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Region VIII
Denver Federal Center, Building 710
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FEMA

R8-MT

October 16, 2019

Union County Commissioners
209 E Main St # 200
Elk City, South Dakota 57025

Dear Union County Commissioners:

We are pleased to announce the approval of the Union County Pre-Disaster Hazard Mitigation Plan as meeting the requirements of the Stafford Act and Title 44 Code of Federal Regulations §201.6 for a local mitigation plan. This approval extends to Union County and the Cities of Alcester, Beresford, Elk Point, Jefferson, and North Sioux City.

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

This plan is approved through October 15, 2024. A local jurisdiction must revise its plan and resubmit it for approval within five years to continue to be eligible for mitigation project grant funding. We have provided recommendations for the next plan update on the enclosed Plan Review Tool.

We wish to thank the jurisdictions for participating in the planning process and commend your continued commitment to reducing future disaster losses. Please contact Jim Poppen, State Hazard Mitigation Officer, South Dakota Office of Emergency Management, at jim.poppen@state.sd.us or (605) 773-8095 with any questions on the plan approval or mitigation grant programs.

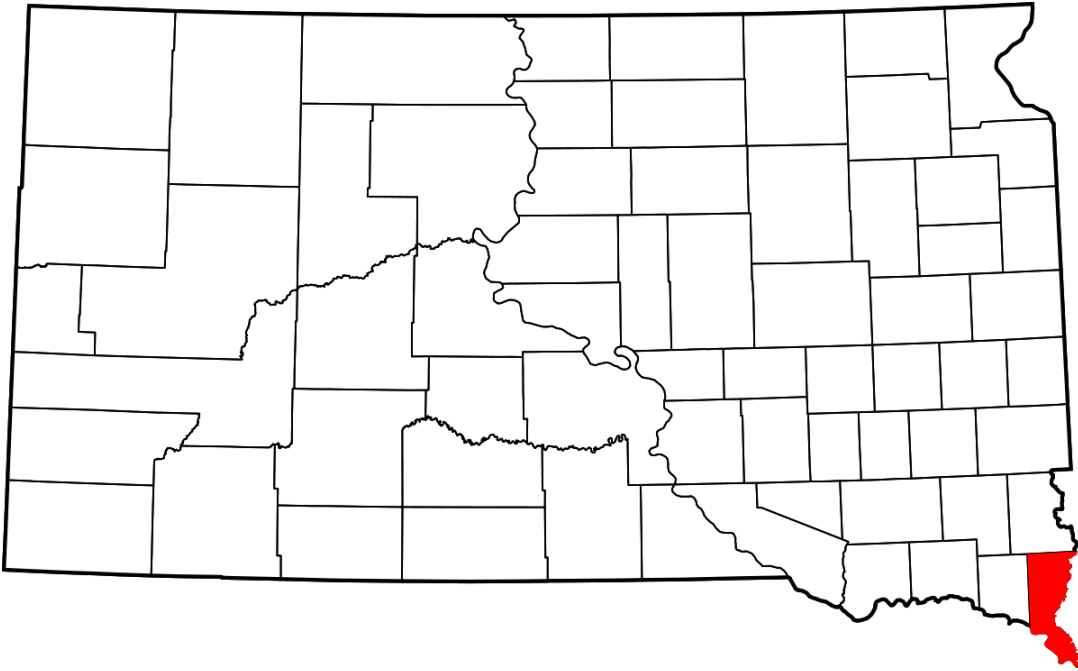
Sincerely,

A handwritten signature in blue ink that reads "Jeanine D. Petterson".

Jeanine D. Petterson
Mitigation Division Director

Enclosure

cc: Jim Poppen, State Hazard Mitigation Officer, South Dakota Office of Emergency Management



UNION COUNTY PRE-DISASTER HAZARD MITIGATION PLAN UPDATE 2019

Approved: October 16, 2019

PREPARED BY:
Union County
Emergency
Management

**Technical
Assistance
Provided By:**
South Eastern Council
of Governments

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Executive Summary

The Hazard Mitigation Plan for Union County, South Dakota is an update of the 2013 *Union County Pre-Disaster Mitigation Plan*. The purpose of this Mitigation Plan update is to ensure that Union County strategies to reduce risks to people and property from hazard events are relevant and effective. This plan is in compliance with the Federal Emergency Management Agency's (FEMA) latest Local Mitigation Planning Guidance of March 2013, and the requirements of the Disaster Mitigation Act of 2000. Through the development and adoption of this update, Union County, and the incorporated communities within are eligible for FEMA Hazard Mitigation Grant Programs.

Section 1: Introduction outlines the purpose and scope of the planning process. The Hazard Mitigation Plan Update for Union County is a multi-jurisdictional plan that includes all unincorporated areas of the counties as well as the cities of Alcester, Elk Point, Jefferson, and North Sioux City. The purpose of the plan is to help Union County anticipate, withstand, and recover from hazard events and in turn, reduce the risks to life and property associated with hazard events. The scope of the planning process was two-fold: to revise the 2013 plan in order to create a user-friendly document that addresses the current needs of the county, while at the same time meeting the requirements of the Disaster Mitigation Act of 2000.

Section 2: Planning Process discusses the process that was used to develop the Plan. All jurisdictions participated in the development of the Plan's update through representation on the Hazard Mitigation Planning Team. Throughout the planning process, all meetings were open to the public. In addition, public events were held to allow residents and other stakeholders to provide input into the Plan's updates.

Section 3: Risk Assessment identifies and profiles the hazard events that threaten Union County. This section provides a discussion of local assets and analyzes hazard events that have occurred since the 2013 Plan was adopted, describes the county's progress toward meeting the mitigation goals that were established in the 2013 Plan, and assesses each individual community's vulnerabilities.

Section 4: Mitigation Strategies details the mitigation goals, objectives, and action items that were developed through the plan update process. Five overall goals were established during the planning process:

- *Reduce injury and loss of life from hazards;*
- *Reduce damage to existing and future structures;*
- *Reduce the losses to critical facilities, utilities, and infrastructure from hazards;*
- *Reduce impacts to the economy, the environment, and cultural resources from hazards;*
- *Support and assist local mitigation capabilities and efforts.*

Section 5: Action Plan & Implementation sets forth the Hazard Mitigation Plan implementation process and establishes roles and responsibilities related to the update and maintenance of the Plan.

Section 6: Plan Adoption provides documentation of the formal adoption of the Plan by Union County and the participating jurisdictions.

The *Hazard Mitigation Plan Update for Union County* was developed by the Union County and Emergency Management Department with the technical assistance of the South Eastern Council of Governments.

Section One: Introduction

Union County is vulnerable to natural and manmade disasters that have the potential to impact the county infrastructure, the welfare of its residents, and the economy. Past disasters have inflicted costly damages upon Union County. While these disasters cannot be eliminated, with mitigation planning, the response and recovery from these events can be improved and adverse impacts to individuals, businesses, and communities can be reduced. Hazard mitigation is the effort to make communities more resilient, and better able to anticipate, withstand, and recover from hazard events.



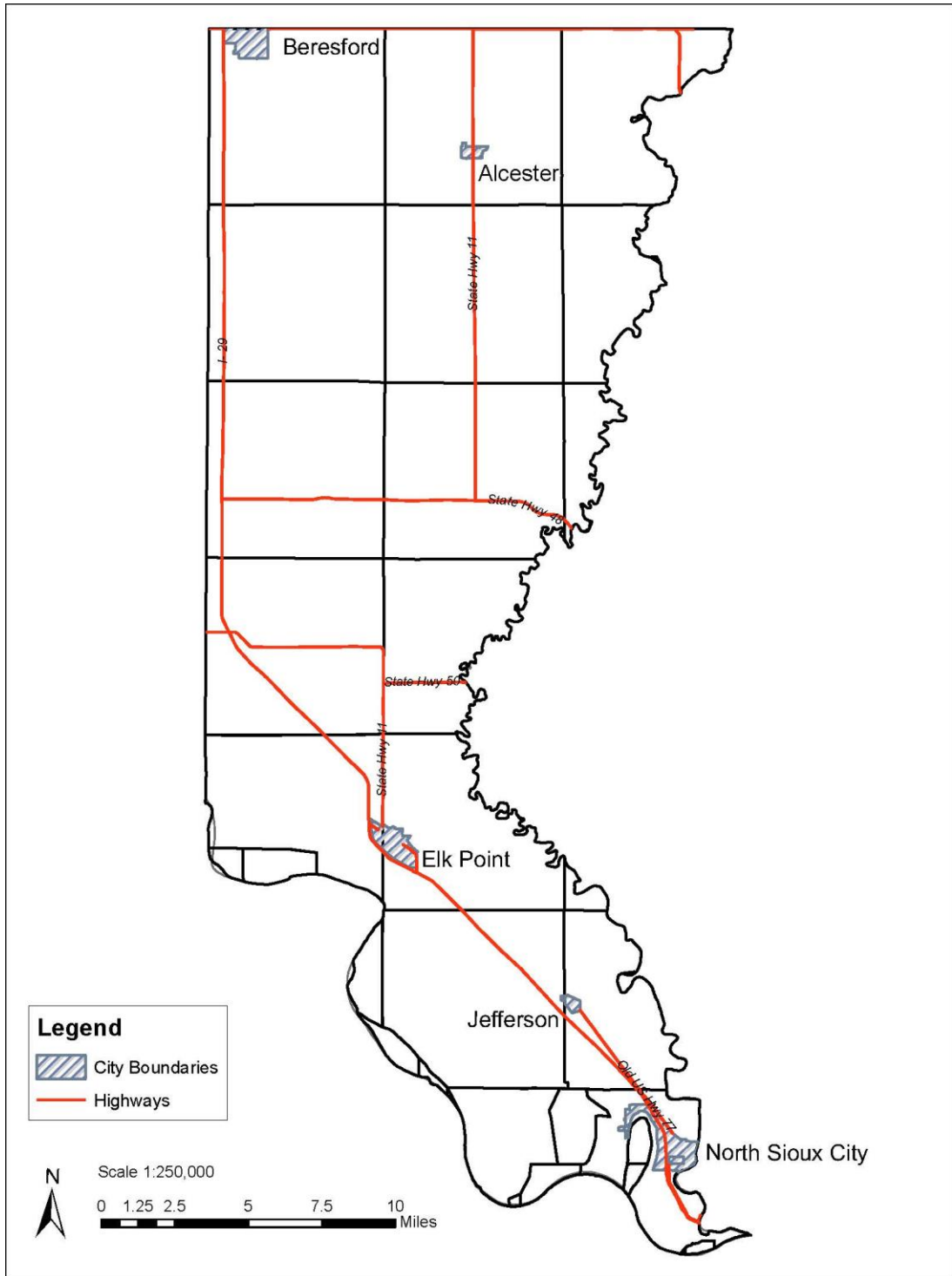
In order to be eligible for FEMA's Hazard Mitigation Assistance (HMA) grant programs, the Disaster Mitigation Act of 2000 (DMA 2000) requires that local governments have a FEMA-approved mitigation plan in place. In these plans, local jurisdictions must demonstrate that proposed mitigation projects assess the unique risks and capabilities of each community. They must be updated every five years to demonstrate that progress has been made toward meeting the community's mitigation goals and to ensure that the plan continues to be an effective mitigation tool.

The Union County Pre-Disaster Hazard Mitigation Plan is an update of the 2013 Pre-Disaster Mitigation Plan. This document details the planning process that was used to update the Plan; considers changes in the built environment and population of the county and its communities since 2013; examines the

communities progress toward meeting the mitigation goals set in the previous Plan; re-evaluates hazard threats; and establishes new mitigation goals that will lead to more resilient communities.

The Union County Pre-Disaster Hazard Mitigation Plan Update is a multi-jurisdictional plan that includes the unincorporated areas of Union County and the cities of:

Alcester
Beresford
Elk Point
Jefferson
North Sioux City



The plan provides goals, objectives and mitigation activities developed by the Mitigation Planning Team that will guide the County’s disaster mitigation efforts over the next five years.

SECTION TWO: PLANNING PROCESS



A diverse group of emergency management professionals, local officials, and citizens participated in the hazard mitigation planning process. In August 2018, the Emergency Management Director from Union County invited community members and local and regional agency representatives to be part of the Mitigation Planning Team. In addition, a request was made to each participating city to appoint a specific person to represent their jurisdiction on the Mitigation Planning Team.

Members of the Mitigation Planning Team were tasked with participating in the planning meetings, providing information and documents used to update the Plan, proposing mitigation actions, and reviewing the draft as it was assembled. The target was to include representation from a diverse section of hazard mitigation stakeholders. Individuals from the following groups were invited to participate on the planning team:

- Union County (commissioners, planning/zoning staff, floodplain administrator, etc.)
- Municipalities within the counties (Mayors, city council members, finance officers, public works staff, etc.)
- Utility providers, including MidAmerican Energy, Union County Electric Co-op, South Lincoln Rural Water System, and Vermillion Basin Water Development District.
- Other entities including engineering firms, local hospitals, clinics, and care and rehabilitation centers with an interest in hazard mitigation.
- Townships
- Emergency Managers from surrounding counties

Table 2.1 Lists the planning team members, including their attendance at the planning meetings that were held as the plan was being developed.

HAZARD MITIGATION PLANNING TEAM REPRESENTATIVES							
NAME	REPRESENTING	POSITION	MEETING ATTENDANCE				
			9/12/18	10/10/18	11/14/18	12/12/18	04/25/19
Patty Brooks	SECOG	Planner	X	X	X		
Jim Feeney	SECOG	Planner II			X		
Leslie Mastroianni	SECOG	Planner I				X	
Trevor Job	Elk Point	Public Works	X	X			
Joe Bogenreif	Jefferson	Mayor	X				
Gary Schaeffer	Jefferson	City Council	X				
Ted Cherry	North Sioux City	Administrator	X	X			X
Richard Headid	North Sioux City	Police Chief	X	X			
Andy Minihan	Union County	Emergency Manager	X	X	X	X	X
Jerry Buum	Union County	Highway Department	X	X		X	X
Dan Clow	MidAmerican	Representative	X				
Mark Fickbohm	Alcester Township	Representative	X				
George Young	Prairie Township	Representative	X				
Linda Scarmon	Spink Township	Representative	X		X	X	X
Chris Hansen	Alcester Care/Rehab	Representative	X				
Anna Faulk	Civil Bend Township	Representative	X				
Jim Poppen	State of SD	Hazard Mitigation Officer	X				
Amanda Abraham	Ward One	Representative	X	X			
Geoff Fillingsness	Union County	Building Officer	X				
Michael Nebelsick	McLaury Engineers	McLaury Engineering	X				
Diane Schreur	Horizon Healthcare	Representative	X	X			
Tracy Schurdevin	Horizon Healthcare	Representative	X	X			
Randy Crum	Jefferson	Police Department	X	X	X		
Dennis Henze	Union County	Planning Director	X				
Derek Tuttle	Elk Point	City Administrator	X	X	X		
Michael Dailey	Union County	Commissioner	X	X	X	X	X
Arlyn Riter	MidAmerican	Representative	X				
Tim Hogan	North Sioux City	Public Works Dir.	X		X	X	
Lillian Hagen	Civil Bend Township	Representative		X			
Molly Lockhorst	City of Jefferson	Representative		X			
Tony Roark	City of Jefferson	Representative		X			
Liz Merrigan	Spink Township	Representative		X			
Dustin Sharkey	North Sioux City	Police Department		X			
Kim McLaury	Elk Point	McLaury Engineering		X			
David Fullenkamp	Civil Bend Township	Representative			X		
Allan Hagen	Civil Bend Township	Representative			X	X	
Michaeleen Roark	City of Jefferson	City Finance Officer			X	X	
Jerry Zeimetz	City of Beresford	City Administrator				X	X
Pat Jurrens	City of Alcester	Finance Officer					X

Table 2-1

In addition to the participating entities, invitations were sent to JEO Consulting Group, Sanford Health Beresford Clinic, Alcester Community Health Center, Elk Point Community Health Center, Dunes Surgical Center, Midlands Clinic, Alcester Care and Rehab Center, Prairie Estates Care Center, MidAmerican Energy, Southeastern Electric Cooperative, McLaury Engineering, Banner Associates, Stockwell Engineers.

All the organized cities in Union County actively participated in the planning team meetings, including the Census Designated Community of Dakota Dunes Community Improvement District, Beresford and the townships of Civil Bend, Spink, Prairie and Alcester.

Public notices of the planning sessions were sent to the following newspapers:

- *Alcester Union*
- *Beresford Republic*
- *Elk Point Record*
- *Dakota Dunes North Sioux City Times*

Meeting 1

The initial Mitigation Planning Team (“Team”) meeting was held September 12, 2018. At this meeting, the group was introduced to the hazard mitigation planning process and the purpose of the plan update. Important definitions (hazard mitigation and climate change) were presented along with examples of possible mitigation projects.

The Team was provided with the 2013 PDM Plan for Union County as a reference. If their community set action steps as part of the 2013 Plan, they were asked to provide an update to those action steps by the next meeting. Team members were tasked with rating potential hazards in their community in order from one to ten, and to provide examples of the top three hazards. Representatives were encouraged to update the leaders in their respective jurisdictions and initiate dialogue regarding hazards in the community.

Meeting leaders reiterated the importance of engaged involvement in the update process and stressed the desire to include a diverse representation of stakeholders in the county.

Meeting 2

The second Team meeting was held October 10, 2018. At this meeting, discussions focused on the locations and values of critical infrastructure. The Team, as a group, identified the probability of hazards occurring in the area and the vulnerability of persons and property associated with the hazards. The team discussed the associated impacts of those hazards with a high probability of occurrence and determined areas of impact. The Team was asked to identify the mitigation activities that have been accomplished since the previous plan was adopted.

Meeting 3

The third Team meeting was held November 14, 2018. The Team reviewed the five Goals and Objectives as presented in the State of South Dakota Hazard Mitigation Plan. The Team elected to adopt the State of South Dakota's hazard mitigation goals and objectives. The team developed hazard problem statements. As a group, discussion and comparison was made between the problem statements and the adopted goals and objectives.

Meeting 4

The fourth meeting was held December 12, 2018. Team discussion revolved around specific mitigation projects, how to determine cost, established a timeframe for completion, resources to assist in project completion, and project prioritization.

The Team also discussed the effect of the proposed mitigation projects on hazards and how each project would meet the Plan's goals and objectives.

Meeting 5

The final team meeting was held on Thursday, April 25, 2019. The Team reviewed the final draft of the 2018 Union County Pre-Disaster Hazard Mitigation Update and provided comments.

Public Forum

The final draft was presented to the residents of Union County at a public forum held on April 25, 2019 at the Union County Courthouse in Elk Point. There was one community member representing the public in attendance, but no comments were received.

COORDINATION WITH OTHER PLANS

During the Plan update process, existing planning documents were referenced to ensure that new plan goals aligned with other established plans and processes within the County. The County's Comprehensive Plans were reviewed and evaluated to ensure each of the Comprehensive Plan's goals and objectives were comparative with the Union County Pre-Disaster Mitigation Plan Update. The current State of *South Dakota Hazard Mitigation Plan* provided a foundation to assess hazard vulnerability for Union County.

Jurisdiction Plans

Union County Comprehensive Plan (2005)

Alcester Comprehensive Plan (April 2011)

Beresford Comprehensive Plan (August 2018)

Elk Point Comprehensive Plan (April 2013)

Jefferson Comprehensive Plan (April 2008)

North Sioux City Comprehensive Plan (November 2017)

SECTION THREE: RISK ASSESSMENT



A step-by-step approach was utilized to identify potential hazard risk for Union County. Hazard risk is influenced by a community's assets – things like population and development characteristics, public facilities and infrastructure, the natural environment, and the local economy – and how those assets relate to hazard threats. This section will describe the multi-jurisdictional assets, profile hazards, and detail progress that has been made on previous mitigation goals.

Numerous resources were used to complete this risk assessment for Union County. The State of South Dakota Hazard Mitigation Plan was a major source of information on potential hazard risks. In addition, hazard histories were obtained from several sources, including the National Climate Data Center, National Weather Service, US Department of Agriculture, and the United States Geological Survey. The Mitigation Planning Team helped identify and describe Union County assets.

The Mitigation Planning Team reviewed a variety of potential hazards and assessed their potential impacts on Union County. The list of potential hazards was narrowed down to focus on those that have the most significant impact on the area and where potential pre-disaster mitigation activities would result in the most substantial benefit.

COMMUNITY ASSETS

UNION COUNTY

PEOPLE

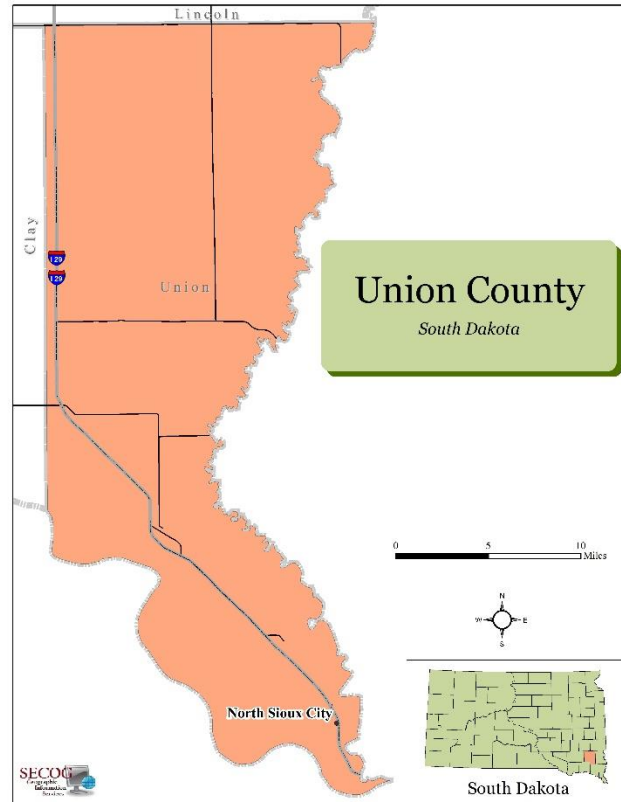
Union County is part of the Sioux City Metropolitan Statistical Area (MSA). The county has seen a slight increase in population over the last several years; the 2010 US Census indicated a population of 14,399 residents. The 2013-2017 American Community Survey 5-year estimates an increase in population to 14,929. There are 6,846 housing units in Union County with an owner-occupied housing rate of 73.2 percent. In comparison, the State of South Dakota's owner-occupied housing rate is 67.9 percent.

The median household income in Union County of \$65,434 trended higher than the \$54,126 median household income for the State of South Dakota (US Census Bureau, 2013-2017 American Community Survey 5-year estimates). Current American Community Survey data states an estimated 7.3 percent of Union County individuals live below the poverty level.

