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## I. INTRODUCTION

### **CHANGES/REVISIONS TO INTRODUCTION:**

The Methodology, Authorities, References, Acronyms, and Definition of Terms were eliminated from the plan as all fell under one or more of the following categories: outdated, not required, lacked purpose, or covered or further explained in another section of the plan. Purpose, scope, and goals were added to the Introduction.

Additionally for organization purposes, the County Profile section was included in the Introduction rather than written as a separate Chapter of the plan. Minor changes were made to the County Profile as some elements such as population have changed since the 2003 draft was written.

## INTRODUCTION

Beadle County is vulnerable to natural, technological, and man-made hazards that have the possibility of causing serious threat to the health, welfare, and security of our citizens. The cost of response and recovery, in terms of potential loss of life or loss of property, from potential disasters can be lessened when attention is turned to mitigating their impacts and effects before they occur or re-occur.

This plan identifies the region's hazards to further understand our vulnerabilities. This knowledge will help identify solutions that can significantly reduce threat to life and property. The plan is based on the premise that hazard mitigation works. With increased attention to mitigating natural hazards, communities can do much to reduce threats to existing citizens and avoid creating new problems in the future. In addition, many mitigation actions can be implemented at minimal cost.

This is not an emergency response or emergency management plan. Certainly, the plan can be used to identify weaknesses and refocus emergency response planning. Enhanced emergency response planning is an important mitigation strategy. However, the focus of this plan is to support better decision making directed toward avoidance of future risks and the implementation of activities or projects that will eliminate or reduce the risk for those that may already have exposure to a natural hazard threat.

## PURPOSE OF THE PRE-DISASTER MITIGATION PLAN

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

1. Identifies hazards and their associated risks and vulnerabilities;
2. Develops and prioritizes mitigation projects; and
3. Encourages cooperation and communication between all levels of government and the public.

The purpose of this plan is to meet the hazard mitigation planning needs for Beadle County and participating entities. Consistent with the Federal Emergency Management Agency's guidelines, this plan will review all possible activities related to disasters to reach efficient solutions, link hazard management policies to specific activities, educate and facilitate communication with the public, build public and political support for mitigation activities, and develop implementation and planning requirements for future hazard mitigation projects.

## **PURPOSE**

To fulfill federal, state, and local hazard mitigation planning responsibilities; to promote pre and post disaster mitigation measures, short/long range strategies that minimize suffering, loss of life, and damage to property resulting from hazardous or potentially hazardous conditions to which citizens and institutions within the county are exposed; and to eliminate or minimize conditions which would have an undesirable impact on our citizens, economy, environment, or the well-being of the County. This plan will aid city, township, and county agencies and officials in enhancing public awareness to the threat hazards have on property and life, and what can be done to help prevent or reduce the vulnerability and risk of each Beadle County jurisdiction.

## **PLAN USE**

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

## **SCOPE**

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

## **LOCAL GOALS**

These ideas form the basis for the development of the PDM Plan and are shown from highest priority, at the top of the list, to those of lesser importance nearer the bottom.

- Protection of life before, during, and after the occurrence of a disaster;
- Protection of emergency response capabilities (critical infrastructure);
- Establish and maintain communication and warning systems;
- Protection of critical facilities;
- Government continuity;
- Protection of developed property, homes and businesses, industry, education opportunities and the cultural fabric of a community, by combining hazard loss reduction with the community's environmental, social, and economic needs; and
- Protection of natural resources and the environment, when considering mitigation measures.

## **LONG-TERM GOALS**

- Eliminate or reduce the long-term risk to human life and property from identified natural and technologic hazards;
- Aid both the private and public sectors in understanding the risks they may be exposed to and finding mitigation strategies to reduce those risks;
- Avoid risk of exposure to identified hazards;
- Minimize the impacts of those risks when they can not be avoided;
- Mitigate the impacts of damage as a result of identified hazards;
- Accomplish mitigation strategies in such a way that negative environmental impacts are minimized;
- Provide a basis for funding of projects outlined as hazard mitigation strategies; and
- Establish a regional platform to enable the community to take advantage of shared goals, resources, and the availability of outside resources.

## **WHAT IS HAZARD MITIGATION?**

Hazard mitigation is defined as any cost-effective action(s) that has the effect of reducing, limiting, or preventing vulnerability of people, property, and the environment to potentially damaging, harmful, or costly hazards. Hazard mitigation measures, which can be used to eliminate or minimize the risk to life and property, fall into three categories. First are those that keep the hazard away from people, property, and structures. Second are those that keep people, property, and structures away from the hazard. Third are those that do not address the hazard at all but rather reduce the impact of the hazard on the victims such as insurance. This mitigation plan has strategies that fall into all three categories.

Hazard mitigation measures must be practical, cost effective, and environmentally and politically acceptable. Actions taken to limit the vulnerability of society to hazards must not in themselves be more costly than the value of anticipated damages.

The primary focus of hazard mitigation actions must be at the point at which capital investment decisions are made and based on vulnerability. Capital investments, whether for homes, roads, public utilities, pipelines, power plants, or public works, determine to a large extent the nature and degree of hazard vulnerability of a community. Once a capital facility is in place, very few opportunities will present themselves over the useful life of the facility to correct any errors in location or

construction with respect to hazard vulnerability. It is for these reasons that zoning and other ordinances, which manage development in high vulnerability areas, and building codes, which insure that new buildings are built to withstand the damaging forces of hazards, are often the most useful mitigation approaches a city can implement.

Previously, mitigation measures have been the most neglected programs within emergency management. Since the priority to implement mitigation activities is generally low in comparison to the perceived threat, some important mitigation measures take time to implement. Mitigation success can be achieved, however, if accurate information is portrayed through complete hazard identification and impact studies, followed by effective mitigation management. Hazard mitigation is the key to eliminating long-term risk to people and property in South Dakota from hazards and their effects. Preparedness for all hazards includes: response and recovery plans, training, development, management of resources, and mitigation of each jurisdictional hazard.

This plan evaluates the impacts, risks and vulnerabilities of natural hazards within the jurisdictional area of the entire county. The plan supports, provides assistance, identifies and describes mitigation projects for each of the local jurisdictions who participated in the plan update. The suggested actions and plan implementation for local governments could reduce the impact of future natural hazard occurrences. Lessening the impact of natural hazards can prevent such occurrences from becoming disastrous, but will only be accomplished through coordinated partnership with emergency managers, political entities, public works officials, community planners and other dedicated individuals working to implement this program.

## **BEADLE COUNTY PROFILE**

Beadle County is located in the east central portion of South Dakota. The geographic area constitutes 1,259.42 square miles. According to the U.S. Census Bureau website, the estimated population for 2008 is 15,878, a decline from the County's 2000 population which was 17,023 persons. Using the 2008 estimated population, a population distribution of 12.6 persons per square mile is achieved.

According to the 2000 Census, nearly 40% of the population is between the ages of 25 and 55 and just over 19% of the population is over 65 years of age. An average of 2.3 persons lives in each household. Nearly 12% of the county population is below the poverty level. High school graduates consist of 83% of the population while college graduates consist of 18% of the population.

United States Highway 14 is the main east-west route through the county. U.S. Highway 281 is the major north-south route through the county. In addition, State Highway 37 runs north to south in the central portion of the county. The Canadian Pacific Railroad bisects the county from east to west approximately through the middle. The Burlington Northern and Santa Fe Railroad runs north to south slightly west of the middle of the county. The VALERO pipeline bisects the entire county from north to south slightly west of the middle of the county.

The South Dakota State Fair, which is held in Huron, brings an estimated 125,000 individuals to the city every fall for one week. Also, the 4-H Horse Show brings around 15,000. Hunting season brings in 5,000 persons each season. Achievement Days and sporting events such as swimming, softball, and racing, each bring in an additional several thousand persons. During these times, emergency response agencies may be taxed in the event of an emergency or disaster. The chance for mishap greatly increases with each event of population influx.

The eastern portion of the county is relatively flat while the western portion becomes rolling and hilly. The James River bisects the county north to south slightly to the east of the center. It flows from north to south and has two major tributaries: Foster Creek and Shue Creek, which connect with the James River north of Huron. Cain Creek and Pearl Creek south of Huron also connect with the river. Only 5.51 square miles of water is located within the county, primarily consisting of the James River and Lake Byron on the northern edge of the county.

The county seat is Huron which has a year 2000 population of 11,893. There are 5,872 housing units. The city covers an area of approximately eight square miles at an average elevation of 1,275 feet. The water area within the city is .13 square miles consisting of Ravine Lake and the James River. Huron lies at the junction of U.S. Highway 14 and State Highway 37.

## II. PREREQUISITES

**CHANGES/REVISIONS TO PREREQUISITES:**

The Prerequisites section is entirely new to the Beadle County PDM as it is required by the 2008 Crosswalk, but did not exist in the 2003 draft.

### ADOPTION BY LOCAL GOVERNING BODY

The local governing body that oversees the update of the Beadle County Pre-Disaster Mitigation (PDM) Plan is the Beadle County Commission. The Commission has tasked the Beadle County Emergency Manager with the responsibility of ensuring that the PDM Plan is compliant with Federal Emergency Management Agency (FEMA) Guidelines and corresponding regulations.

### MULTI-JURISDICTIONAL PLAN PARTICIPATION

This plan is a multi-jurisdictional plan which serves the entire geographical area located within the boundaries of Beadle County, South Dakota. Beadle County has nine incorporated municipalities. Most of the municipalities located within Beadle County elected to participate in the planning process and the update of the existing Beadle County Pre-Disaster Mitigation (PDM) Plan. The participating local jurisdictions include the following municipalities:

<b>Table 2.1: Plan Participants</b>		
<b>New Participants</b>	<b>Continuing Participants</b>	<b>Do Not Participate</b>
Broadland	Beadle County	Iroquois
Cavour	Huron	
Dakota Energy Coop		
Virgil		
Wessington		
Wolsey		
Yale		
Hitchcock		

\*Iroquois is located on the border of Beadle and Kingsbury counties. Only 37 persons and 15 housing units lie within Beadle County. Iroquois will most likely be covered under the Kingsbury County PDM Plan.

\*\*Wessington is located on the border of Hand and Beadle counties. Most of Wessington’s population is located in Beadle County including 230 of 248 persons and 109 of 118 housing units, thus Wessington has decided to participate in the Beadle County PDM rather than the Hand County PDM.

The Beadle County Commissioners and each of the listed participating municipalities will pass resolutions to adopt the updated PDM Plan. In addition to these municipalities, Dakota Energy Cooperative, a local rural electric cooperative, also participated in the plan update and will pass a resolution to adopt the Beadle County PDM Plan.

The townships are not direct participating entities in the plan because the townships are too small, both in population and in resources, to be capable of handling disaster needs on their own. The townships are served by the County whenever necessary. The townships were invited to participate in the PDM Plan update; however, none of the township officials attended the meetings.

The Beadle County PDM Plan was adopted by resolution by eight incorporated municipalities, the Beadle County Commission, and by one rural electric, Dakota Energy Cooperative. The Resolutions of Adoption are included as supporting documentation for the PDM Plan. The dates of adoption by resolution for each of the jurisdictions are summarized in Table 2.2.

<b>Table 2.2: Dates of Plan Adoption by Jurisdiction</b>	
<b>Jurisdiction</b>	<b>Date of Adoption</b>
Beadle County Commission	
Broadland	
Cavour	
Dakota Energy Cooperative	
Hitchcock	
Huron	
Iroquois	N/A
Virgil	
Wessington	
Wolsey	
Yale	

All of the participating jurisdictions were involved in the plan update. Representatives from each municipality, the County, and Dakota Energy Cooperative attended the planning meetings and provided valuable perspective on the changes required for the plan. All representatives took part in the risk assessment by completing the risk assessment worksheets which are included as Appendix G and by profiling the risks. Representatives also took information from the PDM planning meetings back to their respective councils and presented the progress of the plan update. The local jurisdictions have also presented the Resolution of Adoption to their councils and will pass the resolutions upon FEMA approval of the PDM Plan update. The Resolutions are included on the following pages as Attachment B.



Table 2.3 was derived to help define “participation” for the local jurisdictions who intend on adopting the plan. Out of ten categories, each jurisdiction must have at least of eight of the participation requirements fulfilled. Dakota Energy Cooperative is not listed on the table, but has met each of the requirements.

