat or cold can put residents in danger if they do not have ways to cool or heat themselves. It also impacts crops and livestock by freezing or overheating and damaging crops and the feed for livestock. Hail and winds damage buildings and crops along with potentially hurting residents and livestock.

Marshall County's economy is heavily dependent on agriculture and each of these events has had a severe impact on the residents and economy. Table 4.5 lists the Presidential Disasters that have affected Marshall County since 1969.

Marshall County had nineteen Presidential Disaster Declarations. Thirteen of the disaster declarations included flooding. Seven disasters were flooding based on summer storms and three on winter storms. One was due to drought. The widespread impact of these disasters shows the entire county is vulnerable.

Table 4.5: Marshall County Presidential Disaster Declarations 1969 - 2020			
Disaster	**Incident Period**	**Declaration Date**	**Reason**
EM-3015-SD	June 17, 1976	June 17, 1976	Drought
DR-999-SD	May 6, 1993, to September 10, 1993	July 19, 1993	Flooding, Severe Storms
DR-1031-SD	March 1, 1994, to July 29, 1994	June 21, 1994	Severe Storm, Flooding
DR-1052-SD	March 1, 1995, to June 20, 1995	May 26, 1995	Severe Storms and Flooding
DR-1156-SD	January 3, 1997, to January 31, 1997	January 10, 1997	Severe Winter Storms/Blizzards
DR-1173-SD	February 3, 1997, to May 24, 1997	April 7, 1997	Severe Storms and Flooding
DR-1218-SD	April 25, 1998, to June 22, 1998	June 1, 1998	Flooding, Severe Storms and Tornadoes
DR-1375-SD	March 1, 2001, to April 30, 2001	May 17, 2001	Winter Storms and Flooding
DR-1531-SD	May 28, 2004, to June 16, 2004	July 20, 2004	Severe Storms and Flooding
DR-1620-SD	November 27, 2005, to November 29, 2005	December 20, 2005	Severe Winter Storm
DR-1702-SD	May 4, 2007, to June 8, 2007	May 22, 2007	Severe Storms, Tornadoes and Flooding
DR-1844-SD	March 11, 2009, to July 6, 2009	June 16, 2009	Severe Storms and Flooding
DR-1915-SD	March 10, 2010, to June 20, 2010	May 13, 2010	Flooding
DR-1984-SD	March 11, 2011, to July 22, 2011	May 13, 2011	Flooding
DR-4298-SD	December 24, 2016, to December 26, 2016	February 1, 2017	Severe Winter Storm
DR-4440-SD	March 13, 2019, to April 26, 2019	June 7, 2019	Severe Winter Storms and Flooding
EM-3475-SD	January 20, 2020, to ongoing	March 13, 2020	Covid 19-Pandemic
DR-4527-SD	January 20, 2020, to ongoing	April 5, 2020	Covid-19 Pandemic
DR-4718-SD	April 9, 2023, to May 5, 2023	July 6, 2023	Flooding

Table 4.5: data from FEMA Disaster Declarations Database

Marshall County has had township roads underwater due to flooding. Flooding makes roads softer, more susceptible to damage and even unpassable. Flooding makes travel difficult in an emergency for EMS services and impacts the economy by affecting farmers and hunters. The widespread nature of flooding can require the county to build up roads to make them passable, reducing funds for other development. Damage to roads continues in drought due to the repeated exposure to high heat alternated with high water.

Winter weather is widespread and brings hazardous amounts of ice, snow, high winds, and extremely cold temperatures. Storms can be dangerous, having an impact on driving conditions and causing freezing temperatures. Snow can last long periods of time and accumulate to create flooding when the snow melts and can cause ice jams in the local waterways. Summer storms can cause accumulation of water through heavy rains and a lack of dispersion. Although some jurisdictions have storm sewers, many do not.

Drought impacts crops, livestock, and the area, especially since Marshall County's economy is reliant on agriculture. During the last ten years, Marshall County has experienced multiple periods of drought ranging from moderate to severe. As the possibility of increasing temperatures due to global warming, area vulnerability and its impact on the economy can be more severe than historic weather patterns.

Table 4.6: Marshall County Mitigation Projects	
Electric Line Burial	**15**
Lift Station Generators	**3**
Stormwater Improvements	**1**

Table 4.6 illustrates mitigation projects completed by Marshall County. The map below (Figure 4.1) shows the location of projects in Marshall County.

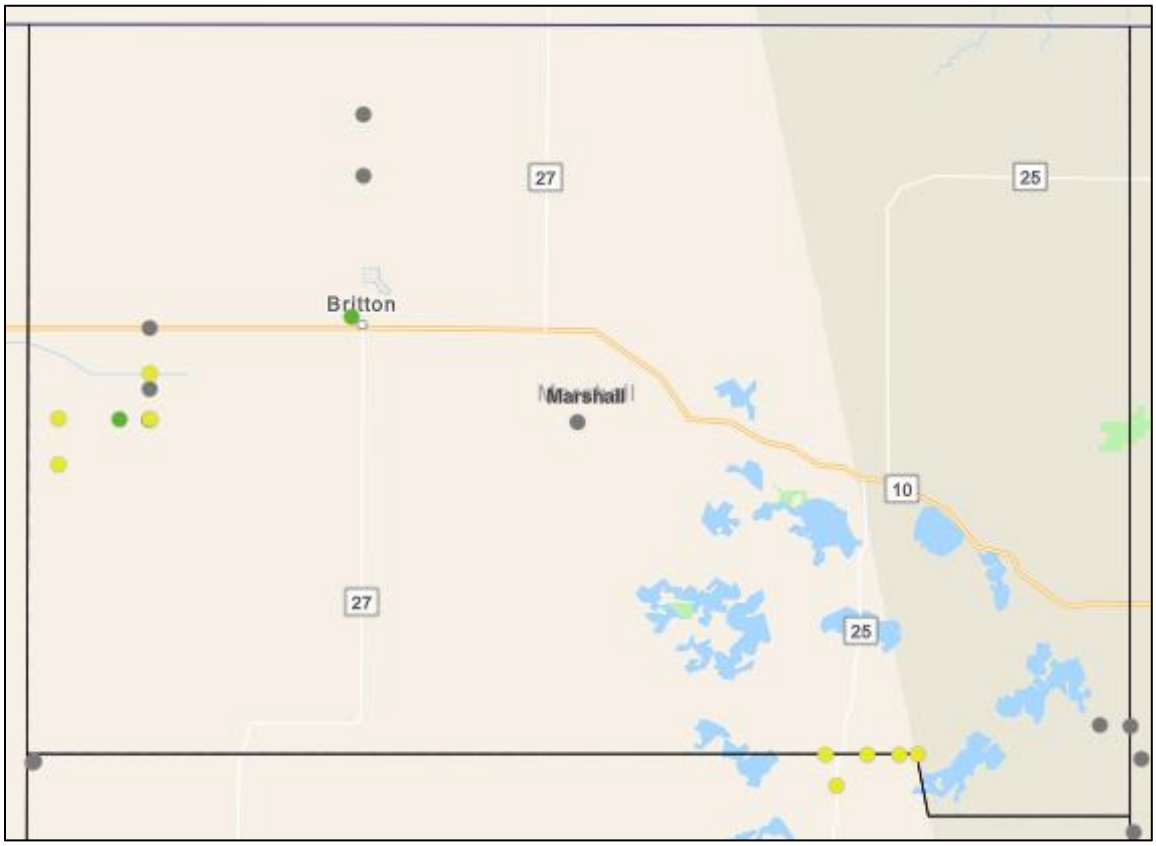


Figure 4.1: South Dakota Mitigation Project map of Marshall County

ASSESSING VULNERABILITY: OVERVIEW OF HAZARD PROFILE

Requirement 201.6(c)(2)(ii): *Does the plan include a description of the type, location, and extent of all natural hazards that can affect the jurisdiction? Does the plan also include infomaton on previous occurrences of hazard events and on the probability of future hazard events?*

- ***B1-b***. *The plan must include information on the location for each identified hazard.*
- ***B1-c***. *The plan must provide the extent of the hazard that can affect the planning area.*
- ***B1-d***. *The plan must include information on previous hazard events for each hazard that affects the planning area.*
- ***B1-e***. *The plan must include the probability of future events for the identified hazards that can affect the planning area.*
- ***B1-f***. *For multi-jurisdictional plans, when hazard risks differ across the planning area and between participating jurisdictions, the plan must specify the unique and varied risk information for each applicable jurisdiction and their assets outside of the planning area.*

HAZARD PROFILE

DAM FAILURE

Table 4.7: Dam Failure	
Dam failure causes a sudden and rapid release of water from the dam. Damage that can occur would depend on the amount of water released and the downstream residents or structures. Dam failures can also cause the loss of water stored for reservoirs and power.	
Dam Failure	• Caused by high water flows or structural failure. • It can cause considerable damage depending on the vulnerable structures and residents downstream from the event.
Marshall County Dams	• 27 Dams in Marshall County • 3 have a significant hazard rating

Table 4.7: Dam Failure Description 2020 Marshall County Natural Hazard Mitigation Plan

Dam breach or failure is a concern for the citizens of Marshall County. Dam failure is usually associated with intense rainfall or prolonged flood conditions but can occur anytime. Dam failure can be caused by many types and combinations of conditions. Some reasons may be age, faulty design, construction and operational inadequacies, intentional breaches, or a flood event larger than the design can handle. The greatest threat from dam failure is to people and structures immediately below the dam since flood discharges decrease as the wave moves downstream. This is the dams “down hazard level.” Dams with a high hazard level can cause a high level of destruction downstream compared with low hazard dams. Table 4.8 lists each dam and its location.

Table 4.8: Dam Locations in Marshall County								
ID	**Name**	**Owner**	**Location - Lat/Long**	**Year Built**	**Type/ Hazard**	**Insp Date:**	**Height (ft)**	**Max Storage (acre-feet)**
SD02239	Freyer Dam	Curt Foster	45.696667 -97.666666	1981	Earth/ Significant	N/A	28	520
SD00032	White Lake Dam	Game Fish & Parks	45.855232 -97.622574	1933	Earth/ Significant	11/15/19	28	3,340
SD02240	Person #1	Gerald A. Person	45.698333 -97.715	1983	Earth/ Significant	N/A	21	400
SD02163	Wild Rice Creek Watershed WR-3	Wild Rice Creek Watershed District	45.788332 -97.651666	1961	Earth/ Low	N/A	67	1,668
SD02155	Wild Rice Creek Watershed WR-2	Wild Rice Creek Watershed District	45.903332 -97.58	1960	Earth/ Low	5/5/80	40	1,588
SD02623	Tyler Dam	Larry Tyler	45.839895 -97.395287	1996	Earth/ Low	N/A	34	90
SD02259	Wild Rice Creek Watershed WR-5	Wild Rice Creek Watershed District	45.83 -97.603332	1961	Earth/ Low	10/14/81	33	560
SD02260	Wild Rice Creek Watershed WR-7	Wild Rice Creek Watershed District	45.836667	1960	Earth/ Low	N/A	30	464
SD00324	Hickman Dam	School & Public Lands	45.658379 -97.745958	1939	Earth/ Low	11/5/19	28	450
SD02604	Parrow Dam	Rob Parrow	45.843779 -97.58815	2009	Earth/ Low	N/A	27	111
SD02364	Anderson East Dam	Thomas Anderson	45.845 -97.298333	1986	Earth/ Low	N/A	65	100
SD02370	Ogren Dam	Roy & Don Ogren	45.596667 -97.726666	1993	Earth/ Low	N/A	24	192
SD02342	Penrhos Farms #1	Curtis Jones	45.725 -97.7	1982	Earth/ Low	N/A	24	270
SD02605	Peters Dam	James Peters	45.688579 -97.71703	1997	Earth/ Low	N/A	23	64
SD02594	Remele Dam	Jeanne Remele	45.74782 -97.59299	2007	Earth/ Low	N/A	23	62
SD02347	Bremmon Dam #1	Paul Bremmon	45.745000 -97.686667	1977	Earth/ Low	N/A	23	198
SD02606	Mikkelson Dam	Denis Mikkelson	45.622749 -97.739039	2009	Earth/ Low	N/A	23	104
SD02343	Penrhos Farms #2	Curtis Jones	45.726667 -97.708333	1976	Earth/ Low	N/A	22	300
SD02595	Ogren Dam #2	Don & Roy Ogren	45.59585 -97.7181	2009	Earth/ Low	N/A	22	133
SD02592	Anderson Dam	Alma Anderson	45.742509 -97.65406	2008	Earth/ Low	N/A	21	83
SD02547	Bien Dam	Neil Bien	45.80815 -97.47224	2006	Earth/ Low	N/A	17	48

SD02344	Penrhos Farms #5	Curtis Jones	45.715 -97.713332	1976	Earth/ Low	N/A	14	80
SD02345	Medenwald WPA	US Fish &Wildlife Service	45.815000 -97.38	1989	Earth/ Low	N/A	13	160
SD02349	Ringer WPA	US Fish & Wildlife Service	45.801666 -97.436667	1985	Earth/ Low	N/A	10	150
SD02372	Schultz-Ringer WPA	Game Fish & Parks	45.690239 -97.312059	1993	Earth/ Low	N/A	9	325
SD02593	Bien Dam #2	Neil & Lyle Bien	45.81785 -97.46664	2010	Earth/ Low	N/A	9	277
SD02384	Samuel Berger Memorial Dam	Bonnie Buhl	45.7333332 -97.52	1994	Earth/ Low	N/A	7	368

Table 4.8: Dam Locations in Marshall County data from National Inventory of Dams

The extent of damage depends on the size of the dam and circumstances of the failure. A large dam failure may cause considerable loss of property, destruction of cropland, roads, utilities and even loss of life. Similar consequences may occur in small dam failure including loss of irrigation water and extreme financial hardship to area farmers.

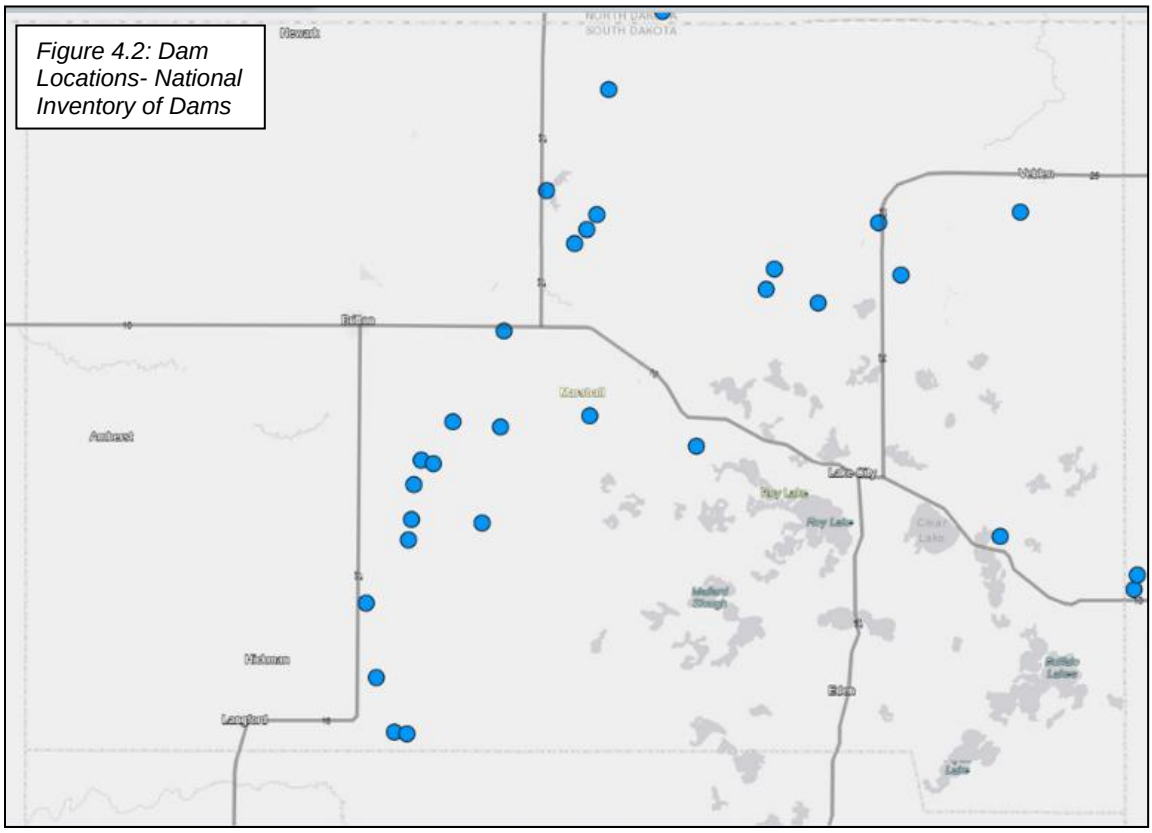


Figure 4.2 illustrates the location of dams in Marshall County. Marshall County has 27 dams in the National Inventory of Dams. All are earth dams and there are three that are significant hazard dams. Significant hazard dams are a classification where there is not expected to be a significant loss of life but there are environmental, economic and lifelines

that are potentially impacted by a breach. Although there has not been a breach of a dam in Marshall County, increasing rainfall events could push the dams over their limits.

DROUGHT

Table 4.9: Drought	
Decrease in precipitation which impacts streams, reservoir, lakes, and groundwater levels. Crops and vegetation are impacted. Even a small reduction in precipitation can impact crops and livestock. Due to the economic reliance on agriculture in Marshall County, droughts can have a serious economic impact. Drought generally occurs about every three years while significant drought occurs around every 50 years. Drought can also impact the power grid causing loss of power for residents due to overuse. As climate change increases temperatures drought impacts and severity are expected to increase.	
Drought	• Prolonged lack of moisture • Generally due to high temperatures and low relative humidity in the summer but can occur in the winter due to lack of snow.

Table 4.9: Drought and Wildfire descriptions from National Risk Index

Marshall County's climate is characterized by cold winters and hot summers. There is usually light moisture in the winter and marginal to adequate moisture for the growing crops in summer. Semi-arid conditions prevail in the western portion. The combination of hot summers and limited precipitation in a semi-arid climatic region places South Dakota in a potential position of a drought in any given year. The climate conditions are so arid that a small departure in the normal precipitation during the hot peak growing period of July and August could produce a partial or total crop failure.

Table 4.10: NOAA Drought Event Statistics	
Number of Events in last 10 Years: Drought	2 drought events
Number of Years with events: Drought	2 years with an event
Possible number of days with events per year Drought	90 days per event per year
Probability of future annual events: Drought	20% (2 events/10 years)

Figure 4.3 illustrates periods of drought in Marshall County since January 4, 2000. A darker red color indicates higher levels of drought. Even moderate drought can magnify economic losses causing impacts statewide, especially during prolonged drought. Roughly every 50 years a significant drought occurs, while less severe drought can happen every three years. The most common time tends to be July through October.