Males in Union County have an average income that is 1.31 times higher than the average income of females, which is \$46,903. The income inequality of Union County measured using the Gini Index is 0.456, which is lower than the national average. Households in Union county have a higher median income than median household income for the United States.

The median age in Union County was 41.1 years in 2017. The median age has been slowly increasing. Services and facilities for vulnerable populations in the county are located in the urban areas. There are no formal senior housing or assisted living facilities located outside the urban areas. Additionally, there are no organized child care centers located in the rural areas of the county.

Vulnerable populations have special needs during times of disaster. In the context of emergencies, vulnerable groups may include individuals with disabilities, very young children,



and the elderly. One measure of the strength of a community’s response and recovery system is its attentiveness to its most vulnerable citizens—children, the frail elderly, the disabled, and the impoverished and disenfranchised.

The following table provides insight into the populations who may face difficulty with evacuations, understanding emergency communications, or may need access to specialized medical equipment and medications.

	PERCENT WITH A DISABILITY	PERCENT UNDER 5 YEARS OLD	PERCENT 65 YEARS AND OVER
United States	22.5%	6.1%	15.6%
South Dakota	18.6%	7.1%	16.3%
Union County	7.4%	5.7%	18.1%

Table 3-1: US Census Bureau, 2013-2017 American Community Survey 5-year estimates

The South Dakota Department of Social Services lists sixteen child care providers in Union County. However, this count does not include many of the in-home child care providers. Nursing homes, assisted living facilities, and housing reserved for senior citizens are easily identified during disaster response. Seniors or persons with a disability not in an identified facility are more vulnerable to hazards.

ECONOMY

The economy of Union County, South Dakota, employs 7,729 people. The largest industries in Union County are Manufacturing with 1,502 employees, Healthcare and Social Assistance with 1,070 employees, and Finance and Insurance with 813 employees. The highest paying industries are Utilities at an annual salary of \$44,931, Finance and Insurance at \$43,417 and Professional Scientific and Technical Services at \$37,788. Union County, the 9th fastest growing of 4000 counties in the United States in terms of family income.

Table 3-2: US Census Bureau, MHI from 2013-2017 American Community Survey 5-year estimates, LMI from 2011-2015 American Community Survey 5-year estimates.

The geography of the Union County region is mostly rural and generally devoted to farm land. Of the total land in farms, 90% is used for crops, 6% is used for pastureland and 4% is for other

Entity	Median Household Income	% of Families Low to Moderate Income
Union County	\$65,434	24.47%
Alcester	\$43,711	51.25%
Beresford	\$58,958	28.05%
Jefferson	\$54,583	24.35%
Dakota Dunes CDP	\$98,787	12.46%
Elk Point	\$54,531	37.22%
North Sioux City	\$52,417	29.67%

uses. There are 527 farms within Union County with an average farm size of 547 acres. A total of 288,491 acres of land in Union County is designated as farm land.

Built Environment

The Federal Emergency Management Agency (FEMA) describes critical facilities as “structures and institutions necessary for a community’s response to and recovery from emergencies.” During the planning process, the Mitigation Planning Team was asked to help identify critical facilities within Union County. Typical critical facilities include hospitals, fire stations, police stations, and storage of critical records. The maps in Appendix A provide an overview of the critical facilities identified by the Team.

The Union County region’s main transportation routes include county highways, bituminous roads, concrete roads, gravel roads, and non-state county bituminous roads. Interstate 29 borders the county line on the northwest side and runs through the south half of the county towards North Sioux City. The eastern county line boundary is the Big Sioux River, which is also the boundary between Iowa and South Dakota. The following South Dakota Highways run through Union County: SD Highway 11, SD Highway 19, SD Highway 46, SD Highway 48, SD Highway 50, and SD Highway 105.

The region is served by two railroad lines. These rail lines are the Burlington Northern/Santa Fe and a South Dakota owned, DAIR operated line. The area’s main airports Joe Foss Field Sioux Falls Regional Airport, serving the Sioux Falls area as well as communities throughout eastern South Dakota, southwestern Minnesota, and northwestern Iowa. Joe Foss Field is classified as a primary commercial service airport. Union County residents also have access to the Sioux Gateway Airport in Sioux City, Iowa. An additional airport includes Graham Field Airport, which is a privately-owned public-use airport located near North Sioux City.

Union County has two rural water systems. Clay Rural Water provides rural water to the south and west parts of the county. South Lincoln Rural Water System provides water to the northeast part of the county. Electric power in the region is provided through Clay-Union Electric Cooperative, Southeastern Electric Cooperative, MidAmerican Energy, and Union County Electric Cooperative. The main phone and internet companies serving the region are Long Lines, CenturyLink, Cable One, and Vast.

Union County residents spend an average of 19 minutes of their day driving to and from work.

Additionally, 0.97% of the workforce in Union County have “super commutes” in excess of 90 minutes per day.

Data USA

Access to healthcare in Union County often requires travel to neighboring towns, especially for specialty care. The area also benefits from two Regional Trauma Hospitals: Avera McKennan Hospital and University Health Center and Sanford USD Medical Center in Sioux Falls, SD. Some communities in Union County are also within close proximity to Mercy Medical and UnityPoint Health St. Luke’s in Sioux City, IA.

The Union County jurisdictions have fire and rescue departments providing emergency services, fire response, and hazardous materials response.

Beresford Fire and Ambulance
 North Sioux City Fire and Ambulance
 Elk Point Fire and Ambulance
 Alcester Fire and Ambulance
 Jefferson Fire and Ambulance

Table 3-3: Fire and Rescue

Union County is the 13th most populous county in the State of South Dakota. Population density in the non-rural areas has an impact on housing, a community’s infrastructure, access to resources, and public safety. Population density may also influence the impact of hazard mitigation activities and the cost-benefit relationship of mitigation activities.

JURISDICTION	AREA IN SQUARE MILES	WATER AREA IN SQUARE MILES	LAND AREA IN SQUARE MILES	POPULATION DENSITY PER SQUARE MILE OF LAND AREA
Union County	467.13	6.59	460.54	31.3
Alcester	.33	0.00	.33	2438.8
Beresford *	1.78	0.00	1.78	1123.7
North Sioux City	2.29	.03	2.26	1119.3
Jefferson	.50	0.00	.50	1086.6
Elk Point	1.36	0.00	1.36	1443.2
Dakota Dunes	2.87	.43	2.44	1042.6

Source: US Census Bureau, 2010 Census, American Fact Finder

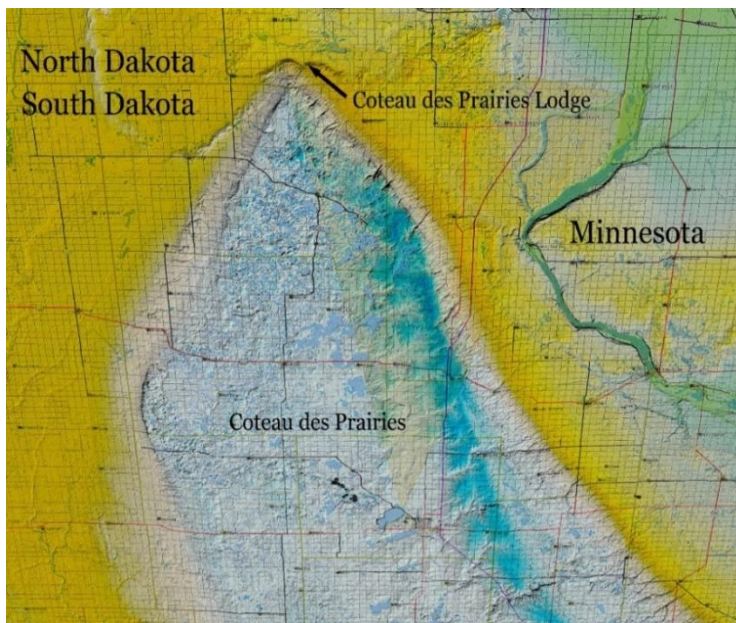
Table 3-4: Population Density

Union County has multiple housing developments outside of incorporated areas with assets worth mentioning. The Big Sioux Township encompasses the area outside of the incorporated areas of North Sioux City, McCook Lake and Dakota Dunes. The Big Sioux Township assists the unincorporated areas with road maintenance and the equalization process. Some of the neighborhoods completely or partially within the Big Sioux Township are Deer Run, Sandy Meade and Riv-R-Land Estates. There are approximately 150 homes within the neighborhoods that comprise the Big Sioux Township. More than 20 homes in Riv-R-Land Estates are located within the floodplain.

The largest of the unincorporated areas of Union County is Dakota Dunes, South Dakota. Dakota Dunes is a CDP adjacent to North Sioux City located in between the Big Sioux River and the Missouri River. The 2013-2017 American Community Survey estimates the population of Dakota Dunes is 2,950 residents, which is an increase from the 2,540 residents counted in the 2010 Census. The five primary neighborhoods in Dakota Dunes include the Country Club Estates, the Meadows, the Prairie, the Willows, and Upscale Apartment Living. Dakota Dunes has a high risk of flooding because the community is within proximity to both the Big Sioux River and the Missouri River.

Natural Environment

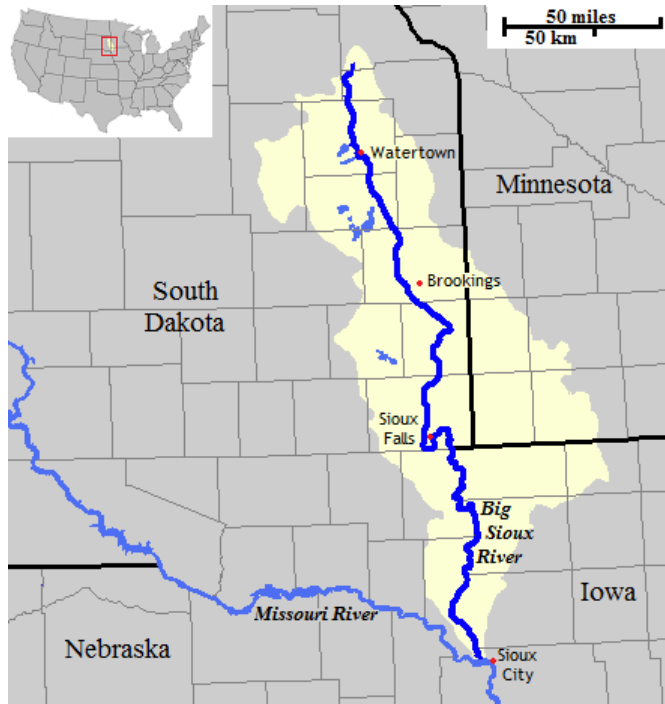
While agriculture takes a front seat in Union County's rural economy, not all land is dedicated to farming. There are three identified lakes in Union County. Horseshoe Lake is north and east of Jefferson, South Dakota. McCook Lake is located west and slightly north of North Sioux City and is adjacent to the Adams Homestead and Native Preserve. Mud Lake, classified as a swamp, is located within the Adams Homestead and Native Preserve. The former Stephen Searls Adams homestead property dates back to 1872 and covers 1500 acres along the Missouri River. The property was donated to the state in 1984 and the park was established in 1997. The park is open for year-round recreation including hiking and cross-country skiing.



Union County is partially located within the Big Sioux River Basin. The Basin is formed within a topographic feature known as the Coteau de Prairies. The Coteau has what is known as a flatiron shape lying in a general northwest to southeast direction. It is about 200 miles long and 80 miles wide at the widest point. The northern part of the Coteau de Prairies has geologically developed features of potholes, sloughs, and lakes.

Figure 3-1: Topography of the Coteau des Prairies

Figure 3-2: Big Sioux River Watershed



During periods of low precipitation, these features tend to hold back water and do not contribute to the drainage of the Big Sioux River. Conversely, during wet years, this area can accumulate enough moisture to greatly increase the water supply to the drainage basin. These wet years pose a higher risk for flood hazards in Union County.

In general, most soil in the region is fertile with adequate rainfall to meet agricultural production needs. In terms of precipitation, the average annual rainfall in Union County is 22.2 inches and falls during the warm summer months. Snowfall occurs mostly in light to moderate amounts during the winter, and the annual average is 38 inches. The climate of the region is considered a

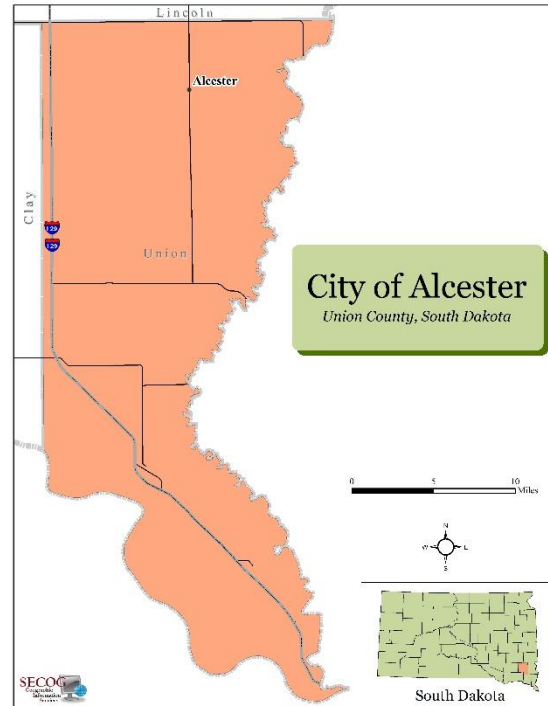
humid continental climate which is characterized by hot, relatively humid summers and cold, drier winters.

ALCESTER

People

Alcester is located in the north central part of the county and it is part of the Sioux City Metropolitan Statistical Area (MSA). There were 807 residents counted during the 2010 US Census, and 880 residents in 2000. There are 477 housing units in Alcester with an owner-occupied housing rate of 69.1 percent.

Median household income in Alcester was an estimated \$43,711 according to the 2013-2017 American Community Survey 5-year estimates. The median household income in Alcester is less than the median household income of Union County. This trend continues with the number of residents living in poverty. The estimated 10 percent of residents living in poverty is higher than the 7.3 percent rate of Union County.



Economy

The greatest economic drivers in Alcester are manufacturing, education and healthcare. With over 100 employees, Alcester's largest employer is Alkota Cleaning Systems, which manufactures power cleaners. The second largest employer is Custom Coils Manufacturing, which manufactures custom magnetic components.

The Alcester-Hudson School District is the city's third largest employer with over 75 staff and faculty. The local economy also has a mix of small business such as car repair, insurance, tax accounting, shops, restaurants, and salons.

Built Environment

There is one primary highway that serves Alcester. South Dakota Highway 11 is a 77-mile stretch of roadway that passes through Alcester as it spans the area between Richland and Elk Point, South Dakota. County Road 13 provides access to Interstate 29 to the west of Alcester and continues east of Alcester to Hawarden, Iowa. Alcester has a rail line that skirts the south edge of the city. This rail line is South Dakota owned and operated by DAIR.

The City of Alcester owns and operates their own wastewater plant. The Alcester wastewater facility is built for a larger capacity than currently needed, so the three existing dry beds do not need to be pumped out. The City of Alcester purchases water from South Lincoln Rural Water. Access to electricity is provided by MidAmerican Energy and the Southeastern Electric Cooperative. Natural gas is also provided by MidAmerican Energy.

Fire protection and ambulance services are provided by the Alcester Fire Department and Alcester Ambulance, respectively. The Alcester Fire Department is a volunteer organization that fights local fires and meets the first and third Mondays of each month at the fire station. The Alcester Ambulance is a volunteer organization that provides ambulance services in Alcester and meets the second Monday of each month in the ambulance building.

Access to healthcare in Alcester often requires travel to neighboring towns, especially for specialty care. Within Alcester, medical services are provided by Alcester Community Health Center. The area also benefits from two Regional Trauma Hospitals: Avera McKennan Hospital and University Health Center and Sanford USD Medical Center in Sioux Falls, SD. Dental services are also available in Alcester.

Alcester has a small commercial district, along E 2nd Street. This area is anchored by the Alcester City Office. Other businesses in this area include banks, shops, restaurants, and other service providers.

Natural Environment

Alcester covers approximately .33 square miles of land and has no water area. The topography of Alcester is indicative of the Great Plains. Consequently, during times of heavy rainfall when the ground is saturated, the water doesn't drain well and pools in roadways and yards.

Located on Highway 11, The Herbert Anderson Memorial Park has two park shelters, a swimming pool, horseshoe pit, baseball field, two camping pads, and restrooms.

Population density in the non-rural areas has an impact on housing, a community's infrastructure, access to resources, and public safety. Population density may also have an impact on hazard mitigation activities and the cost-benefit relationship of mitigation activities. In Alcester –

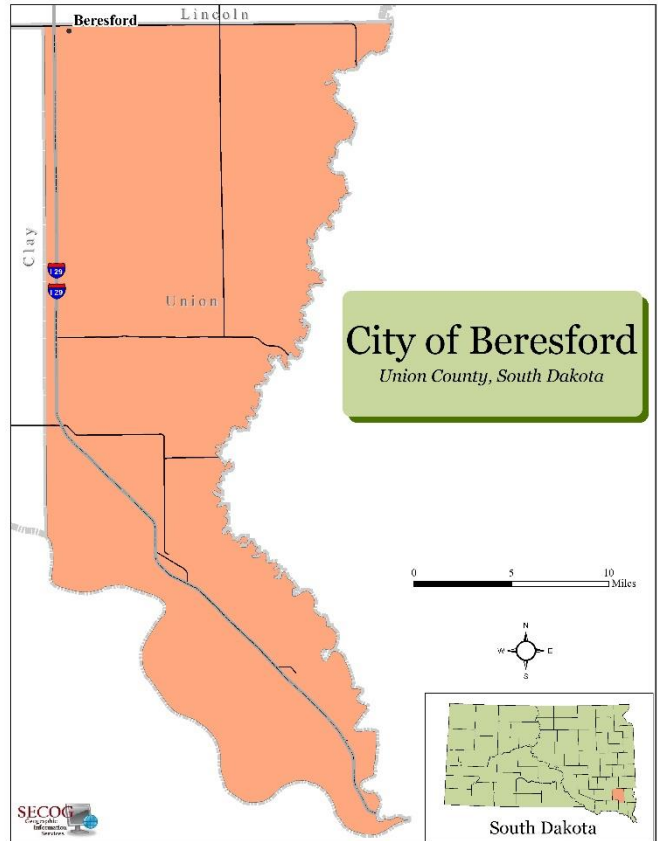
Area in Square Miles	.33
Water Area in Square Miles	0.00
Land Area in Square Miles	.33
Population Density per Square Mile of Land Area	2,445.5

BERESFORD

People

Beresford is located on the border of Lincoln and Union Counties. Lincoln County is part of the Sioux Falls Metropolitan Statistical Area (MSA), while Union County is part of the Sioux City MSA. According to the 2013-2017 American Community Survey, Beresford's population was 2,212. This is an increase from the 2,005 residents counted during the 2010 US Census, which was very close to 2,006 residents counted in 2000. There are 1,020 housing units in Beresford with an owner-occupied housing rate of 66.6 percent.

Median household income in Beresford was an estimated \$58,958 according to the 2013-2017 American Community Survey 5-year estimates. The median household income in Beresford is less than the median household income of Union County. This trend changes with the number of residents living in poverty. The estimated 4.5 percent of residents living in poverty is sharply lower than the 7.3 percent rate of McCook County.



Economy

Beresford is located on the border of Lincoln and Union Counties. Lincoln County is part of the Sioux Falls Metropolitan Statistical Area (MSA), while Union County is part of the Sioux City MSA. Beresford residents have job opportunities available locally, as well as multiple options for commuters, in Sioux Falls, Vermillion, and Sioux City. The largest industries in Beresford include healthcare, manufacturing, and education.

The largest employers in Beresford include Bethesda Nursing Home, Quality Park Products, Beresford School District, City of Beresford, Fiesta Foods, Sioux Steam Cleaners, First Savings Bank, Pedersen Machines, and Farmers Elevator. The local economy also has a mix of small business such as car repair, insurance, tax accounting, restaurants, shops, salons and other services.

Built Environment

Beresford is located at the intersection of Interstate 29 and South Dakota Highway 46. South Dakota Highway 46 is a 107-mile stretch of roadway that runs west to east. Beresford's specific location on Interstate 29 allows for residents to commute to multiple nearby communities such as Sioux Falls, Sioux City, and Vermillion. A South Dakota owned, DAIR operated rail line passes through the northeastern part of Beresford. The rail line ends in Beresford.

Water for the City of Beresford is provided under contract by the Lewis and Clark Regional Water System. The City also has three private wells that could be utilized, if necessary. The city is served by a single 300,000-gallon water tower. Beresford's wastewater treatment facility consists of a three-cell stabilization pond system and is located on the north side of the city. The City of Beresford provides its own municipal electric service. The system can handle the current needs of the City of Beresford, but there are plans to eventually build a second substation on the east side of the city. Natural gas is provided in Beresford by MidAmerican Energy.

Fire protection is provided by the City of Beresford Volunteer Fire Department. The City of Beresford currently has 2 pumpers, 1 brush truck, 2 water tankers, 1 rescue truck and a pump and ladder truck. The Department responds to over 100 emergencies each year. Ambulance services are provided by the Beresford Ambulance. The Beresford Ambulance is a volunteer organization of over 20 EMT's who responds to accidents, emergencies, and other related medical emergencies.

Access to healthcare in Beresford often requires travel to neighboring towns, especially for specialty care. Within Beresford, medical services are provided by the Sanford Health Beresford Clinic. The area also benefits from two Regional Trauma Hospitals: Avera McKennan Hospital and University Health Center and Sanford USD Medical Center in Sioux Falls, SD. Dental services and an assisted living facility are also available in Beresford.

Beresford has a small commercial district, along W 3rd Street. Businesses and organizations in this area include the Post Office, City Hall, banks, shops, restaurants, and other services.

Beresford is home to the Bright Beginnings Children's Day Care Center. There are also home day care providers to supplement child care needs.

Natural Environment

Beresford covers approximately 1.78 square miles of land and has no water area. The topography of Beresford is indicative of the Great Plains. Consequently, during times of heavy rainfall when the ground is saturated, the water doesn't drain well and pools in roadways and yards.

The City has a community park called Bulow Park, which offers playgrounds, picnic areas, gardens, a swimming pool, baseball fields, tennis courts, and horseshoeing area. The Union Grove State Park is 12 miles directly south of Beresford.

Population density in the non-rural areas has an impact on housing, a community's infrastructure, access to resources, and public safety. Population density may also have an impact on hazard mitigation activities and the cost-benefit relationship of mitigation activities. In Beresford –

Area in Square Miles	1.78
Water Area in Square Miles	0.00
Land Area in Square Miles	1.78
Population Density per Square Mile of Land Area	1,126.4

ELK POINT

People

Elk Point is located in the southcentral part of the county. According to the 2013-2017 American Community Survey, Elk Point's population was 2,231. This is an increase from the 1,963 residents counted during the 2010 US Census and the 1,714 residents in 2000. There are 972 housing units in Elk Point with an owner-occupied housing rate of 75.7 percent.