<b>Table 2.3: Record of Participation</b>									
<b>Nature of Participation</b>	Broadland	Cavour	Hitchcock	Huron	Beadle Co.	Virgil	Wessington	Wolsey	Yale
Attended Meetings or work sessions (a minimum of 2 meetings will be considered satisfactory).	■	■	■	■	■	■	■	■	■
Submitted inventory and summary of reports and plans relevant to hazard mitigation.	■	■	■	■	■	■	■	■	■
Submitted the Risk Assessment Worksheet.	■	■	■	■	■	□	■	■	■
Submitted description of what is at risk (including local critical facilities and infrastructure at risk from specific Hazards) Worksheet 3A	□	■	■	■	■	■	■	■	■
Submitted a description or map of local land-use patterns (current and proposed/expected).	■	■	■	□	□	■	■	■	■
Developed goals for the community.	■	■	■	■	■	■	■	■	■
Developed mitigation actions with an analysis/explanation of why those actions were selected. (minimum of 1 per jurisdiction)	■	■	■	■	■	■	■	■	■
Prioritized actions emphasizing relative cost-effectiveness.	■	■	■	■	□	■	■	■	■
Reviewed and commented on draft Plan.	□	■	□	■	■	□	□	□	■
Hosted opportunities for public involvement (allowed time for public comment at a minimum of 2 city council meetings after giving a status report on the progress of the PDM Plan update)	⚡⚡	■	■	■	■	■	□	■	■
<p>■ Met</p> <p>□ Not met</p> <p>⚡⚡ Requirement Waived or Not Applicable</p>									

### III. PLANNING PROCESS

**CHANGES/REVISIONS TO PLANNING PROCESS:**

Planning Process is an entirely new section to the Beadle County PDM as it is required by the 2008 Crosswalk, but did not exist in the 2003 draft.

#### DOCUMENTATION OF THE PLANNING PROCESS

*“An open and public involvement process is essential to the development of an effective plan.” Requirement 201.6(b).*

Public meetings were held at the City of Huron Municipal Building to inform the public about the required PDM Plan update. A planning committee was formed from those persons who attended the public meetings. After the informational meetings were held, the planning committee started working through the existing plan and noting deficiencies, corrections, and updates that needed to be made. The meeting minutes from each of the planning meetings outlines exactly which sections of the plan were revised at each of the meetings and are included as Appendix A.

The existing plan did not follow the format of the most recent crosswalk provided by FEMA dated July 1, 2008. To ensure that the updated plan included everything required by the crosswalk, the planning committee made the decision to use the crosswalk as the outline for the updated plan. A table of contents page was formed from the crosswalk, outlining each of the sections listed in the crosswalk. Then each line item from the crosswalk was inserted into the new document as a heading or area of focus. The 2003 PDM Plan was then compared to the new crosswalk and any portion of the 2003 PDM Plan that was not needed to fulfill the new crosswalk requirements was eliminated and deficiencies were noted as areas of focus.

The remaining portions of the existing plan were reorganized and placed under the appropriate sections of the new plan. This process was completed through a number of work sessions which were advertised in the legal section of the local newspapers, on the Huron Chamber of Commerce website, the Huron radio station, and on the Huron High School television channel. These methods of advertising the plan update process were determined by the planning committee to be the most likely way to create public awareness and public involvement in the process of updating the PDM Plan. The Plan Author followed the direction provided at the FEMA G318 Mitigation Planning Workshop for Local Governments and also used the FEMA Multi-Hazard Mitigation How-To Guidance.

#### SELECTION OF THE PLANNING TEAM

The Beadle County Emergency Manager, staff from Northeast Council of Governments, the Huron City Planner, and Dakota Energy Cooperative Operations Superintendent led the development of the plan update. The local jurisdictions were represented by city council members and/or finance officers who attended the meetings. The council

members then took the information from the work sessions back to their jurisdictions and discussed the progress of the plan at their council meetings. There were no external contributors such as contractors or private businesses, other than Dakota Energy Cooperative.

Those who attended the initial planning meeting for the PDM Plan update were asked to volunteer to serve on the planning committee. Those who volunteered were people who already serve the public in other capacities such as city council and county commission. The only person who volunteered to serve on the committee, who was not already a City Employee, council member, or county commissioner, was Lynn Kruse from Dakota Energy Cooperative, Inc. The planning committee was tasked with reviewing the drafts and providing comments after Northeast Council of Governments initiated changes to the existing plan. Each of the local jurisdictions had a member of their respective councils represent the municipalities in the plan. Those representatives are listed by jurisdiction:

**Table 3.1: PDM Plan Representatives for Local Jurisdictions**

Broadland	Jan Haskett, Emergency Response Coordinator
Cavour	Kristen Bich, Finance Officer
Hitchcock	Scott Gross, Trustee
Huron	Ralph Borkowski, City Planner
Iroquois**	N/A
Wessington	Jeff Reinhardt, Town President
Wolsey	Ruth Brodkorb, Town President
Virgil	George Merkel, Finance Officer
Yale	Kristen Bich, Finance Officer
** Does not participate in the plan	

The representatives from the municipalities were asked to share the progress of the plan at their council meetings and to ensure that those attending the council meetings were aware that they are invited to make comments on and participate in the process of updating the new plan. Comments provided by local residents at the city council meetings were collected and incorporated into the plan.

**PUBLIC INVOLVEMENT**

The public was provided several opportunities to comment on the plan during the drafting stages, both at the PDM Planning Meetings and at City Council Meetings. There were several work sessions and public hearings held to keep the public updated and involved in the plan, however, no one from the public showed up to comment on the plan or to help with the plan update. Those who were most involved were those who volunteered to be part of the planning committee at the very beginning and then stuck with it until the plan was completed.

## SURVEY

In addition to the public hearings, worksessions, and council meetings, the group decided to conduct a survey which was sent out to each of the 35 townships and was kept at the county treasurer's office for people to fill out while they were renewing their license and registration. Only 24 surveys were completed and returned to the Beadle County Emergency Manager. Due to the insignificant number of completed surveys the results are inconclusive; however, since the planning team was using the survey as an opportunity for the public to provide comments they decided that the information and comments collected from the surveys should still be included as part of the updated plan. The survey is attached as Appendix B and the results of the survey are summarized in the following paragraph.

Of the 24 completed surveys, 6 of the respondents reside in Huron, 2 reside in Wolsey, 1 resides in Wessington, 4 reside in Hitchcock, 3 reside in Virgil, and 8 reside in Rural Beadle County. When asked which natural hazards cause the most concern in the area the following hazards were presented in the survey: flood, tornado, severe winter weather, thunder/lightening/hail, strong winds, drought, wildfire. Additionally, the survey provided an option marked "other" with a line to write in other hazards. Respondents added ice storms, excess water, and extreme cold to the list. Respondents were supposed to rank the hazards from highest concern to lowest concern however, due to unclear wording in the survey each of the responses came back in many different forms. In effort to compile the data for the summary of findings, the responses were tallied by the number of times each hazard was checked on a survey:

Natural Hazard	# of times check marked
Flood	8
Tornado	4
Severe Winter Weather	13
Thunder/lightening/Hail	6
Strong Winds	9
Drought	7
Wildfire	0
Other	
Ice Storms	4
Excess Water	3
Extreme Cold	2

Twenty-one of the 24 respondents indicated that they had been negatively affected by a natural hazard in the last 10 years. Three of the respondents answered "no" to the question. The three respondents who answered "no" reside in Huron, Wessington, and Beadle County. When asked what type of natural hazard had negatively affected them, respondents indicated all of the hazards listed above except wildfire. The survey asks if the natural hazard that affected the respondents caused any of the following:

<b>EFFECTS</b>	<b># OF RESPONSES</b>
Cause displacement from primary residence for more than 3 days	2
Cause you to have to take an alternate route to work, school, church, medical facility, etc	9
Damage personal property to include home, structures, land, or crops	14
Cause injuries to yourself or someone you know	3
Cause death to someone you know	0
No	1
No Answer	3

Twenty-two of the 24 respondents indicated that they have a safe place to go in the event of a tornado and 16 indicated that they do not feel there is a need for a storm shelter in their areas. Four respondents feel there is a need for storm shelters in the area and four respondents did not answer. The responses to the survey appear to follow the same sentiment as was shared among the planning team members about summer storms—that being that most people have safe places to go in the event of a tornado, however many would rather go outside and watch the storm rather than take cover in a safe place and thus leading to the conclusion that even if the local jurisdictions constructed safe rooms or storm shelters, such places would not be utilized in the event of a tornado.

The next portion of the survey addresses alternate sources of heat in the event of loss of power during severe winter storms, the type of energy source, and how long the respondent could survive without power. Eighteen respondents indicated they have alternate sources of power and five indicated that they do not have an alternate source of power. Twelve of the eighteen indicated they have backup generators, 4 indicated they have wood burning stoves available, and 2 indicated they have both propane gas and a backup generator.

Respondents were asked how many days they could survive without electricity. The responses were divided into four groups and summarized in the following table.

<b>How long can you survive without power?</b>	<b># of Responses</b>
7 days or less	2
8 to 20 days	4
Indefinitely	5
No Answer	13

The final question on the survey asked if respondents felt like the local governing bodies could or should do more to mitigate the effects of natural hazards that occur in their

areas. Only 4 respondents indicated “yes” that more could or should be done. Sixteen respondents answered “no” and 4 did not answer. Those indicated yes were supposed to provide project ideas that might help mitigate the effects of natural hazards in the area. Three of those who answered yes provided the following comments:

“Go to underground power lines; dredge the river to get it moving better.”

“Help with debris clean up after flood; open roads after blizzard.”

“When the tornado hit our area, after the initial response there was lots of unnecessary traffic and some looting. We should have closed all roads coming off the highway except for residents accessing their homes.”

The comments provided in the survey were discussed at the September PDM meeting by the planning team. The plan for power line burial had already been discussed and is covered in the mitigation section by Dakota Energy Cooperative. The emergency manager commented on the other suggestions and noted that the comments were all very good points. However, closing roads to prevent looting, clearing roads after snow storms, and cleaning up debris are all after-the-fact and thus do not qualify as mitigation actions. The suggestion of dredging the river will require further discussion.

The last section of the survey provided a place for additional comments. Only one of the 24 respondents chose to write additional comments which are provided below.

“Town of Virgil distributed weather warning radios in 2008; this has helped in keeping residents aware of severe conditions.”

Acquiring weather radios for the small towns in Beadle County was a project listed in the 2003 Plan which has been completed.

## **OPPORTUNITIES FOR PUBLIC INVOLVEMENT**

The public was provided several opportunities to comment on the plan during the drafting state and prior to plan approval. Every time the planning committee held a meeting to work on drafting the plan, the meetings were published in the local newspapers and advertised on the radio and local television station. The information for the meetings was also posted on the Huron Chamber of Commerce website. The local jurisdictions also provided the public the opportunity to comment on the plan during their city council meetings.

Every group, agency, business, and interested party had equal opportunity to be involved in the planning process. Unfortunately, none of the private sector or nonprofit sector took the initiative to be involved in the plan update. There are no colleges or universities located in Beadle County.

Each of the representatives from the local jurisdictions put the PDM plan update on the agenda at their council meetings and allowed people to comment at the meetings. Table 2.5 identifies the location and date of each opportunity that was provided for the public to comment and how it was advertised.

**Table 3.5: Opportunities for Public Comment**

Location of Opportunity	Date	Type of Participation			How Was Meeting Advertised			
		City Council Meeting	PDM Meeting	Survey	Public Notice	Radio	Mailing	Website
Broadland	10/12/2009	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	**	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cavour	11/02/2009	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	12/07/2009	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hitchcock	10/05/2009	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	12/07/2009	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Huron	10/26/2009	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	11/16/2009	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Iroquois	NA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	NA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Virgil	10/05/2009	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	11/02/2009	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Wessington	9/3/2009	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	**	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Wolsey	9/14/2009	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	12/08/2009	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Yale	10/19/2009	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	11/16/2009	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Beadle County	12/17/2008	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	3/31/2009	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	5/13/2009	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	6/17/2009	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	7/15/2009	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	9/10/2009	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	10/13/2009	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	11/12/2009	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

\*\*Asterisk denotes communities that will provide second opportunity after plan status changes to “approvable pending adoption.”

## **TECHNICAL REVIEW OF EXISTING DOCUMENTS**

The review and incorporation of existing plans, studies, reports and technical information was completed by the local jurisdictions. Each of the communities was asked to provide a list of existing documents that they have available. Many of the smaller communities do not have such documents.