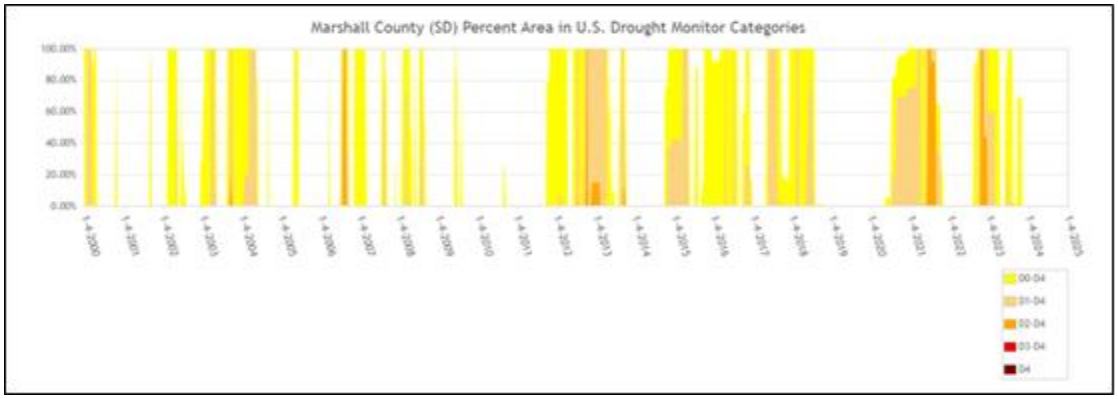


Figure 4.3: National Integrated Drought Information Conditions for Marshall County from drought.gov

The intensity can vary from None to Extreme Drought. Table 4.11 shows drought conditions according to the National Drought Monitor from January 1, 2013, to December 26, 2023. Although there have been periods of severe drought Marshall County usually is in a condition of moderate drought to abnormally dry. High periods of drought can destroy crops and kill livestock increasing the potential financial impact on Marshall County.

Table 4.11: National Drought Monitor January 1, 2013, to December 26, 2023	
Months	**Condition**
January 1, 2013-February 5, 2013	Severe Drought
February 12, 2013 to April 9, 2013	Moderate Drought
April 16, 2013 to May 21, 2013	Abnormally Dry
May 28 2013 -July 30 2013	None
August 6, 2013 to October 8, 2013	Severe Drought
October 15, 2013 to September 30, 2014	None
October 7, 2014 to May 19, 2014	Moderate Drought
May 26, 2015 to August 9, 2016	Abnormally Dry
August 16, 2016 to December 20, 2016	Abnormally Dry
December 27, 2016 to May 2, 2017	None
May 9, 2017 to July 24, 2018	Abnormally Dry
July 31, 2018 to May 12, 2020	None
May 19, 2020 to July 14, 2020	Abnormally Dry
July 21, 2020 to June 1, 2021	Moderate Drought
June 8, 2021 to August 24, 2021	Severe Drought
August 31, 2021 to October 19, 2021	Moderate Drought
October 26, 2021 to August 9, 2022	None
August 9, 2022 to September 20, 2022	Abnormally Dry
September 27, 2022 to December 13, 2022	Extreme Drought
December 20, 2022 to February 21, 2023	Moderate Drought
February 28, 2023 to December 26, 2023	Abnormally Dry

Table 4.11: Drought History from January 1, 2013, to December 26, 2023, from National Drought Monitor

Drought can intensify and create fast-moving dust storms when dry fields are combined with South Dakota's high winds. These events combine to create a "black blizzard" where visibility was reduced to an eighth of a mile or less. High winds can down power lines and trees and start fields on fire, damaging crops. This illustrates how different natural hazards can come together to create a situation where there can be significant and widespread loss. Drought makes fires more common due to dry vegetation catching fire.

Table 4.12: Major historic drought occurrences	
2012-2013 (July 2012-April 2013)	Drought conditions continued over all southeast South Dakota at well below normal rainfall keeping soil and vegetation dry. Harvest of drought affected crops was done in October, but there was no estimate available on reduction of yields. Winter wheat was planted on time, but the lack of moisture slowed germination. Water restrictions were eased, with water use dropping off in the fall. Drought was generally listed as severe to extreme.
1987-1990	An abnormally low amount of precipitation in the summer of 1987 and a hot and dry summer in 1988, negatively impacted South Dakota's economy. Marshall County received disaster aid during this time. Agricultural income was down by .8 percent and wheat price per bushel decreased significantly in 1988.
1930s	During the infamous dust bowl years, Marshall County was affected. Particularly dry summers were in 1934 and 1936.
1880s-1890s	The years 1887, 1894-1896, 1898-1901 were very dry.

Table 4.12: Major Historic Drought Occurrences 2020 Marshall County Natural Hazard Mitigation Plan

Severe drought impacts fire risk and air quality. Drought makes fires more common due to the lack of moisture. The air quality is impacted by the wind blowing up dirt and dust residents with respiratory conditions can be severely impacted.

WILDFIRE

Table 4.13: Wildfire	
Wildfires are more likely to occur when there is drought due to the lack of moisture. They can cause extensive damage throughout the county depending on how fast or far they spread. Counties enact burn bans or controlled burn requirements to prevent human-caused fires, however, they can also be started by natural causes or inadvertently such as a spark from an engine or train. Wildfire can be greatly affected by South Dakota's winds.	
Wildfire	• Uncontrolled blazes that spread quickly • Ignition can be caused by natural or human-caused causes. • More likely to occur when there is drought or hot temperatures causing drier than normal vegetation. • Can change direction or jump barriers, especially under windy conditions. • Magnitude scale is 0-5 based on Byram's fire line intensity (kW m-1) and is measured by: • *Rate at which heat is released (intensity)* • *Size of fire* • *Frequency*

Table 4.13: Wildfire description from the 2020 Marshall County Natural Hazard Mitigation Plan

Table 4.14: South Dakota Fire Marshall Office Wildfire Event Statistics	
Number of Events in the last 10 Years: Wildfire	211 fires
Number of Years with events: Wildfire	10 years
Possible number of days with events per year: Wildfire	21.1 days
Probability of future events: Wildfire	100% (10 Years of events/10 Years)

Burning is allowed of trash, brush, grass, stubble, debris, and rubbish, that is not inside of a stove, spark-proof incinerator, or an established fireplace. Residents must call and inform the County dispatch if they are going to perform a controlled burn. Due to concerns with situations where there are high winds and relatively dry conditions, Marshall County's Ordinances require burning permits to be applied for before open burning. This restricts residents from open burning in the event of drought conditions.

The information in Table 4.15 was received from the State Fire Marshall, Doug Hinkle, from 2012 to 2022. There were 211 fires recorded in Marshall County from 2012 to 2022. There were 42 structure fires, 39 vehicle fires, and 130 other fires. The "other fires" category includes fires of natural vegetation, outside rubbish, special outside fires, cultivated vegetation and crop fires. There was one civilian injury and no civilian deaths. Of the fire service volunteers, there were two fire-related injuries and no deaths. Total damage was $3,077,865. It is unknown which fires resulted from human activity.

Something as simple as a tossed cigarette or sparks from a train can cause fires. The information in Table 4.12 was received from the State Fire Marshall, Doug Hinkle for 2012 to 2022. There were 211 fires recorded in Marshall County from 2012 to 2022. 42 were structure fires, 39 were vehicle fires, and 130 were other fires. The "other fires" category includes fires of natural vegetation, outside rubbish, special outside fires, cultivated vegetation and crop fires. There was one civilian injury and no civilian deaths. Of the fire service volunteers, there were two fire-related injuries. Total damages from fires in Marshall County was $3,874,055. It is unknown which fires were from human activity.

Table 4.15: Fire Summary by Incident Type: 2012-2022								
	Freq	% Of Total	No Aid	Aid Given	Aid Received	Other Aid Given	Exp	Total
Fires								
Structure Fires	42	13.17%	33	11	9	0	1	54
Vehicle Fires	39	12.23%	38	2	1	0	1	42
Other	130	40.75%	118	14	12	0	0	144
Total:	211	66.14%	189	27	22	0	2	240
Pressures, Ruptures, Explosion Overheat	1	0.31%	1	0	0	0	0	1
Rescue Calls								
Emerg. Med Treat	36	11.29%	30	2	3	3	0	38
All Other	10	3.13%	8	1	1	1	0	11
Total Calls	46	14.42%	38	3	4	4	0	49
Haz Cond. Calls	15	4.70%	14	1	1	0	0	16
Serv. Calls	5	1.57%	5	0	0	0	0	5
Good Intent Calls	23	7.21%	22	0	0	1	0	23
Severe Weather or National Disaster Calls	2	0.63%	2	0	0	0	0	2
Special Incidents Calls	2	0.63%	2	0	0	0	0	2
Unknown Incident Type	0	0.00%	0	0	0	0	0	0
Total False Calls	15	4.70%	15	0	0	0	0	15
Total Calls	319	100%	287	31	27	5	2	352

Casualty Summary	Civilian	Fire Service	
Fire Related Injury	1	2	Total Fire Loss ($)
Non-Fire Related Injury	21	0	$3,077,865
Fire Related Deaths	0	0	Total Loss ($)
Non-Fire Related Death	5	0	$3,874,055

Table 4.15: Fire Summary by Incident Type 2012 to 2022 Data from SD Fire Marshall's Office

DENSE SMOKE AND DUST STORMS

Table 4.16: Dense Smoke and Dust Storms	
Dense smoke impacts residents with unhealthy levels of particles in the air, affecting residents who have medical issues. This can also affect healthy individuals if the particle count in the air is high enough. There are six levels set by the number of particulates in the air. Dense smoke can come from fires hundreds of miles away. Dust storms are when high winds are combined with drought and dry conditions. Due to the lack of moisture and vegetation, winds accumulate and lift soil from the ground and carry it through the air causing issues with air quality.	
Dense Smoke	• Occurs in conjunction with wildfires. • It can spread over a great distance. • Affects air quality. Air quality scale based on particles in the air and their concentration. • *Green: 0-50 - Good* • *Yellow: 51-100 - Moderate* • *Orange: 101 – 150 – Unhealthy for Sensitive Groups* • *Red: 151 – 200 – Unhealthy* • *Purple: 201 – 300 – Very Unhealthy* • *Maroon: 201 and higher – Hazardous*
Dust Storms	• Wind gusts that stir up large amounts of dust decrease visibility and air quality.

Table 4.16: Dense Smoke and Dust Storm description from the NOAA Database

Air quality can be extremely impacted by wildfires not just in Marshall County but also from wildfires elsewhere in the world. Air quality warnings have been issued due to wildfire smoke from California and Canada in previous years. Climate change impacts fires worldwide and that impact on air quality cannot be overlooked. The Air Quality Index is based on the concentration of particles in the air. The higher the value, the higher the value the greater the number of particles in the air and the higher the impact on health.

Table 4.17: NOAA Smoke and Dust Storm Event Statistics	
Number of Events in the last 10 Years: Smoke and Dust Storms	1 event over 10 years
Number of Years with events: Smoke and Dust Storms	1 year
Possible number of days with events: per year Smoke and Dust Storms	1 day
Probability of future events: Smoke and Dust Storms	10% (1 Event/10 Years)

NOAA recorded an instance in Marshall County August 30, 2023, where smoke from Canada moved into South Dakota. Air Quality was significantly reduced for 56 total hours. The air quality was significantly reduced. The air quality index from Aberdeen's National Weather Services recorded an Air Quality high of 107 for Marshall County, which is unhealthy for sensitive groups. There has been an increase in smoky/hazy days where smoke from fires throughout North America shift over Marshall County.

According to the planning committee, there have been more occurrences of dense smoke. Even in the spring of 2024, there were "zombie fires" in Canada that reignited from smoldering over the winter. These fires increased the amount of smoke in the Marshall

County area. Residents have been negatively impacted by these events. There have been cancellations of events due to heavy smoke.

Figure 4.4 shows the Particle Pollution scale for dense smoke events. The range is from 0 to over 301. The higher the amounts of particles in the air, the worse the air is for residents. There is little that can be done other than reducing time outdoors inside to reduce exposure to the particles.

AQI Basics for Ozone and Particle Pollution

Daily AQI Color	Levels of Concern	Values of Index	Description of Air Quality
Green	Good	0 to 50	Air quality is satisfactory, and air pollution poses little or no risk.
Yellow	Moderate	51 to 100	Air quality is acceptable. However, there may be a risk for some people, particularly those who are unusually sensitive to air pollution.
Orange	Unhealthy for Sensitive Groups	101 to 150	Members of sensitive groups may experience health effects. The general public is less likely to be affected.
Red	Unhealthy	151 to 200	Some members of the general public may experience health effects; members of sensitive groups may experience more serious health effects.
Purple	Very Unhealthy	201 to 300	Health alert: The risk of health effects is increased for everyone.
Maroon	Hazardous	301 and higher	Health warning of emergency conditions: everyone is more likely to be affected.

See the Activity Guides to learn ways to protect your health when the AQI reaches unhealthy levels.

Figure 4.4: described air quality data values from Airnow.gov

Dust storms are common in the area and combined with drought conditions and high heat, they create a lack of visibility and reduce air quality. Winds in Marshall County can reach up to 60-80 miles per hour or more. Traffic accidents can occur due to lack of visibility. On June 1, 2018, there was a dust storm which downed power lines and destroyed crops. Trees started on fire when power lines fell. There were also car accidents due to the lack of visibility. An accident occurred when a trailer tipped due to the high winds, and another was a lack of visibility due to dust and blowing dirt that led to a head on collision.

HIGH/SEVERE WIND

Table 4.18: High and Severe Winds	
Winds are a constant part of life in South Dakota. High winds damage roofs, trees and if severe, residents, structures, signs, and automobiles. These winds occur throughout the county and can cause widespread damage and can be unpredictable in the area. Mitigation measures include insurance, warnings and saferooms to prevent injuries or even death of residents. When high winds are combined with cold, there is a wind chill. In South Dakota, because high winds are common, wind chills are common in the winter. Wind chill values can go as low as -50 to -60 degrees.	
Strong Winds	• Considered to be 40 miles per hour or more. • Make other natural hazards even more hazardous and destructive. • Causes snow drifting, extreme cold with wind chill, spreading wildfires faster, increasing damage from thunderstorms, causes destruction of property, can injure residents through flying debris or causing structures or trees to fall, and power loss through downed power lines. • Wind intensity is based on the Beaufort Wind Scale speed is based on miles per hour - mph) • *0-1 mph: Calm* • *1-3 mph: Light Air* • *4-7 mph: Light Breeze* • *8-12 mph: Gentle Breeze* • *13-18 mph: Moderate Breeze* • *19-24 mph: Fresh Breeze* • *25-31 mph: Strong Breeze* • *32-38 mph: Near Gale* • *39-46 mph: Gale* • *47-54 mph: Severe Gale* • *55-63 mph: Storm* • *64-72 mph: Violent Storm* • *72-83 mph: Hurricane*

Table 4.18: High/Severe Wind description from the 2020 Marshall County Natural Hazard Mitigation Plan

Severe wind events are common in eastern South Dakota. Several times a year Marshall County can expect fierce winds greater than 40 mph. Gusts of wind higher than 100 mph have been recorded. Wind can be damaging in multiple ways. It can create even lower cold temperatures and if high enough, can destroy buildings and crops. High winds can cause planes or helicopters to crash. Wind combined with other hazards such as fire, cold or snow can create an even more destructive danger. High winds have caused deaths.

Table 4.19: NOAA High and Severe Wind Events	
Number of Events in the last 10 Years: High Winds	17 Events
Number of Years with events: High Winds	10 Years
Possible number of days with events per year: High winds	1.7 days with an event per year
Probability of future events: High Winds	100% (17 events/10 years)

High winds are hard to mitigate and are frequent in South Dakota. Windspeeds up to 46 miles per hour can break larger branches off trees. Winds between 47 to 45 miles per

hour can damage roofs and other structures that are not secured to the ground. Trees can be uprooted with wind speeds from 55 to 63 miles per hour and any wind speed over 64 miles per hour can cause widespread damage to buildings and potentially, people. Mobile homes are very susceptible to high winds due to the lack of a foundation.

Marshall County has 141 mobile homes in the county according to the 2020 census. Britton has ordinances that require tie downs for mobile homes for wind. There are 10 mobile homes in Britton, according to the 2020 census. There are 346 homes and 76 apartment units. According to the 202 census Langford has 10 mobiles homes, Veblen has 14, Lake City has 1, and Eden has 2. Britton has specifications for the footings and tie-downs are required for the mobile home. Sharp edges that could possibly cut the cable must be addressed as part of the tie-down process and ground anchors are required.

THUNDERSTORMS, HEAVY RAIN AND LIGHTNING

Table 4.20: Thunderstorms, Heavy Rain, and Lightning	
Thunderstorms can occur county-wide and cause significant damage to residents, structures, crops, and livestock. Thunderstorms generally include other hazards such as high winds, heavy rains, thunder, lightning, and hail. Mitigation includes warning systems, storm shelters, and insurance policies. Heavy rain can be county-wide and cause flooding of structures, roads and slowing emergency services response. Roads and bridges can be washed out making access difficult. Storm sewers may not be able to manage this heavy rain event and cause structures to be flooded, however, mitigation with storm sewers can reduce the flooding impacts. Lightning occurs with thunderstorms, which can be county-wide. Poles, towers, and lines are more vulnerable to being struck by lightning, potentially causing power loss or structure damages. Lightning can cause fires, especially when combined with a drought-affected area. Residents can be injured by being struck when unprotected outside**.**	
Thunderstorms	• Caused by rapid changes in temperature, air pressure, and air moisture. • Causes hail, lightning, thunder, high winds, and heavy rain.
Heavy Rains	• Occurs when more than 3.30 inches (0.762 sm) per hours falls.
Lightning	• A buildup of electrical charge due to rapidly rising air and precipitation movement in thundercloud. • Can reach temperatures of up to 50,000 F in a split second. • Rapid heating, expansion, and cooling of air near lighting is what causes thunder.

Table 4.20: Tornadoes, Thunderstorms and Hail descriptions from the 2020 Marshall County Natural Hazard Mitigation Plan

The annual risk for intense summer storms is very high. All of Marshall County is susceptible to summer storms. Warning time is normally several hours, enough for relocation and evacuation if necessary. Tornadoes may occur with little or no warning. Specific areas within the county have a high risk of being impacted if hit by a tornado or severe storms. Homes surrounding the lake areas tend to be more susceptible to high winds due to the area of land surrounding the area.

Table 4.21: NOAA Thunderstorm, Heavy Rain, and Lightning Events	
Number of Events in the last 10 Years: Thunderstorm Events	37 events on 21 days
Number of Years with events: Thunderstorm Events	10 years
Possible number of days with events per year: Thunderstorm Events	2.1 days with an event each year
Probability of future events: Thunderstorm Events	100% (21 days with an event/10 years)

Thunderstorms, tornados, and hail are common and widespread. Appendix D shows the extent and severity. The County continues to educate residents about the dangers of storms with public service announcements drills, and other media. Thunderstorm events have potential to damage crops, power lines, buildings, and personal property. Residents can use insurance to mitigate damage from storms and storm shelters to protect residents. Burying power lines reduces damage to those lines ensuring power for residents. Generators help reduce the impact of power loss and storm shelters to protect residents in a severe storm that produces tornadoes and high winds.