Median household income in Elk Point was estimated at \$54,531 according to the 2013-2017 American Community Survey 5-year estimates. The median household income in Elk Point is less than the median household income of Union County. The estimated 7.6 percent of residents living in poverty is slightly higher than the 7.3 percent rate of Union County.

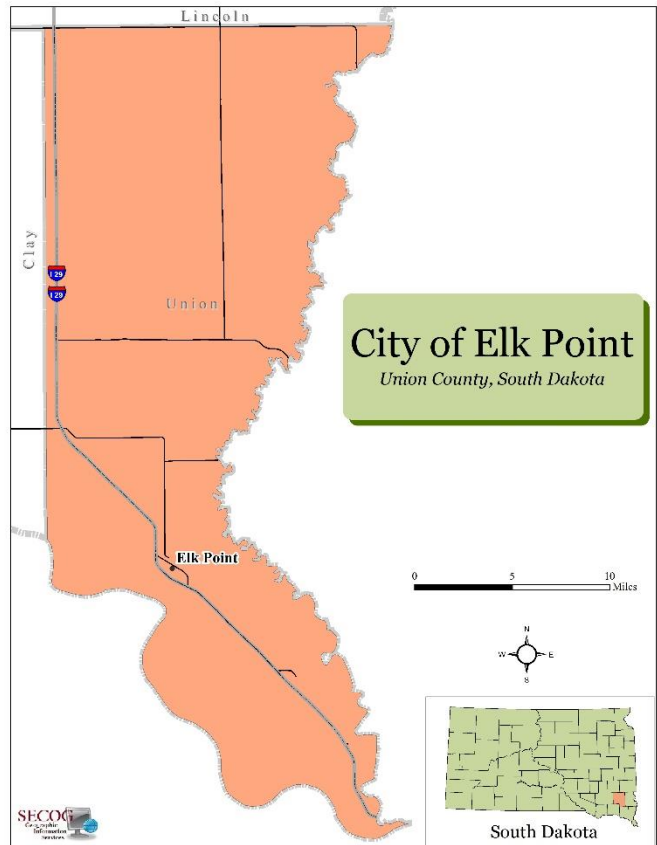
Economy

The City of Elk Point is part of the Sioux City Metropolitan Statistical Area (MSA). Elk Point is the County Seat of Union County, the 9th fastest growing of 4000 counties in the United States in terms of family income. Elk Point's location on Interstate 29 in southeastern South Dakota is especially favorable to resident businesses. The city benefits from two I-29 exits and is on a railway hub with service in three directions.

Elk Point residents have job opportunities available locally, as well as multiple options for commuting to Sioux City, Vermillion, and Sioux Falls. The largest industries in Elk Point include manufacturing, education, and retail. The local economy has a mixture of shops, restaurants, industry, medical facilities, offices, and other service providers.

Built Environment

Elk Point is located on Interstate 29 and benefits from two Interstate 29 exits. The city is also located on a railway hub with service in three directions. The railway lines that converge in Elk



Point include the Burlington Norther/Santa Fe and South Dakota owned, DAIR operated line. Heavy truck traffic travels through Elk Point via Dakota Highway 11 and Union County Road 1B, which are connected by Rose Street.

The City of Elk Point provides water, wastewater, garbage, rubble site, and electric. In the rural areas nearby utility services are provided by Union County Electric, Clay County Rural Water Systems, and MidAmerican Energy.

Fire protection services are provided by the Elk Point Volunteer Fire Department. Ambulance services are provided by the Elk Point Ambulance Service.

Access to healthcare in Elk Point often requires travel to neighboring towns, especially for specialty care. Elk Point Community Health Center offers primary health care to the residents of Elk Point. The area also benefits from two Regional Trauma Hospitals: Avera McKennan Hospital and University Health Center and Sanford USD Medical Center in Sioux Falls, SD. Elk Point is also within close proximity to Mercy Medical and UnityPoint Health St. Luke's in Sioux City, IA.

Elk Point has a small commercial, or downtown, district, along Main Street. Businesses and organizations located in this area include the Fire Department, United States Post Office, grocery store, restaurants, banks, offices, and other service providers.

Elk Point is home to Elk Point Daycare and Early Learning. There are also home day care providers to supplement child care needs.

Natural Environment

Elk Point covers approximately 1.36 square miles of land and has no water area. The topography of Elk Point is indicative of the Great Plains. Consequently, during times of heavy rainfall when the ground is saturated, the water doesn't drain well and pools in roadways and yards.

The City of Elk Point has park area with firepits, picnic areas, a volleyball court, a swimming pool, campground, and baseball field.

Population density in the non-rural areas has an impact on housing, a community's infrastructure, access to resources, and public safety. Population density may also have an impact on hazard mitigation activities and the cost-benefit relationship of mitigation activities. In Elk Point –

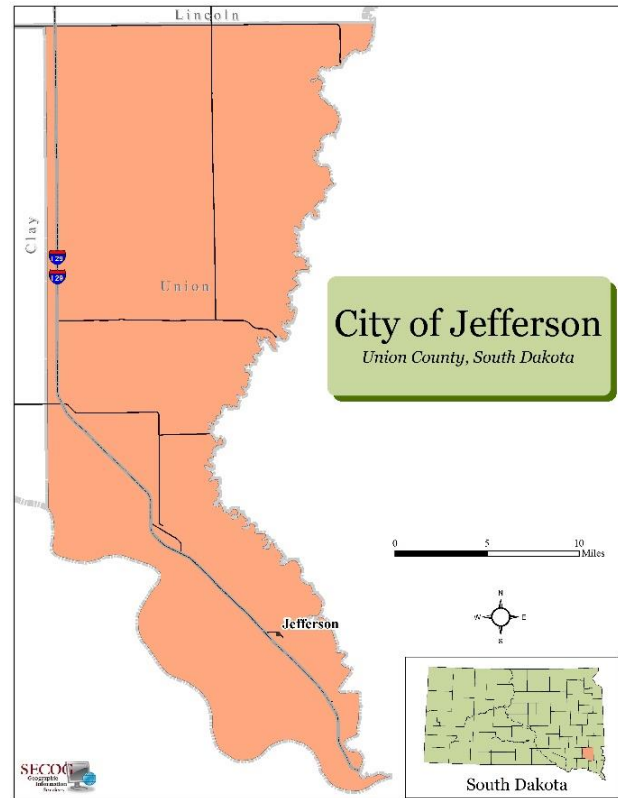
Area in Square Miles	1.36
Water Area in Square Miles	0.00
Land Area in Square Miles	1.36
Population Density per Square Mile of Land Area	1,443.4

JEFFERSON

People

Jefferson is located in the southeast corner of the county. According to the 2013-2017 American Community Survey, Jefferson's population was 622. This is an increase from the 547 residents counted during the 2010 US Census and the 586 residents in 2000. There are 274 housing units in Jefferson with an owner-occupied housing rate of 86.5 percent.

Median household income in Jefferson was an estimated \$54,583 according to the 2013-2017 American Community Survey 5-year estimates. The median household income in Jefferson is less than the median household income of Union County. This trend changes with the number of residents living in poverty. The estimated 5.8 percent of residents living in poverty is lower than the 7.3 percent rate of Union County.



Economy

The City of Jefferson is part of the Sioux City Metropolitan Statistical Area (MSA). Jefferson residents have few job opportunities available locally, but multiple options for commuting to Sioux City and Vermillion with convenient access to Interstate 29. The largest industries in Jefferson include manufacturing, education, and retail. Few services are available locally.

Built Environment

Jefferson is located adjacent to Interstate 29, which provides Jefferson with access to services and jobs in nearby Sioux City and Vermillion. The city is also served by South Dakota State Highway 105, which is connected to County Road 1B by Main Street. South Dakota Highway 105 connects Jefferson east to North Sioux City and County Road 1B connects Jefferson west to Elk Point. The Burlington Northern Sante Fe rail line travels parallel to Main Street in Jefferson.

The City of Jefferson owns and operates its own sewage lagoon. It is a 3 cell system that was built in 2005. The lagoon system was built for more volume than is currently utilized. The last cell allows for percolation. The City of Jefferson operates their own water treatment plant utilizing two

(2) wells that fill a 50,000 gallon water tower. The City of Jefferson water system serves more than 571 customers an average of 42,825 gallons of water per day. The water is groundwater produced from local wells. Access to electricity and natural gas comes from MidAmerican Energy.

Fire protection and ambulance services are provided by the Jefferson Volunteer Fire Department and Ambulance Squad, respectively.

Access to healthcare in Jefferson requires travel to neighboring towns, especially for specialty care. There are no medical services provided in the City of Jefferson. The closest medical services are in Elk Point, North Sioux City, and Dakota Dunes. Jefferson has access to two Regional Trauma Hospitals: Avera McKennan Hospital and University Health Center and Sanford USD Medical Center in Sioux Falls, SD. Jefferson is also within close proximity to Mercy Medical and Unity Point Health St. Luke's in Sioux City, IA.

Jefferson has a small commercial, or downtown, district, along Main Street. City Hall, the Jefferson Police Department, the United States Post Office, and a few other small businesses and service providers are located in this area.

Local day care services are provided at the St. Peter's Church Day Care.

Natural Environment

Jefferson covers approximately .5 square miles of land and has no water area. The topography of Jefferson is indicative of the Great Plains. Consequently, during times of heavy rainfall when the ground is saturated, the water doesn't drain well and pools in roadways and yards.

The City of Jefferson has a small community park called Tower Park.

Population density in the non-rural areas has an impact on housing, a community's infrastructure, access to resources, and public safety. Population density may also have an impact on hazard mitigation activities and the cost-benefit relationship of mitigation activities. In Jefferson –

Area in Square Miles	.5
Water Area in Square Miles	0.00
Land Area in Square Miles	.5
Population Density per Square Mile of Land Area	1,094

NORTH SIOUX CITY

People

North Sioux City is located in the far southeast corner of the county. According to the 2013-2017 American Community Survey, North Sioux City's population was 2,693. This is an increase from the 2,530 residents counted during the 2010 US Census and the 2,288 residents in 2000. There are 1,305 housing units in North Sioux City with an owner-occupied housing rate of 60.4 percent.

Median household income in North Sioux City was an estimated \$52,417 according to the 2013-2017 American Community Survey 5-year estimates. The median household income in North Sioux City is less than the median household income of Union County. This trend continues with the number of residents living in poverty. The estimated 8.5 percent of residents living in poverty is higher than the 7.3 percent rate of Union County.



Economy

The City of North Sioux City is part of the Sioux City Metropolitan Statistical Area (MSA). North Sioux City's location on Interstate 29 and proximity to Sioux City is especially favorable to resident businesses. The city benefits from two I-29 exits and is on a Burlington Northern Sante Fe rail line hub.

North Sioux City residents have job opportunities available locally, as well as multiple options for commuting to Sioux City and Vermillion. The largest industries in North Sioux City include manufacturing, retail, and healthcare. North Sioux City is the former home of Gateway, which employed over 6,000 employees at one time. Acer bought most of Gateway in 2007 and now employs fewer than 100 employees at the original facility. Flynn Business Park is a local industrial park in North Sioux City that has been certified by the State of South Dakota as a Certified Ready Site. Businesses currently located in Flynn Business Park include Hepar Biosciences, Nutraferma, Lewis Electric, The Boulder Company, and Pan-O-Gold. The local economy also has a mixture of shops, restaurants, industry, medical facilities, offices, and other service providers.

Royal Canin is building a manufacturing plant in North Sioux City that is scheduled to open in Spring 2019.

Built Environment

North Sioux City is located on Interstate 29 and benefits from two Interstate 29 exits. The city is also located on a Burlington Northern Santa Fe rail line. South Dakota State Highway 105 connects North Sioux City to Jefferson along a similar path as Interstate 29. North Sioux City has close access to Iowa State Highway 12, which extends north along the western border of Iowa through Hawarden.

The City of North Sioux City provides water to more than 2,530 customers per day. The water is groundwater produced from local wells. Natural gas and electricity are accessible through MidAmerican Energy.

Fire protection services are provided by the North Sioux City Volunteer Fire Department. The 36 member department serves the City of North Sioux, the Big Sioux Township, Dakota Dunes, and Wynstone. The population of this region exceeds 4,000 people and also includes an industrial area with an influx of upwards of 6,000 commuters per day. Ambulance services are provided by the North Sioux City Fire Department. The Fire Department recently created a paramedic division, hiring four full-time paramedic positions and a few part-time positions.

There is access to healthcare, including some specialists, within North Sioux City and also nearby in Dakota Dunes. The area also benefits from two Regional Trauma Hospitals: Avera McKennan Hospital and University Health Center and Sanford USD Medical Center in Sioux Falls, SD. North Sioux City is also within close proximity to Mercy Medical and UnityPoint Health St. Luke's in Sioux City, IA. Dental and chiropractic care is also available in North Sioux City or nearby Dakota Dunes.

North Sioux City does not have a traditional downtown business district, but there are restaurants, shops, banks, offices, and other service providers available, but they are dispersed throughout the city limits.

North Sioux City is home to Storytime Daycare and Tinee Toones Child Care Center. The Prodigy Learning Center and Holy Cross Lutheran Church before and after school program is also available in nearby Dakota Dunes. There are also home day care providers to supplement child care needs.

Natural Environment

North Sioux City covers approximately 2.29 square miles of land and has .03 square miles of water area. The topography of North Sioux City is indicative of the Great Plains. North Sioux City is also within close proximity to the Missouri River and Big Sioux River. Consequently, during

times of heavy rainfall when the ground is saturated, the water doesn't drain well and pools in roadways and yards.

North Sioux City has five park locations (Centennial, City, Davis, Ferrari, Lakeshore) featuring a variety of recreational activities. The city also has a Veterans Memorial Park. North Sioux City is very close to McCook Lake, which has over 400 acres of water recreation with public access. The Adams Homestead and Nature Preserve is also a beautiful place nearby residents can enjoy the outdoors.

Population density in the non-rural areas has an impact on housing, a community's infrastructure, access to resources, and public safety. Population density may also have an impact on hazard mitigation activities and the cost-benefit relationship of mitigation activities. In North Sioux City –

Area in Square Miles	2.32
Water Area in Square Miles	0.03
Land Area in Square Miles	2.29
Population Density per Square Mile of Land Area	437.3

HAZARD PROFILES

The Union County Pre-Disaster Mitigation Plan Update establishes a framework for identifying mitigation goals and prioritizing actions to help make the residents of Union County more disaster resilient and safe. The Team reviewed a variety of potential hazards and assessed their potential impacts on the area. The list of potential hazards was narrowed to focus on hazards that have the most significant impact on the area and hazards where potential pre-disaster mitigation activities would result in the most substantial benefit. As part of this assessment, data was compiled, and maps were produced to help analyze the potential impacts of various hazards.

In particular, the following hazards were discussed by the Mitigation Planning Team as potential hazards to address in the Union County Pre-Disaster Mitigation Plan Update 2019:

Floods	Winter Storms	Windstorms
Tornadoes	Summer Storms	Hazardous Materials
Drought	*Active Shooter	*Mass Shootings
Geological Hazards	Wildfire	*Chemical Warfare
Human Disease and Mass Infections		
Agriculture Pests and Diseases		

*Not Natural Hazards

Table: 3-5: All potential Hazards

The Mitigation Planning Team decided to focus on natural hazards in the Union County Pre-Disaster Mitigation Plan Update. The Team felt that disaster mitigation projects would be most effective in addressing and mitigating against the impact of natural hazards. Man-made hazards such as mass shootings were considered to have a low probability of occurrence. No known incident of mass shootings has occurred in the county. In addition, man-made hazards such as hazardous materials are covered in the Union County Hazardous Materials Plan.

The following table illustrates the Team’s analysis of the area’s vulnerability to identified hazards and the probability of occurrence within a ten-year period.

<p>Probability</p> <p>The likelihood that a disaster event will take place within a defined period. For purposes of this analysis, the probability of a hazard is considered “high” if it were likely to occur five times in a ten-year period, “medium” if it were to occur one to two times in a ten-year period, and “low” if it were likely to occur less than one time in a ten-year period.</p> <p style="text-align: center;">Vulnerability</p> <p>The potential impact of a hazard in terms of monetary impact, disruption, and potential to result in injury or loss of life. For purposes of this analysis, a “high” vulnerability assessment is a hazard that is likely to threaten human life and a substantial amount of property. A “medium” vulnerability assessment is a hazard that this is unlikely to threaten human life, but some risk exists, and the hazard may pose a significant risk to property. A “low” vulnerability assessment is a hazard that is unlikely to threaten human life or pose a risk to property.</p>
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		Vulnerability		
		Low	Medium	High
Probability of Occurrence	Low			
	Medium	Geological Disease/Mass Infection		Hazardous Materials
	High	Ag Pests and Diseases	Drought/Wildfire	Winter Storm Tornado Floods Summer Storm Windstorm

Figure 3-3: Probability and Vulnerability

Drought was considered a hazard for Union county. Several droughts have been recorded in the area over the past 60 years; however, Union County have not been subject to a Presidential Declaration related to drought. The most recent prolonged period of drought since 2012, according to the National Center for Environmental Information Storm Events Database, were the months between June 2012 and April 2013. A review of United States Department of Agriculture Risk Management Agency data shows that over the past 10 years, about \$30 million in crop damages occurred in Union County as a result of drought conditions, however; \$22 million of the

damages were related to one specific damage claim. While this hazard has a significant impact on the agricultural economy and on local economies reliant on the agricultural sector, the Team decided that occurrence data in Union County did not warrant inclusion. As depicted in the map below, rainfall totals in Southeastern South Dakota average higher than the rest of the state. Western South Dakota has been severely impacted by drought conditions. Union County has largely been spared.

Normal Annual Precipitation (1981-2010)

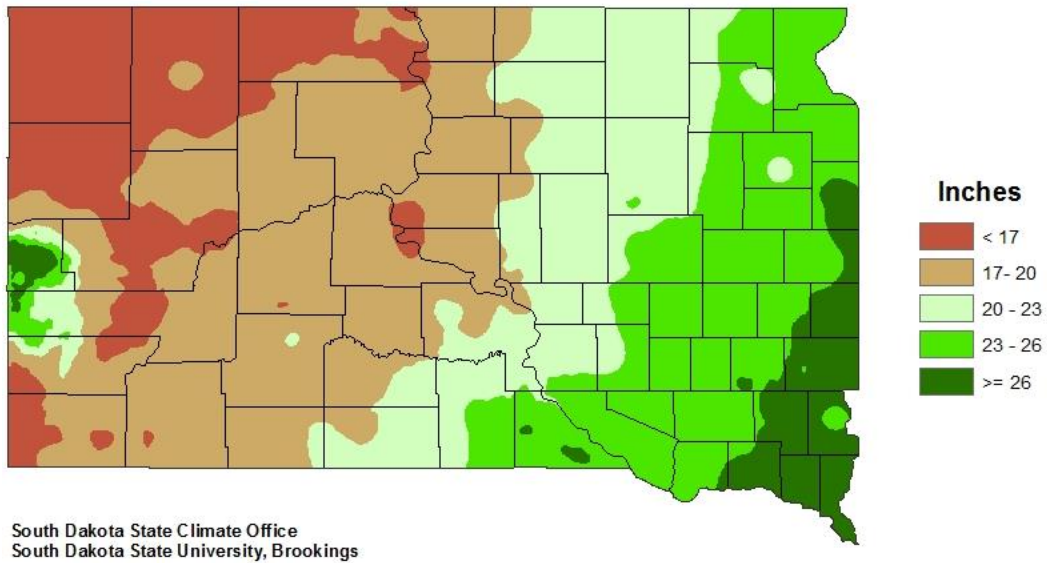
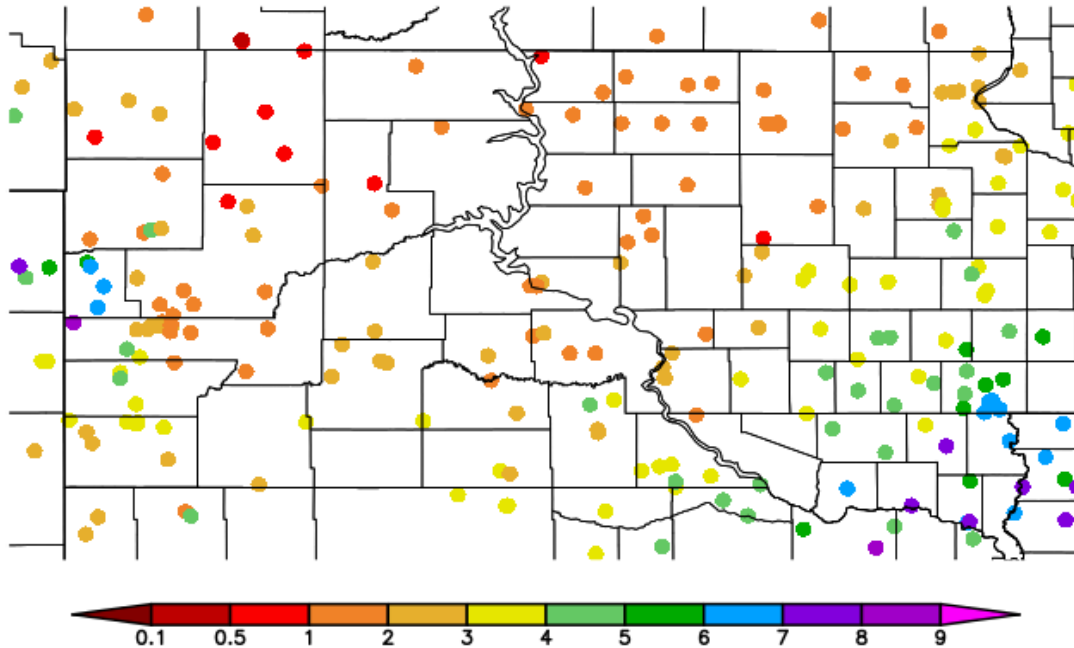


Figure 3-4: Normal Annual Precipitation

Precipitation (in) 10/1/2017 – 2/18/2018



Generated 2/19/2018 at HPRCC using provisional data.

NOAA Regional Climate Centers

Figure 3-5: Annual Precipitation by Location in State

The other primary impact of drought conditions is lower water levels. While this is a potential threat to the area, jurisdictions have already implemented policies that mitigate against the impacts of this threat, including restrictive water usage policies during drought and non-drought periods. These restrictions relate primarily to limits on lawn watering and other heavy uses of water.

Earthquakes were also excluded as an imminent hazard even though this hazard is included in the State's Multi-Hazard Pre-Disaster Mitigation Plan. As illustrated below, the vulnerability of Union County to earthquakes is considered minimal. According to the State's Plan, no major earthquakes have been reported in South Dakota since 1967, and South Dakota is geologically stable. The U.S. Geological Survey estimates only a ten-percent chance of an earthquake exceeding a 5.1 magnitude occurring in any one 50-year period. Minor earthquakes that have been observed in the state have resulted in very limited damage such as displaced foundations, stuck doors and windows, etc.