The existing plan was used as a resource for the new plan because most of the natural hazard profile research had already been completed when the existing plan was drafted in 2003. In addition to the 2003 PDM Plan, the plan author reviewed several other existing documents including but not limited to the South Dakota State Hazard Mitigation Plan, Beadle County Hazmat Plan, the City of Huron Zoning Ordinances and Comprehensive Plan, County Zoning Ordinances, the flood damage prevention ordinance, Beadle County HAZUS 2009 report, and Flood Insurance Rate Maps for the local jurisdictions. A summary of the technical review and incorporation of existing plans is included in Table 3.6 provided on page 17.



**Table 3.6 :Record of Review (Summary)**

Existing Program/Policy/ Technical Documents	Local Jurisdiction								
	Beadle Co.	Broadland	Cavour	Hitchcock	Huron	Virgil	Wessington	Wolsey	Yale
Comprehensive Plan	NA	NA	NA	NA	✓	NA	NA		NA
Growth Management Plan	NA	NA	NA	NA	NA	NA	NA	NA	NA
Flood Damage Prevention Ordinance	✓	✓	✓	NA	✓	NA			NA
Floodplain Management Plan		✓	NA	NA	✓	NA	NA		NA
Flood Insurance Studies or Engineering studies for streams	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hazard Vulnerability Analysis (by the local Emergency Management Agency)	O	C	C	C	C	NA	C	C	C
Emergency Operations Plan	O	NA	NA	NA	✓	NA	NA	NA	NA
Zoning Ordinance	O	C	C	C	✓	C	C	C	C
Building Code	O	C	C	C	✓	C	C	C	C
Drainage Ordinance	O	NA	NA	NA	✓	C			NA
Critical Facilities maps	NA	NA	NA	NA	NA	NA	NA	NA	NA
Existing Land Use maps	NA	NA	NA	NA	✓	NA	NA	NA	NA
Elevation Certificates	O	NA	NA	NA	✓	NA	NA	NA	NA
State Hazard Mitigation Plan	✓	--	--	--	--	--	--	--	--
HAZUS	✓	NA	NA	NA	NA	NA	NA	NA	NA

NA : the jurisdiction does not have this program/policy/technical document

O : the jurisdiction has the program/policy/technical document, but did not review/incorporate it in the mitigation plan

C : the jurisdiction is regulated under the County's policy/program/technical document

✓ : the jurisdiction reviewed the program/policy/technical document

## REVIEW OF THE 2003 PDM PLAN

The planning team reviewed and analyzed each section of the plan and each section was revised as part of the update process. The existing plan did not follow a format that was consistent with or agreeable to the layout of the most recent version of the crosswalk. When the planning committee reviewed the existing plan, they found that the PDM plan would be more easily read and understood if it followed the outline of the crosswalk. The crosswalk was then used to create a new Table of Contents and the rest of the plan was developed from the Table of Contents. The plan author also used the Local Multi-hazard Mitigation Planning Guidance (dated July 1, 2008) and the How-to Guides provided by FEMA to develop tables for the updated plan.

When the planning committee reviewed the introduction and profile sections of the plan, it was determined that there were numerous sections including tables, graphs, and addendums that did not serve an immediate or identifiable purpose to the PDM Plan and thus, those sections were eliminated. The Hazards section of the plan, needed some revision in both language and format to follow the crosswalk, but the information provided in that section was useful and was reused in the updated plan. Some of the areas were eliminated, and others were revised and rewritten. Every section of the plan was reconsidered by the planning committee and the group decided which sections were useful and which sections should be eliminated. The committee review of the plan took place over the course of several two-hour worksessions that were held at the Huron Municipal Building from 1:00 o'clock p.m. to 3:00 o'clock p.m. on the following dates:

April 14, 2009  
May 13, 2009  
June 17, 2009  
July 15, 2009  
September 10, 2009  
October 13, 2009  
November 12, 2009

Prior to the work sessions there were two other scheduled meetings on December 17, 2008 and March 31, 2009. The December meeting was a presentation that explained the purpose and reason for the PDM plan and the required plan update. The March meeting was rescheduled due to severe winter weather warnings in the area.

The meeting minutes from each of the worksessions identify each section of the hazard mitigation plan and how it was analyzed, discussion that took place, and changes that were made. The meeting minutes are attached as Appendix A to the plan for reference.

## IV. RISK ASSESSMENT

### CHANGES/REVISIONS TO RISK ASSESSMENT:

- Pages 19-22 of the Risk Assessment is new to the PDM Plan. While some of the information correlates to the 2003 draft of the PDM, the information was rewritten for clarity.
- The Natural Hazards in the PDM Jurisdiction was edited and rewritten for clarity, however the general information did not change.
- The Hazard Profile was reorganized and some new information, tables, and narrative were added
- Addressing Repetitive Loss Properties is a new section
- Addressing Vulnerability (Overview) is a new section but the information was taken from the 2003 PDM's Chapter 3: Hazards
- Identifying Structures is a new section but the information was taken from the Beadle County Profile section of the 2003 Plan. Values of the structures included in this section were updated.
- Estimating Potential Losses, Methodology for Calculating estimated losses and Analyzing Development Trends are entirely new sections

### IDENTIFYING HAZARDS

Many new websites have been developed since the 2003 plan was drafted, so the planning committee used some of those websites as resources for the updated plan. Specifically, the National Oceanic Atmosphere Administration and the Spatial Hazard Events and Losses Database for the United States (SHELDUS) were used to research natural hazards and disasters that have occurred in the last six years within the geographic location covered under the Beadle County PDM Plan. A summary of the findings for significant hazard occurrences from the past five years is provided below in Table 4.1:

<b>Table 4.1: Significant Hazard Occurrences 1999-2008</b>		
<b>Type of Hazard</b>	<b># of Occurrences Since 1999</b>	<b>Source</b>
Drought	7	NOAA
Wildfire/ Forest Fire	217	NOAA & State Fire Marshall's Office
Flood	12	NOAA
Hail	88	NOAA & SHELDUS
Lightning	3	NOAA
Tornado	9	NOAA & SHELDUS
Temperature Extremes	2	NOAA
Snow and Ice	40	NOAA
Thunderstorm and High Wind	73	NOAA & SHELDUS

While researching the hazard occurrences that have taken place in Beadle County, it became evident that the information found on the NOAA and SHELDUS websites was incomplete. Therefore, other sources were contacted whenever possible. Specifically, NOAA only had one occurrence listed for wildfires in Beadle County, but the Beadle County Emergency Manager knew that there are numerous wildfires or grass fires that occur each year and recommended that the State Fire Marshall's Office be contacted for more accurate information. Helen King, the State Fire Marshall, said her information is derived from the reports submitted by the local fire departments who respond to the fires. She explained that since many of the fire departments in Beadle County are Volunteer Fire Departments many times wildfires are extinguished and reports are never filed with the State. Thus, the information provided by the State Fire Marshall's office is not entirely complete either. For the purpose of this plan we have used the numbers provided by the State Fire Marshal's Office as a point of reference in determining the likelihood of a wildfire hazard occurrence within the jurisdiction.

Table 4.2 is a list of natural hazards produced from the FEMA worksheets completed by each local jurisdiction located within Beadle County. Representatives from each community completed the worksheet for their geographical location, while representatives of Beadle County completed the worksheet for county-wide risks. All of the worksheets are included as Appendix G

<b>Table 4.2: Natural Hazards Categorized by Likelihood of Occurrence</b>		
<b>High Probability</b>	<b>Low Probability</b>	<b>Unlikely to Occur</b>
Communication Disruption	Aircraft Accident	Avalanche
Drought	Biological	Coastal Storm
Extreme Cold	Civil Disorder	Dam Failure
Extreme Heat	HAZMAT	Hurricane
Flood	Landslide	Volcanic Ash
Freezing Rain/Sleet/Ice	National Emergency	Volcanic Explosion
Hail	Radiological	
Heavy Rain	Subsidence	
Heavy Snow	Earthquake***	
Ice Jam		
Lightning	<p>***Earthquakes are marked with an asterisk because they occur often but are so small that the effects are minimal. Thus, mitigation measures specifically for earthquakes are not a priority.</p>	
Rapid Snow Melt		
Strong Winds		
Thunderstorm		
Tornado		
Transportation		
Urban Fire		
Utility Interruption		
Wildland Fire		

Every possible hazard or disaster was evaluated and then the disasters were placed in three separate columns depending on the likelihood of the disaster occurring in the PDM jurisdiction. Hazards that occur at least once a year or more were placed in the High Probability column; hazards that may have occurred in the past or could occur in the future but do not occur on a yearly basis were placed in the low probability column; and hazards or disasters that have never occurred in the area before and are unlikely to occur in the PDM jurisdiction any time in the future were placed in the Unlikely to Occur column. While man-made hazards were listed on the worksheets and discussed briefly during the completion of the worksheets, the planning committee decided to eliminate man-made hazards from the PDM plan because those types of hazards are difficult to predict and assess due to wide variations in the types, frequencies, and locations. Types and scopes of manmade hazards are unlimited.

Due to the topographical features of the County and the nature of the natural hazards that affect the geographical area covered by this PDM plan, all areas of the county appear to be equally as likely to be affected by the hazards identified. Only the natural hazards from the High Probability and Low Probability Columns will be further evaluated throughout this plan. All manmade hazards and hazards in the Unlikely to Occur column will not be further evaluated in the plan. Table 4.3 below identifies the hazards that will be addressed in the PDM Plan update throughout the planning process.

Hazards were identified for this plan in several ways, including: observing development patterns, interviews and surveys from towns and townships, public meetings, PDM worksession, previous disaster declarations, consulting the State Hazard Mitigation Plan and research of the history of hazard occurrences located within Beadle County.

**Table 4.3: Overall Summary of Vulnerability by Jurisdiction**

Natural Hazards Identified										
	Dakota Energy	Beadle Co.	Broadland	Cavour	Hitchcock	Huron	Virgil	Wessington	Wolsey	Yale
Drought	NA	M	M	L	L	L	L	L	L	M
Extreme Cold	H	M	L	L	L	L	L	L	L	L
Extreme Heat	L	M	L	L	L	L	L	L	L	L
Flood	M	M	L	L	L	L	L	L	L	L
Freezing Rain/Sleet	H	H	H	H	H	M	H	H	H	H
Hail	L	H	M	M	M	M	M	M	M	M
Heavy Rain	NA	H	M	H	M	L	M	L	L	H
Ice Jam	NA	M	NA	NA	NA	L	NA	NA	NA	NA
Landslides	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lightning	M	M	M	L	L	L	L	L	L	L
Heavy Snow	H	H	M	M	M	M	M	M	M	M
Strong Winds	H	H	H	M	M	M	M	M	M	M
Earthquakes	L	L	L	L	L	NA	L	L	L	L
Tornadoes	M	H	H	H	H	H	H	H	H	H
Wildfire	M	H	H	M	M	L	H	M	M	H

- NA** : Not applicable; not a hazard to the jurisdiction
- L** : Low risk; little damage potential (minor damage to less than 5% of the jurisdiction)
- M** : Medium risk; moderate damage potential (causing partial damage to 5-10% of the jurisdiction, and irregular occurrence)
- H** : High risk; significant risk/major damage potential (for example, destructive, damage to more than 10% of the jurisdiction and regular occurrence)

## NATURAL HAZARDS IN THE PDM PLAN JURISDICTION

Descriptions of the natural hazards likely to occur in the PDM Jurisdiction were taken directly from the 2003 Beadle County PDM Plan. Some of the descriptions were revised for better clarity. For the purpose of consistency throughout the plan, additional definitions were included to reflect all of the hazards that have a chance of occurring in the area and all of the hazards are alphabetized. For all of the hazards identified the probability of future occurrence is expected to be the same for all of the jurisdictions covered in the Plan.

Blizzards are a snow storm that lasts at least 3 hours with sustained wind speeds of 35 m/h or greater, visibility of less than ¼ mile, temperatures lower than 20°F and white out conditions. Snow accumulations vary, but another contributing factor is loose snow existing on the ground which can get whipped up and aggravate the white out conditions. When such conditions arise, blizzard warnings or severe blizzard warnings are issued. Severe blizzard conditions exist when winds obtain speeds of at least 45 mph plus a great density of falling or blowing snow and a temperature of 10°F or lower.