The severity of lightning can range from significant to insignificant depending on where it strikes and what structures are hit. Water towers, cell phone towers, power lines, trees, and common structures all have the possibility of being struck and damaged by lightning. People who leave shelter during thunderstorms to watch or follow lightning have the possibility of being struck. Heavy rains produced by storms can lead to flooding. If a city has a storm sewer system, heavy rain can overload it causing flooding. Many cities in Marshall County do not have storm sewer systems and the heavy rains cause flooding though the towns and surrounding areas.

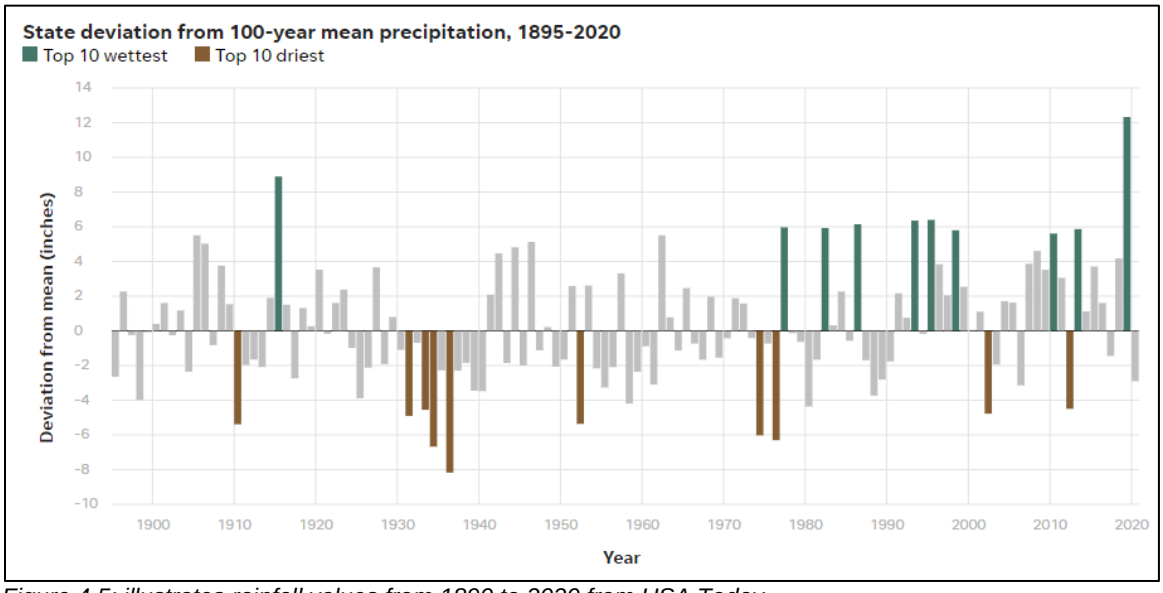


Figure 4.5: illustrates rainfall values from 1890 to 2020 from USA Today

This chart in Figure 4.5 illustrates the rainfall events annually since 1985. Since 2001, South Dakota has had three of its top ten wettest years on record. When comparing 1961 to 1990 versus 1991-2020 the average annual precipitation has increased by three inches.

HAIL

Table 4.22: Hail	
Hail generally occurs when there are thunderstorms. This type of event is common and usually is county-wide. Hail can damage crops, livestock, structures, and cars. Residents are vulnerable to injury when caught outside in a hailstorm. Mitigation is difficult and insurance is usually the process to mitigate hail damages.	
Hail	• Water and ice balls. • Water droplets are pushed upwards by storm winds and fall as ice pellets. • Measure 5 to 150 millimeters in diameter on average. • More severe thunderstorms create larger hailstones.

Table 4.22: Hail Hazard description from the 2020 Marshall County Natural Hazard Mitigation Plan

Hail events are common in Marshall County, however, the information provided by NOAA was incomplete due to inconsistent reporting after events. A full list of occurrences reported in NOAA's Storm Events Database can be found in Appendix E. It is reasonable to expect that at least some property or crop damage was sustained though it may not have been reported, because it was believed to be insignificant, or because those responsible did not report it to the proper agencies. Although there were many storms listed in the database, no damage was recorded. Hopefully, collection of this data will advance to make it available for mitigation. Hail is common during spring, summer, and fall and causes widespread damage each year.

Table 4.23: NOAA Hail Events	
Number of Events in last 10 Years: Hail	53 events
Number of Years with events: Hail	10 years
Possible number of days with events per year: Hail	5.3 days
Probability of future events: Hail	100% (53 events/10 years)

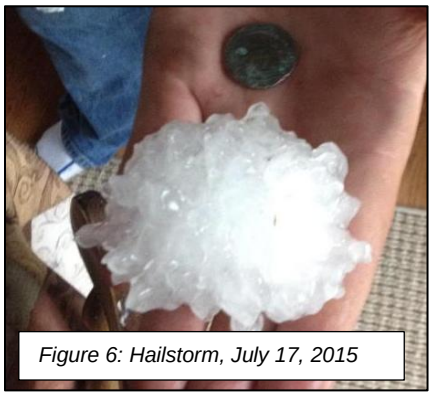


Figure 6: Hailstorm, July 17, 2015

The widespread damage hail creates can make it hard to mitigate. Hail as small as mothballs make holes in leaves, affecting crops. The average size in the last 10 years recorded by NOAA in Marshall County was 1.40 inches. A 1.23-inch hailstorm can punch through shingles on roofs, break window frames, severely damage crops, cars, and structures. The average hail that has been recorded over the last ten years was an average of 1.56 inches in diameter.

The largest in the last ten years was a 3.00-inch hailstone that fell on July 17, 2015, during a storm that hit Marshall County. There were funnel clouds, and a brief EF-0 tornado touched down by Langford. In the last ten years, Marshall County has had many hail events. One storm on July 17th, 2015, produced multiple cases of hail up to 2.50-inch. The storm impacted Britton, Kidder, Lake City, and Hillhead.

TORNADOES AND FUNNEL CLOUDS

Table 4.24: Tornadoes and Funnel Clouds	
Tornadoes are produced by thunderstorms, generally beginning as a funnel cloud. Although a tornado is produced by a funnel cloud, a funnel cloud does not always produce a tornado. These can travel unpredictably throughout the storm area and occur with little to no warning. Mitigation includes warning systems, storm shelters, and insurance policies.	
Tornadoes	• Violent windstorms may occur as many as one or multiple at a time. • Occur most often in May, June, and July between 4 p.m. to 6 p.m. • Occurs when cool air overrides warm air causing the warm air to rise rapidly. • May not touch down on the ground. • Fujita Tornado Damage Scale based on windspeed: • *F0 = less than 73 m/h* • *F1 = 73-112 m/h* • *F2 = 113-157 m/h* • *F3 = 158-206 m/h* • *F4 = 207-260 m/h* • *F5 = 261-318 m/h* • *F6 = greater than 318 m/h*
Funnel Clouds	• May or may not produce a tornado. • Indicates a high probability of tornadic activity of the storm.

Table 4.24: Tornado and Funnel Cloud Hazard description from the 2020 Marshall County Natural Hazard Mitigation Plan

Figure 4.7 shows tornadoes in Marshall County and Figure 4.8 shows the history of tornadoes from 1955 to 2019 for South Dakota from South Dakota's 2024 Hazard Mitigation Plan. Gathering historical data on tornadoes is difficult due to occurrences and unconfirmed reports. Each year at least a few tornadoes affect the county.

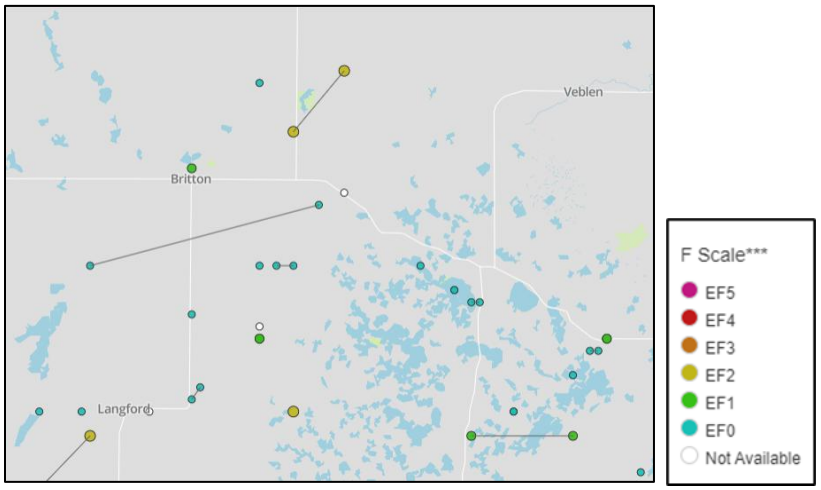


Figure 4.7: Map of Tornado Paths in Marshall County from the 2024 South Dakota Hazard Mitigation Plan

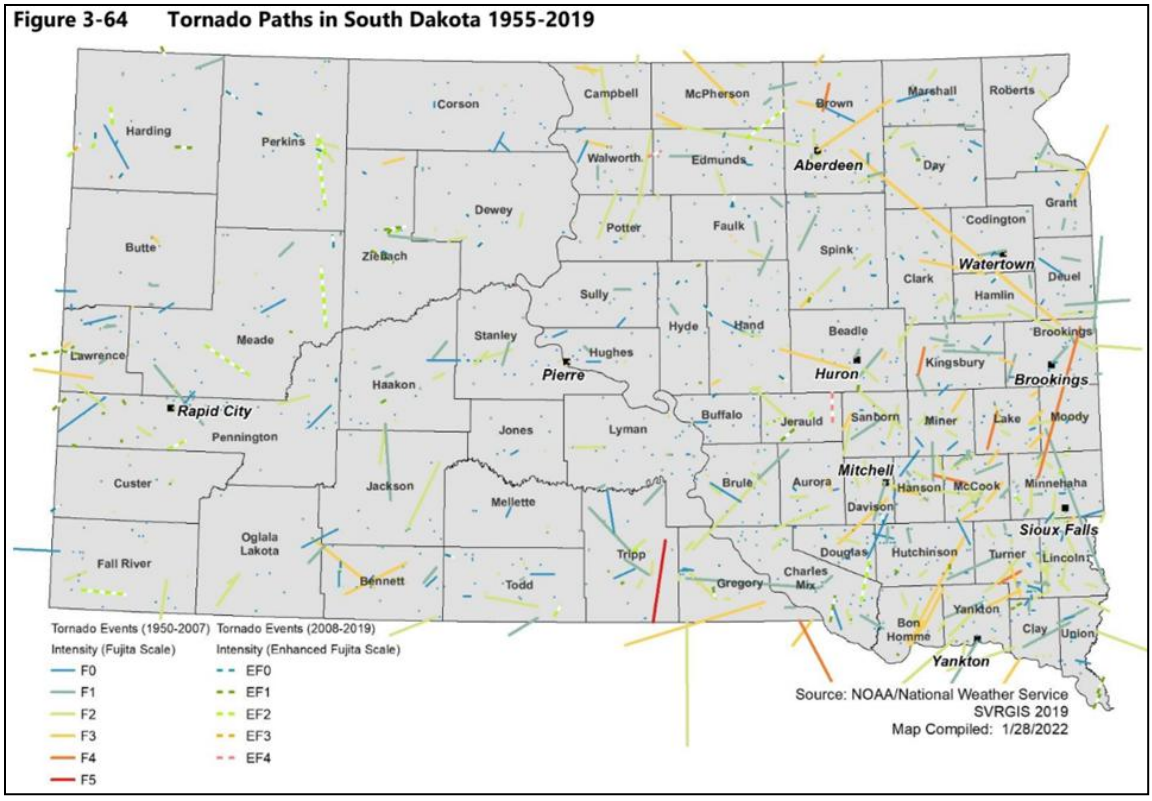


Figure 4.8: Map of Tornado paths in South Dakota from South Dakota's 2024 Hazard Mitigation Plan

Tornadoes may occur with little or no warning, are unpredictable, common, and widespread. Specific areas in the county are at risk if hit by a tornado. Appendix E shows the extent and severity. The County continues to educate residents about the dangers of storms through public service announcements, school drills and other media.

Table 4.25: NOAA Tornado and Funnel Clouds Events	
Number of Events in the last 10 Years: Tornadoes and Funnel Clouds	6 Tornadoes over 10 years
Number of Years with events: Tornadoes and Funnel Clouds	6 Years over 10 Years
Possible number of days with events per year: Tornadoes and Funnel Clouds	.6 Days over 10 years
Probability of future events: Tornadoes and Funnel Clouds	60% (6 Events over 10 Years)

Table 4.25 shows Marshall County's statistics for tornadoes. Marshall County is near the North end of "Tornado Alley." While tornadoes do not occur frequently, there is about a 60% chance of a tornado occurring in any given year. South Dakota had a tornado event that destroyed Manchester, South Dakota. A F4 tornado on June 24, 2003, destroyed the entire town. Although no one was killed, the town was never rebuilt. On May 30, 1998, Spencer, South Dakota was hit by an F4 tornado. It destroyed 150 of the town's 170 structures and 150 people were injured and six were killed. The high number of injuries and deaths was attributed to the lack of warning sirens. The sirens did not go off to warn residents due to a power outage. This tornado was the second deadliest in South Dakota's history. The town was nearly destroyed.

EXTREME TEMPERATURES

Table 4.26: Extreme Heat and Cold	
Extreme heat and cold can be county-wide. High heat combined with high humidity can increase dangers when combined with other hazards such as drought and wildfires. Extreme cold is also even more dangerous when combined with the hazards of a winter storm. These hazards are difficult to mitigate for. Warnings, upgrades to the power grid, saferooms that provide a place to go power access and travel advisories can be used to mitigate the dangers.	
Extreme Cold	• Below 0 degrees F. • It can accompany winter storms, adding to the danger. • It causes danger to residents outside for too long and exposed to the cold. • It can affect transportation by making it difficult for equipment to start or keep starting and the power grid by over taxing the system.
Extreme Heat	• Heat over 100 F and can be accompanied by high humidity. • It can increase drought, causing crop damage and danger to livestock. • It can cause danger to residents without the ability to cool and the power grid by overtaxing the system.
Wind Chill	• The combination of sub-zero temperatures and winds creates a temperature much colder than the air temperature alone. Wind chills can reach as low as between -50 to -60 degrees.

Table 4.26: Extreme Heat and Cold Description from the 2020 Marshall County Natural Hazard Mitigation Plan

Extreme temperatures are common in Marshall County. At least once a year there is extreme heat and cold. Information from NOAA's website is in Appendix E. Residents adapted to the extreme temperatures and events are not reported as often as they occur. Arctic air comes from Canada and affects the region with colder than normal temperatures which occurs in the winter. Pipes and infrastructure can be affected by structures and public utilities. People who choose to venture out in extreme cold temperatures risk becoming stranded and freezing. Figure 4.9 is a wind chill chart that shows temperatures when wind and cold combine.

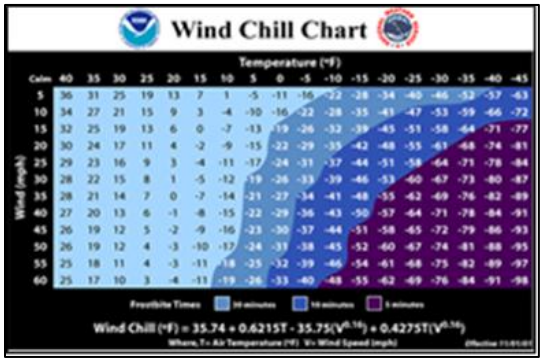


Figure 4.9: Wind Chill Chart from NOAA

Wind chills in South Dakota make frigid winter temperatures much colder and dangerous. Exposed skin can quickly freeze, causing frostbite. Cars and equipment can be difficult to impossible to start, which leaves motorists stranded in the cold. Variations in weather patterns can push air from polar regions. The arctic air moves over Marshall County, causing significant drops in temperatures. Power outages occur by overloading power grids to maintain heat for residents.

On February 6th – 14th in 2020 the high temperatures in northeast South Dakota did not get above 0 degrees Fahrenheit. Extreme cold was common and widespread. January 29, 2019, the weather services recorded wind chills of -59 degrees Fahrenheit. Cold temperatures are common during the winter in northeast South Dakota.

Table 4.27: NOAA Extreme Temperature Events	
Number of Events in the last 10 Years: Cold/Wind Chill	31
Number of Years with events: Cold	10 Years
Possible number of days with events per year: Cold	3.1 days per year
Probability of future events: Cold	100%
Number of Events in the last 10 Years: Heat	2
Number of Years with events: Heat	2 years
Possible number of days with events per year: Heat	.2 days per year with a high heat event
Probability of future events: Heat	20%

High heat is also dangerous. Summer temperatures have reached 113 degrees Fahrenheit. Summer average temperatures shifted higher due to climate change. This increases the risk of drought and impacts residents who cannot find places to cool off and affects power by higher-than-normal use of air conditioners. High heat can be destructive to residents.

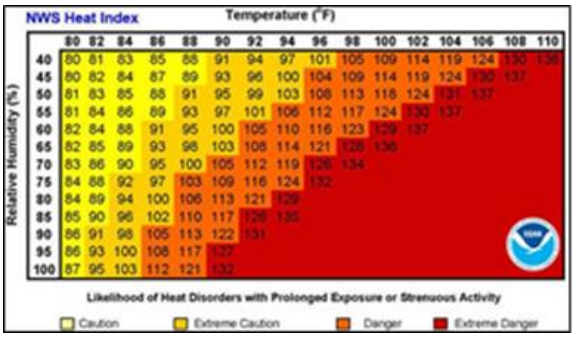


Figure 4.10: Heat Index Chart from NOAA

When humidity and heat are both high, the body cannot cool itself. This causes overheating resulting in fatigue, dehydration, cramps, heat exhaustion, heat stroke and even death. Residents can prepare for extreme temperature events, but livestock is vulnerable to extreme cold or heat, impacting the economy. Water supplies are vulnerable. Rural water systems may not be adequate to meet higher demands.

WINTER STORMS, BLIZZARDS, SNOWSTORMS, FREEZING RAIN, ICE JAMS

Table 4.28: Winter Hazards	
All winter hazards have impacts countywide. Winter storms are common and occur frequently beginning in October and ending as late as April. Hazards are reduction in visibility for transportation, slippery roads, road closures, blowing and drifting snow, dangerously cold temperatures, reduction in response of emergency services, power loss, and livestock loss. Moisture accumulation causes the potential for spring flooding. As climate change occurs and global average temperatures increase, storms are predicted to be more severe.	
Blizzards	• It lasts three hours or more. • Winds greater than 35 miles per hour • Temperatures below 20 degrees F • White out conditions with visibility less than ¼ mile • The most severe of winter storms.
Freezing Rain	• Temperatures below 30 degrees F combined with rain.
Ice Jams	• Warm temperatures and rain cause rapid snowmelt and rivers swell, breaking ice. Large chunks flow downstream and cause blockages of waterways.
Severe Winter Storms	• Snow accumulation of more than 4 inches during a 12-hour period.
Sleet	• A mix of rain and snow that covers surfaces and makes slippery to traverse.
Snow	• Precipitation that occurs below freezing temperatures. • Accumulates on every surface of the ground.
Snow Drifts	• Wind blows snow into large accumulations. Snow drifts can be as high as 20-40 feet.