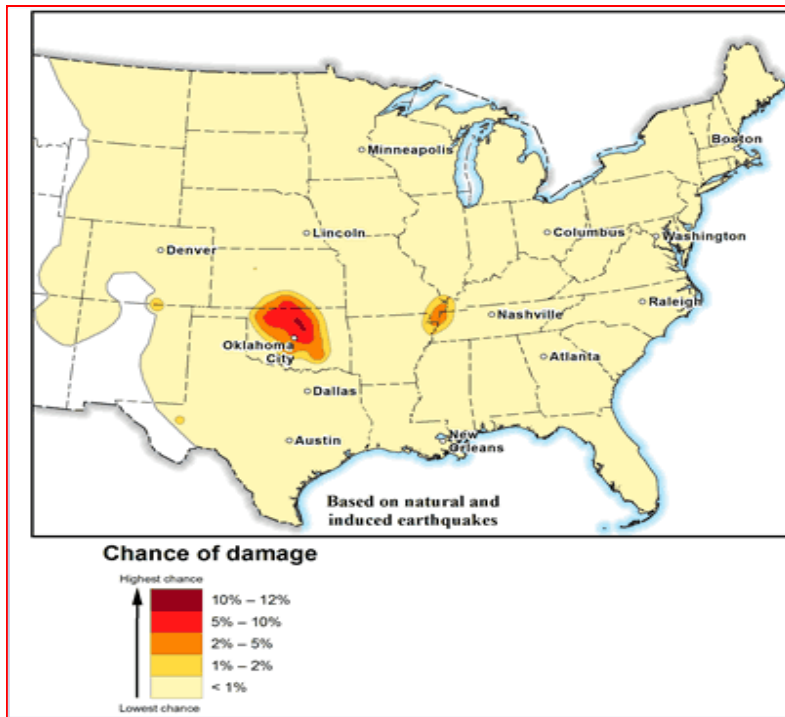


Figure 3-6: US Geological Survey

The Mitigation Planning Team considered other types of geological hazards including **landslides**. However, after further consideration, these hazards were identified as having a low probability of occurrence and low vulnerability factor. While landslides and land subsidence are discussed in the State of South Dakota’s Plan, Union County has level topography, and based on the United States Geological Survey’s Landslide Incidence and Susceptibility Map, the area’s vulnerability to landslides is low. As a result of these assessments, this hazard was rated low in consideration by the Team.

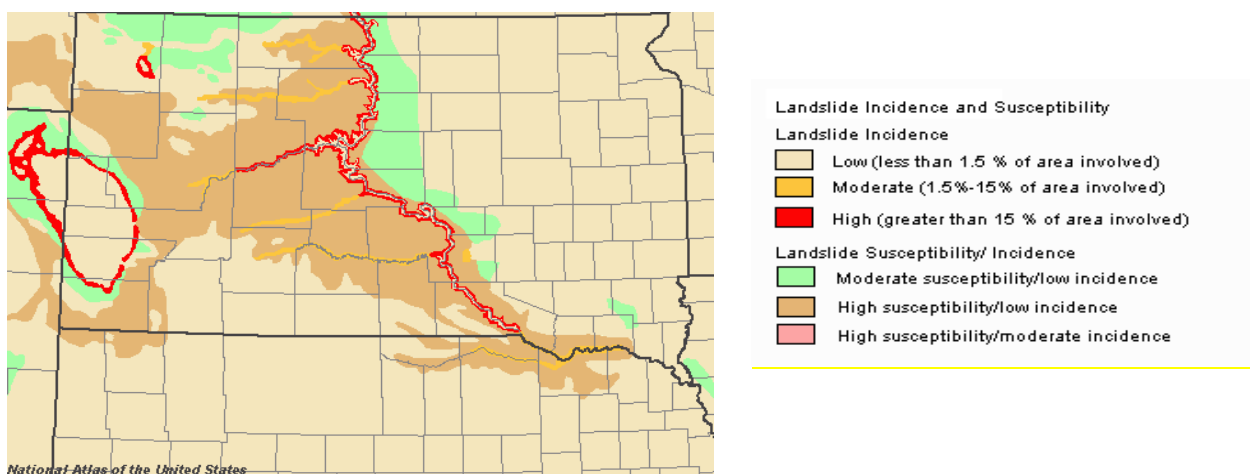


Figure 3-7: US Geological Survey

After reviewing a broad list of hazards and excluding those hazards where the area has limited or no vulnerability, 4 hazards rose to the top of the list in terms of high probability and high vulnerability.

Hazards such as hail, excess precipitation, lightning, freezing, and extreme cold were all considered as hazards, but are incorporated under the broader headings of either severe summer storms or severe winter storms.

Floods

Winter Storm

Tornado

Summer Storm

HAZARD PROFILES

Each of the hazards selected by the mitigation planning team for the Plan's focus is described in terms of the hazard's *location* within Union County the *extent* of the hazard, the *history* of the hazard's occurrence in the county, and the *probability* of future events.

Location is the geographic area within Union County that are affected by the hazard. All 5 of the focus hazards occur in all areas of the Counties with similar degrees of frequency. In the case of flooding, some areas are more susceptible than others.

Extent is the strength or magnitude of the hazard. It is measured in different ways. For example, tornado strength is measured on the Fujita Scale, wind is measured by speed, flooding is measured by duration.

A *history* of each hazard's occurrence in Union County is provided, including major events that proved impactful on the region.

Probability of occurrence is the likelihood that a disaster event will take place within a defined period. For purposes of this analysis, the probability of a hazard is considered "high" if it were to occur 5 times in a ten-year period., "medium" if it were to occur one to two times in a ten-year period, and "low" if it were likely to occur less than one time in a ten-year period.

Flood



A June 29, 2011 photo shows Missouri River flooding in the Riv-R-Land Estates neighborhood in rural Union County, South Dakota. Photo by Tim Hynds, Sioux City Journal.

Description

Flooding and excess precipitation can significantly impact local communities, residents, and the economy in general. Unlike the other hazards discussed in this Plan, flooding is more geographically predictable. While flooding, particularly flash flooding, can potentially occur anywhere during periods of excess precipitation, predictive modeling is done to determine areas that are most at risk for flooding, by designating those areas as flood hazard areas.

In South Dakota, flooding is typically a result of runoff from excess rainfall during the spring, summer, and fall seasons; or runoff from melting snow during the spring. Flooding can occur as a result of localized precipitation, due to excess precipitation occurring outside the region which results in elevated river levels flowing downstream from areas where the excess precipitation occurred.

There are generally 4 types of flooding affecting the region:

Flash Flooding results when several inches of rain and precipitation occur within a short period of time. This type of excess precipitation generally occurs as part of a severe summer storm and may be compounded by other hazards such as high winds, hail, and tornadoes.

Long-Range Flooding occurs when there is a significant amount of precipitation or rainfall over an extended period. Often, the intensity of the rainfall is low, but cumulatively that amount of precipitation is larger and exceeds the capacity of the ground to absorb the precipitation. The ground becomes “water logged” or the rainfall can no longer infiltrate. Water that is unable to infiltrate the soil runs off into low lying areas, can enter homes and commercial facilities through windows and doors, and results in devastating impacts for property owners. Stagnant water that cannot infiltrate the ground can also lead to health issues and a higher incidence of mosquitoes. Excess moisture in the ground can seep into basements of homes and businesses, creating additional damage. Water seepage can exceed the capacity of sump pumps and storm sewer systems to transfer the water out of homes, businesses, and developed areas in general.

Flooding as a result of Snow Melt typically occurs in the spring and has characteristics similar to flash floods and long-range floods. The impacted area is typically larger than that of flash floods, but smaller than long-rain floods. Generally, flooding can last for several days to several weeks. The flooding is compounded if the ground is frozen, resulting in more runoff of precipitation to the lower lying areas and streams/rivers. Recently, flooding from snow melt has become a major challenge for the region due to the large amounts of snow received locally and in surrounding areas.

Dam or Levee Failure could result in flooding and economic loss if physical damage were to occur to the structure. According to the National Inventory of Dams, Union County has 12 dams. All 12 dams located in the county are classified as low hazard.

Location

Flash flooding usually occurs in a smaller geographic area and results in excessive runoff which can exceed the capacity of the community’s storm sewer system. This type of flooding is less predictable geographically. Development resulting in an increase of parking areas and rooftops, can have a significant impact on the increased probability of flash floods by reducing permeability and putting an additional strain on storm sewer systems.

Long-range flooding typically occurs over a widespread geographic area due to the extended period in which the precipitation occurs. Union County lies primarily within the Big Sioux and Missouri Watersheds, which occupies the southeastern portion of South Dakota. A small portion of the county is within the Vermillion watershed.

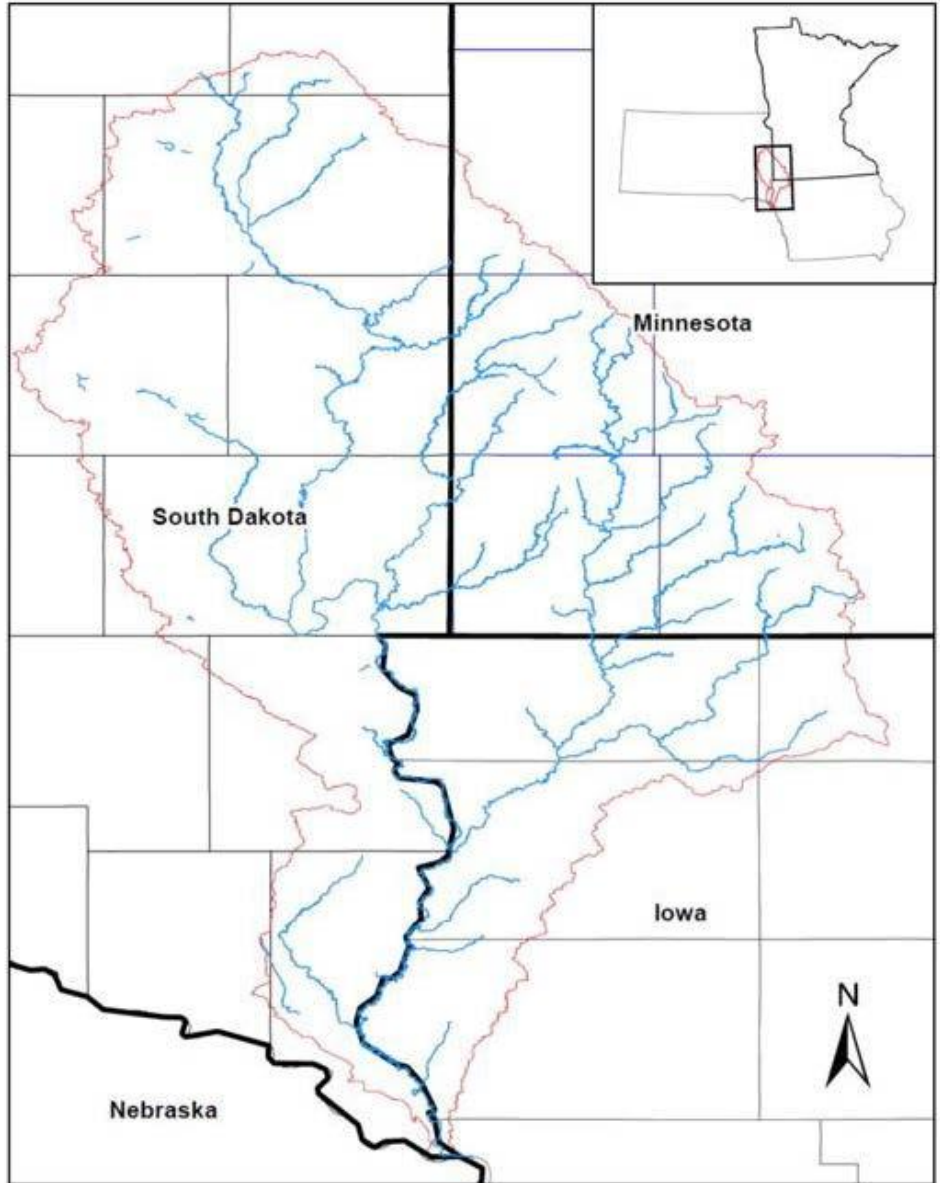


Figure 3-8 Big Sioux Watershed

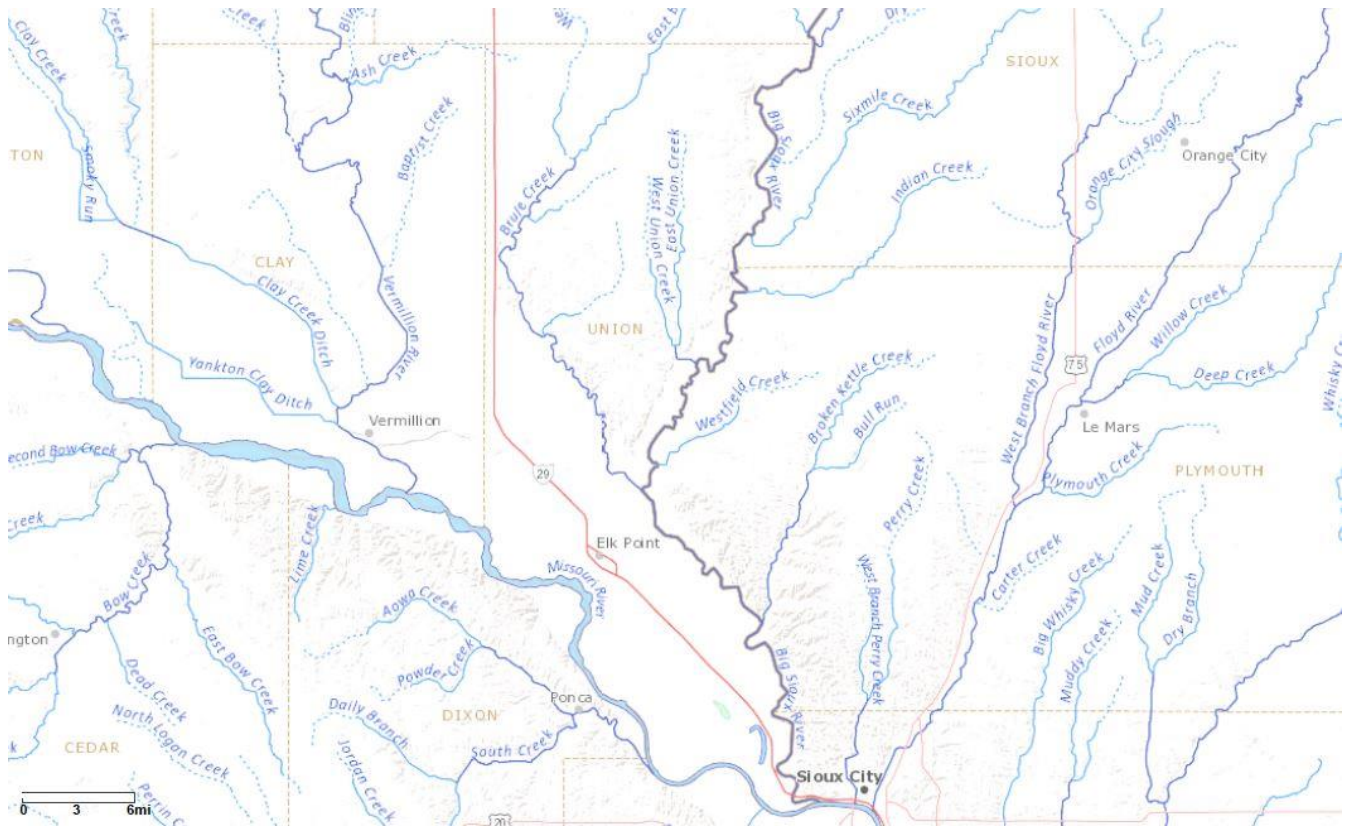


Figure 3-9: Union County Rivers and Streams, USGS

The Big Sioux River is a tributary of the Missouri River. Its watershed has contributed to some of the largest historical floods in the State because of snow and ice melt along the Missouri River. The watershed zone is made up of low-lying areas, which are adjacent to the Big Sioux River and smaller rivers and streams, such as the Brule Creek, West Union Creek, and East Union Creek. The Big Sioux River is the second largest river basin in South Dakota. The river is the heaviest populated river basin in the state and provides drinking water from its surface water and aquifer to approximately 40 percent of the population of South Dakota. The river has an average annual discharge of 246 cubic feet per second and on average exceeds bank full stage every two to three years.

Extent

Changes in land use associated with development throughout Union County affect flooding in many ways. Removing vegetation and soil, grading the land surface, and constructing drainage networks increase runoff to streams from rainfall and snowmelt. As a result, the peak discharge, volume, and frequency of floods increases in nearby streams. Changes to stream channels during development can limit their capacity to convey floodwaters.

History

Based on information in the National Climatic Data Center's Storm Events Database, there were 34 events of flooding in Union County during the 18-year period from 1993 to 2010. Physical damage from flooding in the county over the 18-year period totaled \$100,000. Appendix B lists historical records of flooding that occurred from January 2012 through 2017.

The Union County area has experienced large rain events recently, as described below:

Repeating heavy rain caused record flooding of the lower Big Sioux River from June 15 through June 26, 2014. Severe flooding in Union County during this period contributed to the Presidential Disaster Declaration FEMA-4186-DR. The countywide impact for Union County was \$74.77 per capita. This flood event impacted Hillside, Alcester, Beresford, Big Springs, Junction City and rural portions of Union County. Near Alcester, considerable flooding of farmland and other low areas occurred. Floodwaters damaged a few farm homes, fencing and other buildings. Beresford was also one of the Union County communities affected by heavy rain. Nearly 5 inches of rain fell in a 24-hour period ending the morning of June 17, 2014. The Big Sioux River crested at a record 12.92 feet above flood stage at Hawarden, Iowa on June 17th. A 22-mile portion of Interstate 29 was closed to allow for levee building in order to divert some water to McCook Lake. Luckily, the river crested at a lower level than anticipated and the Interstate was re-opened.

Beresford Rainfall 24 Hours Ending morning of June 17, 2014		
Beresford	4.8 inches of rain in 24 hours	25-year event
<i>Table 3-6: National Oceanic and Atmospheric Administration</i>		

Union County recently experienced and is still recovering from Spring 2019 flooding caused by snow melt and a mixture of rain and snow storms during the month of April 2019. The combination of storms and snowmelt caused significant damage to infrastructure throughout Union County in addition to property and farmland. State and federal agencies are still in the process of assessing damages and recovery assistance information has not been released as of May 8, 2019.

Probability

The probability of spring floods and flash flooding occurring in any given year is high. According to the National Center for Environmental Information Storm Events Database, there were 43 flooding events that occurred between 2012 and 2018. These events are detailed in Appendix B. The flooding events, many times, occurred in conjunction with severe summer storms. Where the occurrence of storms was more common, damage resulting from flooding was more

significant per event. Over \$2.5 million in property and crop damages were reported as a result of flooding in Union County over this period of time. It is a certainty that flooding will continue in the area. The goal of mitigation actions should be to reduce the amount of loss of property and crop loss.

National Flood Insurance Program

The National Flood Insurance Program (NFIP) aims to reduce the impact of flooding on private and public structures. It does so by providing affordable insurance to property owners and by encouraging communities to adopt and enforce floodplain management regulations. These efforts help mitigate the effects of flooding on new and improved structures. Through the NFIP, flood insurance is made available to those communities that agree to regulate development in their mapped floodplains. If the community ensures that future floodplain development meets certain criteria, the Federal Emergency Management Agency (FEMA) will provide flood insurance for properties in the community.

There are three components of the NFIP: mapping, insurance, and regulations.

Mapping: FEMA has prepared floodplain maps for most areas of the Country. The maps are used for several purposes. Communities use them as the basis for construction management in flood prone areas, insurance agents use floodplain maps when rating flood insurance policies, and the maps are used by lenders to determine when flood insurance must be purchased by a borrower. Most communities have a Flood Insurance Rate Map (FIRM). FIRMs are based on a Flood Insurance Study and include information such as flood elevations to better protect new construction from flood damage. Flood Zones for the communities and rural areas in Lincoln and Minnehaha County are found in Appendix C.

Insurance: Buildings in a participating community may be covered by a flood insurance policy, even if a particular structure is not located in a mapped floodplain. Coverage includes lake, river, stream, and other inland water overflows, and the unusual or rapid accumulation of runoff of surface waters as found in flash flooding.

Regulations: Communities have responsibilities to participate in NFIP. These include:

- *Adopt and enforce a flood damage prevention ordinance*
- *Require permits for all types of development in the floodplain*
- *Assure that building sites are reasonably safe from flooding*
- *Estimate flood elevations where not determined by FEMA*
- *Require new or substantially improved homes and manufactured homes to be elevated above the Base Flood Elevation*
- *Require non-residential buildings to be elevated or flood-proofed*
- *Determine if damaged buildings are substantially damaged*
- *Conduct field inspections and city violations*
- *Require Elevation Certificates to document compliance*
- *Carefully consider requests for variances*

- Resolved non-compliance and violations
- Advise FEMA when updates to flood maps are needed

The South Dakota Office of Emergency Management administers the NFIP for South Dakota under a cooperative agreement with FEMA.

The following chart depicts community participation in the National Flood Insurance Program. The cities of Alcester, Beresford, Elk Point and Jefferson do not participate.

COMMUNITY	COUNTY	INITIAL FHBM* IDENTIFIED	INITIAL FIRM* IDENTIFIED	CURRENT EFFECTIVE MAP DATE
Union County*	Union	05/10/77	02/01/87	02/23/01
North Sioux City	Union	11/16/73	12/01/77	02/23/01

Table 3.8: NFIP Participating Communities

*FHBM: Flood Hazard Boundary Map

*FIRM: Flood Insurance Rate Map

Community Participation in NFIP

The following chart provides specific FIRM information for each jurisdiction participating in the NFIP. It should be noted that if indicated in the affirmative, a community has passed a Flood Damage Prevention Ordinance and meets all the criteria noted in Table 3-8.

Jurisdiction	County	Adoption and Enforcement of Floodplain Management Ordinance*	Zone SFHA or NSFHA	Description of Community Assistance
Alcester	Union	Yes, Work in progress with FEMA	N/A	Not a participant in NFIP
Beresford	Union	No	Partially Zone X (NSFHA) N/A	Not a participant in NFIP
Elk Point	Union	Yes	N/A	Not a participant in NFIP
Jefferson	Union	No	N/A	Not a participant in NFIP
North Sioux City	Union	Yes	Zone A (SFHA), Zone AE (SFHA), Zone X	

County	Union	Yes	See Flood Zone Map Appendix	The County oversees the floodplain management program throughout the county.
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Figure 3-10

Discovery Report

Officials from Union County and several of the communities in the county, participated in the Discovery planning process, which identified areas of concern and helped to establish the communities' highest priorities regarding natural hazards. The Discovery process was a large-scale effort, not limited to just Union County, conducted to assess areas in the state with outdated maps.