Drought is an extended period of months or years when a region notes a deficiency in its water supply. Generally, this occurs when a region receives consistently below average precipitation. It can have a substantial impact on the ecosystem and agriculture of the affected region. Although droughts can persist for several years, even a short, intense drought can cause significant damage and harm the local economy. This global phenomenon has a widespread impact on agriculture.

Earthquakes are a sudden rapid shaking of the earth caused by the shifting of rock beneath the earth's surface. Earthquakes can cause buildings and bridges to collapse, disrupt gas, electric and phone lines, and often cause landslides, flash floods, fires, avalanches, and tsunamis. Larger earthquakes usually begin with slight tremors but rapidly take the form of one or more violent shocks, and are followed by vibrations of gradually diminishing force called aftershocks. The underground point of origin of an earthquake is called its focus; the point on the surface directly above the focus is the epicenter.

Extreme Cold What constitutes extreme cold and its effects can vary across different areas of the country. In regions relatively unaccustomed to winter weather, near freezing temperatures are considered "extreme cold," however, Eastern South Dakota is prone to much more extreme temperatures than other areas in the country. Temperatures typically range between zero degrees Fahrenheit and 100 degrees Fahrenheit, so extreme cold could be defined in the Beadle County PDM jurisdiction area as temperatures below zero.

Extreme Heat, also known as a Heat Wave, is a prolonged period of excessively hot weather, which may be accompanied by high humidity. There is no universal definition of a heat wave; the term is relative to the usual weather in the area. Temperatures in Beadle County have a very wide range typically between 0-100 degrees Fahrenheit, therefore anything outside those ranges could be considered extreme. The term is applied both to routine weather variations and to extraordinary spells of heat which may occur only once a century.

Flooding is an overflow of water that submerges land, producing measurable property damage or forcing evacuation of people and vital resources. Floods can develop slowly as rivers swell during an extended period of rain, or during a warming trend following a heavy snow. Even a very small stream or dry creek bed can overflow and create flooding. Two different types of flooding hazards are present within Beadle County.

1. Inundation flooding occurs most often in the spring. The greatest risks are realized typically during a rapid snowmelt, before ice is completely off all of the rivers. The major source of inundation flooding comes from the James River which bisects the county. The most vulnerable areas and residences are along the James River, Ravine Lake, and Lake Byron within the flood plain.
2. Flash flooding is more typically realized during the summer months. This flooding is primarily localized, though enough rain can be produced to cause inundation flooding in areas along the James River. The threat of flooding would be increased during times of high soil moisture. The elevation drop from the west side of Beadle County to the James River is around 150 feet; the elevation drop from the east side of the county to the James River is slightly over 100 feet. These are sufficient enough to produce strong flash flooding. Two areas within the county have potential to experience flash flooding: Stony Run Creek in West Huron and Broadland Creek/Ravine Lake SE of old Hwy. 14.

Freezing Rain/Ice occurs when temperatures drop below 30 degrees Fahrenheit and rain starts to fall. Freezing rain coats objects with ice, creating dangerous conditions due to slippery surfaces, platforms, sidewalks, roads, and highways. Sometimes ice is unnoticeable, and is then referred to as black ice. Black ice creates dangerous conditions, especially for traffic. Additionally, a quarter inch of frozen rain can significantly damage trees, electrical wires, weak structures, and other objects due to the additional weight bearing down on them.

Hail is formed through rising currents of air in a storm. These currents carry water droplets to a height at which they freeze and subsequently fall to earth as round ice particles. Hailstones usually consist mostly of water ice and measure between 5 and 150 millimeters in diameter, with the larger stones coming from severe and dangerous thunderstorms.

Heavy Rain is defined as precipitation falling with intensity in excess of 0.30 inches (0.762 cm) per hour. Short periods of intense rainfall can cause flash flooding while longer periods of widespread heavy rain can cause rivers to overflow.

Ice Jams occur when warm temperatures and heavy rain cause snow to melt rapidly. Snow melt combined with heavy rains can cause frozen rivers to swell, which breaks the ice layer on top of the river. The ice layer often breaks into large chunks, which float downstream and often pile up near narrow passages other obstructions, such as bridges and dams.

Landslide is a geological phenomenon which includes a wide range of ground movement, such as rock falls, deep failure of slopes and shallow debris flows, which can occur in offshore, coastal and onshore environments. Although the action of gravity is



the primary driving force for a landslide to occur, there are other contributing factors build up specific sub-surface conditions that make the area/slope prone to failure, whereas the actual landslide often requires a trigger before being released.

Lightning results from a buildup of electrical charges that happens during the formation of a thunderstorm. The rapidly rising air within the cloud, combined with precipitation movement within the cloud, results in these charges. Giant sparks of electricity occur between the positive and negative charges both within the atmosphere and between the cloud and the ground. When the potential between the positive and negative charges becomes too great, there is a discharge of electricity, known as lightning. Lightning bolts reach temperatures near 50,000° F in a split second. The rapid heating and expansion, and cooling of air near the lightning bolt causes thunder.

Severe Winter Storms deposit four or more inches of snow in a 12-hour period or six inches of snow during a 24-hour period. Such storms are generally classified into four categories with some taking the characteristics of several categories during distinct phases of the storm. These categories include: freezing rain, sleet, snow, and blizzard. Generally winter storms can range from moderate snow to blizzard conditions and can occur between October and April. The months of May, June, July, August, and September could possibly see snow, though the chances of a storm is very minimal. Like summer storms, winter storms are considered a weather event not a natural hazard, and thus will not be evaluated as a natural hazard throughout this plan.

Sleet does not generally cling to objects like freezing rain, but it does make the ground very slippery. This also increases the number of traffic accidents and personal injuries due to falls. Sleet can severely slow down operations within a community. Not only is there a danger of slipping, but with wind, sleet pellets become powerful projectiles that may damage structures, vehicles, or other objects.

Snow is a common occurrence throughout the County during the months from October to April. Accumulations in dry years can be as little as 5-10 inches, while wet years can see yearly totals between 110-120 inches. Snow is a major contributing factor to flooding, primarily during the spring months of melting.

Strong winds are usually defined as winds over 40 m/h, are not uncommon in the area. Winds over 50 m/h can be expected twice each summer. Strong winds can cause destruction of property and create a safety hazards resulting from flying debris. Strong winds also include severe localized wind blasting down from thunderstorms. These downward blasts of air are categorized as either microbursts or macrobursts depending on the amount geographical area they cover. Microbursts cover an area less than 2.5 miles in diameter and macrobursts cover an area greater than 2.5 miles in diameter.

Subsidence is defined as the motion of a surface as it shifts downward relative to a datum. The opposite of subsidence is uplift, which results in an increase in elevation. There are several types of subsidence such as dissolution of limestone, mining-induced, faulting induced, isostatic rebound, extraction of natural gas, ground-water related, and seasonal effects.

Summer Storms are generally defined as atmospheric hazards resulting from changes in temperature and air pressure which cause thunderstorms that may cause hail, lightning, strong winds, and tornados. Summer storms are considered a weather event rather than

a natural hazard, therefore summer storms are not evaluated as a natural hazard throughout this plan.

Thunderstorms are formed when moisture, rapidly rising warm air, and a lifting mechanism such as clashing warm and cold air masses combine. The three most dangerous items associated with thunderstorms are hail, lightning, and strong winds.

Tornados are violent windstorms that may occur singularly or in multiples as a result of severe thunderstorms. They develop when cool air overrides warm air, causing the warm air to rapidly rise. Many of these resulting vortices stay in the atmosphere, though touchdown can occur. The Fujita Tornado Damage Scale categorizes tornadoes based on their wind speed:

- F0=winds less than 73 m/h
- F1=winds 73-112 m/h
- F2=winds 113-157 m/h
- F3=winds 158-206 m/h
- F4=winds 207-260 m/h
- F5=winds 261-318 m/h
- F6=winds greater than 318 m/h

Wildland Fires are uncontrolled conflagrations that spread freely through the environment. Other names such as brush fire, bushfire, forest fire, grass fire, hill fire, peat fire, vegetation fire, and wildland fire may be used to describe the same phenomenon. A wildfire differs from the other fires by its extensive size; the speed at which it can spread out from its original source; its ability to change direction unexpectedly; and to jump gaps, such as roads, rivers and fire breaks.

Fires start when an ignition source is brought into contact with a combustible material that is subjected to sufficient heat and has an adequate supply of oxygen from the ambient air. Ignition may be triggered by natural sources such as a lightning strike, or may be attributed to a human source such as "discarded cigarettes, sparks from equipment, and arched power lines.

## HAZARD PROFILE

*Requirement §201.6 (c)(2)(i): [The risk assessment shall include a] description of the type of the... location and extent of all natural hazards that can affect the jurisdiction. The plan shall include information on previous occurrences of hazard events and on the probability of future hazard events.*

Geographic location of each natural hazard is addressed in the updated plan. Most of the hazards identified have the potential of occurring anywhere in the County. Previous occurrences are listed individually by the type of hazard and by location in the following tables. Table 4.4 identifies the Latitude and Longitude of the local jurisdictions along with the population, elevation, and number occupied homes according to the 2000 US Census.

<b>Table 4.4: Latitude/Longitude of Communities within the County</b>				
<b>City</b>	<b>Population</b>	<b>Location</b>	<b>Elevation</b>	<b>Occupied Units</b>
Huron	11,983	44°27'47.95"N, 98°12'51.33"W	1,275 ft.	5,263
Iroquois	278*	44°22'01"N, 97°51'02"W	1,398 ft.	113
Wessington	248**	44°27'15"N, 98°41'48"W	1,415 ft.	118
Wolsey	418	44°24'28"N, 98°28'28"W	***	174
Cavour	41	44°22'12"N, 98°02'15"W	1,310 ft.	60
Yale	118	44°26'02"N, 97°59'23"W	***	47
Hitchcock	108	44°37'46"N, 98°20'56"W	***	52
Broadland	38	44°29'33"N, 98°20'56"W	***	14
Virgil	25	44°17'27"N, 98°25'26"W	***	13
*** Community did not provide the information				

Additionally, the extent (i.e., magnitude or severity) of each hazard, information on previous occurrences of each hazard and the probability of future events (i.e., chance or occurrence) for each hazard are addressed in the following tables. While the planning team reviewed all hazard occurrences that have been reported in the last 100 years, the list for some of the hazards was extremely long. The information provided in the tables is not a complete history report, but rather an overview of the hazard events which have occurred over the last ten years. The planning committee felt the hazard trend for the last 10 years could be summarized in this section and decided to include any new occurrence that have taken place since the previous plan was drafted. The complete history which was included in the 2003 Plan, was not changed and can be found at the end of each hazard section.

## DROUGHT AND WILDFIRE

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

The fact South Dakota's economy is closely tied to agriculture only magnifies the potential loss which could be suffered by the state's economy during drought conditions.

<b>Location or County</b>	<b>Date</b>	<b>Time</b>	<b>Type</b>
Beadle County	11/1/1999	12:00 AM	Drought
Beadle County	12/1/1999	12:00 AM	Drought
Beadle County	2/1/2000	12:00 AM	Drought
Beadle County	3/1/2000	12:00 AM	Drought
Beadle County	4/1/2000	12:00 AM	Drought
Beadle County	7/18/2006	12:00 AM	Drought
Beadle County	8/1/2006	12:00 AM	Drought

Roughly every 50 years a significant drought is experienced within the county, while many less severe droughts can occur at times every three years.

**Major drought occurrences:**

- 1987-1990: An abnormally low amount of precipitation in the summer of 1987 combined with a hot and dry summer during 1988, left South Dakota in financial and economic hardship. Beadle County received disaster aid during this period. Agricultural income was down .8 percent and wheat price per bushel decreased significantly in 1988.
- 1930s: During the infamous dust bowl years, Beadle County was not spared a fair share of problems. Particularly dry summers were in 1934 and 1936.
- 1880s-1890s: The years 1887, 1894-1896, 1898-1901 were very dry years.

A strong possibility exists for simultaneous emergencies during droughts. Wildfires are the most common. As mentioned on page 20 of this plan, the accuracy of the fire history is questionable, because the State Fire Marshall's Office collects information from the County, thus the accuracy of the information reported relies on the local fire departments that are responsible for filing the reports.

<b>Location or County</b>	<b>Date</b>	<b>Time</b>	<b>Type</b>	<b>Area Burned</b>
Wessington	7/22/2006	6:00 PM	Wildfire	10 Acres

The 2003 Plan did not list or identify the history of wildfire occurrences. Several notable structural fires were identified, but were left out of the 2009 Plan because structural fires are not a natural hazard.