Table 4.28: Winter Hazards description from the 2020 Marshall County Natural Hazard Mitigation Plan

Winter storms and blizzards are common in Marshall County and are considered extreme in many parts of the country. Planning and response mechanisms for snow and ice storms are routine. Response to snowstorms is managed by utilizing snowplows when residents have an emergency, although response time is impacted depending on storm severity. Winter storms often cover large areas, and most occur countywide. Winter storms can leave large accumulations of snow and ice. This snowpack can cause ice jams in rivers and cause significant flooding events when combined with spring rain.

Table 4.29: NOAA Winter Events	
Number of Events in last 10 Years: Winter Hazards	79 events
Number of Years with events: Winter Hazards	10 years
Possible number of days with events per year: Winter Hazards	7.9 days with an event each year
Probability of future events: Winter Hazards	100%

Beginning October 2022 and ending April of 2023, Marshall County repeatedly had winter storms, blizzards, high winds, and ice storms. Those storms shut down transportation and impacted the economy. A list of recorded winter storms is included in Appendix E.

During winter, there are times when residents need to use a snowmobile to get around. School closures in the area have resulted in rural students being bused farther from their homes to get to school. A concern in winter is students getting stuck in a storm due to the

increased travel distance required to get to schools. Generally, the Britton/Hecla and Langford Schools close more and earlier to prevent incidents due to the weather. There are residents who just moved to town to avoid the bad weather and its impact.

The Marshall County Ambulance Service receives calls for assistance for heath emergencies during snowstorms. The county Highway Department takes a snowplow and plows a path for the ambulance. This adds significant time to get to the patient, depending on the severity of the storm and the resident's location. Like many rural areas, Marshall County does have issues ensuring their EMT services are staffed at times. Although some residents are trained in CPR, the only hospital in Marshal County is in Britton.

FLOOD

Table 4.30: Flood	
Flooding is an overflow of water that submerges land, causes property damage, and can harm residents caught in the water. Six inches of running water can sweep a vehicle off the road. Flooding disrupts electric services, destroys structures, and affects transportation. Emergency services can have challenges responding to residents needing help. Disruption of communication, transportation, electric service, and community services, along with contamination of water supplies and transportation accidents. Mitigation for flooding includes building codes, enforcing flood map requirements, flood insurance, travel advisories and warnings, sump pumps for homes and sandbagging to prevent water from reaching structures.	
Flooding	• Overflow of water that submerges land. • Residents and structures can be washed away. • It can develop quickly or slowly over time. • Caused by heavy rains, ice jams blocking waterways, and heavy snowmelt. • Two types: inundation and flash. • *Inundation Flooding: usually in the spring due to rapid snowmelt. The James River is a slow-moving river so when flooded, the water moves slowly out of the area.* • *Flash Flooding: usually during the summer, caused by heavy rainfall and is localized. It can overwhelm stormwater systems, culverts, and other systems to deal with water.*

Table 4.30: Flood Hazard description from the 2020 Marshall County Natural Hazard Mitigation Plan

Numerous flood events have occurred in Marshall County over the past 50 years. Most are flooding overland from heavy rainfall and spring thaw causing the James River to rise above flood stage. The most typical structures affected are low-lying streets and roads. Croplands are affected, impacting agriculture. Critical infrastructure and housing are the biggest concern when it comes to mitigation. Multiple locations in Marshall County are susceptible. The James River drainage basin covers about half of the county and due to the low elevation, makes the entire county vulnerable.

Table 4.31: NOAA Flood and Flash Flood Events	
Number of Events in the last 10 Years: Flood	121 Days over 6 months in three separate years
Number of Years with Events: Flood	3 Years with events
Possible number of days with events per year Flood	12.1 Days per year with a flood event
Probability of future events: Flood	100% chance of flood each year
Number of Events in the last 10 Years: Flash Flood	2 days of flood over two locations and two years
Number of Years with Events: Flash Flood	2 years with a flash flood
Possible number of days with events per year Flash Flood	.2 days with a flood event each year
Probability of future events: Flash Flood	20% chance of flash flood each year

There is a lack of drainage on the west side of Marshall County because the topography is very flat. It takes time for the water to either move downstream or evaporate. Roads can flood, which obstructs access to homes and farmland. This flooding can hinder development in Marshall County. Load limits and reduced speed limits are placed on roads to prevent further degradation. Croplands are lost when there is flooding. Sometimes, flooding can delay planting or harvesting indefinitely, impacting the economy. Flooding can happen anywhere in the county. Flash flooding, where the water accumulates quickly, has occurred, and is often associated with massive rainfall and/or rapid snowmelt. Culverts and bridges are used throughout the county to allow water to flow while maintaining roadways. However, in times of severe flooding, the impact is minimal. Levees are another option to control floodwaters but there are no levees in the county listed on the National Levee Database.

High water tables impact Marshall County by causing residents to continually run sump pumps. If power is lost, many homes would be impacted because they are dependent upon those pumps to keep their home or building dry. Floodplain management is a gray area for the smaller jurisdictions. Many residents do not have the resources to administer floodplains on their own and reach out to the County's Planning and Zoning Department for assistance. When a resident requests to build inside a floodplain, a certificate from a surveyor is required to ensure the structure is above the base flood elevation and has the correct amount of freeboard.

According to the NOAA, flooding has occurred in Marshall County's history. On July 26, 2020, heavy rain with a total accumulation of 4.94 inches fell on Britton. This caused flooding throughout Britton and the surrounding area.

FEMA uses LiDAR (a high-resolution, very detailed topographical map of the earth) to get geographical information of the county. FEMA completed field studies of culverts, bridges, and dams to map how water will flow. They also used HEC-RAS 5.03 from the Hydrologic Engineering Center River Analysis System which allows the study of how water flows in the area. The mapping includes a study of the sediment that will flow with the water and temperature and water quality monitoring.

Marshall County is currently in the process of updating their flood maps. Currently, the process has been delayed, and the county is suspended due to processing of the new flood maps. One of the jurisdictions to be affected by the new floodplain requirements is

requesting additional information on the flood maps and their impact. Once resolved, the county will approve the resolution and the new flood maps will be enacted and the county will no longer be suspended. Britton, Langford and Veblen approved and are current with the new flood maps. Those maps were effective on December 21, 2023. Residents in those towns can purchase flood insurance and be protected in the event of flooding.

Following the adoption of the new updated flood maps, Marshall County will have six months to formally adopt the new rates and inform homeowners of the changes. The new flood maps have orange as a .2% flood hazard, a 1% chance of an average depth of less than one foot or with drainage areas of less than a square mile. Dark blue areas are zones AE with a base flood elevation or depth and light blue areas are special flood hazard areas. These areas have a much higher chance of flooding each year.

IMPACTS OF CLIMATE CHANGE

Climate change will have a significant impact on Marshall County. One impact on dams would be the fact that dams would be more impacted and more vulnerable to breach because of the higher single event amounts of rain projected. According to Larua Edwards, state of South Dakota Climatologist, rain events will be more significant and due to the longer timeframes of higher temperatures, the ground is less able to absorb the additional moisture due to drought.

ClimRR projections indicate a historical number of days annually without precipitation at 20.86 and a historical amount of precipitation of 22.11 inches annually. By the end of the century, the number of days without precipitation is projected to reduce to 15.94. Annual precipitation projections will go up to 28.78 inches annually. Although that will help to reduce drought, storms are projected to be higher in severity with heavier rains causing higher accumulations to address. Higher temperatures between rain events will make the ground less able to absorb moisture and reduce the chance of flooding.

Temperature projections by ClimRR indicate average highs increasing by at least 10 degrees Fahrenheit by the end of the century. Average lows trend higher also with an average increase of 10 degrees. These hotter temperatures increase the risk of drought, fire and dust storms.

Table 4.32: Temperature Projections (Degrees Fahrenheit)

	Historical	Mid-Century (RCP 8.5)	End of Century (RCP 8.5)	Difference
Max Avg. Temp. Overall	53.33	56.05	62.53	9.20
Min Avg. Temp. Overall	35.82	40.21	47.05	11.23
Max Avg. Temp. Autumn	59.84	63.28	69.36	9.52
Min Avg. Temp. Autumn	41.6	46.58	52.36	10.76
Max Avg. Temp. Winter	26.41	30.91	36.85	10.44
Min Avg. Temp. Winter	12.20	19.18	26.07	13.87
Max Avg. Temp. Spring	53.62	57.15	61.37	7.75
Min Avg. Temp. Spring	37.58	41.34	46.01	8.43
Max Avg. Temp. Summer	79.85	84.65	90.75	10.90
Min Avg. Temp. Summer	58.49	63.34	69.68	11.19

Figures 4.11 and 4.12 are from Risk Factor projections of the fire risk in Marshall County and the increase over the next 30 years. Areas that are a darker orange show higher

projected fire risk as compared with the sections in the green. More areas shift from green to orange from the year 2024 to 2054.

Figures 4.11 and 4.12: Marshall County Wildfire Risk 2024 vs. 2054 from Risk Factor

Dense smoke and dust storms will impact Marshall County more as more areas in the world will be impacted by wildfires due to drought. Those wildfires will spread smoke throughout the continent. Wind will spread the fires and smoke. Higher temperatures will increase wind in the area.

According to ClimRR, Annual precipitation during the fall, spring and summer will be affected by climate change. During the fall, spring and summer there will be an increase in maximum daily precipitation by the end of century. State climatologist Laura Edwards stated that rain events will be more extreme in amounts of precipitation.

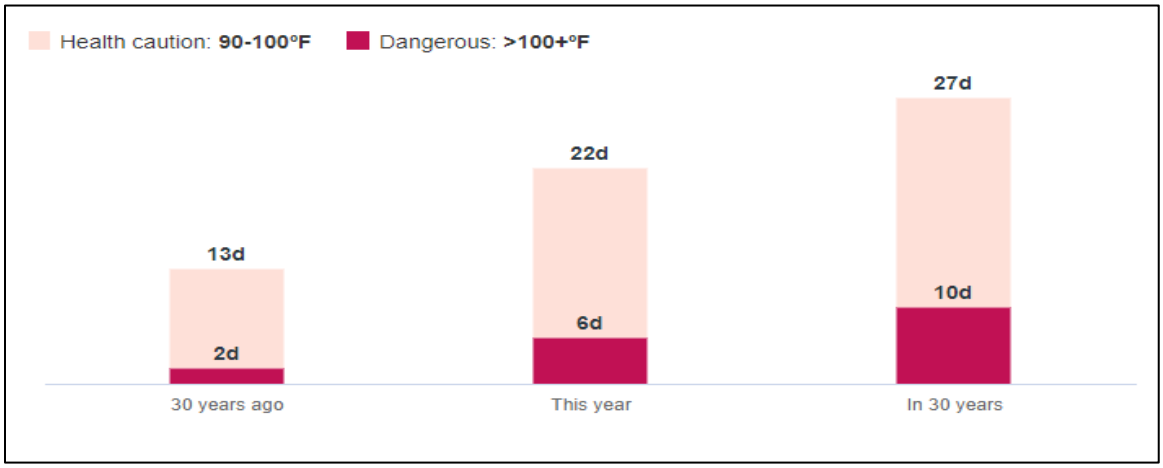
Table 4.33: Average Maximum Daily Precipitation Climate Stats (inches)			
Season	**Historical average**	**Mid-Century**	**End of Century**
Autumn	0.86	1.08	1.03
Spring	1.11	1.41	1.43
Summer	1.14	1.39	1.56
Winter	0.61	0.66	0.54

Table 4.33: Climate Stats based on calculations from ClimRR.

These projections show an increase in precipitation for Marshall County by the end of the century. Projections without measurable precipitation will be 15.94 days. This information indicates that rain will be more severe and there will be more precipitation. As climate change shifts weather patterns, the likelihood of more powerful storms and larger size hail also increases. Tornados will be more common due to the higher severity of storms.

Figure 4.13: Heat Index Chart impacts from Risk Factor

The charts from Risk Factor in Figures 4.13 and 4.14 illustrate the number of days over 100 degrees Fahrenheit. According to Risk Factor, a day that is over 100 degrees is expected to occur 7 times in 2024. In 30 years, or 2054, Marshall County will experience 27 days that fit those criteria, doubling the number of days at that heat index.



Figures 4.14: Past, Present and Future Annual Days with high heat events

ClimRR is a resource for weather projections and their review of Marshall County. Mid-century temperatures will increase from 1.5-3 degrees F. By the end of the century, high temperatures are expected to increase 6-8 degrees from the historical average. The average low temperatures will also shift higher. Mid-century projections are that average temperatures will increase by 3-5 degrees and by the end of the century the increase is projected to be 8-12 degrees.

Table 4.34: Heat Index Projections (Fahrenheit)			
	Historical	**Mid Century**	**End of Century**
Daily Max	79.50	84.80	91.52
Seasonal Max	101.77	120.13	126.57
Days with Max Heat over 95	6.18	14.08	31.07
Days with Max Heat over 105	0.04	3.87	10.58
Days with Max Heat 115	0.04	1.83	2.84
Days with Max Heat over 125	0.01	1.49	1.60

Table 4.34 shows heat index projections and the differences between the historical, mid-century and by the end of the century. Heat has a significant impact on all hazards, especially drought and severity of summer storms.

Shifts in weather patterns due to climate changes are affecting early winter storms. The higher average temperatures are causing ice storms, which would have been snowstorms. There are also later spring snows. ClimRR shows winter precipitation projections into the end of the century. Amounts get higher by the mid-century then reduce significantly by the end of the century. The number of days without precipitation is expected to reduce, indicating that there will be more moisture for Marshall County to address.

ADDITIONAL HAZARDS

Additional hazards that were in the previous plan: earthquakes subsidence, and landslides were removed due to lack of occurrences in the Marshall County area.

NATIONAL FLOOD INSURANCE PROGRAM PARTICIPATION

Requirement: 201.6(c)(3)(ii): *Does the plan address each jurisdiction's participation in the NFIP and continued compliance with NFIP requirements, as appropriate?*

> ***C2-a.*** *The plan must describe participation in the NFIP for each participant, as applicable, in accordance with NFIP regulatory requirements.*

NFIP: [§201.6(c)(2)(ii)]

Marshall County participates in NFIP. As part of the NFIP there is flood insurance and benefits available in the event of a flood. The following list is of NFIP participating jurisdictions in Marshall County. NFIP Participation Community Status book listing is in Table 4.35. Currently, Marshall County is not part of the Community Rating System (CRS) program. This program allows for community mitigation actions to count towards lower flood insurance premiums for residents. The community receives a rating of nine through one which shows the level of premium discount that ranges from 5% to 45%.

Table 4.35: Federal Emergency Management Agency Community Status Book Report SOUTH DAKOTA Communities Participating in the National Flood Program Effective 1/3/2024								
CID	**Community Name**	**County**	**Init FHBM Id**	**Init FIRM Id**	**Curr Eff Map Date**	**Reg Emer-Date**	**Curr Class**	**% Disc SFHA**
460159A	BRITTON, CITY OF	MARSHALL COUNTY		12/21/23	(NSFHA)	06/08/98		
460125A	LANGFORD, TOWN OF	MARSHALL COUNTY	06/27/75	12/21/23	12/21/23(M)	04/25/97		
Communities Not in the National Flood Program								
460279A	MARSHALL COUNTY *	MARSHALL COUNTY		12/21/23	12/21/23	12/21/23(S)		
460146A	VEBLEN, CITY OF	MARSHALL COUNTY	04/25/75	05/01/86	12/21/23	12/21/23(S)		

Table 4.35: Community Status book from FEMA.gov

Residents throughout the county participate in NFIP. Flooding that resulted in insurance claims has occurred throughout the County. According to the South Dakota Department of Public Safety rural Marshall County and participating jurisdictions currently have 13 policies in force for flood insurance. Participants and losses are listed in Table 4.35.

Table 4.36: NFIP Insurance Participants and Losses						
Location	**Initial FIRM**	**Policies in Force**	**Insurance in Force**	**Paid Losses**	**Total Losses Paid**	**Sub. Dam. Claims from 1978 on**
Britton	Participating 12/21/2023	0	0	0	$0.00	0
Langford	Participating 12/21/2023	0	0	1	$46,565.52	0
Veblen	Suspended 12/21/2023	0	0	0	$0.00	0
Marshall County	Suspended 12/21/23	2	$490,000.00	10	$91,028.22	0
Total:		2	$490,000.00	11	$137,593.74	0

Table 4.36: NFIP Insurance Participants and Losses from the South Dakota Department of Public Safety

The Marshall County Planning and Zoning Department maintains Flood Insurance Rate Maps for all planning mechanisms in the county, specifically the development of new homes and businesses. When a business, resident, or colony wants to develop they are instructed on whether the location is in a floodplain. If so, they are required to have the site evaluated to ensure above the floodplain.

Marshall County is currently sanctioned due to a delay in approving the resolution because of questions about the updated maps. Approximately 25 structures shifted into the new floodplain. FEMA and Marshall County are currently working through the process to get Marshall County approved and move forward finalizing the new maps. When the process

moves forward and Marshall County will work with FEMA to get the Flood Insurance Rate Maps on file at the County Planning and Zoning Department. FEMA requires all NFIP participants to pass the Flood Damage Prevention Ordinance which states that the City/County "elects to comply with the requirements of the National Flood Insurance Act of 1968 (P.L. 90-488, as amended)."

ADDRESSING VULNERABILTY: REPETITIVE LOSS PROPERTIES

Requirement 201.6(c)(2)(ii): *Does the plan include a summary of the jurisdiction's vulnerability and the impacts on the community from the identified hazards? Does this summary also address NFIP insured structures that have been repetitively damaged by floods?*

> ***B2-c****. The plan must describe the potential impacts on each participating jurisdiction and its identified assets.*

Repetitive loss properties are those for which two or more losses of at least $1,000 each have been paid under the National Flood Insurance Program (NFIP) within any 10-year period since 1978. The two repetitive loss structures in Marshall County have had three losses each. Both structures were single family homes. Total payments in participating jurisdictions are $23,765.83 for structures. Information in the following table was provided by Marc Macy from the South Dakota Department of Public Safety, Office of Emergency Management and is current as of June 2024. Table 4.36 is the numbers of repetitive loss properties and the payments that were issued.

Table 4.37: NFIP Repetitive Losses

Location of Repetitive Loss Buildings	RL Building Type	RL Buildings (Number of Losses)	Flood Zone	Building Payments (Total)	Contents Payment (Total)	RL Payments Total
Marshall Co.	Single Family	7/12/2011 6/9/2011 8/23/2010	C	$6,451.72 $5,441.37 $5,549.30	$0.00 $0.00 $0.00	$17,442.39
Marshall CO.	Single Family	7/28/2011 7/8/2011 3/14/2010	X	$1,518.94 $2,854.08 $1,950.42	$0.00 $0.00 $0.00	$6,323.44
Total County Payment	2 Single Family	6 total losses		$23,765.83	$0.00	$23,765.83

Table 4.37: NFIP Insurance Participants and Losses from the South Dakota Department of Public Safety

ASSESSING VULNERABILITY: VULNERABLE POPULATIONS

Requirement 201.6(c)(2)(ii): *Does the plan include a summary of the jurisdiction's vulnerability and the impacts on the community from the identified hazards? Does this summary also address NFIP insured structures that have been repetitively damaged by floods?*

> ***B2-a.*** *The plan must describe the vulnerability of each participant to the identified hazards. The description must include current and future assets and the risk that makes them susceptible to damage from the identified risk hazards.*

Marshall Courtny's overall vulnerability is low, according to CDC.gov and the National Risk Index. Both reference Marshall County's vulnerably to cold, hail, ice storms, flooding, winter weather, and wildfires. Overall community resilience is high since steps have been taken to prevent losses and historic losses have been relatively low when compared with the rest of the United States. Marshall County and its communities have a Relatively High rating for the ability to prepare for, adapt and recover from changing weather hazards.