During Discovery, FEMA and the State of South Dakota reached out to local communities with the following goals:

- Identify opportunities to support mitigation action through technical assistance, guidance, and grants;
- Gather information about local hazards and risks;
- Document needs related to all hazards identified in the Discovery Meetings and the National Flood Insurance Program (NFIP);
 - Review current and historic mitigation plans to understand local mitigation capabilities and priorities, hazard risk assessments, and current or future mitigation activities; and
 - Involve multi-disciplinary community staff in evaluating risks and participating in the identification and mitigation of risk.

The purpose of the Discovery Report is to provide a summary of the Risk Mapping, Assessment, and Planning (Risk MAP) Discovery process and to provide a foundation for FEMA hazard mitigation projects moving forward.

According to FEMA, Discovery is the first phase of the overall Risk MAP program that provides the State of South Dakota, local communities, and Tribes with flood risk information along with tools to increase resilience to flooding and better protect people and property through collaboration with state and local entities.

Repetitive Losses

Periodic flooding affects numerous areas in both incorporated and unincorporated areas of Union County. Property adjacent to the Big Sioux River and its tributaries are most prone to flooding. Residential development occurred in these areas long before the initial flood hazard boundaries were identified in 1974. As a result, numerous structures already existed at the time of adoption of the first map and continue to be lived in today. Many structures located within the area have

experienced flooding or are required to be insured against flooding due to their proximity to special flood hazard areas.

NFIP Policy Information

Jurisdiction	Policies in Force	Insurance in Force
North Sioux City – Union County	37	\$7,993,700
Union County*	319	\$97,159,300

Figure 3-11: Federal Emergency Management Agency (FEMA) NFIP Policy Statistics. As of 09/30/2018.

* Unincorporated areas of county only

An issue of primary concern is the number of times specific properties and structures on those properties flood. 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 ten-year period. A goal of the mitigation planning team is to protect specific areas in the county from flooding.

Jurisdiction	Building Payments	Contents Payments	Total Payments	Average Payment	Losses	Properties
Union County	\$105,316.41	\$20899.63	\$126,216.04	\$31,554.01	4	2

Figure 3-12

BIG SIOUX RIVER FLOOD INFORMATION SYSTEM

The BSRFIS is a one-stop web platform to access real-time stream conditions, flood forecasts, visualizations, inundation maps, and flood-related data and information. This tool was released in November 2018.

The following text appeared in a public release statement by former South Dakota Governor, Dennis Daugaard on Friday, November 2, 2018:

During my time as governor, I have always tried to learn from experience, and to improve systems and processes to lead to better performance. Recently, a new flood information system came online that will help with future flooding events on the Big Sioux River.

In June 2014, after several days of heavy rains, residents prepared for a Big Sioux River flood. The rising water threatened homes, farms, and businesses in South Dakota, especially in the lower basin. Based on the flood prediction models in use at that time, significant resources were deployed to protect people and property. A section of Interstate 29 and part of a railroad line were both closed. Fortunately, flood waters were not as severe as predicted and those transportation routes and most homes were ultimately unharmed.

Although I was happy that the flooding was less than predicted, the 2014 event made it clear the existing flood prediction models were not accurate. Forty percent of South Dakota's population lives in the Big Sioux River basin, and our state needed better information to react to flooding events in this area.

I asked Lieutenant Governor Matt Michels to convene a flood task force to evaluate what could be done. The task force included staff from the Departments of Environment and Natural Resources (DENR), Transportation, Public Safety, and the Bureau of Information and Telecommunications. The aim was to develop an accurate hydrologic computer model linked to real-time, river-height measuring gages to better predict inundated areas during high flow events.

After reviewing the findings of the Task Force and seeing the need, DENR's Board of Water and Natural Resources recommended funding for the model in the 2016 State Water Plan. Their recommendation was to appropriate funds from the state Water and Environment Fund. The 2016 Legislature agreed and passed the bill.

Using the dedicated water funding, DENR produced two online, flood information systems with mapping tools. The first system contains 8,500 possible flood scenarios that can be accessed by the general public to evaluate risks to their families and property. The second system is for use by local, state, and federal officials as it can use real time data to assess immediate flood conditions and determine appropriate response actions to protect communities and critical infrastructure such as drinking water and wastewater systems.

To ensure the model would meet the needs of local officials in the basin, DENR asked for review and input throughout the development process. Several local government entities responded by contributing financial support to install new stream gages to help monitor real-time river stages and predict maximum water levels during a flood. Ultimately, the new flood model coupled with the additional stream gages will also help the National Weather Service make more accurate river stage predictions. All this information will lead to more effective and efficient flood response, enhanced protection for threatened communities, and better planning for future development near the flood plain.

I am pleased to announce DENR and its contractor have completed the modeling effort on-time and on-budget. Best of all, it works! While maintenance of the system will be on-going, it has been verified and calibrated several times this spring and summer during high-flow events in the Big Sioux River. To view the new online flood information system visit <http://www.bigsiouxfis.org>.

This is a landmark project that uses the latest technology to produce information that will better protect human life and property for years to come. That is what government is supposed to do, and the Big Sioux River Flood Information System does the job.

Severe Winter Storms



Description

Severe Winter Storms, as defined for purposes of this report, are a combination of heavy snow, blowing snow, and/or dangerous wind chills. Blizzards are severe winter storms that are a combination of blowing snow and wind that result in very low visibilities. The combination of snow and wind can cause drifting on roadways. These storms tend to occur in the late fall, winter, and early spring seasons.

Location

Similar to severe summer storms, severe winter storms are typically associated with unstable weather conditions and are not geographically predictable. All areas within Union County are equally susceptible to the impacts of these events, including hazardous driving conditions, loss of life or injury for individuals without proper shelter, damage to agricultural crops, and budgetary issues for local governments to clear snow from roadways.

Extent

Compared with other hazards discussed in this Plan, winter storms are far more likely to result in the loss of life or injuries. Since one of the primary impacts of winter storms is hazardous

driving conditions, it is likely that most of the deaths and injuries resulting from winter storms were a result of traffic accidents on icy or snow-covered roadways or poor driving conditions resulting from blowing snow. Appendix B shows the extent of severe winter storms in Union County.

History

Appendix B lists historical records of severe winter storms that occurred from January 2012 through 2018.

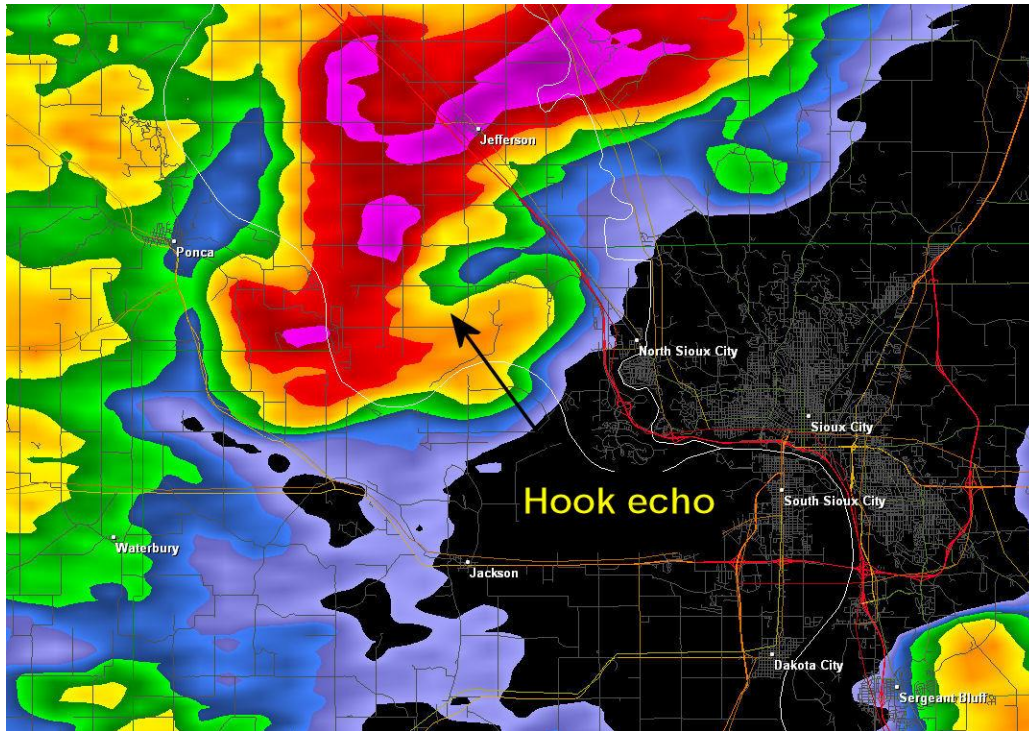
Below is one recent occurrence to note:

In 2018, one of the year's most intense winter storms occurred after the official end of the winter season. On April 13th, the storm brought a mix of wintry precipitation and numerous thunderstorms across the area. Life threatening conditions developed on the morning of April 14th as an influx of colder air changed the precipitation to snow, and a record-breaking 8 to 16 inches of snow fell, and brought fierce winds gusting 50 to 60 mph in southeast South Dakota, southwest Minnesota, northwest Iowa and extreme northeast Nebraska. Elk Point experienced winds as high as 45 mph. In many locations, snow drifts of over 6 feet were reported. The brutal winds contributed to extremely low visibility, which made travel very difficult, if not impossible, for almost a full day. State offices and schools were closed on April 13th.

Probability

The probability of Severe Winter Storms occurring in any given year is high. According to the National Center for Environmental Information Storm Events Database, 52 winter storm and storm-related events occurred between January 2012 and September 2018. Thus, severe winter storms have a "high" probability of occurrence. These events are detailed in Appendix B.

Tornado



Radar of Jefferson tornado, National Weather Service, October 4, 2013

Description

Similar to the other natural hazards identified in this Plan, tornadoes and high winds have the potential to significantly impact the region. A tornado is a rotating column of air that extends from the base of a thunderstorm to the ground. A funnel cloud is a rotating column of air that does not reach the ground. The funnel cloud's violently rotating column of air may reach the ground rather quickly, becoming a tornado. A tornado may happen any time of year, although they are most commonly associated with severe summer storms.

Location

As indicated in Figure 3-10 - *Wind Zones in the United States*, all of Union County is located in a Wind Zone 4 (250 mph).

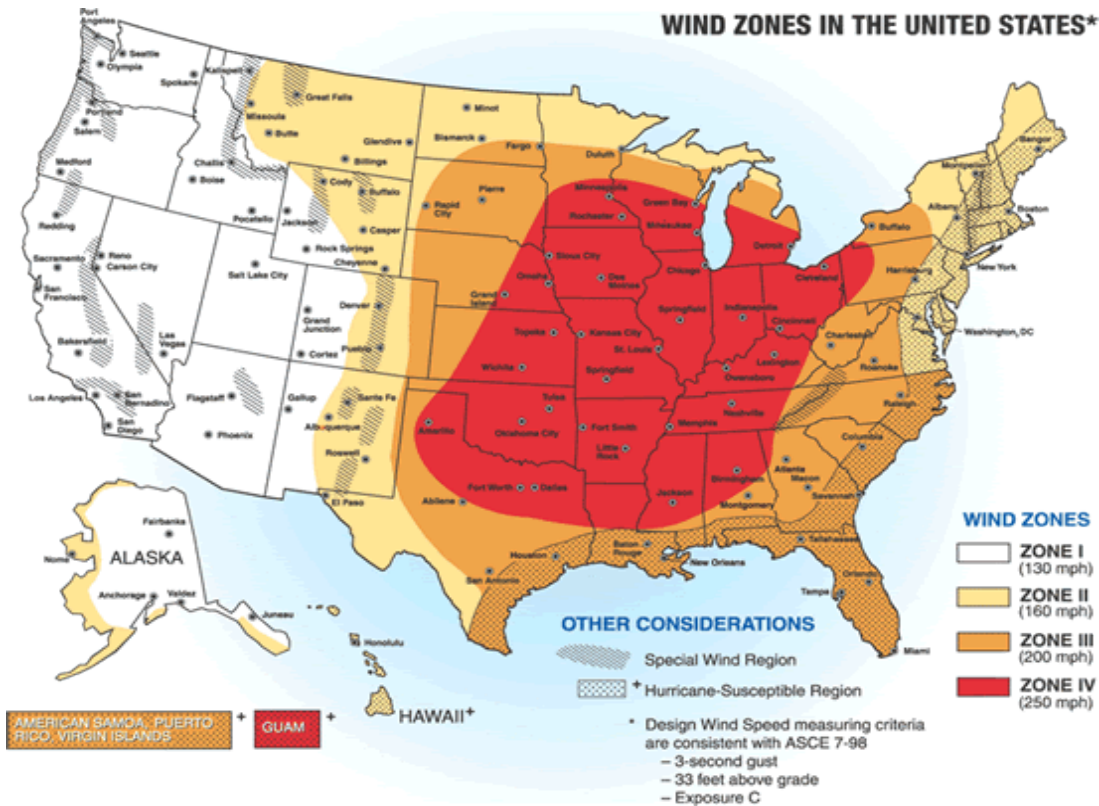


Figure 3-13: National Oceanic and Atmospheric Administration

Similar to severe summer and winter storms, tornadoes and high wind events are associated with unstable weather patterns and are geographically unpredictable. As a result, all areas within the region are equally susceptible to the potential of tornadoes and high wind events.

Extent

The most common way to determine the strength of a tornado is to look at the damage it caused. From the damage, wind speeds can be estimated. An Enhanced Fujita Scale was implemented by the National Weather Service in 2007 to rate tornadoes in a more consistent and accurate manner. The EF-Scale considers more variables than the original Fujita Scale when assigning a wind speed rating to a tornado. These variables include 28 damage indicators such as building type, structures, and trees. For each damage indicator, there are 8 degrees of damage ranging from the beginning of visible damage to complete destruction of the damage indicator.

Appendix B shows the extent of tornadoes and funnel clouds in Union County.

History

Appendix B lists historical records of tornadoes and funnel clouds that occurred from January 2012 through 2018.

There is an occurrence from the recent past that is important to note:

Thunderstorms produced two tornadoes in southeast Union County late afternoon on October 4, 2013. One tornado crossed the Missouri River into Union County from Dakota County, Nebraska. Another tornado formed in Union County. Near McCook Lake, an EF 1 tornado with a path width of 400 yards, traveled on the ground 4.18 miles, causing damage to a house, garage, trees and irrigation system. Near Jefferson, a tornado with a path width of 800 yards, traveled on the ground 4.75 miles, causing damage to a house, storage buildings, trees, signs, power poles, power lines and crops. There were no fatalities or injuries associated with these tornadoes. The total property damage was \$450,000.



Tornado damage in McCook Lake, SD, National Weather Service, October 4, 2013

Probability

The probability of Tornadoes and High Wind occurring in any given year is medium but comes with a high vulnerability factor. According to the National Center for Environmental Information Storm Events Database, 3 tornado events occurred between 2012 and 2018. These events occurred during the late spring and early fall months of May through October. These events caused just over \$470,000 in damages. These events are detailed in Appendix B.

Severe Summer Storms



Beresford thunderstorm damage, September 18-21, 2018

Description

Severe Summer Storms, as defined for purposes of this report, include all storms occurring during spring, summer, and fall with damages that may result from excess rain or thunderstorms, lightning, and hail. The impact of tornadoes and high winds, which usually occur in conjunction with summer storms or winter storms (high winds), are considered separately. According to the National Severe Storms Laboratory, a storm is considered “severe” when it contains one or more of the following: hail one-inch or greater, winds gusting in excess of 57.5 miles per hour, or a tornado.

Location

Severe Summer Storms are typically associated with unstable weather conditions and are not geographically predictable. All portions of Union County are equally susceptible to these types of events, although the type and amount of damages will vary depending on the location. For example, hail can result in significant agricultural damage in the rural parts of the counties, while it may result in property damage to cars and buildings in the urban areas.

Extent

Rainstorms are most common in the early summer months with hailstorm frequency increasing in midsummer. Appendix B shows many of the summer storms that produced high winds and hail. One event in 2014 produced 1.75-inch diameter hail.

History

Appendix B lists historical records of severe summer storms that occurred from January 2012 through 2018.

There are several occurrences to note:

During the early evening of May 11, 2014, thunderstorms produced damaging winds and a tornado in Union County near Spink and Midway. Thunderstorm wind damage destroyed a metal machine shed.

On May 10, 2015, thunderstorms across southeastern South Dakota produced several tornadoes, including one that caused injuries and severe damage in Delmont in Douglas County, SD. Near Jefferson and other areas near the eastern border of South Dakota the thunderstorms produced large hail, damaging winds and flash flooding.

On the evening of June 6, 2015, heavy rain caused flash flooding of several roads near McCook Lake. Thunderstorms produced large hail and heavy rain at several locations in southeast South Dakota.

On June 29, 2017, widespread thunderstorms developed in south central South Dakota, which produced hail in Jefferson (1.25 in), Richland (1 in) and Alsen (1 in) in Union County.

Probability

The probability of severe summer storms occurring in any given year is high. According to the National Center for Environmental Information Storm Events Database, over 55 summer storm and storm-related events occurred between January 2012 and September 2018. Thus, severe summer storms have a “high” probability of occurrence. These events caused just over \$2.09 million in damages. These events are detailed in Appendix B.

SECTION FOUR: MITIGATION STRATEGIES



Problem Statements sum up the impact of the hazard at the local level and help to identify goals and objectives. The Team broke into 4 small groups to develop problem statements associated with the identified hazards: Flooding, Severe Winter Storms, Windstorms, Tornadoes, and Severe Summer Storms. The problem statements were used to identify and zero down to the hazard at a narrow level.

Flooding Problem Statements

The Team identified several problem statements relating to all types of flooding in the region.

- Infrastructure Damage or Failure
- Transportation is Impacted; Limited Access for Emergency Services
- Debris Management

Severe Winter Storms Problem Statements

The Team identified several problem statements associated with severe winter storms.

- Loss of Power and Limited Access to Fix
- High Cost of Snow Removal
- Cold and freezing temperatures create Safety Concerns

- Road Blockage and Closed Roads; Limited Access for Emergency Services

Windstorms Problem Statements

The Team identified several problem statements associated with severe winter storms.

- Transportation is Impacted; Limited Access for Repairs and Emergency Services
- Flying Debris and Downed Trees
- Loss of Power
- Fire Hazards

Severe Summer Storms Problem Statements

The Team identified several problem statements associated with severe summer storms.

- Loss of Property and Lives due to Flooding
- Wind Damage
- Transportation is Impacted; Limited Access for Repairs and Emergency Services
- Loss of Power

Tornadoes Problem Statements

The Team identified several problem statements associated with tornadoes.

- Loss of Life and Injury
- Damage to Water Storage and Other Infrastructure
- Damage to Power Lines and Loss of Power
- Transportation is Impacted; Limited Access for Repairs and Emergency Services
- Fire Hazards

The Team began the process of developing mitigation goals and objectives by reviewing the mitigation goals and objectives included in the draft State of South Dakota Hazard Mitigation Plan – Standard Plan (April 2014). The committee wanted to ensure that the goals and objectives identified in this updated Plan, specifically would complement the goals and objectives identified in the statewide plan, while focusing on the impact of hazards locally. The Mitigation Planning Team adopted the goals and objectives of the State of South Dakota plan.

PRE-DISASTER HAZARD MITIGATION PLAN GOALS AND OBJECTIVES

Goal 1	Reduce injuries and loss of life from hazards
Objective 1.1	Reduce the number of injuries/fatalities due to all hazards
Objective 1.2	Maintain and improve public health and safety outreach activities/programs
Goal 2	Reduce damage to existing and future structures within hazard areas
Objective 2.1	Reduce the number of repetitive loss structures
Objective 2.2	Reduce the number of structures lost by wildfires
Objective 2.3	Reduce the number of structures within the Special Flood Hazard Area and other identified local flood risk areas
Objective 2.4	Reduce the number of structures/infrastructure at risk to geologic hazards
Goal 3	Reduce the losses to critical facilities, utilities, and infrastructure from hazards
Objective 3.1	Reduce the number of power outages
Objective 3.2	Reduce negative impacts to water supply and sewage treatment systems
Objective 3.3	Improve reliability of communications during/following hazard events
Goal 4	Reduce impacts to the economy, the environment, and cultural resources from hazards
Objective 4.1	Reduce loss to natural resources (i.e. forest and watershed health)
Objective 4.2	Reduce impacts to cultural resources (i.e. historical/tribal)
Objective 4.3	Reduce agricultural losses
Objective 4.4	Reduce economic losses to recreation and tourism
Goal 5	Support and assist local/tribal mitigation capabilities and efforts
Objective 5.1	Encourage locals to participate in risk reduction measures.

Table 4-1: State of South Dakota Hazard Mitigation Plan 2014

The Team then began the process of identifying specific mitigation projects that reflect the goals, objectives, and problem statements identified in this chapter; and that if implemented, would

mitigate the impact of future hazard events. The Team first took a look at progress made since the previous update in 2013.

Mitigation Progress – 2013 Plan Projects

The 2013 Union County Pre-Disaster Hazard Mitigation Plan identified 5 broad goals:

- 1) Reduce injuries and loss of life from natural hazards;
- 2) Reduce damage to existing and future structures within hazard areas;
- 3) Reduce the losses to critical facilities, utilities, and infrastructure from natural hazards;
- 4) Reduce impacts to the economy, the environment, and cultural resources from hazards; and,
- 5) Better coordinate efforts to mitigate, prepare, manage, and respond to all hazard events across jurisdictions in Union County.