## FLOOD

In reviewing the recent flood history, the only jurisdiction which has reported damage due to flood hazard is the Town of Broadland. Broadland is in the process of working with Beadle County to adopt a flood plain ordinance.

<b>Location or County</b>	<b>Date</b>	<b>Time</b>	<b>Type</b>	<b>Property Damage</b>	<b>Crop Damage</b>
Beadle County	5/9/1999	6:00 AM	Flood	0	0
Beadle County	4/1/2001	6:00 AM	Flood	0	0
Beadle County	5/1/2001	12:00 AM	Flood	0	0
Huron	6/13/2001	2:40 AM	Flash Flood	0	0
Huron	3/13/2007	7:00 PM	Flood	0	0
Cavour	5/4/2007	11:28 PM	Flash Flood	0	0
Huron	5/5/2007	3:30 PM	Flash Flood	0	0
Broadland	5/5/2007	6:00 PM	Flood	.5 Million	0
Broadland	6/1/2007	12:00 AM	Flood	0	0
Wessington	6/5/2008	6:22 PM	Flash Flood	0	0
Yale	8/11/2008	6:45 PM	Flash Flood	0	0
Hitchcock	3/19/2009	7:00 AM	Flood	0	0

The table above is a 10-year flood history in Beadle County from 1999 to 2009. The information below is the flood history that was included in the 2003 PDM Plan, with the exception of the 2001 flooding which is already included above in the 10-year history.

### **Past flooding occurrences:**

- Spring 1997: The entire county experienced severe flooding. The city of Huron received \$1,100,962 reimbursement. Many township roads were under water.
- Spring 1995: County wide property and crop damage was significant. The city of Huron had damages totaling \$113, 042. A reimbursement of \$24,589.97 was received.
- March 1994: Snowmelt flooding caused road damage.
- Spring 1993: Significant flooding throughout the county.

Critical infrastructure such as county and township roads are one of the biggest concerns when flooding occurs in the County. Regulations have been put in place that do not allow residential or commercial development in the flood plain in most areas of the county.

## HAIL

The following charts indicate hail occurrences by location throughout the county. However, the information provided by the NOAA and SHELDUS websites was incomplete due to inconsistent reporting after such hazards occur. Obviously, with such a high number of occurrences it is reasonable to expect that at least some property or crop damage was sustained in the communities during some of the occurrences, even though the damage may not have been reported or recorded. It is possible that such damage was not reported because it was believed to be insignificant at the time, or because those responsible for reporting such information did not report to the proper agencies.

**Table 4.8: Beadle County 10-year Hail History by Location**

Location	Date	Time	Type	Magnitude	Property Damage	Crop Damage
Bonilla	9/28/2008	3:40 PM	Hail	1.0 inches	0	0

Location or County	Date	Time	Type	Magnitude	Property Damage	Crop Damage
Broadland	6/18/2001	2:30 AM	Hail	.75 inches	0	0
Broadland	9/7/2005	11:50 PM	Hail	1.0 inches	0	0

Location	Date	Time	Type	Magnitude	Property Damage	Crop Damage
Cavour	6/7/1999	8:25 PM	Hail	1.0 inches	0	0
Cavour	8/20/1999	9:15 PM	Hail	.75 inches	0	0
Cavour	7/11/2000	4:10 PM	Hail	1.75 inches	0	100K
Cavour	8/5/2000	10:54 PM	Hail	1.0 inches	0	0
Cavour	7/15/2004	6:59 AM	Hail	.88 inches	0	0
Cavour	7/19/2005	11:48 PM	Hail	.88 inches	0	0
Cavour	9/12/2005	3:54 PM	Hail	1.25 inches	0	0
Cavour	9/12/2005	4:06 PM	Hail	1.0 inches	0	0
Cavour	8/12/2006	5:45 PM	Hail	.88 inches	0	0
Cavour	9/16/2006	5:12 PM	Hail	1.75 inches	0	0
Cavour	4/21/2007	6:30 PM	Hail	1.0 inches	0	0
Cavour	4/21/2007	7:31 PM	Hail	1.0 inches	0	0

Location	Date	Time	Type	Magnitude	Property Damage	Crop Damage
Hitchcock	8/28/2002	4:15 PM	Hail	1.0 inches	0	0
Hitchcock	5/5/2007	8:29 PM	Hail	.88 inches	0	0
Hitchcock	8/8/2007	6:30 PM	Hail	.88 inches	0	0

(Cont.) Table 4.8 Beadle County 10-year Hail History by Location

Location	Date	Time	Type	Magnitude	Property Damage	Crop Damage
Huron	8/20/1999	9:10 PM	Hail	.75 inches	0	0
Huron	9/25/1999	9:30 PM	Hail	.75 inches	0	0
Huron	5/7/2000	6:39 PM	Hail	.88 inches	0	0
Huron	7/24/2000	9:30 AM	Hail	.75 inches	0	0
Huron	6/9/2001	10:18 PM	Hail	.75 inches	0	0
Huron	6/14/2001	5:29 PM	Hail	.75 inches	0	0
Huron	6/24/2002	8:40 PM	Hail	1.0 inches	0	0
Huron	6/25/2002	4:42 PM	Hail	.75 inches	0	0
Huron	7/28/2002	11:35 AM	Hail	.75 inches	0	0
Huron	8/3/2002	3:50 PM	Hail	.88 inches	0	0
Huron	8/28/2002	4:14 PM	Hail	.88 inches	0	0
Huron	6/24/2003	5:44 PM	Hail	1.75 inches	0	0
Huron	6/5/2004	3:45 PM	Hail	.88 inches	0	0
Huron	8/2/2004	2:25 PM	Hail	.88 inches	0	0
Huron	8/2/2004	2:25 PM	Hail	.88 inches	0	0
Huron	8/15/2004	4:50 PM	Hail	1.0 inches	0	0
Huron	9/5/2005	8:20 PM	Hail	.75 inches	0	0
Huron	9/7/2005	11:09 PM	Hail	.75 inches	0	0
Huron	9/12/2005	3:44 PM	Hail	.75 inches	0	0
Huron	8/12/2006	5:52 PM	Hail	.75 inches	0	0
Huron	8/24/2006	6:10 PM	Hail	2.5 inches	0	0
Huron	8/24/2006	6:11 PM	Hail	1.0 inches	0	0
Huron	5/1/2008	7:25 PM	Hail	.88 inches	0	0
Huron	8/14/2008	8:36 PM	Hail	.88 inches	0	0
Huron Airport	6/3/2000	1:55 PM	Hail	.75 inches	0	0
Huron Airport	8/28/2002	4:05 PM	Hail	1.0 inches	0	0

Location	Date	Time	Type	Magnitude	Property Damage	Crop Damage
Iroquois	8/5/2000	10:55 PM	Hail	.75 inches	0	0
Iroquois	8/2/2004	5:20 AM	Hail	1.0 inches	0	0
Iroquois	9/12/2005	4:25 PM	Hail	1.0 inches	0	0

Location	Date	Time	Type	Magnitude	Property Damage	Crop Damage
Virgil	9/25/1999	9:05 PM	Hail	.75 inches	0	0
Virgil	8/5/2000	10:07 PM	Hail	.75 inches	0	0
Virgil	8/5/2000	12:05 AM	Hail	1.75 inches	0	0
Virgil	6/14/2001	5:08 PM	Hail	.75 inches	0	0
Virgil	9/17/2003	9:18 PM	Hail	.75 inches	0	0
Virgil	9/17/2003	9:21 PM	Hail	1.0 inches	0	0
Virgil	6/20/2005	9:55 PM	Hail	1.0 inches	0	0
Virgil	9/12/2005	3:00 PM	Hail	.88 inches	0	0
Virgil	6/5/2006	3:16 PM	Hail	1.25 inches	0	0

(Cont.) Table 4.8 Beadle County 10-year Hail History by Location

Location	Date	Time	Type	Magnitude	Property Damage	Crop Damage
Wessington	8/4/2000	11:26 PM	Hail	.75 inches	0	0
Wessington	6/7/2005	9:42 PM	Hail	.88 inches	0	0
Wessington	6/7/2005	10:00 PM	Hail	.75 inches	0	0
Wessington	6/29/2005	5:55 AM	Hail	.75 inches	0	0
Wessington	9/5/2005	8:15 PM	Hail	.75 inches	0	0
Wessington	9/5/2005	8:45 PM	Hail	1.25 inches	0	0
Wessington	9/18/2005	7:54 PM	Hail	1.0 inches	0	0
Wessington	6/5/2006	2:21 PM	Hail	1.75 inches	0	0
Wessington	6/25/2008	2:30 AM	Hail	.75 inches	0	0
Wessington	7/27/2008	6:25 AM	Hail	1.0 inches	0	0

Location	Date	Time	Type	Magnitude	Property Damage	Crop Damage
Wolley	6/5/1999	9:14 PM	Hail	.75 inches	0	0
Wolley	6/5/1999	9:46 PM	Hail	.75 inches	0	0
Wolley	6/18/2001	2:00 AM	Hail	.88 inches	0	0
Wolley	7/20/2001	7:25 AM	Hail	.75 inches	0	0
Wolley	7/20/2001	7:25 AM	Hail	1.75 inches	0	0
Wolley	8/3/2005	4:55 PM	Hail	.75 inches	0	0
Wolley	5/5/2007	7:00 PM	Hail	1.0 inches	0	0
Wolley	5/1/2008	7:50 PM	Hail	.75 inches	0	0

Location or County	Date	Time	Type	Magnitude	Property Damage	Crop Damage
Yale	8/20/1999	7:40 PM	Hail	1.0 inches	0	0
Yale	6/15/2001	3:30 PM	Hail	.75 inches	0	0
Yale	7/14/2003	6:10 AM	Hail	.75 inches	0	0
Yale	6/15/2004	3:10 PM	Hail	.88 inches	0	0
Yale	8/2/2004	5:00 AM	Hail	.88 inches	0	0
Yale	9/8/2005	12:30 AM	Hail	1.0 inches	0	0
Yale	7/13/2006	3:58 PM	Hail	.75 inches	0	0

While hail occurrences are numerous, property and crop damage reported is minimal. According to the NOAA and SHELDUS websites, Beadle County had only one hail occurrence in the past 10 years where damage to crops and or property was reported. The location of the occurrence is Cavour with damage in the amount of \$100,000 reported. As mentioned previously, possibility exists that damage was not reported to or recorded by the appropriate agencies, and thus there may be more property and crop damage than appears in the tables.



## LIGHTNING

<b>Location or County</b>	<b>Date</b>	<b>Time</b>	<b>Type</b>	<b>Property Damage</b>
Huron	5/29/2003	1:45 PM	Lightning	5 K
Huron	5/29/2003	1:50 PM	Lightning	5 K
Hitchcock	8/1/2004	11:40 PM	Lightning	5 K

The extent or severity of lightening can range from significant to insignificant depending on where it strikes and what structures are hit. Water towers, cell phone towers, power lines, trees, and common buildings and structures all have the possibility of being struck by lightning. People who leave shelter during thunderstorms to watch or follow lightening also have the possibility of being struck by lightning. The lightning history for the past 10 years only denotes three different instances where lightning caused damage, however, possibility exists that the information reported is incomplete.

## TORNADO

<b>Location or County</b>	<b>Date</b>	<b>Time</b>	<b>Type</b>	<b>Magnitude</b>	<b>Injuries</b>	<b>Property Damage</b>
Huron	6/24/2003	6:00 PM	Tornado	F0	0	0
Huron	6/24/2003	6:00 PM	Tornado	F0	0	0
Cavour	6/24/2003	6:16 PM	Tornado	F0	0	0
Cavour	6/24/2003	8:25 PM	Tornado	F3	0	1.5 M
Yale	6/24/2003	9:05 PM	Tornado	F2	0	0
Wessington	8/24/2006	5:37 PM	Tornado	F3	2	15 M
Huron	8/24/2006	6:18 PM	Tornado	F2	0	2 M
Huron	8/24/2006	6:23 PM	Tornado	F0	0	0
Wolsey	5/5/2007	7:36 PM	Tornado	F0	0	0

The annual risk for intense summer storms is very high. All of Beadle County, nearly \$1 billion in property and over 17,000 residents are susceptible to any of the summer storms. Warning time for summer storms is normally several hours, sufficient for relocation and evacuation if necessary. However, tornadoes may occur with little or no warning.