There are residents that are more vulnerable in Marshall County. The residents at the South Dakota Developmental Center would require more care if needed to respond to a severe weather event. The nursing homes in Britton would also require more care in the event of a storm. Other vulnerable populations include residents that are older than 65. Some of these residents would need assistance responding to a weather event. Mobile homes throughout the county and visitors to the area campgrounds would also require assistance seeking suitable shelter in the event of a storm.

Marshall County's Social Vulnerability Maps are in Appendix G. Social vulnerability is based on a community's ability to prepare and respond to stress of hazardous events from natural disasters to human-caused threats. Based on the maps, Marshall County's vulnerability is moderately low. The National Risk Index through FEMA illustrates the vulnerability of residents in Marshall County to hazard events. It is based on the CDC's social vulnerability index and community resilience.

Table 4.38: Overall Social Vulnerability - 2022 (CDC)	
Socioeconomic	Lowest (bottom 4th)
Household	Moderately high (75th)
Racial and Ethnic Minority	Moderately high (75th)
Housing type/Transportation	Moderately high (75th)
Overall Social Vulnerability	Moderately Low (50th)

The CDC's Social Vulnerability Index is based on socioeconomic status (below poverty, unemployed, income, high school graduation), household composition and disability (65 or older, 17 or younger, older than 5 with a disability, single-parent homes) minority status and language (minority, English-speaking), housing type and transportation (multi-unit structures, mobile homes, crowding, access to vehicles, group quarters.)

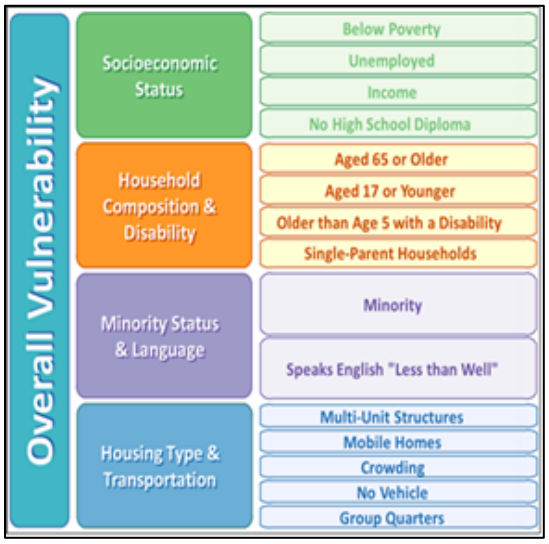


Figure 4.15: Social Vulnerability Table

Results are based on the data collected by the census. It refers to a community's capacity to prepare for and respond to stress of hazardous events in the community ranging from natural disasters to human caused threats. Marshall County has an overall vulnerability index of 0.1193 on a scale of 0 (lowest) to 1 (highest), which shows a low level of vulnerability to disasters, according to the index.

Table 4.39: FEMA Risk Rating for Marshall County				
Risk	**Rating**	**Score**	**Expected Annual Loss**	**Risk Value**
Cold Wave	Relatively High	96.3	$1,595,400	$1,742,313
Drought* Crop Risk Only	No Rating	0.0	$0	$0
Earthquake	Very Low	8.2	$3,490	$3,812
Hail	Relatively Moderate	85.9	$701,626	$766,235
Heat Wave	Relatively Low	41.8	$48,166	$52,601
Ice Storm	Relatively Low	55.7	$80,819	$88,262
Landslide	Very Low	11.5	$7,614	$8,316
Lightning	Very Low	17.3	$27,700	$30,251
Riverine Flooding	Very Low	18.5	$60,751	$66,345
Strong Wind	Relatively Low	59.3	$464,457	$507,226
Tornado	Relatively Low	32.6	$520,570	$568,507
Wildfire	Relatively Low	76.2	$324,098	$353,942
Winter Weather	Relatively High	91.5	$444,115	$485,011

Table 4.39: CDC Social Vulnerability Index

ASSESSING VULNERABILITY: IDENTIFYING STRUCTURES

Requirement §201.6(c)(2)(ii)): *Does the plan include a summary of the jurisdiction's vulnerability and the impacts on the community from the identified hazards? Does this summary also address NFIP insured structures that have been repetitively damaged by floods?*

> ***B2-b****. The plan must describe the potential impacts on each participating jurisdiction and its identified assets.*

One of the primary purposes of this plan is identifying critical structures and facilities in Marshall County. This helps determine what is at risk. In the event of a disaster, Marshall County and participating entities can prevent further loss of life by generator powered critical facility shelters. Marshall County's smaller towns have additional risks for citizens such as power failures or structural damage. Travelling during a severe storm can be hazardous. Residents would leave the safety of their homes to find shelter and power. Local critical structures with power and shelter allow citizens protection in their community and reduce exposure. The City of Britton has the only hospital in Marshall County. Residents needing medical care in a severe storm would need to travel in the treacherous elements or require emergency responders to travel to them.

In smaller communities, critical structures can be anything from hospitals, schools, and law enforcement buildings to bars and local churches. Each facility contributes to the community through tax revenue and jobs for residents to safety and resources. These structures represent the community's lifelines. A church can provide shelter and a base of communications in disasters. It can be a place to disperse supplies like food, water, and power. Although some structures in the Marshall County plan may not be considered essential, these structures are the lifelines of each community. Residents can congregate, communicate and during a natural hazard, mitigate aspects of a disaster.

Places like city pools and parks give residents places to go and attract people from outside the community. These public spaces support the town financially through taxes, permits and participant fees. It may be one of a few sources of revenue. Damage to these structures can show how fragile the balance can be in an area and a natural hazard can

impact more than just the building or structure. Loss of critical infrastructure can severely impact the community if destroyed, long past the hazard event.

The plan author acknowledges that determining what is "critical" can mean something different to every community and that the information provided is not comprehensive. However, the information provided by the participants was used as a baseline and can be supplemented in the future during the annual plan review and/or during the 5-year update. Using information provided by the representatives from each community helps establish a sense of ownership.

Many structures and departments vital to emergency operation in Marshall County are in Britton. Table 4.40 is a list of critical facilities that would cause the greatest disruption in the county if destruction occurred. While these facilities may be vital community assets, they are not necessarily vulnerabilities. Marshall County has fire departments that can be called when needed. There are volunteer fire departments throughout the county at Britton, (North Marshall and Sunset) Eden, Langford, and Veblen.

The information provided in Table 4.40 was updated from the 2020 Mitigation Plan. Participants were instructed to think of structures that would cause the most devastation to their communities if lost: "Those structures that you cannot live or operate without." While the information may not be comprehensive it gives FEMA, SDOEM, and readers an idea of how communities in rural South Dakota feel about certain structures. Each critical structure was determined to have one main function in the BRIC format, although many of the structures would have multiple uses in an emergency.

Table 4.40: Critical Structures in Marshall County

Marshall County					
Name/Type	**Address**	**Description**	**BRIC Function**	**Owner**	**Hazard Vulnerability**
County Courthouse	911 Vander Horck	County Offices	Safety and Security	County	All hazards except flood – not in flood zone
Highway Department	10844 423rd Ave	County Services	Transportation	County	All hazards except flood – unknown if in flood zone
Ambulance Service	413 9th St.	Emergency Services	Health and Medical	County	All hazards except flood – not in flood zone
County Community Building	909 Main St.	Community	Safety and Security	County	All hazards except flood – not in flood zone
Hillhead Communication Tower	109 St. Guy Rd. (Lake City)	Tower	Communication	County	All hazards except flood – not in flood zone
State of South Dakota					
State DOT Shop	Britton	Maintenance Unit 151	Transportation	South Dakota	All hazards except flood – unknown if in flood zone
Britton					
Name/Type	**Address**	**Description**	**BRIC Function**	**Owner**	**Hazard Vulnerability**
Britton Events Center/City Hall	1203 3rd St.	Community 7,200 sq. feet	Safety and Security	City	All hazards except flood – not in flood zone

City Shop	1523 Vander Horck St.	City Services	Transportation/ Safety and Security	City	All hazards except flood – not in flood zone
Water Tower	Britton	Utilities 150,000 gal	Food, Water and Shelter	City	All hazards except flood – not in flood zone
Ground Storage Tank	Britton	Utilities 250,000 gal	Food, Water and Shelter	City	All hazards except flood – not in flood zone
Booster Pump House	Britton	Utilities	Food, Water and Shelter	City	All hazards except flood – not in flood zone
Municipal Airport	423rd Ave	Services 1 section	Transportation	City	All hazards except flood – unknown if in flood zone
Britton-Hecla Public School	759 5th St.	Education 50,000 ft.	Safety and Security	School District	All hazards except flood – not in flood zone
North Marshall Fire Department (shelter)	605 Vander Horck St.	Emergency Services 21,000 ft.	Safety and Security	Private Non-Profit	All hazards except flood – not in flood zone
Marshall County Healthcare Center Avera	413 9th St.	Healthcare 19,229 ft.	Health and Medical	Private	All hazards except flood – not in flood zone
Senior Center	615 Main St.	Community 5,000 ft.	Safety and Security	Private	All hazards except flood – not in flood zone
Wheatcrest Hills	1311 Vander Horck St.	Nursing Home 89,050 ft.	Health and Medical	Private	All hazards except flood – not in flood zone
Truss Pro	406 Vander Horck St.	Industrial 75,000 ft.	Food, Water and Shelter	Private	All hazards except flood – not in flood zone
Horton Inc	423rd Ave	Industrial 90,000 ft.	Food, Water and Shelter	Private	All hazards except flood – unknown if in flood zone
Precision Walls	102 Vander Horck St.	Industrial 15,000 ft.	Food, Water and Shelter	Private	All hazards except flood – not in flood zone
Venture Communication	507 Main St.	Utilities 5,000 ft.	Communication	Private	All hazards except flood – not in flood zone
Full Circle Ag	520 Vander Horck	Agriculture 10,000 ft.	Hazardous Materials	Private	All hazards except flood – not in flood zone
Full Circle Ag Agronomy	Britton SD	Agriculture 15,000 ft.	Hazardous Materials	Private	All hazards except flood – not in flood zone
Agtegra	305 Vander Horck	Agriculture	Hazardous Materials	Private	All hazards except flood – not in flood zone
Cliff's 1-Stop	801 Vander Horck	Company 5,000 ft.	Food, Water and Shelter	Private	All hazards except flood – not in flood zone
Norstar Federal Credit Union	515 Vander Horck	Bank 4,860 ft.	Communication	Private	All hazards except flood – not in flood zone
Holland Bros Oil Co	822 Vander Horck	Company 5,000 ft.	Energy	Private	All hazards except flood – not in flood zone

First Savings Bank	600 Main St.	Company 16,000 ft.	Communication	Private	All hazards except flood – not in flood zone
Main Sewer Lift	Britton	Utilities	Food, Water and Shelter	City	All hazards except flood – not in flood zone
10th Ave Sewer Lift	Britton	Utilities	Food, Water and Shelter	City	All hazards except flood – not in flood zone
Lagoon Sewer Lift	Britton	Utilities	Food, Water and Shelter	City	All hazards except flood – not in flood zone
Industrial Sewer Lift	Britton	Utilities	Food, Water and Shelter	City	All hazards except flood – not in flood zone
County View Sewer Lift	Britton	Utilities	Food, Water and Shelter	City	All hazards except flood – not in flood zone
1st Street Sewer Lift	Britton	Utilities	Food, Water and Shelter	City	All hazards except flood – not in flood zone
Kadoun Sub Sewer Lift	Britton	Utilities	Food, Water and Shelter	City	All hazards except flood – not in flood zone
Hicks Sewer Lift	Britton	Utilities	Food, Water and Shelter	City	All hazards except flood – not in flood zone
Emergency Warning Siren	Britton	Utilities	Communication	City	All hazards except flood – not in flood zone
Britton Public Library	755 7th St.	Library 5,060 ft.	Safety and Security	City	All hazards except flood – not in flood zone
SCADA Tower for Sewer System	Britton	Utilities	Food, Water and Shelter	City	All hazards except flood – not in flood zone
Cell Phone Tower	Britton	Utilities	Communication	Private	All hazards except flood – not in flood zone
Eden					
Name/Type	**Address**	**Description**	**BRIC Function**	**Owner**	**Hazard Vulnerability**
Eden Fire Department	102 3rd St.	Emergency Services 4,000 ft.	Safety and Security	City	All hazards except flood – not in flood zone
Sewer Lagoon	Eden	Utilities 3 ponds	Food, Water and Shelter	City	All hazards except flood – not in flood zone
Water Storage System	Eden	Utilities 25,000 ft.	Food, Water and Shelter	City	All hazards except flood – not in flood zone
City Park	Eden	Services	Safety and Security	City	All hazards except flood – not in flood zone
Marshall County Highway Shop	Eden	Services 2,500 ft.	Transportation	County	All hazards except flood – not in flood zone
Sacred Heart Church (shelter)	114 S. 2nd St.	Religious	Safety and Security	Private	All hazards except flood – not in flood zone

Dan's Grocery and Gas	322 Broadway Ave.	Company 2,500 ft.	Food, Water and Shelter	Private	All hazards except flood – not in flood zone
Eden Oil	Eden	Company	Energy	Private	All hazards except flood – not in flood zone
Club Eden, Eden Café	Eden	Restaurant	Food, Water, and Shelter	Private	All hazards except flood – not in flood zone
Great Plains Bank	402 Broadway Ave.	Bank	Communication	Private	All hazards except flood – not in flood zone
Eden Lumber	12219 DS 25	Services	Food, Water and Shelter	Private	All hazards except flood – not in flood zone
Lake City					
Name/Type	**Address**	**Description**	**BRIC Function**	**Owner**	**Hazard Vulnerability**
Lake City Community Center	Lake City	Community	Safety and Security	City	All hazards except flood – not in flood zone
Municipal Building	219 Broadway St.	Community	Safety and Security	City	All hazards except flood – not in flood zone
City Shop	Lake City	City 1,600 ft.	Transportation	City	All hazards except flood – not in flood zone
Lutheran Church	Lake City	Religious 1,300 ft.	Safety and Security	Private	All hazards except flood – not in flood zone
Catholic Church	114 S. 2nd St.	Religious 2,000 ft.	Safety and Security	Private	All hazards except flood – not in flood zone
US Post Office	303 Broadway St.	Services	Communication	Govt.	All hazards except flood – not in flood zone
Langford					
Name/Type	**Address**	**Description**	**BRIC Function**	**Owner**	**Hazard Vulnerability**
Langford Fire Department (Fire Hall)	302 Main St.	Emergency Services 4,200 ft.	Safety and Security	City	All hazards except flood – not in flood zone
City Maintenance Office	Langford	Services 1,176 /1,356 ft.	Transportation	City	All hazards except flood – not in flood zone
Langford City Hall (Library/Fin. Office)	Langford	Community 1,920 ft.	Safety and Security	City	All hazards except flood – not in flood zone
Lagoons	Langford	Utilities 3 ponds / 10 M gallons	Food, Water and Shelter	City	All hazards except flood – not in flood zone
Substation	Langford	Utilities 1,200	Energy	City	All hazards except flood – not in flood zone
Pump Station / Water Tower	Langford	Utilities 160 / 32,000 Gal	Food, Water and Shelter	City	All hazards except flood – not in flood zone

City Well	Langford	Utilities	Food, Water and Shelter	City	All hazards except flood – not in flood zone
Marshall County Highway Shop	504 Main St.	Services	Transportation	County	All hazards except flood – not in flood zone
Langford Area Public School	206 Chestnut St.	Education 58,855 ft.	Safety and Security	School District	All hazards except flood – not in flood zone
Henry Osness Post (Legion Hall)	Langford	Community 3,200 ft.	Safety and Security	Private	All hazards except flood – not in flood zone
Agtegra (Anhydrous Storage)	601 Main St.	Agriculture 29,000 gal	Hazardous Materials	Private	All hazards except flood – not in flood zone
Agtegra (Chemical Storage)	601 Main St.	Agriculture 4,800 gal	Hazardous Materials	Private	All hazards except flood – not in flood zone
Agtegra (Office - Cold Storage)	601 Main St.	Agriculture 8,720 ft.	Hazardous Materials	Private	All hazards except flood – not in flood zone
Anderson Grain Facility	Langford	Agriculture 1,200 ft.	Hazardous Materials	Private	All hazards except flood – not in flood zone
County Line Seed	12311 SD 27	Agriculture 6,500 ft.	Hazardous Materials	Private	All hazards including flood – is in flood zone
DaMar Farmer's Elevator (Convenience Store/Fuel Storage)	12307 SD 27	Company 3,400 / 3,500 gal	Hazardous Materials	Private	All hazards except flood – not in flood zone
DaMar Farmer's Elevator (Propane Storage	12307 SD 27	Company 95,000 gal / 30,000 gal	Hazardous Materials	Private	All hazards except flood – not in flood zone
First State Bank	402 Main St.	Finance 4,080 ft.	Communication	Private	All hazards except flood – not in flood zone
Front Porch Bar & Grill	Langford	Company 5,000 ft.	Food, Water and Shelter	Private	All hazards except flood – not in flood zone
Good Friends Day Care	506 Maple St.	Community 1,200 ft.	Safety and Security	Private	All hazards except flood – not in flood zone
Hewitt Insurance Agency	418 Main St.	Finance 1,800 ft.	Communication	Private	All hazards except flood – not in flood zone
Jensen Auto Service	604 Main St.	Company 1,600 ft.	Transportation	Private	All hazards except flood – not in flood zone
Langford Lumber Co.	603 Main St.	Company 12,000 ft.	Food, Water and Shelter	Private	All hazards except flood – not in flood zone
Langford Lutheran Church	Langford	Religious 8,000 ft.	Safety and Security	Private	All hazards except flood – not in flood zone
Larson Shop (equipment storage for city)	Langford	Services 2,400 ft.	Transportation	Private	All hazards except flood – not in flood zone

Swede's Corner	313 Main St.	Company 2,800 ft.	Food, Water and Shelter	Private	All hazards except flood – not in flood zone
Venture Communication	Langford	Utilities 800 ft.	Communication	Private	All hazards except flood – not in flood zone
United States Post Office	309 Main St.	Services 2,800 ft.	Communication	Govt.	All hazards except flood – not in flood zone
Veblen					
Name/Type	**Address**	**Description**	**BRIC Function**	**Owner**	**Hazard Vulnerability**
Veblen Fire Department	106 Main St.	Services 3,120 ft.	Safety and Security	City	
Veblen City Hall (Fitness Center, Senior Center)	115 N. Flick St.	Services/ Community	Safety and Security	City	All hazards except flood – not in flood zone
Schoolhouse/ Daycare	222 Noble Ave.	Community	Safety and Security	City	All hazards except flood – not in flood zone
City Shop	Veblen	Services 1,224 ft.	Transportation	City	All hazards except flood – not in flood zone
Post Office	206 Main St.	Services 2,700 ft.	Communication	Govt.	All hazards except flood – not in flood zone
Water Tower	Veblen	Utilities 50,000 gal	Food, Water and Shelter	City	All hazards except flood – not in flood zone
Waste Water Lagoons	Veblen	Utilities 3 ponds	Food, Water and Shelter	City	All hazards except flood – not in flood zone
County Highway Shop	Veblen	Services 1,920 ft.	Transportation	County	All hazards except flood – not in flood zone
Veblen Legion (shelter)	Veblen	Community 4,752 ft.	Safety and Security	Private	All hazards except flood – not in flood zone
Grobe's Grocery and Hardware	102 Washington Ave.	Company	Food, Water and Shelter	Private	All hazards except flood – not in flood zone
Laundromat	Veblen	Company	Safety and Security	Private	All hazards except flood – not in flood zone
First Savings Bank	123 Main St.	Finance	Communication	Private	All hazards except flood – not in flood zone
Cantina Bar & Grill	Veblen	Company	Food, Water and Shelter	Private	All hazards except flood – not in flood zone
Border States Propane and Shop	Veblen	Utilities	Transportation/ Energy	Private	All hazards except flood – not in flood zone
Lien's Shop	Veblen	Company	Transportation	Private	All hazards except flood – not in flood zone
Ottertail Substation	Veblen	Utilities	Energy	Private	All hazards except flood – not in flood zone

RC Communication	Veblen	Utilities	Communication	Private	All hazards except flood – not in flood zone
Baus Oil and Gas Pumps	111 Central Ave.	Company	Energy	Private	All hazards except flood – not in flood zone
Rein Construction	Veblen	Company	Food, Water and Shelter	Private	All hazards except flood – not in flood zone
Hair on Mane	Veblen	Company	Safety and Security	Private	All hazards except flood – not in flood zone
Joe's Ag Supply	Veblen	Agriculture	Hazardous Materials	Private	All hazards except flood – not in flood zone
Pub 605	202 Main St.	Company	Food, Water and Shelter	Private	All hazards except flood – not in flood zone

ASSESSING VULNERABILITY: ESTIMATING POTENTIAL LOSSES

***B2-a**. For each participating jurisdiction, does the plan describe the potential impacts of each of the identified hazards on each participating jurisdiction?*

The Director of Equalization's office was contacted to provide the assessed valuation of properties in the jurisdictions. Due to the extensive records required and privacy concerns, they were unable to give an exact updated accounting of structures. However, each structure is an important piece of Marshall County's history and identity. This shows how vital these structures and each person are to the county. The value of structures will vary as time passes and valuations increase or decrease depending on the economic values of the structures.