ALCESTER		
Water and sewer replacement with curb and gutter on east side of city.	Flooding	No progress
Water and sewer replacement on west to east section.	Flooding	In progress
BERESFORD		
Bury 36 square blocks of overhead primary and secondary lines north of SD Hwy 46	All Hazards	No progress - Continues to be a priority, but community lacks resources.
Provide 11.4-megawatt transformer as backup for the Beresford Municipal Electric System	All Hazards	No progress – lack of time and resources
Provide tornado and emergency shelter	All Hazards	Constructed: Disaster 1887: Severe Winter Storm Fed share: \$739,854
Emergency backup generator for city hall and library	All Hazards	No progress – lack of resources
Upgrade storm drainage system	All Hazards	In progress – working on identifying culverts that need replacement
ELK POINT		
Replace water and sewer with curb and gutter on Rose Street	Flooding	In progress - projected completion is Spring 2019
NORTH SIOUX CITY		
Construction of 500K gallon ground storage reservoir with pumps, piping, generator with transfer switch.	All Hazards	Complete
Continue Severe Weather Awareness Programs	All Hazards	No progress
Promote the use of NOAA Weather Radios for all hazard events	All Hazards	No progress

Continue warning and evacuation procedures	All Hazards	Ongoing
Public awareness about heavy snow loads on house roofs	Winter Storm	No progress
DAKOTA DUNES CID		
Earthen levees and/or flood wall system to protect Missouri River infrastructure.	Flooding	No progress indicated
Minimize outlet structures to the river by consolidating yard drains and sump pump lines to a central retention area.	Flooding	No progress indicated
Improve outlet structures so they can be water tight under higher head pressure during extended high releases or increased river levels.	Flooding	No progress indicated
Improve Dakota Dunes Country Club golf course as a retention area for holding storm water during high releases or increase river levels.	Flooding	No progress indicated
Install additional permanent pumping stations to remove water from the site when storm water outlets are sealed.	Flooding	No progress indicated
Install ground water pumping stations and improve manhole sanitary sewer lines in susceptible areas.	Flooding	No progress indicated
Pre-identify areas where debris and trees can be hauled to and burned or chipped.	Flooding	No progress indicated
UNION COUNTY		
Review Mutual Aid Agreements at the County and Jurisdictional Level.	All Hazards	Ongoing at no cost
Ensure Union County and jurisdictional Emergency Operation Plans are current.	All Hazards	Ongoing at no cost
Conduct Emergency Exercises to Test Emergency Operation Plans. Exercise severe weather drills and simulated hazardous material spills.	All Hazards	No progress indicated
Develop a comprehensive mass shelter and care plan for the entire county.	Severe Weather	No progress indicated
Identify at risk population in Union County	Severe Weather	No progress indicated
Maintain continuity of Operations Plan – Ties to LEOP	All Hazards	In Progress
Develop protocols to purchase food during sheltering events.	All Hazards	No progress indicated
Replace overhead lines affected by ice, water and trees with underground lines.	Winter/Ice Storms	No progress indicated
Ensure adequate water supply. Install alarm switches on hatches of all four water storage tanks and two underground pumping stations.	All Hazards	Complete
Installed standby generator connection at two sites that hose booster pumping equipment.	All Hazards	Complete

Tie all sites to central SCADA system to monitor 24/7.	All Hazards	Complete
Continue to participate in the National Flood Plain Program	Flooding	Ongoing
Establish Drainage Districts	Flooding	In progress – partially complete
Maintain an active public education program	All Hazards	No Progress
Identify roads that need to be elevated and culverts that need replacement.	Flooding	In progress – partially complete
Encouraging private property owners to install and maintain smoke detectors on all levels of the residence and to place detectors in all bedrooms.	Structural Fires	In progress – local fire departments participate in distribution of free smoke detectors

Table 4-2

The 2013 plan also established related mitigation actions to help meet the identified goals. Following is a summary of the accomplishments:

During the fourth Team meeting, discussions revolved around specific mitigation projects, how to determine cost, established a timeframe for completion, resources to assist in project completion, and project prioritization. The Team also discussed the effect of the proposed mitigation projects on hazards and how each project would meet the Plan’s goals and objectives. Participants at that meeting ranked and prioritized the projects using the following:

- Time Frame
- Priority
- Funding Resources

A table listing the proposed mitigation actions/projects for Union County and its communities can be found in Appendix D. The team identified some projects that are more preparedness in nature. Mitigation are those actions that minimize the amount of harm or damage to property and life. Mitigation projects could include such things as constructing safe rooms, land use zoning that prevents development in flood-prone areas or burying power lines to reduce the likelihood of power outages. Preparedness are actions that help with effective response. Preparedness activities could include preparing a fire department for response, developing a disaster response plan, and conducting disaster training.

Hazard Mitigation projects that are being submitted to the State will be reviewed for their cost effectiveness and must have a benefit cost analysis ratio of 1.0 or greater to be considered for submission. The South Eastern Council of Governments will work with Union County and their communities to help them determine whether a project is cost effective.



SECTION 5: PLAN UPDATE, EVALUATION, AND IMPLEMENTATION

After the Plan is reviewed and accepted by the Team and the local governing bodies, the Union County Emergency Management Director is responsible for submitting the plan to the State of South Dakota Hazard Mitigation Management Officer at the South Dakota Department of Public Safety. The State Hazard Mitigation Officer will then submit the plan to the Federal Emergency Management Agency (FEMA) for review. This review will address the criteria outlined in the FEMA Interim Final Rule 44 CFR Part 201. Upon acceptance by FEMA, Union County and the Communities will formally adopt the plan and will be eligible for Hazard Mitigation Grant Programs and other federal mitigation grants.

In order to be an effective hazard mitigation tool, the Union County Multi-Hazard Pre-Disaster Hazard Mitigation Plan should be updated on an annual basis or after the occurrence of a hazard event. It must also be flexible enough so that it can be used with existing planning and emergency management documents at both the city and county level. Local officials in Union County and their communities intend to ensure the following:

- The plan's goals and objectives address current and expected conditions

- The plan has addressed the nature, magnitude, and/or type of risks that have changed
- The current resources available are appropriate for implementing the plan
- The plan has addressed implementation issues such as technical, political, legal or coordination issues with other agencies
- The plan has measured the outcomes that have occurred and the progress that has been made regarding meeting hazard mitigation goals and objectives

The Union County Multi-Hazard Pre-Disaster Mitigation Plan 2019 Update is an open document that will be evaluated and updated as needed. The Union County Emergency Management Director is responsible for ensuring the plan is maintained. They will work with the Team throughout the Plan's maintenance process.

Each year, the Team will assemble as a group at an annual review meeting to evaluate the overall effectiveness of the Hazard Mitigation Plan. These meetings will be open to the public and the date, time, and location will be published in newspapers with circulation throughout the county. The group will scrutinize each chapter and individually discuss hazard mitigation actions that have been undertaken to indicate what has worked and not worked for their communities. At each annual review meeting, the group shall acknowledge the occurrence of a significant event, funding availability, changes in local priorities, and technological advancements. The public will be encouraged to provide input and insight into the plan and the progress in achieving the goals set forth.

When the review meeting concludes, the group will make changes to the current mitigation strategy, goals, and objectives as needed. If no changes are proposed, it is anticipated that the Plan would not be updated until required (within 5 years). The emergency managers will be responsible for ensuring that the Plan updates are incorporated into the Plan document. Each Team member will then be tasked with reporting their findings back to their local government officials. All city council meetings are open to the public and agendas are posted in advance. It is the responsibility of each mitigation planning team member to inform the residents of their particular jurisdiction the details of the Plan updates and mitigation activities, both planned and completed.

Each year the emergency manager for Union County will be tasked with annually reporting the Union County Multi-Hazard Pre-Disaster Mitigation Plan 2019 Update's effectiveness to its County Commission. These meetings are open to the public and agendas are posted in advance. At each annual review meeting, an update on the progress of current and ongoing hazard mitigation projects and priorities will be discussed. Each participating community represented in the Plan will be invited to send a representative to each County's review meeting of the County Commission. This will help ensure local jurisdiction input is a part of the annual plan review process.

To ensure the Union County Multi-Hazard Pre-Disaster Mitigation Plan 2019 Update's usefulness, local policy makers need to be familiar with the goals and actions that are identified

in this plan and incorporate these into local priorities. This can be accomplished by aligning local capital improvements with mitigation improvements during each community's annual budgeting process. This will allow local jurisdictions to better plan for future hazard mitigation projects and activities.

It is also imperative that County Officials and City Officials within Union County and their communities work together as a region when confronting the flooding hazard and other hazards. As Union County and the surrounding area continues to change, cooperation at all levels must occur.

SECTION 6: PLAN ADOPTION

City of Alcester, South Dakota
Resolution # 2019-06

A resolution of the City of Alcester Declaring Support and Adoption of the Union County Pre-Disaster Hazard Mitigation Plan Update, dated 2019.

WHEREAS, the Alcester City Council supports the contents of the Union County Pre-Disaster Hazard Mitigation Plan Update; and

WHEREAS, the Union County Pre-Disaster Hazard Mitigation Plan Update will be utilized as a guide for planning related to FEMA Hazard Mitigation and other purposes as deemed appropriate by the City of Alcester.

NOW THEREFORE BE IT RESOLVED, that the City of Alcester City Council hereby adopts, supports and will facilitate the implementation of the Union County Pre-Disaster Hazard Mitigation Plan Update.

Dated this 2 day of October, 2019.

CITY OF ALCESTER

Thomas Glas
Thomas Glas, Mayor

ATTEST:

Patricia Jurrens
Patricia Jurrens, Finance Officer

Date of Adoption: 10/2/19
Date of Publication: 10/17/19
Effective Date: 10/17/19



City of Beresford, South Dakota
Resolution # 2019-09

A resolution of the City of Beresford Declaring Support and Adoption of the Union County Pre-Disaster Hazard Mitigation Plan Update, dated 2019.

WHEREAS, the Beresford City Council supports the contents of the Union County Pre-Disaster Hazard Mitigation Plan Update; and

WHEREAS, the Union County Pre-Disaster Hazard Mitigation Plan Update will be utilized as a guide for planning related to FEMA Hazard Mitigation and other purposes as deemed appropriate by the City of Beresford.

NOW THEREFORE BE IT RESOLVED, that the City of Beresford City Council hereby adopts, supports and will facilitate the implementation of the Union County Pre-Disaster Hazard Mitigation Plan Update.

Adopted this 5th day of August, 2019



Nathan Anderson, Mayor

ATTEST:



Elaine Johnson, Finance Officer

**CITY OF ELK POINT, SOUTH DAKOTA
RESOLUTION #2019-10**

A resolution of the City of Elk Point Declaring Support and Adoption of the Union County Pre-Disaster Hazard Mitigation Plan Update, dated 2019.

WHEREAS, the Elk Point City Council supports the contents of the Union County Pre-Disaster Hazard Mitigation Plan Update; and

WHEREAS, the Union County Pre-Disaster Hazard Mitigation Plan Update will be utilized as a guide for planning related to FEMA Hazard Mitigation and other purposes as deemed appropriate by the City of Elk Point.

NOW THEREFORE BE IT RESOLVED, that the City of Elk Point City Council hereby adopts, supports and will facilitate the implementation of the Union County Pre-Disaster Hazard Mitigation Plan Update.

Adopted this 5th day of August, 2019

THE GOVERNING BODY OF THE CITY
OF ELK POINT

By: Deb M Ercrey
Mayor

ATTEST:

By: Gina Hammit
Finance Officer

(CITY SEAL)

RESOLUTION # 19R01

A resolution of the City of Jefferson, South Dakota, Declaring Support and Adoption of the Union County Pre-Disaster Hazard Mitigation Plan Update, dated 2019.

WHEREAS; the Jefferson City Council supports the contents of the Union County Pre-Disaster Hazard Mitigation Plan Update; and

WHEREAS; the Union County Pre-Disaster Hazard Mitigation Plan Update will be utilized as a guide for planning related to FEMA Hazard Mitigation and other purposes as deemed appropriate by the City of Jefferson, South Dakota.

NOW THEREFORE BE IT RESOLVED; that the City of Jefferson City Council hereby adopts, supports and will facilitate the implementation of the Union County Pre-Disaster Hazard Mitigation Plan Update.

Adopted this 7th day of October, 2019



Joe Bogenreif
Mayor
Jefferson, South Dakota

ATTEST:



Michaela Roark
City Finance Officer
Jefferson, South Dakota



City of North Sioux City, South Dakota
Resolution #2019-03

A resolution of the City of North Sioux City Declaring Support and Adoption of the Union County Pre-Disaster Hazard Mitigation Plan Update, dated 2019.

WHEREAS, the North Sioux City City Council supports the contents of the Union County Pre-Disaster Hazard Mitigation Plan Update; and

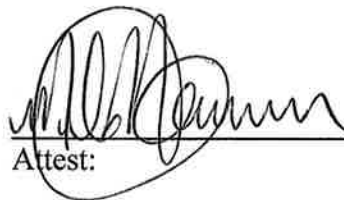
WHEREAS, the Union County Pre-Disaster Hazard Mitigation Plan Update will be utilized as a guide for planning related to FEMA Hazard Mitigation and other purposes as deemed appropriate by the City of North Sioux City.

NOW THEREFORE BE IT RESOLVED, that the North Sioux City City Council hereby adopts, supports and will facilitate the implementation of the Union County Pre-Disaster Hazard Mitigation Plan Update.

Adopted this 19TH day of AUGUST, 2019



Mayor



Attest:

Union County, South Dakota Resolution # 2019-01

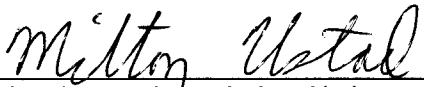
A resolution of the Union County Commission Declaring Support and Adoption of the Union County Pre-Disaster Hazard Mitigation Plan Update, dated September 24, 2019.

WHEREAS, the Union County Board of Commissioners supports the contents of the Union County Pre-Disaster Hazard Mitigation Plan Update; and

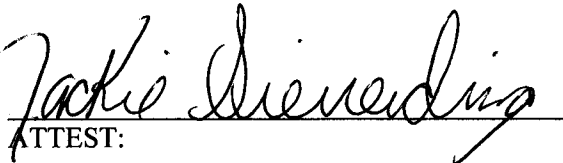
WHEREAS, the Union County Pre-Disaster Hazard Mitigation Plan Update will be utilized as a guide for planning related to FEMA Hazard Mitigation and other purposes as deemed appropriate by the Union County Board of Commissioners.

NOW THEREFORE BE IT RESOLVED, that the Union County Board of Commissioners hereby adopts, supports and will facilitate the implementation of the Union County Pre- Disaster Hazard Mitigation Plan Update.

Adopted this 24th day of September, 2019

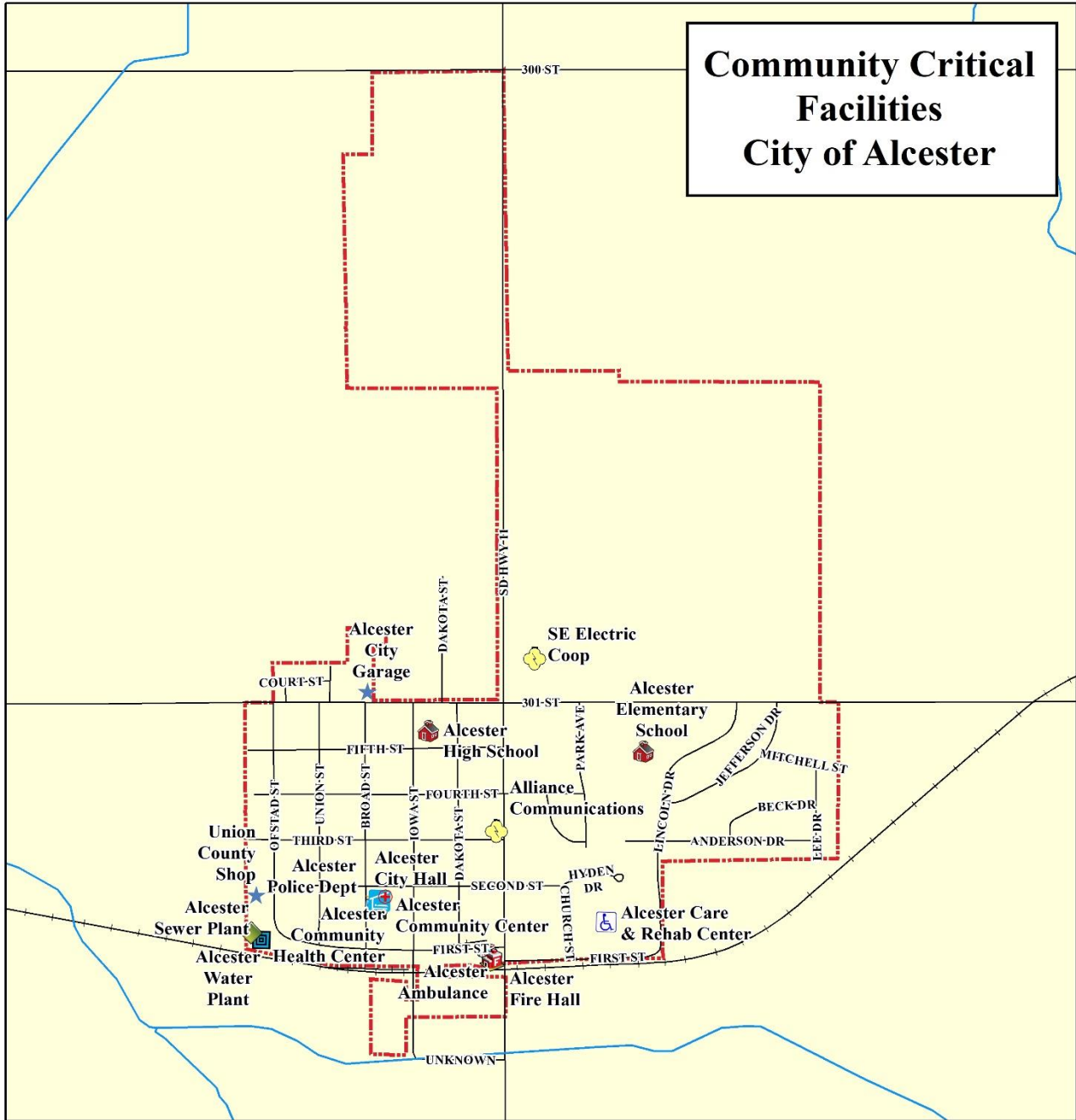


Union County Commission Chairman


ATTEST:

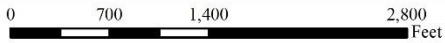
APPENDIX A: CRITICAL FACILITIES

Community Critical Facilities City of Alcester

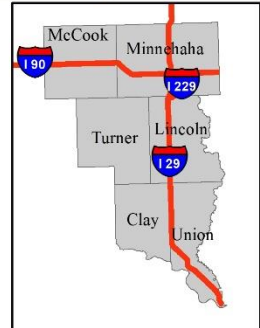


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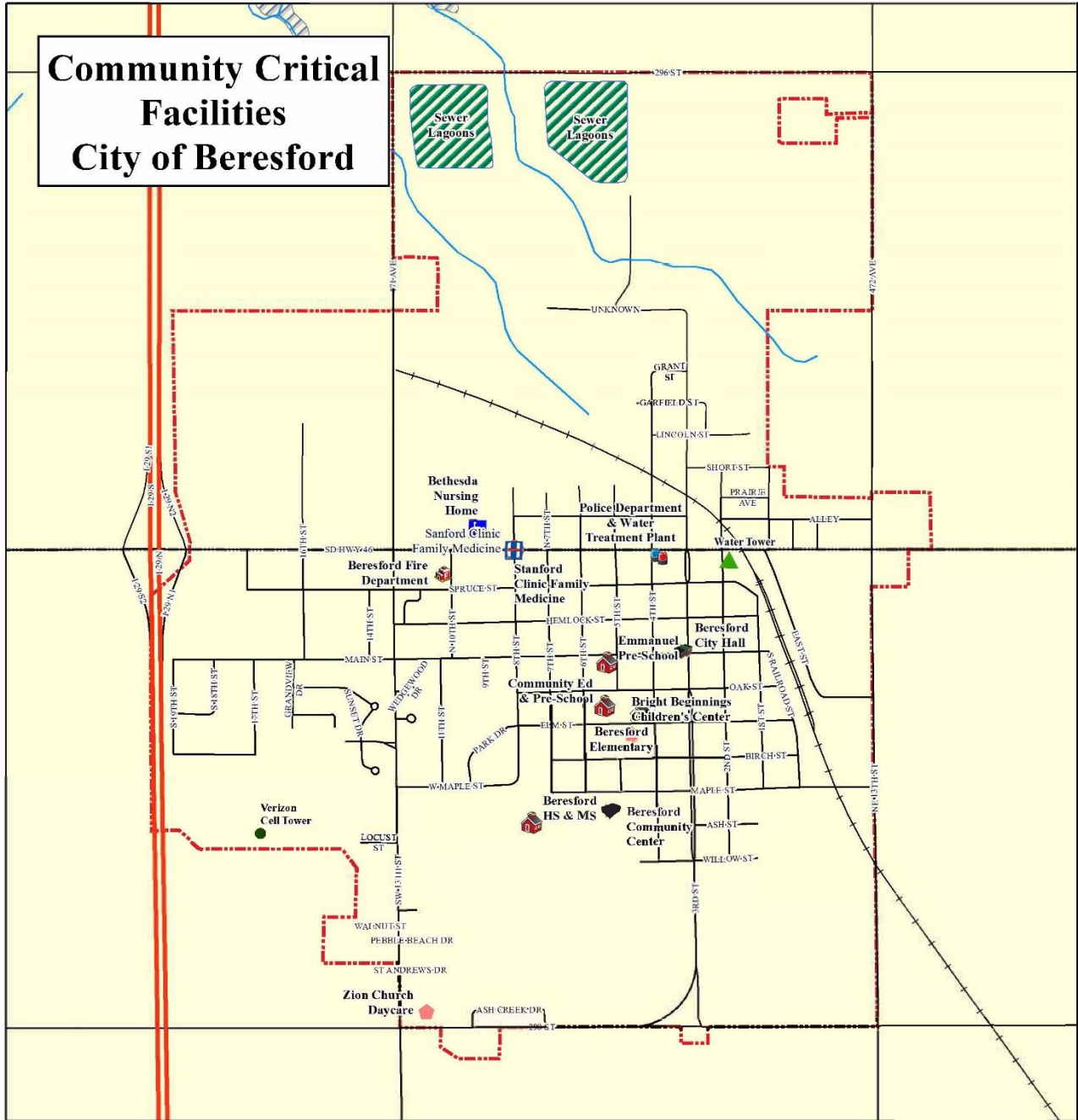
City Hall	Police Station	Water Tower
Courthouse	Daycare	Water Treatment
Government Building	School	Lift Station
Clinic	Nursing Home/Assisted Living	Public Utilities
Ambulance	Airport	
Fire Station	Shelter	