Specific areas within the county have a high risk of being impacted if hit by a tornado or severe storms. The fairgrounds is particularly vulnerable because of a high seasonal population. All schools, mobile home parks, nursing homes, and the hospital in Huron are at high risk during summer storms.

Gathering historical data on tornadoes and thunderstorms is very difficult due to the number of occurrences and unconfirmed reports. Each year, many storms and a few tornadoes affect the county. Summer storms in Beadle County usually produce a wide range of damage making damage estimates very difficult. A complete listing of all summer storms having occurred within the county is not possible to produce. Available data regarding the many major summer storms that have affected the county was gathered. The National Weather Service reports online were the primary source for

this information. A map and pictures of the deadly June 24, 2003 tornadoes that hit Beadle County, particularly Cavour are included as Appendix F.

**Table 4.11: 55-year History of Summer Storms:**

Storm	Date	Location	Details
Tornado	Aug 2006	Western Beadle	8 homes totaled, 8 homes damaged, power line damage
Tornado	June 2003	Cavour	An F-2 tornado aloft did considerable damage
High winds	Sum. 2002	(North) Huron	Damage to car wash in Huron, small planes and hangers damages at airport, roof off of business in city
Thunderstorm	Aug 2000	Bonilla	70 m/h wind, \$100,000 property damage
Thunderstorm	Jul 2000	Cavour	1.75" hail, \$100,000 crop damage
Thunderstorm	Aug 1998	Huron	83 m/h wind, \$1 million damage
Thunderstorm	Jul 1998	Huron	Lightning caused \$10,000 property damage
Thunderstorm	May 1998	Huron	2.75" hail, \$5,000 property damage
Thunderstorm	Oct 1996	Iroquois	\$50,000 damage from high wind
Thunderstorm	Jul 1994	Huron	Lightning caused \$5,000 property damage
Thunderstorm	Jun 1994	near Virgil	1" hail, \$50,000 property damage, \$50,000 crop damage
Tornado	Aug 1992	County	F1 caused \$3,000 property damage
Thunderstorm	Jul 1992	County	2.25" hail
Thunderstorm	Sep 1991	County	86 m/h wind
Thunderstorm	May 1991	County	86 m/h wind
Thunderstorm	Jul 1989	County	2" hail
Thunderstorm	Jul 1987	County	2" hail
Thunderstorm	Sep 1983	County	2" hail
Thunderstorm	Aug 1982	County	2.5" hail
Thunderstorm	Jun 1979	County	2.5" hail
Thunderstorm	Aug 1978	County	80 m/h wind, golf ball size hail, 480,000 acres crop damage, \$4 million total damages
Thunderstorm	Jul 1978	Southern Beadle	90 m/h wind, farm buildings destroyed
Thunderstorm	Jul 1974	County	81 m/h wind
Thunderstorm	Aug 1974	County	2" hail
Thunderstorm	Apr 1973	County	80 m/h wind
Tornado	Jul 1972	County	F2 caused \$25,000 damage
Tornado	Jul 1971	County	F1
Thunderstorm	Jun 1970	County	3" hail
Thunderstorm	Aug 1968	County	115 m/h wind
Tornado	Sep 1967	County	F1 caused \$3,000 property damage
Thunderstorm	Jun 1967	County	1.5" hail, 1 injury
Thunderstorm	Jun 1965	County	2" hail
Tornado	May 1965	County	F2 caused \$3,000 damage
Thunderstorm	Jun 1964	County	103 m/h wind
Tornado	Jul 1962	County	F2 caused \$3,000 damage
Thunderstorm	Jul 1961	County	80 m/h wind
Thunderstorm	May 1958	County	2" hail
Tornado	Apr 1957	County	F1 caused \$25,000 property damage
Thunderstorm	Jul 1956	County	80 m/h wind
Tornado	Jun 1954	County	F1
Tornado	May 1953	County	F1 caused \$25,000 property damage

## EXTREME TEMPERATURES

Extreme temperatures in Beadle County are common occurrences. It is expected that at least once each year there will be extreme heat or extreme cold in the area. The following information was found on the SHELDUS and NOAA websites. It is possible that people in the area have adapted to such extreme temperatures and thus such weather events are not reported as often as they occur. It is also possible that the information has only in recent years been tracked or reported.

Location	Date	Time	Type	Wind Chill	Temperature	Wind Speed
Beadle Co.	2/19/2008	9:00 PM	Cold/Wind Chill Extreme	35 to 45 Below	20 Below	10-20 mph
Beadle Co.	1/14/2009	6:00 AM	Cold/Wind Chill	35 to 45 Below	20-30 Below	NA

## WINTER STORMS

The following table shows just how common snow and ice storms are in Beadle County. While such storms would be considered extreme in many parts of the Country, the consistent nature of such weather hazards are expected in this area. Thus, planning and response mechanisms for snow and ice storms are vital to the County and are routine procedures in Beadle County due to the common nature of such storms.

Location or County	Date	Time	Type	Property Damage	Snow/Ice Accumulation	Wind Speed
Beadle County	1/1/1999	6:00 AM	Winter Storm	0	4 to 10 inches	20 to 40 mph
Beadle County	10/1/1999	6:00 AM	Heavy Snow	40 K	4 to 8 inches	NA
Beadle County	11/6/2000	6:00 PM	Heavy Snow	0	5 to 12 inches	NA
Beadle County	11/11/2000	10:00 AM	Winter Storm	0	3 to 7 inches	40 mph
Beadle County	1/13/2001	2:00 AM	Winter Storm	0	6 to 14 inches	NA
Beadle County	2/7/2001	1:00 AM	Winter Storm	0	6 to 9 inches	NA
Beadle County	2/24/2001	12:00 PM	Winter Storm	0	NA	NA
Beadle County	11/26/2001	4:00 AM	Heavy Snow	0	8 to 15 inches	40 to 50 mph
Beadle County	3/14/2002	8:00 AM	Winter Storm	210 K	6 to 16 inches	NA
Beadle County	2/2/2003	3:00 PM	Winter Weather/Mix	0	8 to 19 inches	NA
Beadle County	2/14/2003	7:45 AM	Winter Storm	10 K	2 to 5 inches	NA
Beadle County	11/3/2003	3:00 AM	Winter Weather/Mix	0	3 to 7 inches	NA
Beadle County	11/22/2003	5:00 PM	Winter Storm	0	2 to 6 inches	NA
Beadle County	12/17/2003	4:00 AM	Winter Weather/Mix	0	3 to 12 inches	35 to 45 mph
Beadle County	2/11/2004	6:00 AM	Winter Weather/Mix	0	NA	NA
Beadle County	3/17/2005	9:00 PM	Winter Weather/Mix	0	NA	44 mph
Beadle County	11/27/2005	11:00 AM	Ice Storm	15 M	3 inches	NA
Beadle County	11/30/2005	11:00 AM	Winter Weather/Mix	0	3 to 6 inches	NA
Beadle County	12/2/2005	12:00 PM	Winter Weather/Mix	0	3 to 5 inches	NA
Beadle County	3/12/2006	1:00 PM	Winter Storm	0	4 to 8 inches	35 mph

Beadle County	12/30/2006	6:00 AM	Winter Weather	0	NA	NA
Beadle County	2/12/2007	3:00 PM	Winter Weather	0	3 to 5 inches	NA
Beadle County	2/24/2007	9:00 AM	Winter Storm	0	5 to 7 inches	NA
Beadle County	2/24/2007	9:00 AM	Winter Weather	0	3 to 5 inches	NA
Beadle County	2/28/2007	8:00 AM	Heavy Snow	0	6 to 12 inches	NA
Beadle County	12/1/2007	3:30 AM	Heavy Snow	0	6 to 12 inches	NA
Beadle County	12/1/2007	3:30 AM	Winter Storm	0	4 to 7 inches	NA
Beadle County	1/23/2008	12:00 AM	Winter Weather	0	6 to 7 inches	NA
Beadle County	3/26/2008	10:00 PM	Heavy Snow	0	2 to 4 inches	NA
Beadle County	3/26/2008	10:00 PM	Winter Weather	0	5 to 7 inches	NA
Beadle County	3/31/2008	3:00 AM	Heavy Snow	0	3 to 5 inches	NA
Beadle County	3/31/2008	3:00 AM	Winter Weather	0	5 to 7 inches	NA
Beadle County	4/25/2008	6:00 AM	Heavy Snow	0	3 to 6 inches	NA
Beadle County	4/25/2008	6:00 AM	Winter Weather	0	6 to 10 inches	NA
Beadle County	11/7/2008	4:00 AM	Winter Weather	0	4 to 7 inches	NA
Beadle County	12/2/2008	12:00 PM	Winter Weather	0	2 to 4 inches	30 mph
Beadle County	12/8/2008	11:00 AM	Winter Weather	0	2 to 5 inches	NA
Beadle County	1/3/2009	7:00 AM	Winter Weather	0	2 to 5 inches	NA
Beadle County	1/12/2009	9:00 AM	Winter Weather	0	2 to 5 inches	20 to 30 mph
Beadle County	2/26/2009	4:00 AM	Winter Weather	0	1 to 2 inches	50 mph

Winter storms often cover large areas and most storms can be considered to have occurred countywide. Due to the multiple occurrences of winter storms each year, an exhaustive compilation is not possible. The following table was taken from the 2003 PDM Plan. In comparison to the table provided above, it is evident that the information is being reported and recorded more accurately now than in previous decades which is most likely a result of technology, internet, and a coordinated and focused efforts to share information between agencies and local governments.

**Table 4.14: Winter Storm Dates and Damage**

Storm	Date	Location	Details
Ice Storm	Nov 2005	County	Massive damage to power lines & trees
Blizzard	Feb 2003	County	
Blizzard	Mar 2002		
Blizzard	Feb 2002	County	64 m/h wind, \$70,000 property damage
Snow	Oct 1999		
Snow	Mar 1998		
Snow	Feb 1997		
Cold	Jan 1997		2 deaths
Blizzard	Dec 1996		
Ice	Nov 1996		
Snow	Oct 1995		
Snow	Apr 1995		15 injuries
Snow	Mar 1995		
Ice/wind	Jan 1995		
Snow	Dec 1994		
Snow	Nov 1994		
Snow	Apr 1994		
Snow/cold	Feb 1994		1 death, \$50,000 property damage

Snow	Jan 1994		\$50,000 property damage
Snow/wind	Dec 1993		2 injuries, \$50,000 property damage
Snow	Mar 1985		18.3" snow
Blizzard	Jan 1952		
Blizzard	Jan 1949		
Blizzard	1888		

## THUNDERSTORMS

Thunderstorms and high wind occurrences in the County are also very common. The following table denotes the extent and severity of such hazards. The County continues to educate residents of the dangers of such storms through public service announcements and other printed media. The 2003 plan listed all significant thunderstorm occurrences on record dating back to 1953. Table 4.15 denotes all occurrences on record for the past 10 years.