Table 4.41: Marshall County Estimated Potential Losses to Vulnerable Structures

Type of Structure	Number of Structures		Occupied		Vacant	
	Number of Structures	% in Hazard Area	Number Occupied	% in Hazard Area	Number Vacant	% in Hazard Area
Residential	2394 total	100%	1702 occupied	100%	692 vacant	100%
Commercial						
Agricultural						
Religious						
Government						
Mob. Homes						
Utilities						
School						
Total	**2394**		**1702**		**692**	

Table 4.42: Britton Estimated Potential Losses to Vulnerable Structures						
Type of Structure	Number of Structures		Occupied		Vacant	
	Number of Structures	% in Hazard Area	Number Occupied	% in Hazard Area	Number Vacant	% in Hazard Area
Residential	626 total	100%	522 occupied	100%	104 vacant	100%
Commercial						
Agricultural						
Religious						
Government						
Mob. Homes						
Utilities						
School						
Total	626		522		104	100%

Table 4.43: Eden Estimated Potential Losses to Vulnerable Structures						
Type of Structure	Number of Structures		Occupied		Vacant	
	Number of Structures	% in Hazard Area	Number Occupied	% in Hazard Area	Number Vacant	% in Hazard Area
Residential	65 total	100%	53 occupied	100%	12 vacant	100%
Commercial						
Agricultural						
Religious						
Government						
Mob. Homes						
Utilities						
School						
Total	65		53		12	100%

Table 4.44: Lake City Estimated Potential Losses to Vulnerable Structures						
Type of Structure	Number of Structures		Occupied		Vacant	
	Number of Structures	% in Hazard Area	Number Occupied	% in Hazard Area	Number Vacant	% in Hazard Area
Residential	29 total	100%	26 occupied	100%	3 vacant	100%
Commercial						
Agricultural						
Religious						
Government						
Mob. Homes						
Utilities						
School						
Total	29		26		3	100%

Table 4.45: Langford Estimated Potential Losses to Vulnerable Structures						
Type of Structure	Number of Structures		Occupied		Vacant	
	Number of Parcels - Structures	% in Hazard Area	Number Occupied	% in Hazard Area	Number Vacant	% in Hazard Area
Residential	156 total	100%	141 occupied	100%	15 vacant	100%
Commercial						
Agricultural						
Religious						
Government						
Mobile Homes						
Utilities						
School						
Total	**156**		**141**		**3**	**100%**

Table 4.46: Veblen Estimated Potential Losses to Vulnerable Structures						
Type of Structure	Number of Structures		Occupied		Vacant	
	Number of Parcels - Structures	% in Hazard Area	Number Occupied	% in Hazard Area	Number Vacant	% in Hazard Area
Residential	151 total	100%	118 Occupied	100%	33 vacant	100%
Commercial						
Agricultural						
Religious						
Government						
Mob. Homes						
Utilities						
School						
Total	**151**		**118**		**33**	**100%**

Table 4.53: Marshall County Housing – 2020 Census			
Jurisdiction	Housing Units - Occupied	Housing Units - Unoccupied	Total
Britton	522	104	626
Eden	53	12	65
Lake City	26	3	29
Langford	141	15	156
Veblen	118	33	151
Marshall County	1702	692	2394
Total	2562	859	3421

ASSESSING VULNERABILITY: ANALYZING DEVELOPMENT TRENDS

Requirement 201.6(d)(3): *Was the plan revised to reflect changes in development?*

E1-a. *The plan must describe changes in development that have occurred in the hazard-prone areas and how they have increased or decreased in vulnerability of each jurisdiction since the previous plan was approved.*

***E2-c**. The update plan must explain how the jurisdiction(s) integrated information from the mitigation plan into other planning mechanisms, as a demonstration of progress in local hazard mitigation efforts.*

The land use and development trends for each jurisdiction were identified by the representatives on the planning committee. Marshall County is going through a reduction in its population numbers. Marshall County has gone from 4,656 residents in 2010 to 4,306 in 2020. Britton's population was 1,241 in 2010 and is currently at 1,215. Although the population has seen a slight decrease countywide, there are jurisdictions that are seeing an increase in population and homes. Housing and business development remain strong and a focus for Marshall County and all jurisdictions.

Marshall County: Marshall County's population is slowly declining. In 2000, Marshall County had 4,576 residents. In 2010, that number increased to 4,656 (1.75%) and is currently at 4,306 (-7.52%). The percentage of the population of Marshall County that is 65 years or older has also increased from 21.09% in 2000, declined to 18.92% in 2010 and then increased to 24.64% in 2020. Residents over 65 have increased in percentage of county residents. This makes it more difficult to replace essential members for emergency services such as police, Emergency Medical Services, and fire fighters.

Marshall County is in the process of remodeling and putting on a new addition to their courthouse. These improvements will allow accessibility and better workflows for county officials. The addition will include offices for the Sheriff's department, 911 dispatch, holding cells, and a conference room for the Marshall County Commission. The remodel will cover approximately 2,045 square feet. The new addition will be an 11,830 square foot expansion of the courthouse. The total cost of construction of the addition and remodel is $9,035,040 plus architect, furniture, fixture and equipment.

Marshall County has one economic development corporation to assist the county with its growth. Glacial Lakes Area Development focuses on Marshall County. These organizations work with communities to attract residents and businesses to the area and assist communities with projects.

The development of Marshall County is addressed through the Planning and Zoning Commission. The commission receives and processes building permits and variances. If the building is occurring on the floodplain a survey is required to ensure that the builder is compliant with floodplain building codes such as having one foot of free board over the base flood elevation requirement. The County is responsible for building and development throughout the county except for the municipalities of Britton, Langford and Veblen.

Marshall County averaged 83 structures built annually since 2019. The total estimated cost of the construction projects was $115,785,625. The projects ranged from grain bins, to homes, decks to additions, storage buildings and sheds. Costs of construction projects increased significantly. Average costs from 2019 to 2021 $12,873,740. Average costs from 2022 to 2024 were: $25,721,468, nearly double from 2019 to 2020.

Marshall County has been working to reduce the impact of disaster county wide. Multiple electrical line burials have been completed by Northern Electric and sirens and generators have been installed county-wide to mitigate the impact of tornadoes and power outages. Jurisdictions have been working to mitigate hazards through projects in coordination with FEMA, DANR, and USDA.

Many of Marshall County's residents commute from within and outside the county. There are also residents who travel from those counties to work in Marshall County. Accessibly is essential to these workers and weather conditions can impact travel along the highway system. Marshall County has focused on road and bridge improvements to assist accessibility in rural Marshall County.

The Marshall County Healthcare Center has 20 beds for critical access with a Wellness Center, Spruce Court (assisted living) and other outpatient services. They also employ 90 people and are one of the biggest employers in Marshall County. The ambulance service covers all of Marshall County. One concern countywide is winter weather. Marshall County received over 65 inches of snowfall in the winter of 2022-2023. When residents have medical emergencies in the rural parts of Marshall County or in the municipalities of Marshall County, the highway department gets a snowplow and moves the snow for the ambulance. Although this is a solution, it takes a while to get where the ambulance needs to go. Precious moments are lost during a medical emergency. Marshall County has their fire department to address fires in the county. The department coordinates with others in the county to ensure fast response.

Power loss is also an issue for rural areas of the county. Lake Region Electric had 14 power line burial projects in Marshall County to prevent power line losses. The lake areas of the county are more likely to lose power due to more severe weather events. The Couteau Line seems to have more severe weather than the rest of the county, possibly due to the higher elevation of the area.

BDM supplies water throughout Marshall County. As a provider, they have had increasing demand, especially in dry years, at times exceeding their capacity. BDM is currently building a second water treatment plan to ensure that the water demand can be met and there will be redundancies in the systems. BDM has ensured that even in the event of power loss, the system will continue to operate as needed.

Britton: Britton is the most populated city in Marshall County and the County seat. Britton also provides goods and services to Marshall County residents such as medical, retail, and financial. Britton's population has slightly reduced (-2.1%) since the 2010 census. Britton went from 1,241 residents to 1,215. Britton is the most populated city in Marshall County and provides the area residents with an event center, athletic fields, and pool. Britton is also home to the Britton – Hecla School district.

Development is addressed by the City Finance Officer regarding permit requests. Zoning, building codes, setback information and floodplain administration are all through the City Finance office. Britton coordinates with Glacial Lakes Area Development which helps expand economic, commercial, industrial, and residential development. The City of Britton has focused on development through improving infrastructure such as their hospital, water and wastewater projects and roads.

Other projects undertaken by the City include improvements to their stormwater system, the water and wastewater system, generators at three lift stations, and extensions of their water and waste systems to add users. New homes are also being developed and the City is looking for additional avenues to develop more housing for residents.

Hortin Inc. is a very important part of Britton's economy. Horton has expanded their operations with additional units. The City undertook sewer expansions for their facility. Horton would like to expand in the future and the City is looking at alternatives to address the additional water usage. Another manufacturer in Britton is MiTek USA Inc. This manufacturer is also looking at possible expansions within the community requiring additional investment from the City.

Langford: Langford is located near the south border of Marshall County. Langford has their own electric company and has recently replaced their water tower, water and wastewater system. Langford has also decreased in population from 313 to 283. A reduction of -9.58%. Langford has the area school and recently upgraded their football field with new lighting.

Langford is unique with their own electric supply. There are concerns that the system needs upgrades due to the increased power requirements of residents. Another concern is that the system is vulnerable to downed power lines. The lines themselves are exposed to the elements and need to be buried to ensure line safety during weather events.

Another challenge Langford has is a lack of cell coverage in the center of town. This lack of a signal affects the emergency system and accessibility for residents. Langford has the system One Call Now to update residents on emergencies in the area and public notifications. Langford is 17 miles from Britton. In the event of an emergency, there would be difficulties getting to the town in a timely manner. Langford has a fire department and assists the rest of the county in the event of an emergency.

Veblen: Located 34 miles from Britton, Veblen has a population of 317 as per the 2020 Census. In 2010 the population was 531. There was a decrease of -40.3% between 2010 and 2020. Veblen's population includes more diversity due to the dairy and the migrants that are hired to work there. One challenge in an emergency will be communication with the migrants and knowledge of what to do and where to go in the event of a weather hazard.
Veblen's development has been housing. Two new houses have been built along with new housing units for the dairy to use for their employees. One item is that these new homes have concrete rooms that can be used as a personal saferoom in an emergency.

The dairy in Veblen has been an important part of Veblen's development. They have expanded their operations and added housing for workers. They are looking at expanding capacity in the future including additional water that will be supplied by BDM.

Veblen's rural nature affects the ability for emergency services to reach the city during an emergency. If the hazard is a snowstorm, the snowplows are required to assist the ambulance in reaching Veblen, putting highway workers and emergency services at risk. It can take much longer than normal to reach the resident also.

UNIQUE OR VARIED RISK ASSESSMENT

Requirement 201.6(c)(2)(i)): *Does the plan include a description of the type, location, and extent of all natural hazards that can affect the jurisdiction? Does the plan also include information on previous occurrences of hazard events and on the probability of future hazard events.*

***B1-f**. For the multi-jurisdictional plans, when hazard risks differ across the planning area and between participating jurisdiction, the plan must specify the unique and varied risk information for each applicable jurisdiction and their assets outside the planning area.*

Most of the natural hazards identified in the risk assessment have an equal chance of occurrence in the county and have similar risks county-wide. While the extent to which each jurisdiction is affected by hazards other than flooding varies slightly between the local jurisdictions, the implications are the same. Development trends and land use were assessed by each jurisdiction's representatives to the planning committee.

Marshall County:
A capacity map by Headwaters Economics indicated that Marshall County has a medium capacity for addressing the needs of residents. Headwaters Economics' Rural Capacity Index is based on twelve variables for capacity to address needs for the county. Marshall County has a medium capacity with 59% of locations nationwide having a higher capacity.

Table 4.47: Marshall County Capacity	
Metropolitan	No
Head of Planning	Yes
Gov. job gain/loss per 1k (2010 to 2020)	15
Has College or university	Yes
Drive to city with >50k pop. (avg. mins)	60-120
Population change	-255
Income stability score (0-100)	40
Families below poverty level	3%
Households with broadband	81%
People without health insurance	5%
Voter turnout	61%
Adults with higher education	23%
Marshall County: Medium Capacity **Overall capacity: 59% of locations nationwide have a higher capacity**	

Table 4.47: Capacity from Headwaters Economics

Marshall County has identified in the Risk Assessment worksheet that the county is most vulnerable to Extreme Cold, Flash Flood, Freezing Rain/Sleet, Heavy Rain, Heavy Snow, Strong Winds, and Urban Fire. Marshall County has Medium Risk to: Extreme Heat, Flood, Hail, Lightning, Rapid Snow Melt, Thunderstorms, and Utility Disruption.

Marshall County is a flat-to-hilly region of South Dakota. The Marshall Conservation District covers the entire county. There are three different topographies and soils throughout the county. Around 60% of the county is cropland while the rest is used for rangeland, pastureland, lakes and marsh. Wind and soil erosion are serious problems for the district. The Conservation District has restored over 80 wetlands and planted over 6,596.5 acres of trees since 1944 totaling 3,611,859 trees on 2,935 sites.

Natural hazards are generally widespread. The rural nature of many of Marshall County's communities make them vulnerable due to the distance to travel to get resources in an event. Also, emergency services may be affected by a flooded road or a blinding blizzard which may make it nearly impossible to assist residents in an emergency. Residents who require urgent medical care may not be able to make it to the nearest hospital due to distance, road conditions and accessibility.

Extreme weather conditions may damage cell towers or internet connectivity. This has become a greater issue due to the reliance on the internet and cell phones to communicate, especially in rural areas. If an ice storm or tornado damages the towers, the result can be devastating to the area's communication system as there are limited alternatives for communication. Due to the rural aspects of Marshall County, communications are essential. To communicate with residents, Marshall County has multiple methods to inform and warn residents of weather hazards. Table 4.48 lists these methods the County can use to communicate emergency conditions from natural hazards along with community information. Residents can sign up on jurisdiction websites.

Table 4.48: Marshall County Emergency Communication Methods	
Area Newspaper	*The Marshall County Journal*
Webpages	Marshall.sdcounties.org
Social media (Facebook)	Marshall County, Marshall County Sheriff's Office, Marshall County Emergency Management,
Alerts	AlertSense

Specific populations that are more vulnerable include rural residents, which is over half of the population of Marshall County (55.21%). 22% of residents are 65 and over in Marshall County. Rural residents who are over 65 are more vulnerable because of the time it takes to get to them in the event of an emergency.

There are three Hutterite Colonies in rural Marshall County (Sunset, Westport, and Westwood). The colonies have locations under their food hall to take shelter during storms and potential hazards, although they are not designated as storm shelters. Sunset has its own fire department the others do not and rely on the county and surrounding volunteer departments for assistance.

In the event of a fire, the fire departments within the county coordinate with each other for mutual aid, along with departments in other counties. If there is not sufficient water for the demands of a fire, there are aquifers that the departments can pull from.

Farmers and other rural residents are more impacted by drought than residents of municipalities. Farmers are dependent on the weather. Drought can cause a reduction in crop yields and impact livestock. It can also cause crops to be more vulnerable to fires. Many of the area firefighting districts assist other fire districts when assistance is requested. Water is provided to northern Marshall County by BDM Waster. BDM is currently working to expand their capacity. They are constructing a new water treatment facility. During drought periods, BDM was working over capacity to ensure water to the county. The new water treatment facility will have redundancies and will offer increased supply to Marshall County residents.

Marshall County is vulnerable to inundations and flash flooding. Although the James River does not run through the county, the drainage basin is located on the south and west side of the county. Flooding can impact homes that are located along the lakes of Marshall County. Flash flooding can occur within the county during heavy rains when the soil is already saturated, and water has nowhere else to go. Marshall County's flood maps are currently suspended due to questions on the process of approving the final maps. Once

the maps are approved, new updated insurance rates will be assessed to homeowners who had their homes move into floodplains. Approximately 25 moved into the floodplain.

Marshall County Highway Department maintains roads throughout the county. Marshall County has been proactive in maintaining bridges and addressing the ones that need to be repaired to prevent issues with travel for residents. There are also culverts and other structures the county uses to address the flooding issues that occur; however, Marshall County has had many roads under water due to flooding. Flooding makes roads softer, more susceptible to damage and sometimes even unpassable. Flooding roads is a concern because travel is more difficult in an emergency, to receive EMS services, and impacts the economy by affecting farmers and hunters, who contribute to the Marshall County's economy. The widespread nature of flooding can cause the county to build roads up just to make them temporarily passable, reducing funds available for other development. Marshall County has enacted load limits on roads because roads get easily damaged when heavy traffic traverses them during wet years.