Map updated by
SECOG on 3/12/2019

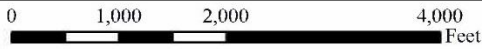


Community Critical Facilities City of Beresford

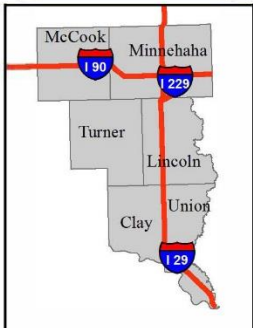


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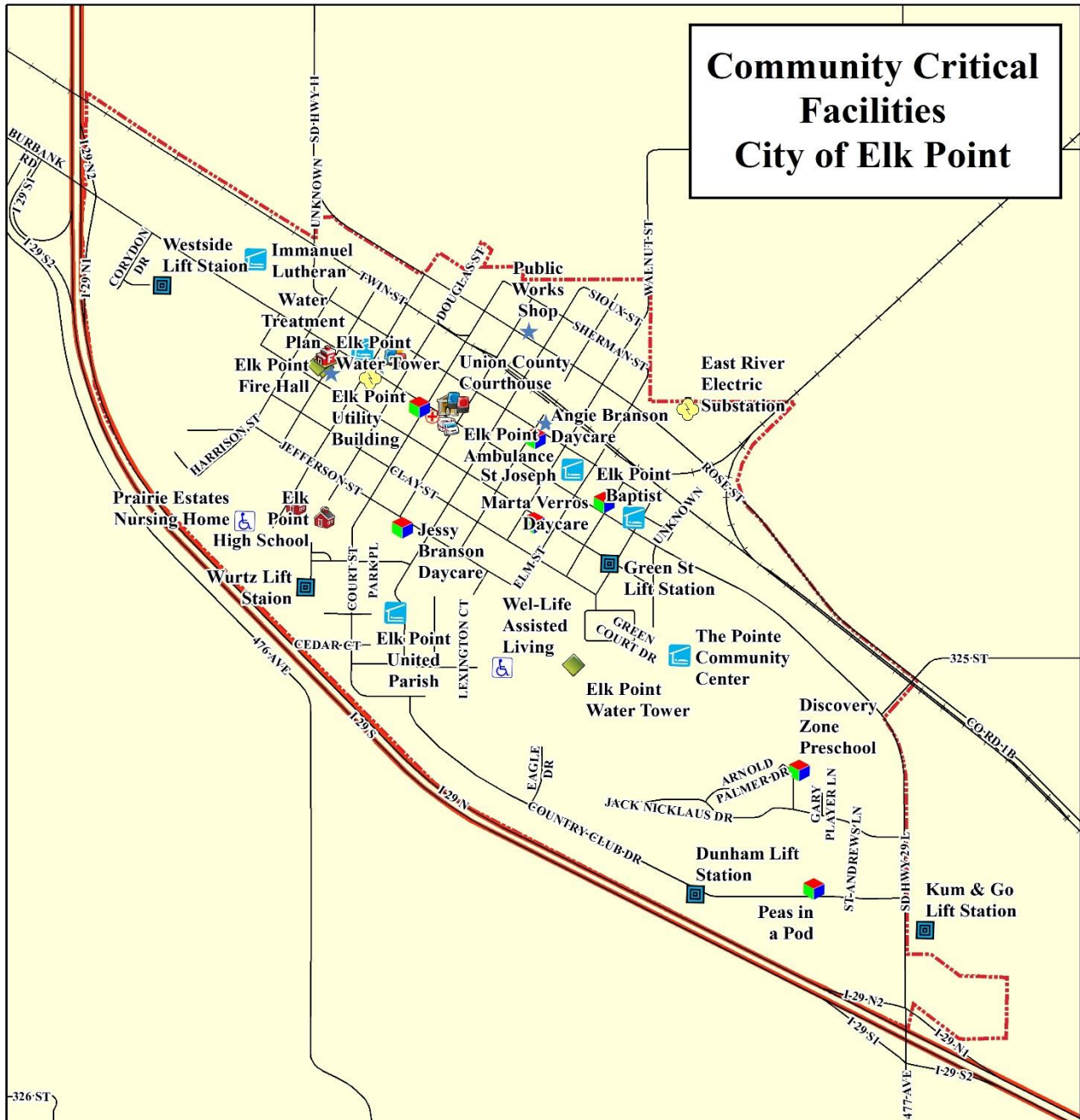
- | | | | |
|------------------|----------------|----------------------|-------------------|
| City Hall | Schools | Clinic | Interstate |
| Community Center | Daycare Center | Water Tower | Roads |
| Courthouse | Nursing Homes | Lift Station | City Limits |
| Fire Station | Ambulance | Communication Tower | Flood Zone |
| Police Station | Hospital | Wastewater Treatment | A |
| | | Railroads | AE |
| | | Rivers | |



Map updated by
SECOG on 8/1/2017

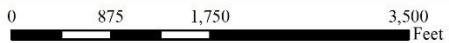


Community Critical Facilities City of Elk Point

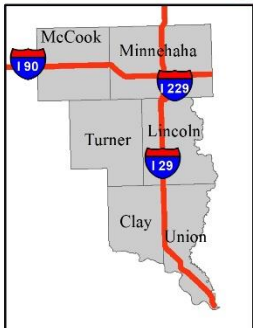


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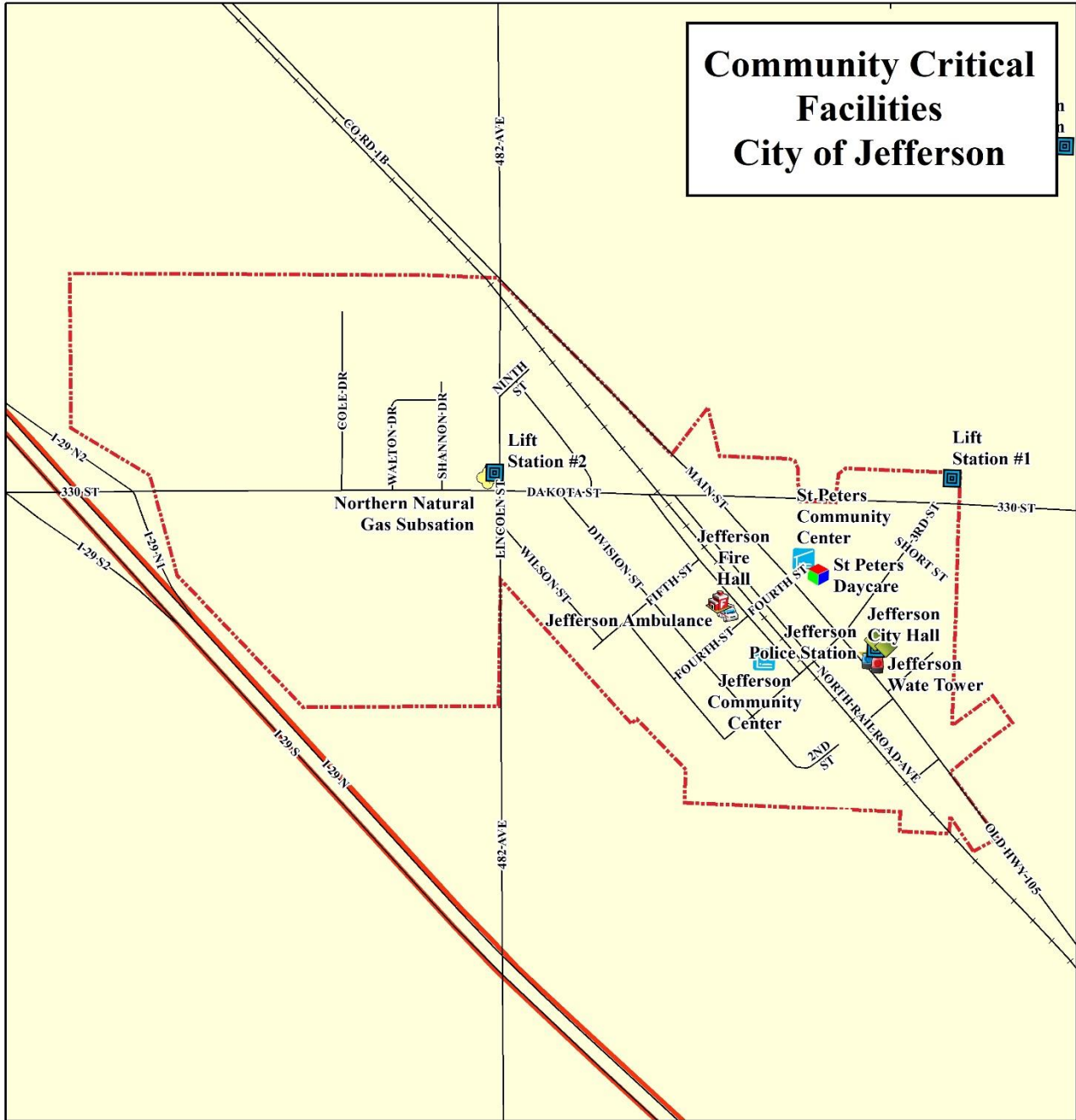
City Hall	Police Station	Water Tower
Courthouse	Daycare	Water Treatment
Government Building	School	Lift Station
Clinic	Nursing Home/Assisted Living	Public Utilities
Ambulance	Airport	
Fire Station	Shelter	



Map updated by SECOG on 3/12/2019

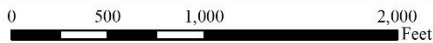


Community Critical Facilities City of Jefferson

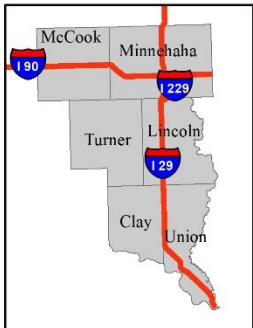


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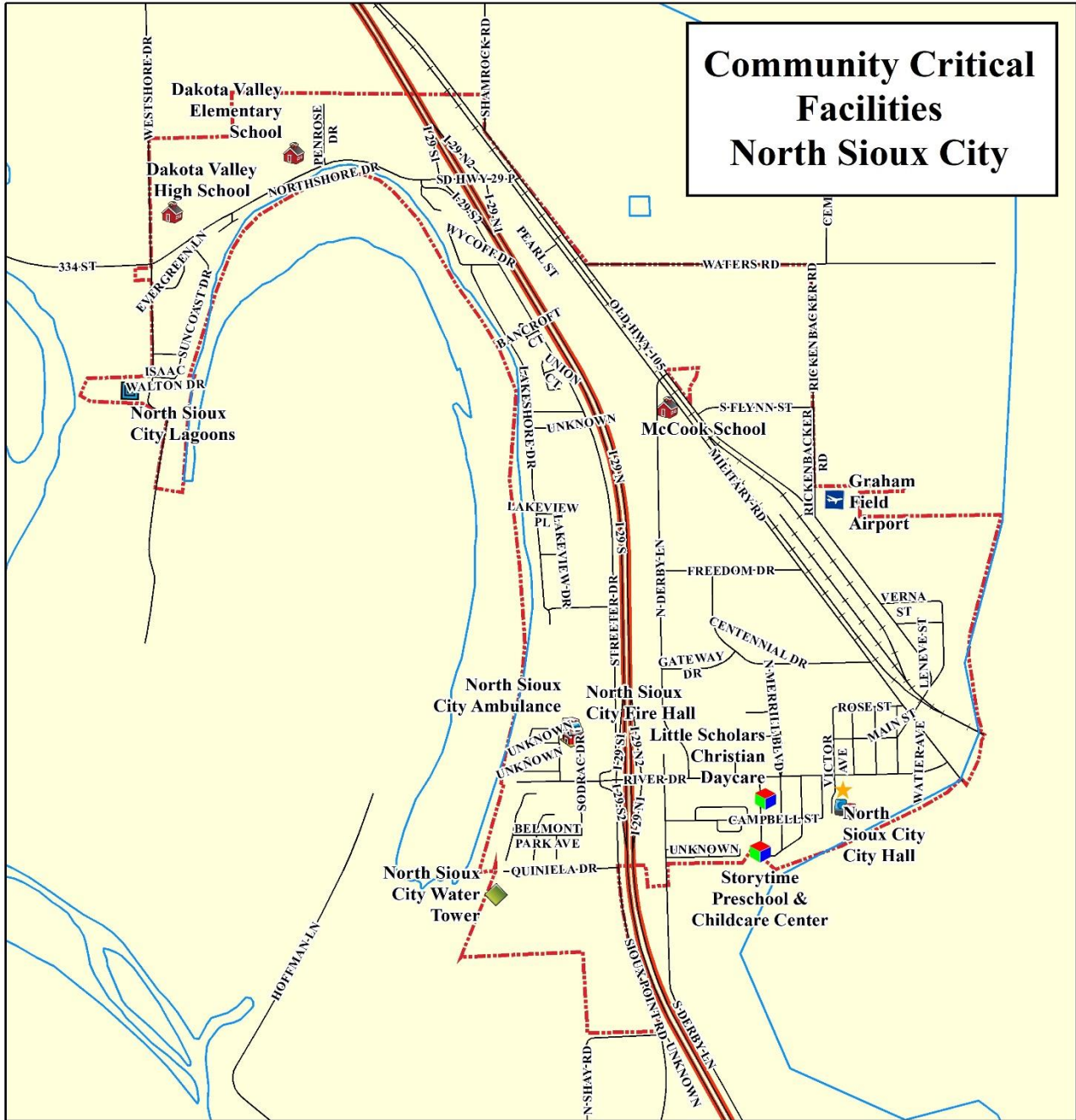
City Hall	Police Station	Water Tower
Courthouse	Daycare	Water Treatment
Government Building	School	Lift Station
Clinic	Nursing Home/Assisted Living	Public Utilities
Ambulance	Airport	
Fire Station	Shelter	



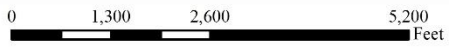
Map updated by SECOG on 3/12/2019



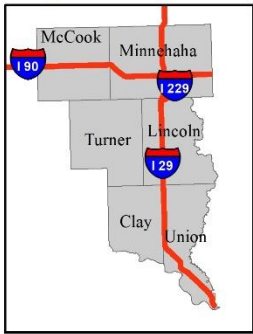
Community Critical Facilities North Sioux City



- Legend**
- | | | |
|---------------------|------------------------------|------------------|
| City Hall | Police Station | Water Tower |
| Courthouse | Daycare | Water Treatment |
| Government Building | School | Lift Station |
| Clinic | Nursing Home/Assisted Living | Public Utilities |
| Ambulance | Airport | |
| Fire Station | Shelter | |



Map updated by SECOG on 3/12/2019



APPENDIX B: SIGNIFICANT HAZARD EVENTS IN UNION COUNTY
JANUARY 1, 2012 – DECEMBER 31, 2018

LOCATION	COUNTY	DATE	TYPE
Union County	Union	01/20/2012	Winter Weather
Union County	Union	02/13/2012	Winter Weather
Union County	Union	02/13/2012	Winter Weather
Union County	Union	04/27/2012	High Wind
Alcester	Union	05/07/2012	Flood
Junction City	Union	05/27/2012	Thunderstorm Wind
Big Springs Township	Union	05/27/2012	Thunderstorm Wind
Big Springs Township	Union	05/27/2012	Hail
Big Springs Township	Union	05/27/2012	Thunderstorm Wind
McCook Lake	Union	05/27/2012	Hail
Graham Airport	Union	05/27/2012	Hail
Alcester	Union	05/28/2012	Flood
Union County	Union	06/01/2012	Drought
Union County	Union	06/27/2012	Excessive Heat
Union County	Union	07/01/2012	Drought
Union County	Union	07/02/2012	Excessive Heat
Union County	Union	07/15/2012	Excessive Heat
Union County	Union	07/18/2012	Excessive Heat
Union County	Union	08/01/2012	Drought
Union County	Union	08/01/2012	Excessive Heat
Union County	Union	09/01/2012	Drought
Union County	Union	10/01/2012	Drought
Union County	Union	11/01/2012	Drought
Union County	Union	12/01/2012	Drought
Union County	Union	12/27/2012	Winter Weather
Union County	Union	01/01/2013	Drought
Union County	Union	02/01/2013	Drought
Union County	Union	02/21/2013	Heavy Snow
Union County	Union	03/01/2013	Drought
Union County	Union	03/10/2013	Winter Weather
Union County	Union	04/01/2013	Drought
Union County	Union	04/09/2013	Winter Storm
Union County	Union	05/01/2013	Drought
Union County	Union	05/01/2013	Winter Weather
Alcester	Union	05/26/2013	Flood
McCook Lake	Union	06/25/2013	Thunderstorm Wind
Elk Point	Union	07/07/2013	Thunderstorm Wind
McCook Lake	Union	10/04/2013	Tornado
Jefferson	Union	10/04/2013	Tornado
Union County	Union	12/03/2013	Winter Weather

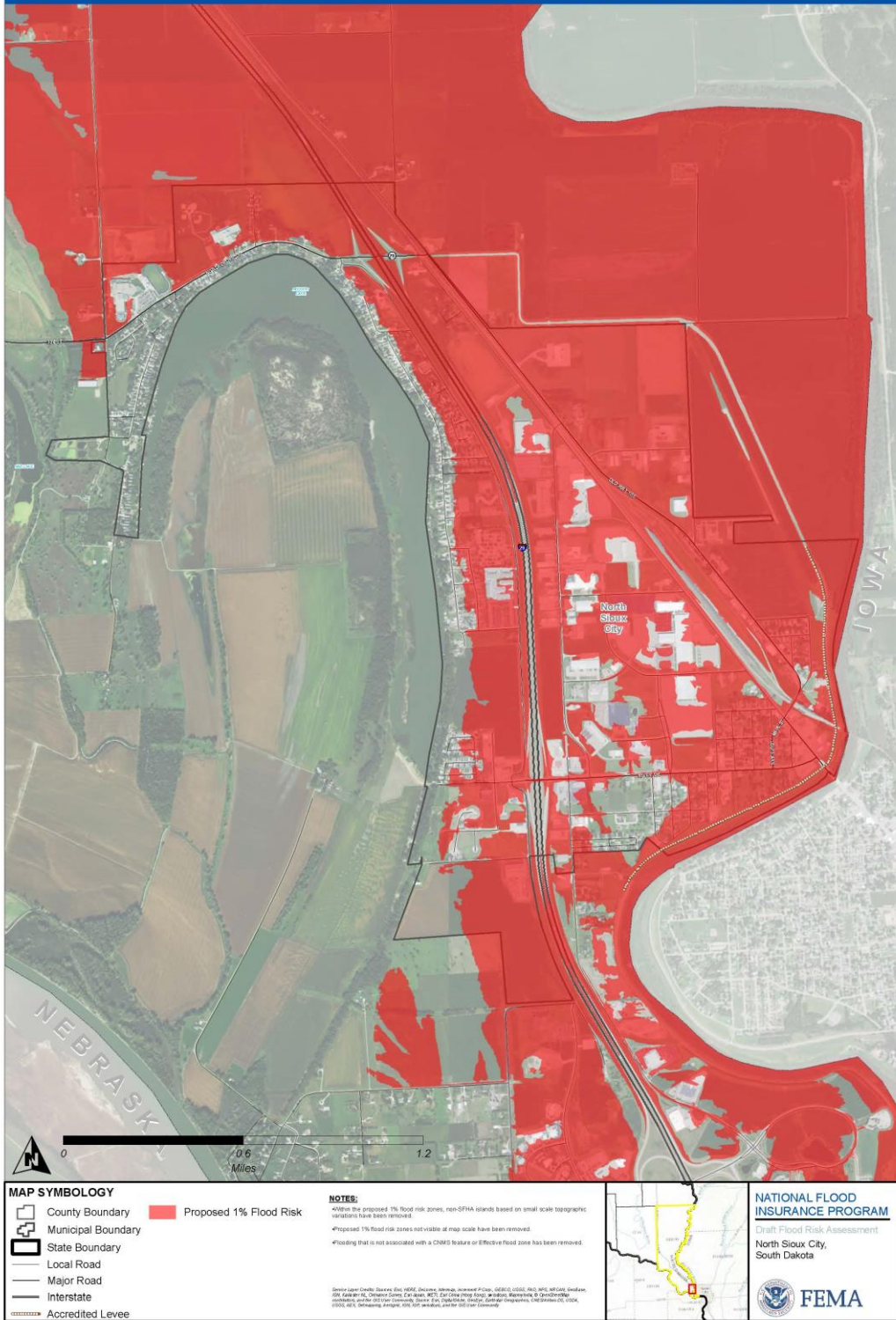
Union County	Union	01/16/2014	High Wind
Union County	Union	01/26/2014	High Wind
Union County	Union	04/03/2014	Winter Weather
Alcester	Union	05/08/2014	Hail
Midway	Union	05/11/2014	Thunderstorm Wind
Spink	Union	05/11/2014	Thunderstorm Wind
Spink	Union	05/11/2014	Tornado
Spink	Union	05/11/2014	Thunderstorm Wind
Spink	Union	05/11/2014	Thunderstorm Wind
Spink	Union	05/11/2014	Thunderstorm Wind
Spink	Union	05/11/2014	Thunderstorm Wind
Hillside	Union	06/15/2014	Flood
Alcester	Union	06/15/2014	Flood
Hillside	Union	06/16/2014	Flood
Big Springs Township	Union	06/16/2014	Hail
Junction City	Union	06/20/2014	Hail
Hillside	Union	09/19/2014	Hail
Nora	Union	09/19/2014	Thunderstorm Wind
Union County	Union	11/15/2014	Winter Weather
Union County	Union	12/15/2014	Winter Weather
Union County	Union	01/03/2015	Blizzard
Union County	Union	01/03/2015	Winter Weather
Union County	Union	01/05/2015	Winter Weather
Union County	Union	01/08/2015	Winter Weather
Union County	Union	01/31/2015	Winter Storm
Union County	Union	02/01/2015	Winter Storm
Union County	Union	02/09/2015	Winter Weather
Big Springs Township	Union	04/12/2015	Hail
Jefferson	Union	05/10/2015	Hail
McCook Lake	Union	06/06/2015	Flash Flood
Alcester	Union	07/06/2015	Thunderstorm Wind
Alcester	Union	08/09/2015	Thunderstorm Wind
Union County	Union	11/20/2015	Heavy Snow
Union County	Union	11/30/2015	Winter Storm
Union County	Union	12/01/2015	Winter Storm
Union County	Union	12/26/2015	Winter Storm
Union County	Union	12/28/2015	Winter Weather
Union County	Union	01/07/16	Winter Weather
Union County	Union	02/02/2016	Blizzard
Union County	Union	02/03/2016	Winter Weather
Union County	Union	02/07/2016	Winter Weather
Union County	Union	02/19/2016	High Wind