Table 4.15: Beadle County 10-year Thunderstorm and High Wind History						
Location or County	Date	Time	Type	Magnitude	Property Damage	Injuries
Beadle County	3/17/1999	9:00 AM	High Wind	52 knots	0	0
Wolsey	6/5/1999	9:46 PM	Thunderstorm Wind	52 knots	0	0
Huron Airport	7/30/1999	12:45 PM	Thunderstorm Wind	55 knots	0	0
Cavour	7/30/1999	12:50 PM	Thunderstorm Wind	52 knots	0	0
Yale	8/20/1999	9:30 PM	Thunderstorm Wind	50 knots	5 K	0
Beadle County	1/10/2000	1:00 PM	High Wind	52 knots	5 K	0
Beadle County	4/5/2000	11:00 AM	High Wind	56 knots	510 K	1
Wessington	5/30/2000	5:30 AM	Thunderstorm Wind	52 knots	0	0
Cavour	7/9/2000	6:00 PM	Thunderstorm Wind	52 knots	20 K	0
Bonilla	8/4/2000	11:15 PM	Thunderstorm Wind	61 knots	100 K	0
Virgil	8/5/2000	12:05 AM	Thunderstorm Wind	52 knots	0	0
Huron Airport	6/9/2001	10:15 PM	Thunderstorm Wind	61 knots	0	0
Hitchcock	7/19/2001	4:30 AM	Thunderstorm Wind	52 knots	0	0
Yale	7/19/2001	5:15 AM	Thunderstorm Wind	69 knots	0	0
Beadle County	2/11/2002	2:00 PM	High Wind	56 knots	70 K	0
Huron	6/24/2002	8:40 PM	Thunderstorm Wind	61 knots	100 K	0
Huron Airport	7/21/2002	2:26 AM	Thunderstorm Wind	53 knots	0	0
Huron	7/21/2002	2:40 AM	Thunderstorm Wind	69 knots	100 K	0
Huron Airport	8/3/2002	3:23 PM	Thunderstorm Wind	73 knots	100 K	0
Huron	8/3/2002	3:25 PM	Thunderstorm Wind	52 knots	100 K	0
Huron	8/11/2002	7:20 PM	Thunderstorm Wind	52 knots	0	0
Iroquois	8/11/2002	7:59 PM	Thunderstorm Wind	52 knots	0	0
Cavour	8/11/2002	8:15 PM	Thunderstorm Wind	52 knots	0	0
Huron Airport	8/28/2002	3:59 PM	Thunderstorm Wind	52 knots	0	0
Huron	8/28/2002	4:11 PM	Thunderstorm Wind	69 knots	1 M	0
Beadle County	2/11/2003	10:30 AM	High Wind	54 knots	0	0
Huron	7/9/2003	12:30 AM	Thunderstorm Wind	52 knots	0	0
Hitchcock	7/29/2003	2:49 PM	Thunderstorm Wind	61 knots	0	0
Wolsey	7/29/2003	2:49 PM	Thunderstorm Wind	52 knots	0	0

Yale	7/29/2003	3:09 PM	Thunderstorm Wind	61 knots	0	0
Yale	7/29/2003	3:40 PM	Thunderstorm Wind	67 knots	10 K	0
Virgil	8/9/2003	4:55 PM	Thunderstorm Wind	61 knots	0	0
Huron Airport	6/13/2004	7:45 PM	Thunderstorm Wind	51 knots	0	0
Wessington	8/1/2004	10:25 PM	Thunderstorm Wind	61 knots	0	0
Wessington	8/1/2004	10:29 PM	Thunderstorm Wind	52 knots	0	0
Wessington	8/1/2004	10:30 PM	Thunderstorm Wind	61 knots	2 K	0
Huron	8/1/2004	10:53 PM	Thunderstorm Wind	78 knots	200 K	0
Huron	8/1/2004	10:55 PM	Thunderstorm Wind	69 knots	30 K	0
Cavour	8/1/2004	11:15 PM	Thunderstorm Wind	69 knots	20 K	0
Huron	8/1/2004	11:16 PM	Thunderstorm Wind	69 knots	0	0
Huron	8/1/2004	11:55 AM	Thunderstorm Wind	50 knots	0	0
Beadle County	10/29/2004	11:00 PM	High Wind	53 knots	0	0
Beadle County	12/12/2004	3:30 AM	High Wind	52 knots	0	0
Beadle County	3/10/2005	8:00 AM	High Wind	55 knots	530 K	0
Huron	5/7/2005	6:35 PM	Thunderstorm Wind	63 knots	0	0
Hitchcock	6/7/2005	10:00 PM	Thunderstorm Wind	52 knots	0	0
Wessington	6/7/2005	10:00 PM	Thunderstorm Wind	61 knots	0	0
Huron	6/7/2005	10:33 PM	Thunderstorm Wind	61 knots	0	0
Wolsey	7/3/2005	12:05 AM	Thunderstorm Wind	52 knots	0	0
Huron	7/19/2005	11:30 PM	Thunderstorm Wind	52 knots	0	0
Virgil	7/19/2005	11:30 PM	Thunderstorm Wind	52 knots	0	0
Huron	7/19/2005	11:35 PM	Thunderstorm Wind	52 knots	0	0
Hitchcock	9/5/2005	7:25 PM	Thunderstorm Wind	61 knots	0	0
Cavour	9/12/2005	4:06 PM	Thunderstorm Wind	52 knots	0	0
Beadle County	11/8/2005	6:00 PM	High Wind	52 knots	25 K	0
Huron	5/23/2006	4:30 PM	Thunderstorm Wind	52 knots	0	0
Wessington	8/10/2006	7:20 PM	Thunderstorm Wind	52 knots	0	0
Wessington	8/10/2006	7:20 PM	Thunderstorm Wind	52 knots	0	0
Wolsey	8/10/2006	7:35 PM	Thunderstorm Wind	52 knots	0	0
Wolsey	8/10/2006	7:42 PM	Thunderstorm Wind	52 knots	0	0
Huron	8/10/2006	8:10 PM	Thunderstorm Wind	52 knots	0	0
Huron	8/12/2006	5:42 PM	Thunderstorm Wind	52 knots	0	0
Huron	8/12/2006	5:51 PM	Thunderstorm Wind	52 knots	0	0
Hitchcock	8/18/2006	8:20 AM	Thunderstorm Wind	52 knots	0	0
Wolsey	8/18/2006	8:44 AM	Thunderstorm Wind	52 knots	0	0
Hitchcock	9/18/2006	8:20 AM	Thunderstorm Wind	52 knots	0	0
Iroquois	5/5/2007	4:30 PM	Thunderstorm Wind	57 knots	5 K	0
Wessington	5/5/2007	6:22 PM	Thunderstorm Wind	65 knots	0	0
Beadle County	2/19/2008	9:00 PM	Cold/Wind Chill	NA	0	0
Huron	6/20/2008	2:16 PM	Thunderstorm Wind	61 knots	0	0
Virgil	7/27/2008	6:48 AM	Thunderstorm Wind	61 knots	0	0
Beadle County	10/26/2008	6:30 AM	High Wind	41 knots	0	0
Beadle County	1/14/2009	6:00 PM	Extreme Cold/Wind Chill	NA	0	0

## **ASSESSING VULNERABILITY: OVERVIEW**

*Requirement §201.6(c)(2)(ii): [The risk assessment shall include a] description of the jurisdiction's vulnerability to the hazards described in paragraph (c)(2)(i) of this section. This description shall include an overall summary of each hazard and its impact on the community.*

The following paragraphs summarize the description of the jurisdiction's vulnerability to each hazard and the impact of each hazard on the jurisdiction.

Blizzards are characterized by high winds, blowing snow, cold temperatures, and low visibility. Blizzards create conditions such as icy roads, closed roads, downed power lines and trees. Beadle County's population is especially vulnerable to these conditions because people tend to leave their homes to get places such as work, school, and stores rather than staying inside. Traffic is one of the biggest hazards in Beadle County during a blizzard because people often get stuck, stranded, and lost when driving their vehicles which usually prompts others such as family and or emergency responders to go out in the conditions to rescue them.

Drought can be defined as a period of prolonged lack of moisture. High temperatures, high winds, and low relative humidity all result from droughts and are caused by droughts. A decrease in the amount of precipitation can adversely affect stream flows and reservoirs, lakes, and groundwater levels. Crops and other vegetation are harmed when moisture is not present within the soil.

South Dakota's climate is characterized by cold winters and warm to hot summers. There is usually light moisture in the winter and marginal to adequate moisture for the growing season for crops in the eastern portion of the state. Semi-arid conditions prevail in the western portion. This combination of hot summers and limited precipitation in a semi-arid climatic region present a potential position of suffering a drought in any given year. The climatic conditions are such that a small departure in the normal precipitation during the hot peak growing period of July and August could produce a partial or total crop failure. fact South Dakota's economy is closely tied to agriculture only magnifies the potential loss which could be suffered by the state's economy during drought conditions. Roughly every 50 years a significant drought is experienced within the county, while less severe droughts have occurred as often as every three years.

Earthquakes occur in the area, but have not had a great enough magnitude or intensity in the past 10 years to be reported. The magnitude and intensity of an earthquake is measured by the Richter scale and the Mercalli scale. An earthquake of noteworthy magnitude has not occurred in the county for decades, but it would be reasonable to expect that a large earthquake would have comparative impact on Beadle County as it would anywhere else. Beadle County does not have skyscrapers or very many tall buildings, but it also does not have codes in place that require homes or buildings to be retrofitted.

Extreme Cold temperatures often accompany a winter storm, so you may have to cope with power failures and icy roads. Whenever temperatures drop decidedly below normal and as wind speed increases, heat can leave your body more rapidly. These weather-related conditions may lead to serious health problems. Extreme cold is a dangerous situation that can bring on health emergencies in susceptible people, such as those without shelter or who are stranded, or who live in a home that is poorly insulated or

without heat. Exposure is the biggest threat/vulnerability to human life, however, incidences of exposure are isolated and thus unlikely to happen in masses.

Extreme Heat: Severe heat waves have caused catastrophic crop damage, thousands of deaths from hyperthermia, and widespread power failures due to increased use of air conditioning. Loss of power and crop damage are the largest vulnerability to the county during extreme heat. Both have an effect on quality of life, however, neither are detrimental to the existence of the population of Beadle County.

Flooding: Floods can result in injuries and even loss of life when quickly moving water is involved. Six inches of moving water is enough to sweep a vehicle off a road. Disruption of communication, transportation, electric service, and community services, along with contamination of water supplies and transportation accidents are very possible.

Population, property, and environment exposure is low due to changes that have occurred since previous occurrence of this hazard. There are no properties that lie within the floodplain. Dikes have been constructed within the city of Huron which leaves the threat of flooding inhabited areas at a minimum. A high flood level would see the inundation of Riverside and Memorial Parks and the municipal pool.

The flooding of township roads is a concern for the entire county. Concern areas are addressed in the Mitigation Section of this plan. Appendix C and Appendix E are true examples of the effects of flooding on rural roads. Though it is merely data from one flooding situation, other floods would have similar impacts.

Freezing Rain causes adverse conditions such as slippery surfaces and extra weight buildup on power lines, poles, trees, and structures. The additional weight can often cause weak structures to cave in and cause tree branches and power lines to break and fall. Beadle County and the local jurisdictions within are susceptible to these conditions due to the types of structures and surfaces that exist in the county that can not be protected from freezing rain. Traffic on the roads and highways tend to be the biggest hazard during freezing rain conditions because vehicles often slide off the road which prompts emergency responders and others to have to go out on rescue missions in the adverse conditions.

Hail causes damage to property such as crops, vehicles, windows, roofs, and structures. Beadle County and its local jurisdictions are vulnerable to hail, like most other areas in the State due to the nature of the hazard. Mitigating for hail is difficult and is usually found in the form of insurance policies for structures, vehicles, and crops.

Heavy Rain causes damage to property such as homes and roads. Often when heavy rains occur in Beadle County it causes sewers to backup in homes due to excess water entering the wastewater collection lines. The excess water sometimes has no place to go and thus basements fill up with water which results in damage to water heaters, furnaces, and damage to living quarters for people who live in basement apartments. Roads and bridges can be washed out, thus causing traffic hazards for travelers and commuters. Many times the roads have to be closed causing rural traffic to have to take alternate routes which can sometimes be an additional 5-10 miles out of the way. All areas of the County are vulnerable when heavy rains occur. Storm sewers are built for the typical storm and therefore do not accommodate for excessive or heavy rains.



Ice Jams cause damage to bridges, roads, and culverts due to water currents pushing large chunks of ice under or through small openings. There are two bridges inside the City limits of Huron, located on 3<sup>rd</sup> Street and 21<sup>st</sup> street, which are at risk for ice jams. There are also many other unspecified areas throughout the county that are vulnerable to ice jams.

Landslides have a low chance of occurring in Beadle County due to the relatively flat topography. There may be areas around Lake Byron that are more prone to landslides, however none of those areas are particularly noted since the planning team lacked specific information.

Lightning often strikes the tallest objects within the area. In towns trees and poles often receive the most strikes. In rural areas, shorter objects are more vulnerable to being struck. Electrical lines and poles are also vulnerable because of their height and charge. In addition, many streetlights function with sensors. Since thunderstorms occur primarily during hours of darkness, lightning strikes close to censored lights cause the lights to go out, causing a potential hazard for drivers. Flickering lights and short blackouts are not at all uncommon in the county.

One of lightning's dangerous attributes includes the ability to cause fires. Since the entire county is vulnerable to lightning strikes and subsequent fires, these fires will be treated under the fire section of this plan.

Most injuries from lightning occur near the end of thunderstorms. Individuals who sought shelter leave those areas prior to the entire completion of the thunderstorm. Believing it is safe to freely move around, concluding lightning strikes catch them off guard.