Damage to county roads continues in drought due to the repeated exposure to high heat alternated with high water. Drought impacts crops, livestock, and the area, especially since Marshall County's economy is reliant on agriculture. During the last ten years, according to NOAA's Storm Events Database, Marshall County has experienced multiple periods of drought ranging from moderate to severe. As the possibility of increasing temperatures due to global warming, area vulnerability and its impact on the economy can be more severe than historic weather patterns.

Winter weather is widespread and brings hazardous amounts of ice, snow, high winds, and extremely cold temperatures. Storms can be dangerous, impacting on driving conditions and causing freezing temperatures. Snow can last long periods of time and accumulate to create flooding when the snow melts and can cause ice jams in the local waterways. Summer storms can cause accumulation of water through heavy rains and a lack of dispersion. Britton has storm sewers and has been working to increase storm sewer capacity with the city. Veblen and Langford do not. Britton has the only hospital in the county. In a winter emergency, the Highway Department is called upon to create a path for the ambulance to reach the patient. This puts both the residents and the county employees in danger.

BDM is the water supplier in Marshall County. BDM has redundancies that will enable them to continue providing water to residents if the generators continue to operate.

According to the Fifth National Climate Assessment, rising temperatures will cause more severe weather events in the northern plains. This increase in temperatures will cause more severe droughts, increases in hail and frequency, floods and wildfire.

This impacts residents' physical, mentally and financially due to increasing unpredictability of weather events and the impact of the damage. Impacts on agriculture will have a significant impact on residents. Livelihoods are placed at risk and residents will have to deal with increasingly unpredictable seasons and more severe weather events.

Britton:
Britton indicated that they have a vulnerability to Freezing Rain/Sleet. There is moderate vulnerability to Drought, Extreme Cold and Heat, Flood, Hail, Heavy Rain and Snow,

Lightning, Rapid Snow Melt, Strong Winds, and Tornadoes, according to their Risk Assessment Worksheets.

Britton is the largest community in Marshall County and is also the county seat. Of all cities in Marshall County, Britton has the largest number of resources and provides aid to surrounding communities when requested. Britton has a community hospital, EMS service, and fire department. The County Sheriff's office is also located in Britton. The city also has full-time city departments for public works and finance.

Britton's population has nearly 20% of their residents 65 and older. Britton also has the only nursing home in the county. 21.6% of Britton's population is under 19. There is a school in Britton and it's one of two in Marshall County.

Britton has a vulnerability to snow like the rest of the county. However, there are portions of town that get hit harder with snowfall. Accumulations of snow are higher on the outskirts of town instead of throughout Britton.

Britton has Otter Tail and Lake Region for their power supplier. If there are issues with one, they can switch to the other. This offers redundancy to Britton in the event of a disaster.

Britton has worked to mitigate their vulnerability to hazards. They installed generators at their lift stations. Britton's water and wastewater systems have had upgrades due to the age of the system. Stormwater systems were also updated in 2021. Britton has stated that the stormwater systems are not yet adequate, especially during heavy rain. Water tends to fill up the core area of town and Main St. Redirecting the water outside of town will be essential.

Although Britton has the largest population in the county, like other small towns and the surrounding communities, if there are hazards or disasters, the community works together to fill the gaps in what is needed to assist.

Langford

Langford's Risk Assessment worksheet results indicated High Vulnerability Drought, Flash Flood, Flood, Rapid Snow Melt, Utility Disruption. Langford indicated a Moderate vulnerability to Dam Failure, Extreme Cold and Heat, Freezing Rain/Sleet, Hail, Heavy Rain, Heavy Snow, Ice Jam, Strong Winds, and Thunderstorms.

Langford has a larger population of residents who are 0-19 (35%) and 20-44 (29%) than 45-64 (25%) and 65 and over (15%). Langford School is in Langford and makes the town more vulnerable if a hazard were to occur during school hours. Although the school can be used as a shelter in the event of an emergency, many students are from rural areas and getting students from Langford to their homes in a weather hazard can be dangerous.

Langford is unique to the county in the fact that they have their own electricity supplied through the town. Their electricity system needs upgrades due to the increased demand for electricity. Their system is overtaxed by demand, including SCADA. Increasing usage of electric cars will also create issues when they are being charged. They purchase their electricity through Western Area Power Administration (WAPA).

Langford has a bridge that is degraded outside of town. Coral Creek, which runs near Langford, breaches its banks when there is flooding. The water is unpredictable and causes issues throughout town when it floods.

Langford has a fire department which coordinates with other area departments when necessary. However, Langford does not have a hospital or law enforcement services. Residents depend on the county and Britton for those.

Veblen:
Veblen has indicated that there is a "H" High Vulnerability to freezing rain/sleet, Heavy Snow, Strong Winds, Thunderstorms, and Tornadoes. Moderate Vulnerability "M" for Veblen is: Extreme Cold and Heat, Flash Flood and Flood, Hail, Heavy Rain, Lightning, and Rapid Snow Melt.

Veblen has a dairy as a large part of their economy. The dairy has workers who have difficulty speaking English. These differences in language make it difficult in disasters to communicate instructions or directions.

Veblen has a larger percentage of residents who are 0-19 (33%0 and 20-44 (31%). Those aged 45-64 (16%) and 65 and over (18%) are a smaller percentage of residents. Veblen had a school until funding changes closed it. The school was remodeled to serve as a community center and city hall. In the event of an emergency, the old school can be used as an emergency shelter.

Veblen is also approximately 30 miles northeast of Britton. That part of Marshall County is hilly and getting there in a snowstorm is difficult during an emergency. Veblen students go to Britton for school, which transportation for those students can be impacted by weather events. Veblen does not have the resources that Britton does regarding emergency services. There is a volunteer fire department but no law enforcement or hospital services. Power can also go out with extreme weather. There have been times that the power was out for at least a couple of hours. Due to the remote nature of Veblen, lack of power is a major vulnerability. There is currently work on revamping the power station.

V. MITIGATION STRATEGY

CHANGES/REVISIONS TO THE MITIGATION SECTION:

- Goals were changed to reflect participant communities and changes in some of the priorities and completed projects.
- Goals that were completed were updated. Ongoing mitigation projects are listed.
- Projects were transitioned to a table format and organized by county and jurisdictions. Nonparticipating jurisdictions were listed under the project format. However, due to lack of participation, they will be required to go through the county for projects.

MITIGATION REQUIREMENTS

Requirement 201.6(c)(3): *Does the plan document each jurisdiction's existing authorities, policies, programs and resources and its ability to expand on and improve these existing policies and programs?*

C1-a*. The plan must describe the existing authorities, policies, programs, funding, and resources of each participant are available to support the mitigation strategy.*

C1-b*. The plan must describe the ability of each participant to expand on and improve the capabilities described in the plan.*

Requirement 201.6(c)(3)(i): *Does the plan include goals to reduce/avoid long-term vulnerabilities to the identified hazards?*

C3-a*. The plan must include goals to reduce the risk of the identified hazards. Goals must be consistent with the hazards identified in the plan.*

Requirement 201.6(c)(3)(ii): *Does the plan identify and analyze a comprehensive range of specific mitigation actions and projects for each jurisdiction being considered to reduce the effects of hazards, with emphasis on new and existing buildings and infrastructure?*

C4-a. *The mitigation strategy must include an analysis of a comprehensive range of actions of projects that the participants considered to specifically address vulnerabilities identified in the risk assessment.*

C4-b*. Each plan participant must identify one or more mitigation actions the participant(s) intends to implement for each hazard addressed in the risk assessment.*

Requirement 201.6(c)(3)(iii): *Does the plan contain an action plan that describes how the actions identified will be prioritized, implemented, and administered by each jurisdiction?*

C5-a. *The plan must identify who is responsible for administering each action, along with the actions' potential funding sources and expected timeframes for completion.*

C5-b*. The action plan must identify who is responsible for administering each action, along with the action's potential funding source and expected time frames for completion.*

MITIGATION OVERVIEW

The State Hazard Mitigation Plan addresses several mitigation categories including warning and forecasting, community planning, and infrastructure reinforcement. Marshall County and the participants' greatest needs are flood mitigation, generators, storm shelters and public awareness. There are several aspects tied to the State's plan.

A main concern for Marshall County is flooding. Due to its history, Marshall County is highly susceptible to flooding. Distribution of information on flooding and flood plains and reducing risk should be given to homeowners so they can address potential issues with their homes. High winds are also another concern for residents. Owners (and renters) need to identify safe places within their homes and nearby locations if necessary. Local radio stations and weather advisory systems announce severe weather over the radio or social media. School closings, activity postponements, and travel advisories are communicated by radio, social media, and text. Alerts are sent to area users' phones through AlertSense.

IDENTIFICATION AND ANALYSIS OF MITIGATION ACTIONS FOR PARTICIPATING JURISDICTIONS

After meetings with the local jurisdictions and opportunities for public input, mitigation goals were devised to best aid the County in reducing and lessening the effects of hazards. Projects previously identified in the 2020 Natural Hazard Mitigation Plan were carefully analyzed and discussed to determine which projects had merit to be in the updated plan and determine if the projects meet the mitigation needs of the county.

Goals and projects were focused on FEMA BRIC community lifelines. Storm shelters contribute to safety, security, and communication. Storm sewers, levees, and holding ponds create ways to store water safely from residents, reducing the impact of the flooding on community and all systems. Generators contribute to energy lifelines but also aid in the medical and health lifelines, allowing residents to continue to receive medical care. Flooded roads impact emergency response and transportation so storm sewer projects that were included keep hazards away from infrastructure and homes. Education, awareness, and ordinances help residents know how to respond to hazards, increasing safety. Removal of threats such as trees that could fall keeps residents safe from the additional dangers that can occur when a natural hazard event happens.

A timeframe for completion, oversight, funding sources, and other relevant issues were addressed. The implementation strategies are designed for the specific goal and area. Often, these projects will not encounter any resistance from environmental agencies, legal authorities, and political entities. When there are concerns, they will be addressed by the jurisdiction.

PRIORITIZATION OF MITIGATION ACTIVITIES

Requirement 201.6(c)(3)(iii)… *Does the plan contain an action plan that describes how the actions identified will be prioritized, implemented, and administered by each jurisdiction?*

> ***C5-a****. The plan must describe the criteria used for prioritizing the implementation of the actions.*

Plan participants were instructed that a Benefit Cost Analysis would be required when applying and the plan author advised that specific details of each project could be analyzed during the application period. Ongoing projects and projects without cost that were listed in the 2020 Plan were reviewed and evaluated based on a cost/benefit ratio and priority from high to low. A *high* priority classification means that the project should be implemented as soon as possible and would effectively minimize losses. A *moderate* classification means that the project should be considered and completed after the high priority projects have been completed. A *low* priority means that the project should not be

considered soon. However, it is a potential solution and should not be eliminated until further evaluation. Such projects may be completed considering closures of all other projects striving toward the same goal.

Plan participants had a specific goal and action for mitigation projects. Many small rural towns and townships have problems accomplishing capital improvements due to more restricted budgets. Improvements are limited because of fewer revenue options. The focus of mitigation will be on the project that the community chose. The other concern is the required 25% match for mitigation projects to occur with FEMA funding. Projects were prioritized by the number of residents to benefit and the reduction in damage that occurred after implementation. Projects are listed from Table 5.1 to Table 5.3.

Projects that were beyond Marshall County felt were not needed were removed. Some projects were similar and left in the plan. Those projects were condensed and prioritized. Projects were grouped based on the hazards that each participating jurisdiction indicated were either high or medium risk and those that tend to occur at the same time. Projects with a low or no risk of occurring in the hazard area were not considered. Funding projects was discussed along with the projects needing to meet a benefit cost analysis. Options for the town's portion of the in-kind match were discussed to cover the cost of some projects. Coordination with other jurisdictions to have a multi-jurisdictional project was also an option that was discussed.

Project focus for Marshall County was on events they were highly vulnerable to: Extreme Cold, Flash Flood, Freezing Rain/Sleet, Heavy Rain and Snow, Strong Winds, and Urban Fires. The lead administrator is bolded in the responsible entity section of each table.

Table 5.1: Mitigation Goals and Actions
Flood Hazard Events
Section 1: Mitigation to reduce the impact of flooding in Marshall County
Goal #1: Reduce the impact of floods, flash flood, and rapid snow melt.

Project: #1 IN PROGRESS	Work with FEMA to get updated maps approved and continue participating with the NFIP to ensure residents protected from flood.
Responsible Entity	**Marshall County Commission**, Marshall County Zoning, SD OEM, FEMA
Priority	High
Funding Source	Marshall County, FEMA,
Timeframe	Ongoing
Cost	Unknown
Notes	Marshall is currently working through their flood map process. They are currently suspended and trying to get answers from FEMA so their mapping process can move forward.

Project: #2	Identify roads that need grade raises and complete the work as soon as possible.
Responsible Entity	**Marshall County Commission**, Marshall County Highway Department, Marshall County Emergency Management, SD OEM, FEMA, SD DOT
Priority	High
Funding Source	Marshall County, FEMA, SD DOT
Timeframe	Ongoing
Cost	Unknown
Notes	Roads that are under water or are vulnerable to water damage need to be addressed to ensure access to residents.

Project: #3	Address flooding and drainage issues throughout the county with a hydrology study emphasizing culverts and bridges needing replacement.
Responsible Entity	**Marshall County Commission**, Marshall County Highway Department, Marshall County Emergency Management, SD OEM, FEMA, SD DOT
Priority	Medium
Funding Source	Marshall County, FEMA, SD DOT
Timeframe	Ongoing
Cost	Unknown
Notes	Marshall County has drainage issues when it rains due to high water tables. A hydrology study looking at how culvert and bridges can be upsized to allow for more drainage would help Marshall County address those issues.

Section 2: Mitigation to reduce the impact of summer and winter storms.
Goal #1: Reduce the impact of severe summer and winter storms including strong winds, tornadoes, freezing rain/sleet, hail, heavy rain, heavy snow, lightning, and extreme cold and reduce the impact of potential utility disruption to residents.

Project #1	Hillhead tower replacement. The Hillhead tower is too short and degraded to be reliable in an emergency and replacement is needed. This will allow communications throughout the county to ensure residential safety.
Responsible Entity	**Marshall County Commission**, Marshall County Zoning, Marshall County Emergency Management, SD OEM, FEMA
Priority	High
Funding Source	FEMA,
Timeframe	As funding becomes available – within the next two years
Cost	$200,000
Notes	The Hillhead tower allows for communications throughout the county. One area that is difficult is the eastern part of the county where it gets hilly. The tower needs replacement due to age and degradation.

Project #2	Construction of safe rooms where the county feels necessary to protect residents and visitors to Marshall County. Another option is to retrofit current facilities to make resistant to high wind events and winter and summer storms.
Responsible Entity	**Marshall County Commission**, Marshall County Zoning, Marshall County Emergency Management, SD OEM, FEMA
Priority	High
Funding Source	Marshall County, FEMA
Timeframe	As soon as possible
Cost	Unknown – will depend on bids and current construction costs.
Notes	Areas where there are people hunting/fishing/camping are a concern due to the lack of protection.

Project #3	Generators for storm shelters throughout the county and facilities that the county determines are required in the event of an emergency or can be used as a shelter in the event of an emergency.
Responsible Entity	**Marshall County Commission**, Marshall County Zoning, Marshall County Emergency Management, SD OEM, FEMA
Priority	High
Funding Source	Marshall County, FEMA
Timeframe	As soon as possible
Cost	Unknown – will depend on bids and current construction costs.
Notes	Generators are needed throughout the county to support emergency response in the event of a winter to summer hazard.

Project #4	Education for residents regarding high wind events and winter and summer storms. Topics would include mitigation of hazards in and around their home, such as tree removal and cleanup, preparation for disasters while lacking access to resources.
Responsible Entity	**Marshall County Commission**, Marshall County Emergency Management
Priority	Medium
Funding Source	Marshall County
Timeframe	Ongoing
Cost	Time and materials for the presentations
Notes	This item is preparedness, however, a population that is informed of the mitigation actions they can take on their own is also mitigation as they are able to reduce their own risk to hazards. Focus for education will be informing the public about resources that are available (text alerts, online notifications) and location of resources for residential use.

Section 3: Mitigation to reduce the impact of Fire/High Heat
Goal #1: Reduce the impact of fires, extreme heat and drought.

Project #1	Public information campaigns to inform the public about potential ways to reduce water consumption, reduce fire risk, and ways to reduce the impact of high heat, fire and drought
Responsible Entity	**Marshall County Commission**, Marshall County Emergency Management
Priority	Low
Funding Source	Marshall County
Timeframe	Ongoing
Cost	Time and Materials for Presentations
Notes	This would focus in informing the public about potential ways to reduce the impact of heat, fire and drought.

Completed or Removed Mitigation Projects
Projects that are no longer priorities for Marshall County

Project REMOVED	Plant living windbreaks/snow fences in areas throughout counties where needed.
Responsible Entity	
Priority	
Funding Source	
Timeframe	
Cost	
Notes	Project was removed due to the fact there is limited impact and requires the landowners to plant and maintain trees.

MULTI-JURISDICTIONAL PLAN REQUIREMENTS

Requirement §201.6(c)(3)(iv): *For multi-jurisdictional plans, there must be identifiable action items specific to the jurisdiction requesting FEMA approval of credit of the plan.*

The participating jurisdictions prioritized projects by the ones that would have a great impact and benefit public needs. Current prioritization methods were feasibility, impact to the public, improvements that offer greatest operational flexibility, and benefits to cost ratio. Some of these items may shift in the future depending on circumstances that shift the analysis and priorities. Final costs will be based on bid costs and will be updated as the process moves forward. Each project must meet FEMA's Benefit Cost Analysis as a pre-requisite for funding through FEMA programs.

Previous plans included the townships. Due to budget constraints and lack of participation in the 2019 and 2024 plan, the township projects were included in the county's project list. The county has the capacity to address the townships projects. Non-participating jurisdictions also include Eden and Lake City, who will be covered under the county also.

High Hazards indicated by participating jurisdictions were Britton: Freezing Rain/Sleet; Langford: Drought, Flash Flood, Flood, Rapid Snow Melt, Utility Disruption; Veblen: Freezing Rain/Sleet, Heavy Snow, Strong Winds, Thunderstorms, and Tornadoes. Lead jurisdiction for the projects is indicated in bold print.

Table 5.2: Mitigation Goals and Actions
Section 3: Mitigation to reduce the impact of flooding.
Goal #1: Reduce the impact of floods, flash flood, and rapid snow melt.