Union County	Union	03/23/2016	Winter Storm
Graham Airport	Union	04/24/2016	Hail
Alcester	Union	04/29/2016	Flood
Alcester	Union	05/01/2016	Flood
Union County	Union	06/10/2016	Excessive Heat
Union County	Union	07/20/2016	Excessive Heat
Union County	Union	11/18/2016	Winter Weather
Union County	Union	12/16/2016	Winter Weather
Union County	Union	12/17/2016	Cold/Wind Chill
Union County	Union	12/25/2016	High Wind
Union County	Union	01/17/2017	Winter Weather
Union County	Union	01/24/2017	Winter Storm
Union County	Union	02/23/2017	Blizzard
Union County	Union	03/12/2017	Winter Weather
Alcester	Union	06/13/2017	Thunderstorm Wind
Jefferson	Union	06/29/2017	Hail
Alsen	Union	06/29/2017	Hail
Richland	Union	08/19/2017	Hail
Union County	Union	12/21/2017	Winter Weather
Union County	Union	12/26/2017	Cold/Wind Chill
Union County	Union	12/31/2017	Extreme Cold/Wind Chill
Union County	Union	01/01/2018	Extreme Cold/Wind Chill
Union County	Union	01/10/2018	Winter Weather
Union County	Union	01/15/2018	Cold/Wind Chill
Union County	Union	01/22/2018	Blizzard
Union County	Union	02/05/2018	Winter Weather
Union County	Union	02/08/2018	Winter Weather
Union County	Union	02/19/2018	Winter Weather
Union County	Union	02/22/2018	Winter Weather
Union County	Union	02/24/2018	Winter Weather
Union County	Union	03/05/2018	Blizzard
Alcester	Union	03/06/2018	Flood
Big Springs Township	Union	03/08/2018	Flood
Union County	Union	03/16/2018	Winter Weather
Alcester	Union	03/24/2018	Flood
Big Springs Township	Union	03/29/2018	Flood
Big Springs Township	Union	04/01/2018	Flood
Alcester	Union	04/01/2018	Flood
Union County	Union	04/03/2018	Winter Weather
Union County	Union	04/08/2018	Winter Weather
Union County	Union	04/14/2018	Blizzard
Union County	Union	04/18/2018	Blizzard

Alcester	Union	04/21/2018	Flood
Big Springs Township	Union	04/21/2018	Flood
Big Springs Township	Union	05/01/2018	Flood
Alcester	Union	05/01/2018	Flood
Alcester	Union	05/12/2018	Flood
Big Springs Township	Union	05/12/2018	Flood
Richland	Union	05/13/2018	Flood
Alcester	Union	06/01/2018	Thunderstorm Wind
Alcester	Union	06/21/2018	Flood
Spink	Union	06/21/2018	Flood
Big Springs Township	Union	06/21/2018	Flood
Richland	Union	06/21/2018	Flood
Elk Point	Union	06/24/2018	Flood
Alcester	Union	07/01/2018	Flood
Elk Point	Union	07/01/2018	Flood
Richland	Union	07/01/2018	Flood
Big Springs Township	Union	07/01/2018	Flood
Union County	Union	07/04/2018	Heat
Union County	Union	07/11/2018	Heat
Spink	Union	09/04/2018	Flood
Alcester	Union	09/20/2018	Flood
Alcester	Union	09/20/2018	Flood
Big Springs Township	Union	09/20/2018	Flood
Spink	Union	09/20/2018	Flood
Richland	Union	09/21/2018	Flood
Elk Point	Union	09/23/2018	Flood
Big Springs Township	Union	10/01/2018	Flood
Richland	Union	10/01/2018	Flood
Alcester	Union	10/10/2018	Flood
Big Springs Township	Union	10/10/2018	Flood
Richland	Union	10/11/2018	Flood

APPENDIX C: FLOOD ZONES

NORTH SIOUX CITY, SOUTH DAKOTA: DRAFT FLOOD RISK ASSESSMENT



APPENDIX D: Hazard Mitigation Projects

JURISDICTION	HAZARD	MITIGATION ACTION	PRIORITY	TIME FRAME	COST	POTENTIAL FUNDING
Alcester	Multi-Hazard	Install two generators for the city lift stations	High	Long	Cost TBD	HMGP
	Multi-Hazard	Build a storm shelter or safe room with a generator	High	Long	Cost TBD	HMGP
	Flood	Build ways to contain rain water overflow	High	Short	Cost TBD	HMGP – SD DENR
	Multi-Hazard	Repair or replace failing storm sewer	Medium	Long	Cost TBD	SD DENR
	Multi-Hazard	Balloon treatment of sewer line or replacement of main	High	Short	Cost TBD	SD DENR
	Multi-Hazard	Replace generator	Medium	Long	Cost TBD	HMGP
	Multi-Hazard	Devise a plan to actively flush, repair and replace any needed fire hydrants	High	Short	Cost TBD	CITY
Beresford	Multi-Hazard	Provide 18-megawatt transformer as a back-up for the municipal electric system	High	Medium	Cost TBD	FEMA
	Flood	Replace storm culvert on northwest 13 th Street, approximately ¼ mile north of SD Highway 46	Medium	Long	Cost TBD	HMGP – SD DENR
	Multi-Hazard	Emergency generator backup for the public library – winter storm shelter	Low	Medium	Cost TBD	HMGP
Elk Point	Flood	Set up a drainage committee to determine the best approach to solving drainage.	High	Long	No Cost	CITY
	Summer Storm	Put together a plan to receive funding for upgrading our storm shelter.	High	Short	Cost TBD	CITY - SD DENR
Jefferson	Flood	Establish a drain board that would encompass the City plus the outlying rural areas so that we may address positive drainage and not pooling.	High	Long	No Cost	CITY
	Tornado	Establish a reliable shelter for residents.	Medium	Short	Cost TBD	CITY - HMGP
North Sioux City	Winter Storm	Provide consistent plowing with safe locations in case of power outage.	Low	Short	Ongoing	CITY
	Summer Storm/Tornado	Provide safe shelter locations for residents.	Low	Short	Cost TBD	CITY - HMGP
	Flood	Maintain current levee and culvert systems.	High	LT – Ongoing	Cost TBD	CITY
Civil Bend Township	Multi-Hazard	Identify township, local farmers, contractors and other area residents with equipment to assist with	High	Short	No Cost	CITY

		obstructed roadways. Compile list with contact numbers and type of equipment.				
Spink Township	Multi-Hazard	Clearing row of trees and debris.	High	LT - Ongoing	Cost TBD	LOCAL
	Summer Storm	Clean ditches and inspect and clear culverts	Medium	LT - Ongoing	Cost TBD	LOCAL
	Winter Storm	Mowing ditches in the fall and prompt snow removal	High	ST - Ongoing	Ongoing	LOCAL
Union County	Flood	The County spread a layer of crushed concrete on the road bed to allow traffic to enter a residence. Hire a contractor to pull up the washed off gravel out of the ditch.	High	Short	Cost TBD	LOCAL
	Flood	Perform a culvert inventory to assess the location, condition, diameter, obstructions, and elevations of all culverts in the county. Many of these culverts are plugged, in disrepair, and have other problems that need to be addressed.	Medium	Short	Cost TBD	LOCAL - HMGP
	Flood	Develop a voluntary buyout program for homeowners impacted by severe flooding.	High	Long	Cost TBD	FEMA

APPENDIX E: List of Tables and Figures

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APPENDIX F: Committee Meeting Documentation

AGENDA

September 12, 2018

4:00 pm Union County Courthouse, Elk Point, SD

- I. Welcome – Jim Poppen, State Hazard Mitigation Officer
- II. Introductions – 5 minutes
- III. Team Member’s Roles and Responsibilities – 5 minutes
- IV. Review Participant Packet – 10 minutes
- V. Activity: Refer to the list of hazards. Place the hazards in order of how they affect your community. Of the top three, how do they affect you and give examples – 20 minutes.
- VI. Wrap-Up – 5 minutes

Next Meeting: October 10, 2018, Union County Courthouse at 4:00 pm

Homework: List your community’s critical facilities with their street addresses

SIGN-IN

 SEPTEMBER 12, 2018 - 4:00 PM - UNION COUNTY COURTHOUSE
 UNION COUNTY PRE-DISASTER MITIGATION MEETING ONE

NAME	REPRESENTING	EMAIL	PHONE	TRAVELED FROM...
Anna Faulk	Wildland Fire	a.faulk@kentuckyint.net	712-898-1569	Nelson
Derek Tuttle	Elk Point	dtuttle@iw.net	605-356-2141	Elk Point
Arcade Abrecha	CP ^{district} _{Elk Point}	marche@gnail.com	605-214-0335	EP
Michael Nebelsick	MEI	mnebsick@mcclurgengineering.com	605-670-0169	Elk Point
Tim Hogan	North Sioux City	Tim.Hogan@NorthSiouxCitySD.gov	712-203-1803	North Sioux
Ed Cherry	N Sioux City	ed.cherry@northsiouxcitysd.gov	605-232-4276	N. Sioux
Richard Headid	Union County Commissioner - N. Sioux City	rich.headid@northsiouxcitysd.gov	605-270-3302	N. Sioux City Rural
MICHAEL DAILEY	UNION COUNTY COMMISSIONER	MIKEMADDAILEY@gmail.com	712-253-7336	JEFFERSON
Dan Clow	Mid. Can. Amer. Energy	DJClow@MidAmerican.com	605-373-6032	Sioux Falls
Arton Ritter	MidAmerican Energy	Artritter@midamerican.com	605-373-6094	Sioux Falls
Jerry A Buuma	Union Co Highway	jerry.buuma@unioncountysd.org	605-677-8967	Elk Point

SIGN-IN

SEPTEMBER 12, 2018 - 4:00 PM - UNION COUNTY COURTHOUSE

UNION COUNTY PRE-DISASTER MITIGATION MEETING ONE

NAME	REPRESENTING	EMAIL	PHONE	TRAVELED FROM...
Quinn Schewe BV	Horizon HealthCare Elk Point Clinic	dschewe@horizonhealthcare.org	605-356-3317	N/A
Tracy Schurdevia MA	Horizon Clinic Alcester Sp	tschurdevia@horizonhealthcare.org	605-934-2122	Alcester
Mark Fickbohm	Alcester Twp	m.fickbohm@akota.com	6053213038	Alcester
Randy Crum	City of Jefferson	jeffersonsp@longhorns.af	(605) 966-5588	Jefferson
GARY Schaeffer	Jefferson Fire Council	gcsbmv@gmail.com	710 251 7119	Jefferson

SIGN-IN

SEPTEMBER 12, 2018 - 4:00 PM - UNION COUNTY COURTHOUSE

UNION COUNTY PRE-DISASTER MITIGATION MEETING ONE

NAME	REPRESENTING	EMAIL	PHONE	TRAVELED FROM...
Andy Minihan	Union County EMA	axemad@unioncountysd.org	605-670-1548	
Jim Pappan	SDOEM ACRC	jim.pappan@state.sd.us	605 773 3831	Pierre
Chris Hansen	Jefferson SD	Chris.hansen@calcester.com	605 934 2011	Alcester
Joe Bogenreif	Union County Planning Director	wczoning@unioncounty sd.org	605-966-5231	Jefferson SD
Dennis Henze			605 356-3354	—

SIGN-IN

SEPTEMBER 12, 2018 - 4:00 PM - UNION COUNTY COURTHOUSE

UNION COUNTY PRE-DISASTER MITIGATION MEETING ONE

NAME	REPRESENTING	EMAIL	PHONE	TRAVELED FROM...
Linda Scarmon	Junk Toys	nomraes@yahoo.com	605-677-8046	Spink
George Young	Prairie Toys	6h Young 65@yahoo.com	605-957-4592	Prairie
Paul Fillingness	City of Beresford	pfillingness@hotmail.com	605-360-4227	Beresford
Trevor Job	City of Elk Point	Tjob@vastbb.net	605-670-8679	Elk Point

AGENDA

Wednesday, October 10, 2018

4:00 pm Union County Courthouse

- VII. Welcome and Introductions – 5 minutes
- VIII. Summary of Hazard Ranking – 5 minutes
- IX. Identify Community Assets – 10 minutes
- X. Activity: Probability and Vulnerability – 20 minutes
- XI. Wrap-Up – 5 minutes

Next Meeting: November 14, 2018 – 4:00 pm – Union County Courthouse

Homework: Complete Capability Assessment Worksheet

Also, if you haven't already, please provide the following ASAP:

- **Critical Facilities**
- **Community Questionnaire from 2013**

SIGN-IN

October 10, 2018 - 4:00 PM - UNION COUNTY COURTHOUSE

UNION COUNTY PRE-DISASTER MITIGATION MEETING TWO

NAME	REPRESENTING	EMAIL	PHONE	TRAVELED FROM...
Union County Emerg mgmt Andy Minikel	UCEM A	ucemasd@unioncountysd.org	605 670-1548	Spink, SD
MIKE DAILEY	Union County Commissioner	mike.dailey@unioncountysd.org	712 253-7336	Rural Jefferson
Ted Cherry	N. Sioux City	ted.cherry@northsioux.city-sd.gov	605-252-4276	N. Sioux City
Richard Headid	N. Sioux City PD - Union County Commissioner N. Sioux City, PD	rich.headid@northsioux.city-sd.gov	712-253-6278	N. Sioux City
Dustin Straley		Dustin.Straley@northsioux.city-sd.gov	712-666-2014	N. Sioux City
Tim Hagan	Sioux City of North	Tim.Hagan@northsioux.city-sd.gov	712-203-1803	North Sioux City

SIGN-IN

October 10, 2018 - 4:00 PM - UNION COUNTY COURTHOUSE

UNION COUNTY PRE-DISASTER MITIGATION MEETING TWO

NAME	REPRESENTING	EMAIL	PHONE	TRAVELED FROM...
Jerry A Baum	Union County Highway Dept	Jerry.baum@unioncounty.sd.org	605-677-8967	EP
SAU HAGED	CIVIL BEND TOWNSHIP	Kneeboone Hagen @ gmail.com	712-490-6901	RURAL JEFFERSON
TRAK Tuttle	CITY OF ELK POINT	dtuttle@iw.net	386-2141	EP
Wendy Schurdevin	CITY OF ELK POINT	wendy@schurdevin.com	605-214-6337	EP
Evor Job	CITY OF ELK POINT	Tjob@Vastbb.net	605-670-8679	EP
Wendy Crum	CITY OF JEFFERSON	jeffersonsdpd@engineers.com	(605) 766-5588	JEFFERSON
Wendy Kothorst	CITY OF JEFFERSON	wendykothorst@yahoo.com	712-259-4277	JEFFERSON
Wendy Roark	CITY OF JEFFERSON	aroark002@gmail.com	712-577-1699	SIOUX CITY
Wendy McLaury	CITY OF ELK POINT	kimclausy@mcclausy engineering.com	605-356-2308	EP
Wendy Schreier	Horizon HealthCare ELK POINT CLINIC	dschreier@horizonhealthcare.org	605-356-3317	EP
Wendy Schurdevin	HORIZON HEALTH ALGER CENTER	Fschurdevin@horizonhealthcare.org	605-434-2122	ALGER CENTER
LIZ McRigan	SPINK TOWNSHIP		414-559-4833	SPINK

AGENDA

November 14, 2018

4:00 pm Union County Courthouse

- XII. Welcome and Introductions – 5 minutes
- XIII. Recap of risk assessment – 10 minutes
- XIV. Activity: Problem Statements – 30 minutes
- XV. Wrap-Up – 5 minutes

Next Meeting: December 12, 2018 4:00 pm Turner County Courthouse – Subsequent dates to be determined

Homework:

Complete Problem Statement Worksheet and bring back with you at next meeting!

Also, if you haven't already, please provide the following ASAP:

- **Critical Facilities**
- **Community Questionnaire**
- **Capability Assessment Worksheet**

SIGN-IN

NOVEMBER 14, 2018 - 4:00 PM - UNION COUNTY COURTHOUSE

UNION COUNTY PRE-DISASTER MITIGATION MEETING #3

NAME	REPRESENTING	EMAIL	PHONE	TRAVELED FROM...
Linda Searmon	Spink team Spink	nom.vacs@ydnac.com	605 677 8046	Spink SD
David Fullenkamp	Civil Bend trip	dfullenkamp@vernet.net	712.309.5223 605	Elk Point
Allan Hagen	Civil Bend Trip		712-490-6901	RURAL JEFFERSON
Randy Crum	City of Jefferson	jeffersonsp@jefferson.com	(727) 838-5253	Jefferson
Michaela Roark	City of Jefferson	cityjeff@longlines.com	605-906-5838 712-490-2609	Jefferson
Tim Hagan	City of North Sioux	tim.hagan@northsiouxcity.gov	605 232 9165 712 203 1803	North Sioux
Derek Tuffe	City of Elk Point	dtuffe@iw.net	605-214-2956	Elk Point
MICHAEL DAILEY	Union County	mike.dailey@unioncountysd.org	712-253-7336	Rural Jefferson
Andy Miniken	Union County Eng Mgt	ucemad@unioncountysd.org	605-670-1548	Spinks SD
Jim Feeney	SECOG	jim@secof.org	605.681.8175	Sioux Falls

AGENDA

December 12, 2018, 2018

4:00 pm Union County Courthouse

XVI. Welcome and Introductions – 5 minutes

XVII. Activity: Finalizing Mitigation Actions – 40 minutes

XVIII. Wrap-Up – 5 minutes

Next Meeting: TBD

Also, if you haven't already, please provide the following ASAP:

- **Critical Facilities**
- **Community Questionnaire**
- **Capability Assessment Worksheet**

SIGN-IN

December 12, 2018 - 4:00 PM - UNION COUNTY COURTHOUSE

UNION COUNTY PRE-DISASTER MITIGATION MEETING #4

NAME	REPRESENTING	EMAIL	PHONE	TRAVELED FROM...
Jerry Zeimetz	City of Beresford	jerry@bmtc.net	605-751-9210	Beresford
Leslie Mastoranni	Secoq	leslie@secoq.org	681-8184	Sioux Falls
Allan Hagen	CIVIL BEND	UOVE	712-490-6901	JEFFERSON
LINDA SCARMON	SPUNK Township	nomracs@yahoocom	605-677-8046	Spink
Jerry A Bunn	Union Co.	jerry.bunn@unioncounty.org	605-677-8967	EKK Point
Andy Mirnikan	Union County Emergency Mgt	wemas@unioncounty.org	605-670-1548	
MIKE DAILEY	Union Co. Jefferson Township	mike.dailey@unioncounty.org	712-253-7336	Jefferson
Tim Hagen	North Sioux City	Tim.Hagen@NorthSiouxCity.org	712-263-1803	North Sioux
Michaeldeen Roark	JEFFERSON CITY	cityjeff@longines.com	605-966-5838	JEFFERSON

Press Release

FOR IMMEDIATE RELEASE

Release Date: Wednesday, April 17, 2019

Contact: Andy Minihan, Union County Emergency Manager, 605-761-1812

Union County Multi-Hazard Pre-Disaster Mitigation Planning Meeting to be held on April 25th at 4:00pm

Over the course of the last several months, a planning committee consisting of representatives from Union County and the municipalities within the county have been meeting to facilitate the update of the Union County Multi-Hazard Pre-Disaster Mitigation Plan. The updated Plan is required for Union County and the municipalities within the county to remain eligible for the Federal Emergency Management Agency's Hazard Mitigation Grant Program Funding.

The Planning Committee is scheduled to hold a meeting to review and ask for public input on the current draft update of the 2019 Union County Multi-Hazard Pre-Disaster Mitigation plan on **Thursday, April 25th from 4:00 PM to 6:00 PM** at the Union County Courthouse, 209 E Main St., Elk Point, SD 57025. At this meeting, the committee will be reviewing the current draft update of the 2019 Union County Multi-Hazard Pre-Disaster Mitigation plan and voicing any final concerns or changes. They will also ask for any final concerns or changes from the public.

This meeting is one of several public meetings to be held during the development of the updated Plan. Individuals with specific knowledge or interest regarding the topics being discussed are encouraged to attend to provide feedback on potential pre-disaster hazard mitigation projects.

For more information, please contact Andy at 605-761-1812 or visit www.secog.org.

AGENDA

April 25, 2019

4:00 pm Union County Courthouse, Elk Point, SD

2019 Pre-Disaster Mitigation Plan Draft Review and Public Forum

- I. Review of Committee's Prior Work
- II. Comments Prior to Draft Review
- III. Review of Draft PDM Report
- IV. Discussion / Next Steps
 - a. Submission to State and FEMA for Review
 - b. Adoption by Participating Jurisdictions

SIGN-IN

APRIL 25, 2019 - 4:00 PM - UNION COUNTY COURTHOUSE

UNION COUNTY PRE-DISASTER MITIGATION MEETING #5 - DRAFT REVIEW AND PUBLIC FORUM

NAME	REPRESENTING	EMAIL	PHONE	TRAVELED FROM...
Jerry Zeinste	Beresford	jerry@bntk.net	605-751-9210	Beresford
Ted Cherry	N. Sioux	ted.cherry@northsiouxcity-sd.gov	605-232-4274	N. Sioux
Jeary A Buam	Union County Leader - October	jerry.buam@unioncounty-sd.org	605-677-8967	E.P.
Beth Fenel	Timon	timon1@in.net	605-356-2632	Elk Point
Linda Sarnon	Spink township Union County	nomracs@yotro.com	605-677-8046	Spink
Andy Miribar	Emergency Mgmt Jefferson Township	ucemasd@unioncountysd.org	605-670-1548	Spink
Mike Dailey	Union County	mike.dailey@unioncountysd.org	712-253-7336	Jefferson Township
Pat Gunnens	Alcester	alcestercityfo@alliancecm.net	605-934-2851	Alcester

APPENDIX G: References

Print References

Local Mitigation Planning Handbook. FEMA. March 2013.

Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards. FEMA. January 2013.

South Dakota Hazard Mitigation Plan. April 2014. South Dakota Office of Emergency Management/Dewberry. 2014.

Community Status Book Report – South Dakota. FEMA. February 26, 2018.

Big Sioux River Watershed Strategic Plan. South Dakota Department of Environment and Natural Resources. June 2016.

Union County Comprehensive Plan 2013. Union County.

Beresford: Comprehensive Plan 2035. City of Beresford.

Electronic References

Repetitive Loss County Summary. <https://bsa.nfipstat.fema.gov/reports/1040.htm>.

NFIP Policy Statistics. <https://bsa.nfipstat.fema.gov/>.

FEMA Flood Map Service Center. <https://msc.fema.gov/portal>.

Disaster Federal Registry Notice. www.fema.gov.

National Weather Service. www.weather.gov.

National Centers for Environmental Information. www.ncdc.noaa.gov/stormevents.

National Climatic Data Center. www.ncdc.noaa.gov.

Federal Emergency Management Agency. www.fema.gov.

United States Drought Monitor. <http://drought.unl.edu/MonitoringTools/USDroughtMonitor.aspx>.

National Weather Service – Storm Ready. <https://www.weather.gov/stormready/>.

Sioux Falls Area Climate Summary. http://w2.weather.gov/climate/local_data.php?wfo=fsd.

United States Census Bureau. <https://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml>.

South Dakota Dashboard. <https://www.southdakotadashboard.org/>.

National Severe Storms Laboratories. <https://www.nssl.noaa.gov/>.

United States Geological Survey. <https://www.usgs.gov/>.

United States Environmental Protection Agency. <https://www.epa.gov/>.

National Oceanic and Atmospheric Administration. <https://www.noaa.gov/>.

Sioux City Journal. <https://www.siouxcityjournal.com/>.

CorpsMap National Inventory of Dams. <http://nid.usace.army.mil/>.

South Dakota Department of Environment and Natural Resources. <https://denr.sd.gov/>.