Project #1	Storm sewer improvements
Responsible Entity	**Jurisdiction City Councils (Britton)**, SD OEM, DANR, and FEMA
Priority	High
Funding Source	Jurisdiction City Council, SD OEM, DANR, USDA RD, FEMA
Timeframe	As soon as possible
Oversight	City of Britton, FEMA
Notes	

Project #2	Upgrade lagoons to reduce water infiltrates in the system.
Responsible Entity	**Britton City Council**, SD OEM, FEMA
Priority	High
Funding Source	Britton City Council, SD OEM, DANR, USDA RD FEMA
Timeframe	As soon as funds are available
Oversight	
Notes	

Project #3	Hydrology study of water bodies in the county, particularly those surrounding Langford.
Responsible Entity	**Jurisdiction City Council (Langford)**, SD OEM, FEMA
Priority	Medium
Funding Source	Jurisdiction City Council, SD OEM, FEMA
Timeframe	
Oversight	
Notes	

Section 2: Mitigation to reduce the impact of summer and winter storms.
Goal #1: Reduce the impact of severe summer and winter storms including strong winds, tornadoes, freezing rain/sleet, hail, heavy rain, heavy snow, lightning, and extreme cold. and reduce the impact of potential utility disruption to residents.

Project #1	Generators for essential structures in each participating jurisdiction.
Responsible Entity	**Jurisdiction City Council (Britton, Langford, Veblen),** SD OEM, FEMA
Priority	High
Funding Source	**Jurisdiction City Council**, SD OEM, FEMA
Timeframe	As soon as funding available
Oversight	
Notes	

Project #2	Storm shelters for residential use in the event of a severe winter or summer storm.
Responsible Entity	**Jurisdiction City Council** (Veblen, SD OEM, FEMA)
Priority	High
Funding Source	Jurisdiction City Council, SD OEM, FEMA
Timeframe	As soon as funding available
Oversight	
Notes	

Project #3	Improve internet communications in Langford
Responsible Entity	**Jurisdiction City Council** (Langford, SD OEM, FEMA)
Priority	High
Funding Source	Jurisdiction City Council, SD OEM, FEMA
Timeframe	As soon as funding available
Oversight	
Notes	Langford is having communication issues due to internect connectivity being unavialbe throughout the town.

Section 3: Mitigation to reduce the impact of Wildfire/Drought/High Heat.
Goal #1: Reduce the impact of wildfires, extreme heat and drought.

Project #1	Public information campaigns to inform the public about potential ways to reduce water consumption, reduce fire risk, and ways to reduce the impact of high heat, fire and drought
Responsible Entity	**Participating Jurisdictions**, Marshall County Emergency management,
Priority	Medium
Funding Source	Participating Jurisdictions,
Timeframe	Ongoing
Oversight	Marshall County Emergency Management
Notes	

Project #3	Work on burying power lines throughout the town of Langford.
Responsible Entity	**Jurisdiction City Council** (Langford, SD OEM, FEMA)
Priority	High
Funding Source	Jurisdiction City Council, SD OEM, FEMA
Timeframe	As soon as funding available
Oversight	
Notes	Langford's power grid is vulnerable and needing to be buried to reduce impacts from fallen wires.

Table 5.3: Completed, Removed, or In Progress Mitigation Goals and Actions Completed Mitigation Projects for Natural Hazards for Jurisdictions	
Project COMPLETED	City of Britton Lift Station Generator Project
Responsible Entity	**City of Britton**, SD OEM, FEMA
Priority	High
Funding Source	FEMA/City of Britton
Timeframe	Completed 2024
Oversight	City of Britton, OEM
Notes	The project was to install four generators at Britton's lift stations to continue operations in the event of a power outage. Three were installed due to cost and a wastewater project at the main lift station which will install a generator.

Project COMPLETED	City of Britton Storm Sewer Expansion
Responsible Entity	**City of Britton**/USDA RD
Priority	High
Funding Source	Britton, USDA RD
Timeframe	2020-2021
Oversight	Britton/USDA
Notes	The project was to install storm sewers in high water spots throughout Britton.

IMPLEMENTATION OF MITIGATION ACTIONS

Requirement: 201.6(c)(3)(iii)… *Does the plan contain an action plan that describes how the actions identified will be prioritized, implemented, and administered by each jurisdiction?*

C5-a*. The plan must identify who is responsible for administering each action, along with the actions' potential funding sources and expected timeframes for completion.*

C5-b*. The action plan must identify who is responsible for administering each action, along with the action's potential funding sources and expected time frames for completion.*

Upon adoption of the updated Marshall County Natural Hazard Mitigation Plan, each jurisdiction is responsible for implementing its mitigation actions. The planning required for implementation is the sole responsibility of the jurisdictions that participated in the plan update. All municipalities have indicated that they do not have the financial capability to move forward with projects identified in the plan currently, however, all will consider applying for funds through the State and Federal Agencies once funds are available. If and when the municipalities are able to secure funding for the mitigation projects, they will move forward with the projects identified. Since some of the local jurisdictions only had one mitigation action/goal, prioritization was not necessary. Jurisdictions with several mitigation projects will prioritize those projects in a manner that will ensure benefit is maximized to the greatest extent possible. A benefit cost analysis will be conducted on the project after the decision to move forward is made.

The 2025 Natural Hazard Mitigation Plan was approved after revisions were recommended by FEMA and made by the plan author. At that time, the plan was drafted under the requirements of the 2020 FEMA Mitigation version of the Crosswalk. Since then, FEMA has produced several planning documents to help aid in the development of local mitigation plans. Some of those documents include the Local Mitigation Planning Handbook from March 2013, the Plan Review Guide from October 1, 2011, and the Local Mitigation Plan Review Tool. Since disaster mitigation was a relatively new concept at that time, the same depth of planning was not utilized in the 2020 Plan as was used for the 2025 plan update. It is anticipated with the amount of time, energy, and professional guidance involved during the drafting process of the updated plan that the County has created a document that has validity and a clear purpose which will be more likely to fit in with the existing planning mechanisms that exist county-wide. Additionally, by involving most of the local jurisdictions and bringing the plan to the attention of neighboring communities, the planning process has brought more awareness of mitigation to residents in the County, which will encourage future involvement. This participation in the mitigation process will only add to the resilience of Marshall County in the future.

VI: PLAN MAINTENANCE

CHANGES/REVISIONS TO PLAN MAINTENANCE:

- Programs were updated to reflect suggestions from FEMA.

MONITORING, EVALUATING, AND UPDATING THE PLAN

Requirement §201.6(c)(4)(i)): *Is there a description of the method and schedule for keeping the plan current (monitoring, evaluating, and updating the mitigation plan within a five-year cycle)?*

D2-a*. The plan must identify how, when, and by whom the plan will be tracked for implementation over its five-year cycle.*

D2-b*. The plan must identify how, when and by whom the plan will be assessed for effectiveness at achieving its stated purpose and goals.*

D2-c*. The plan must identify how, when, and by whom the plan will be reviewed and revised at least once every five years.*

Marshall County and all the participating local jurisdictions thereof will incorporate the findings and projects of the Natural Hazard Mitigation Plan in all planning areas as appropriate. Periodic monitoring and reporting of the plan are required to ensure that the goals and objectives are kept current and that mitigation efforts are being carried out.

During implementation of mitigation strategies, the jurisdictions may experience lack of funding, budget cuts, staff turnover, and/or a general failure of projects. These scenarios are not a reason to discontinue and fail to update the Natural Hazard Mitigation Plan. A good plan needs to provide for periodic monitoring and evaluation of successes and failures and allow for appropriate changes to be made.

ANNUAL REPORTING PROCEDURES

The plan shall be reviewed annually, as required by the County Emergency Manager, or as the situation dictates, such as after a disaster declaration. The Marshall County Emergency Manager will review the plan annually in November and ensure the following:

1. The County Elected body will receive an annual report and/or presentation on the implementation status of the plan.
2. The report will include an evaluation of the effectiveness and appropriateness of the mitigation actions proposed in the plan; and
3. The report will recommend, as appropriate, any required changes or amendments to the plan.

FIVE YEAR PLAN REVIEW

Every five years the plan will be reviewed, and completely updated. All information in the plan will be evaluated for completeness and accuracy based on new information. New property development activities will be added and evaluated for impacts. New or improved sources of hazard related data will also be included.

In the future, if the County relies on grant dollars to hire a contractor to write the Plan update, the County will initiate the process of applying for and securing funding in the third year of the plan to ensure the funding is in place by the fourth year. The fifth year will then be used to write the plan update, which in turn will prevent any lapse in time where the county does not have a current approved plan on file.

The goals, objectives, and mitigation strategies will be readdressed and amended as necessary based on new information, additional experience, and the implementation progress of the plan. The approach to this plan update effort will be the same as the one used for the original plan development. The Emergency Manager will meet with the Natural Hazard Mitigation Planning Committee for review and approval prior to final submission of the updated plan.

PLAN AMENDMENTS

Plan amendments will be considered by the Marshall County Emergency Manager, during the plan's annual review to take place at the end of each county fiscal year. All affected local jurisdictions (cities, towns, and counties) will be required to hold a public hearing and adopt the recommended amendment by resolution prior to considerations by the planning committee.

INCORPORATION INTO EXISTING PLANNING MECHANISMS

Requirement: 201.6(c)(4)(ii): *Does the plan describe a process by which each community will integrate the requirements of the mitigation plan into other planning mechanisms, such as comprehensive or capital improvements plans, when appropriate?*

- ***D3-a****. The plan must describe the communities' process to integrate the plan's data, information, and hazard mitigation goals and actions into other planning mechanisms.*
- ***D3-b****. The plan must identify the local planning mechanisms where hazard mitigation information/actions may be integrated. The identified list of planning mechanisms must be applicable to the plan participant(s) and not contradict the identified capabilities.*
- ***D3-c****. A multi-jurisdictional plan must describe each participant's individual process for integrating information from the mitigation strategy into their identified planning mechanisms.*

Britton is the only jurisdiction that currently has comprehensive, or capital improvements plans. All the other jurisdictions do not have a planning mechanism like that. Marshall County and the City of Britton will consider the mitigation requirements, goals, actions, and projects when it considers and reviews the other existing planning documents. Mitigation projects will be considered and prioritized in conjunction with non-mitigation projects, such as water and wastewater infrastructure improvements, new construction of schools, parks, etc.

The rest of the local jurisdictions cannot incorporate the requirements of the mitigation plan into other planning mechanisms because they do not have any other planning mechanisms that currently exist. The risk assessment which was conducted is specific to mitigation actions and projects included in the Plan and is not tied into any other mechanisms that would initiate conversations or actions by the city councils to move forward with actions or projects outlined in the Plan. Absence of such mechanisms creates a problem for the local jurisdictions because ideas, projects, and actions identified due to the Natural Hazard Mitigation Plan update process often never move forward because they are forgotten so no mechanism exists to initiate the process of completing them. Local jurisdictions identified one unrelated mechanism that could be used to remedy the problem. Municipalities are required by State law to prepare budgets for the upcoming year and typically consider any expenditure for the upcoming year at that time. South Dakota Codified Law 9-21-2 provides that:

> The governing body of each municipality shall, no later than its first regular meeting in September of each year or within ten days thereafter, introduce the annual appropriation ordinance for the ensuing fiscal year, in which it shall appropriate the sums of money necessary to meet all lawful expenses and liabilities of the municipality….an annual budget for these funds shall be developed and published no later than December thirty-first of each year.

Since all the local jurisdictions except Marshall County and Britton lack planning mechanisms in which to incorporate the mitigation actions identified in this plan, it was determined that each year when the budget is prepared the municipalities will also consider the mitigation actions at that time. The local jurisdictions will post a permanent memo to their files as a reminder for them to incorporate their annual review of the mitigation actions identified into the budget preparation process. This does not require the projects to be included in the budget, it is a reminder to city officials that they have identified mitigation projects in the Plan that should be considered if the budget allows.

POTENTIAL FUNDING SOURCES

Although all mitigation techniques will likely save money by avoiding losses, many projects are costly to implement. None of the local jurisdictions have the funds available to move forward with mitigation projects at this time, thus, the Potential Funding Sources section was included so that the local jurisdictions can work towards securing funding for the projects. Inevitably, due to the small tax base and small population, most of the local jurisdictions do not have the ability to generate enough revenue to support anything beyond the basic needs of the community. Thus, mitigation projects will not be completed without a large amount of funding support from State or Federal programs.

The Marshall County jurisdictions will continue to seek outside funding assistance for mitigation projects in both the pre- and post-disaster environment. Primary Federal and State grant programs have been identified and briefly discussed, along with local and non-governmental funding sources, as a resource for the local jurisdictions

Federal

The following federal grant programs have been identified as funding sources which specifically target hazard mitigation projects:

Title: Building Resilient Infrastructure and Communities **Agency: Federal Emergency Management Agency**
Through the Disaster Mitigation Act of 2000, Congress approved the creation of a national program to provide a funding mechanism that is not dependent on a Presidential Disaster Declaration. The Building Resilient Infrastructure and Communities (BRIC) program provides funding to states and communities for cost-effective hazard mitigation activities that complement a comprehensive mitigation program and reduce injuries, loss of life, and damage and destruction of property. The funding is based upon a 75% Federal share and 25% non-Federal share. The non-Federal match can be fully in-kind or cash, or a combination. Special accommodations will be made for "small and impoverished communities", who will be eligible for 90% Federal share/10% non-Federal. FEMA provides BRIC grants to the states that, in turn, can provide sub-grants to local governments for accomplishing the following eligible mitigation activities: State and local hazard

mitigation planning, technical assistance (e.g., risk assessments, project development), Mitigation Projects, Acquisition or relocation of vulnerable properties, Hazard retrofits, Minor structural hazard control or protection projects, community outreach and education (up to 10% of State allocation)

Title: Flood Mitigation Assistance Program
Agency: Federal Emergency Management Agency

FEMA's Flood Mitigation Assistance program (FMA) provides funding to assist states and communities in implementing measures to reduce or eliminate the long-term risk of flood damage to buildings, manufactured homes, and other insurable structures under the National Flood Insurance Program (NFIP). FMA was created as part of the National Flood Insurance Reform Act of 1994 (42 USC 4101) with the goal of reducing or eliminating claims under the NFIP.

FMA is a pre-disaster grant program and is available to states on an annual basis. This funding is available for mitigation planning and implementation of mitigation measures only and is based upon a 75% Federal share/25% non-Federal share. States administer the FMA program and are responsible for selecting projects for funding from the applications submitted by all communities within the state. The state then forwards selected applications to FEMA for an eligibility determination. Although individuals cannot apply directly for FMA funds, their local government may apply on their behalf.

Title: Hazard Mitigation Grant Program
Agency: Federal Emergency Management Agency

The Hazard Mitigation Grant Program (HMGP) was created in November 1988 through Section 404 of the Robert T. Stafford Disaster Relief and Emergency Assistant Act. The HMGP assists states and local communities in implementing long-term mitigation measures following a Presidential disaster declaration.

To meet these objectives, FEMA can fund up to 75% of the eligible costs of each project. The state or local cost-share match does not need to be cash; in-kind services or materials may also be used. With the passage of the Hazard Mitigation and Relocation Assistance Act of 1993, federal funding under the HMGP is now based on 15% of the federal funds spent on the Public and Individual Assistance programs (minus administrative expenses) for each disaster.

The HMGP can be used to fund projects to protect either public or private property, so long as the projects in question fit within the state and local government's overall mitigation strategy for the disaster area and comply with program guidelines. Examples of projects that may be funded include the acquisition or relocation of structures from hazard-prone areas, the retrofitting of existing structures to protect them from future damage; and the development of state or local standards designed to protect buildings from future damage.

Eligibility for funding under the HMGP is limited to state and local governments, certain private nonprofit organizations or institutions that serve a public function, Indian tribes, and authorized tribal organizations. These organizations must apply for HMPG project funding on behalf of their citizens. In turn, applicants must work through their state since the state is responsible for setting priorities for funding and administering the program.

Title: Public Assistance (Infrastructure) Program, Section 406
Agency: Federal Emergency Management Agency

FEMA's Public Assistance Program, through Section 406 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act, provides funding to local governments following a Presidential Disaster Declaration for mitigation measures in conjunction with the repair of damaged public facilities and infrastructure. The mitigation measures must be related to eligible disaster related

damages and must directly reduce the potential for future, similar disaster damages to the eligible facility. These opportunities usually present themselves during the repair/replacement efforts.

Proposed projects must be approved by FEMA prior to funding. They will be evaluated for cost effectiveness, technical feasibility, and compliance with statutory, regulatory, and executive order requirements. In addition, the evaluation must ensure that the mitigation measures do not negatively impact a facility's operation or risk from another hazard.

Public facilities are operated by state and local governments, Indian tribes or authorized tribal organizations and include:

*Roads, bridges & culverts
*Draining & irrigation channels
*Schools, city halls & other buildings
*Water, power & sanitary systems
*Airports & parks

Private nonprofit organizations are groups that own or operate facilities that provide services otherwise performed by a government agency and include, but are not limited to the following:

*Universities and other schools
*Hospitals & clinics
*Volunteer fire & ambulance
*Power cooperatives & other utilities
*Custodial care & retirement facilities
*Museums & community centers

Title: SBA Disaster Assistance Program
Agency: US Small Business Administration

The SBA Disaster Assistance Program provides low-interest loans to businesses following a Presidential disaster declaration. The loans target businesses to repair or replace uninsured disaster damages to property owned by the business, including real estate, machinery and equipment, inventory, and supplies. Businesses of any size are eligible, along with non-profit organizations' SBA loans can be utilized by their recipients to incorporate mitigation techniques into the repair and restoration of their business.

Title: Community Development Block Grants
Agency: US Department of Housing and Urban Development

The community Development Block Grant (CDBG) program provides grants to local governments for community and economic development projects that primarily benefit low- and moderate-income people. The CDBG program also provides grants for post-disaster hazard mitigation and recovery following a Presidential disaster declaration. Funds can be used for activities such as acquisition, rehabilitation or reconstruction of damaged properties and facilities and for the redevelopment of disaster areas.

Local

Local governments depend upon local property taxes as their primary source of revenue. These taxes are typically used to finance services that must be available and delivered on a routine and regular basis to the public. If local budgets allow, these funds are used to match Federal or State grant programs when required for large-scale projects.

Non-Governmental

Another potential source of revenue for implementing local mitigation projects are monetary contributions from non-governmental organizations, such as private sector companies, churches, charities, community relief funds, the Red Cross, hospitals, Land Trusts, and other non-profit organizations.

CONTINUED PUBLIC PARTICIPATION/INVOLVEMENT

Requirement: 201.6(c)(4)(iii): *Is there discussion of how each community will continue public participation in the plan maintenance process?*

> ***D1-a.*** *The plan must describe how the participant(s) will continue to seek public participation after the plan has been approved and during the plan's implementation, monitoring, and evaluation.*

During interim periods between the five-year re-write, efforts will be continued to encourage and facilitate public involvement and input. The plan will be available for public view and comment at the Marshall County Emergency Management Office located at 911 Vander Horck St., Britton, SD and the NECOG office at 416 Production St. N. Ste #1 Aberdeen SD. Comments will always be received whether orally, written or by e-mail. All ongoing workshops and training courses will be open to the public and appropriately advertised. Ongoing press releases and interviews will help disseminate information to the public and encourage participation.

As implementation of the mitigation strategies continues in each local jurisdiction, the primary means of public involvement will be the jurisdiction's own public comment and hearing process. State law as it applies to municipalities and counties requires this as a minimum for many of the proposed implementation measures. Effort will be made to encourage cities, towns, and counties to go beyond the minimum required to receive public input and engage stakeholders.