Severe Winter Storms have a high risk of occurrence. Approximately five snowstorms each resulting in 5-10 inches of snow occur in the Beadle County area annually. Heavy snow can immobilize transportation, down power lines and trees and cause the collapsing of weaker structures. Livestock and wildlife are also very vulnerable during periods of heavy snow. Most storms can be considered to have occurred countywide. Due to the multiple occurrences of winter storms each year, an exhaustive compilation is not possible.

Additionally, winter storms often result in some forms of utility mishaps. High voltage electric transmission/distribution lines run the length of Beadle County. These lines are susceptible to breaking under freezing rain and icy conditions and severing during high blizzard winds. Within the county, particularly within Huron, there are fiber optics associated with phone transmissions that are the lifeline to communications. Any electrical complications bring associated risk of food spoilage, appliance burnout, loss of water, and potential harm for in-house life support users. Limited loss of power is not uncommon on an annual basis. A typical power interruption lasts from 1 to 3 hours. Most residents are prepared to deal with this type of inconvenience.

The greatest danger during winter weather is traveling. Many individuals venture out in inclement weather. Reasons include the necessity of getting to work, going to school, going out just to see how the weather is, and to rescue stranded persons.

Snow Drifts is caused by wind blowing snow and cold temperatures. These drifts can be small finger drifts on roadways causing cautionary driving, or 20-40 foot high drifts that block entire highways, roads, and farmyards for several days.

Populations at highest vulnerability for this type of hazard are rural homeowners, which account for approximately 20% of the county, and the elderly. As with any weather event, those dependent upon healthcare supplies and other essentials will also bear the brunt of highway closures and slowed transportation due to snow and ice. Emergency services will also be delayed during winter storms.

Snow removal policies and emergency response is at excellent performance and no projects will be considered in this area. Generators provide back-up power to many critical facilities within Huron and in rural areas. However, some of the critical facilities that could be utilized in disaster situations do not have backup generators. Also, some facilities have generators that only power a portion of operations.

Strong Winds can be detrimental to the area. Trees, poles, power lines, and weak structures are all susceptible and vulnerable to strong winds. When strong winds knock down trees, poles, power lines, and structures it creates additional traffic hazards for travelers and commuters. Strong winds are a common occurrence in all parts of Beadle County. The farming community tends to be vulnerable because many old farm sites have weak, dilapidated, or crumbling structures or structures such as grain bins which can easily be blown over. Another area of particular vulnerability would be those areas with dense tree growth where dead or decaying trees lose their stability and can be blown over or knocked down easily.

Subsidence is a hazard that has a very low probability of occurring in the area. Therefore the jurisdictions do not consider themselves particularly vulnerable to such a hazard.

Thunderstorms cause lightening a sometimes large amounts of rain in a small timeframe. The entire county experiences thunderstorms on a regular basis and is only vulnerable when weather events outside the norm occur. Specific vulnerabilities are further identified in the paragraphs for "Lightening" and "Heavy Rains".

Tornadoes present significant danger and occur most often in South Dakota during the months of May, June, and July. The greatest period of tornado activity (about 82 percent of occurrence) is from 11 am to midnight. Within this time frame, most tornadoes occur between 4 pm and 6 pm.

The annual risk for intense summer storms is very high. Often associated with summer storms are utility problems. High voltage electrical transmission lines run the length of Beadle County. These lines are susceptible to breaking during high winds and hail. Tall trees located near electrical lines can be broken in wind or by lightning strikes and land on electrical lines, severing connections. Any electrical complications bring associated risk of food spoilage, appliance burnout, loss of water, and potential harm to in-house life support dependents. Limited loss of power is common on an annual basis. Typical power interruptions last around 1 to 3 hours. Most residents are prepared to deal with this.

All of Beadle County, nearly \$1 billion in property and over 17,000 residents are susceptible to any of the summer storms. Warning time for summer storms is normally several hours, sufficient for relocation and evacuation if necessary. However, tornadoes may occur with little or no warning.

Specific areas within the County have a high risk of being impacted if hit by a tornado or severe storms. The fairgrounds are particularly vulnerable because of a high seasonal population. All schools, mobile home parks, nursing homes, and the hospital in Huron are at high risk during summer storms.

Gathering historical data on tornadoes and thunderstorms is very difficult due to the number of occurrences and unconfirmed reports. Each year, many storms and a few tornadoes affect the county. Summer storms in Beadle County usually produce a wide range of damage making damage estimates very difficult. A complete listing of all summer storms having occurred within the county is not possible to produce. Available data regarding the many major summer storms that have affected the county was gathered.

Wildfires occur primarily during drought conditions. Wildfires can cause extensive damage, both to property and human life, and can occur anywhere in the county. Even though wildfires can have various beneficial effects on wilderness areas for plant species that are dependent on the effects of fire for growth and reproduction, large wildfires often have detrimental atmospheric consequences, and too frequent wildfires may cause other negative ecological effects. Current techniques may permit and even encourage fires in some regions as a means of minimizing or removing sources of fuel from any wildfire that might develop.

Since there are no remote forested regions in Beadle County, wildfires can be easily spotted and are capable of being maintained. Beadle County does not have any areas that are considered Wildland-urban interface because property outside city limits is primarily agricultural land, thus, there are no urban interface areas of risk in Beadle County. In addition, fire interference with traffic on highways is not a major concern. The most important factor in mitigating against wildfires continues to be common sense and adherence to burning regulations and suggestions disseminated by the County.

Wildfires (grassland fires/prairie fires) are a threat to the entire county. With 1,259 square miles, and a majority of that being flat farmland and flat grassland, Beadle County has a high risk for fires. The city of Huron does not allow burning within city limits, though the smaller communities have no burning bans. Many farms burn garbage and debris on a routine basis. Also, campgrounds see a regular use of controlled campfires which could potentially get out of control.

Moisture amounts have the biggest impact on fire situations. During wet years, fire danger is low. More controlled burns are conducted and less mishaps occur. During dry years, severe restrictions are placed on any types of burns. For information on dealing with open/controlled burning within the county, see SDCL 34-29B and 34-35.

Hunting season brings thousands of hunters to the area. Shots have the potential to ignite dry grassland, hay bales, or storage areas. This is a risk that is addressed in hunting education and safety.

## **ADDRESSING VULNERABILITY: REPETITIVE LOSS PROPERTIES**

*Requirement §201.6(c)(2)(ii): [The risk assessment] must also address National Flood Insurance Program (NFIP) insured structures that have been repetitively damaged by floods.*

Repetitive loss properties are those for which two or more losses of at least \$1,000 each have been paid under the National Flood Insurance Program (NFIP) within any 10-year period since 1978. Repetitive loss properties do not exist in Beadle County for two reasons: 1) The City of Huron has ordinances that do not allow for development in the flood plain and has acquired and removed the last two remaining properties that were located in the flood plain and 2) the areas of the County outside the Huron city limits that are prone to flooding are primarily agricultural/crop land. Thus, repetitive loss properties do not exist in Beadle County.

## **ASSESSING VULNERABILITY: IDENTIFYING STRUCTURES**

*Requirement §201.6(c)(2)(ii)(A): The plan should describe vulnerability in terms of the types and numbers of existing and future buildings, infrastructure, and critical facilities located in the identified hazard area...*

One of the primary purposes of this plan is identifying critical facilities, emergency shelters, and summer storm shelters and equipping those facilities with the means to provide the necessary energy for access to sanitation and maintain important functions during a natural hazard occurrence. In the event of a disaster as a result of severe summer or winter storms, a terrorist attack, or a hazardous materials incident, Beadle County and participating entities will have the ability to prevent further loss of life by generator powered critical facility shelters.

The State Hazard Mitigation Plan addresses several mitigation categories including warning and forecasting, community planning, and infrastructure reinforcement. Beadle County and participating entity's greatest needs are for generators in storm shelters and public awareness. There are several aspects tying into the State's plan.

First, the distribution of informational materials to homeowners is essential. Owners (and renters) need to identify safe places within their homes and nearby locations if necessary. Many individuals do not have secure basements and/or inner rooms. In addition, residents in rural areas are located a substantial distance from a public shelter. Unfortunately these individuals who do not have secure facilities within their homes, can almost never afford to tornado-proof an area of their home.

Secondly, each community should have some form of notification stating where shelters are located. This may mean waiting until a public shelter is constructed or advertising a large, sturdy house as a storm shelter in the community. Posting signs on major highways indicating the location of shelters is another means to protect travelers.

Both local radio stations, KIJV and KOKK announce severe weather. School closings, activity postponements, and travel advisories are communicated by radio. This is done at the request of the Emergency Manager. KIJV will announce individual public notices regarding concerns over severe weather.

The City of Huron has many structures that are vital to emergency operations. Table 4.16 is a list of critical facilities that would cause the greatest distress in the county if destruction occurred. Approximate dollar values are also listed.

<b>Table 4.16: Critical Facilities</b>		
Water Treatment Plant	\$ 4.5 M	Huron
SE Water Tower	\$ 2.6 M	Huron
Wyoming Water Tower	\$ 0.5 M	Huorn
Winter Park Water Tower	\$ 0.5 M	Huruon
Sewer Treatment Plant	\$25.0 M	
Airport		
North Fire/Ambulance Station	\$ 1.5 M	
South Fire/Ambulance Station	\$ .3 M	
High School	\$10.0 M	
Central Administration Bldg.	\$ .4 M	
Middle School	\$ 8.4 M	
Vocational Building	\$ 1.6 M	
Buchanan Elementary	\$ 2.9 M	
Jefferson Elementary	\$ 2.1 M	
Madison Elementary	\$ 2.0 M	
Washington Elementary	\$ 1.9 M	
Huron Arena	\$ 4.0 M	
Huron Regional Medical Center		
Beadle County Courthouse		

Table 4.17 is a listing of facilities which house a considerable number of persons on any given day. Hazards such as summer storms, winter storms, fires, terrorist activities, hazardous materials incidents, or aviation incidents would have greatest impact upon these facilities.

<b>Table 4.17: Facilities Housing Large Numbers of Persons</b>				
<b>Facility</b>	<b>Number</b>			
<b>Schools</b>	<i>Students</i>	<i>Staff</i>		<i>Total</i>
Buchanan El. School	152	36		188
Jefferson El. School	166	35		201
Madison El. School	212	28		240
Washington El. School	256	32		288
Pearl Creek	115			
Huron Middle School	523	84		607
Huron High School	723	72		795
Huron Colony School	22	3		25
Riverside Colony School	24	3		27
Hitchcock School	96			
Iroquois School	195			
Shamrock Colony School	90			
Wolsey-Wessington School	196			

<b>Other Businesses/Government</b>				<i>Staff</i>
U.S. Government				384
Huron Regional Medical Center				212
NorthWestern				211
Huron Area Center for Independence				189
Trussbilt, Inc.				181
City of Huron				129
State Government				128
Terex, Inc.				116
Our Home, Inc.				110
Coborn's				98
Dakota Provisions				400
Beadle County				80

The 'typical' home being built in Huron consists of 1,400 square feet and has a cost of roughly \$105,000. Development occurs on half-acre and larger plots of land. Currently, within the city of Huron, household size, number of households, average median age, and population continues to decrease. Little business within the city has changed within the last five years.

However, Huron continues to expand to the south. On the west side of Huron, the Huron Planning Commission rezoned an area along the new truck route. The area is zoned for commercial and residential uses.

The rest of Beadle County and the local jurisdictions are not experiencing growth at this time, but rather just trying to maintain the population they currently have, thus, development trends are static and not experiencing much change at this time. Most structures throughout the county and in the local jurisdictions are not located within the flood plains, but are susceptible to wildfires, winter storms, and summer storms.

**ASSESSING VULNERABILITY: ESTIMATING POTENTIAL LOSSES**

Requirement §210.6(c)(2)ii(B): [The plan should describe vulnerability in terms of an] estimate of the potential dollar losses to vulnerable structures identified in paragraph (c)(2)ii(A) of this section and a description of the methodology used to prepare the estimate...

The information provided in the following tables was collected from the local jurisdictions by the representatives from each community. The Beadle County Emergency Manager provided the information for Beadle County and Lynn Kruse from Dakota Energy provided the information for Dakota Energy. Inconsistencies and missing information are a result of lack of existing mechanisms, plans, and technical documents available to the communities and also a result of people who are serving their communities on a volunteer basis as opposed to many other areas in the nation which have larger communities who pay salaried professionals to represent them during the PDM drafting process. Each of the communities provided the best available data considering the lack of resources in which to access the information. Since this section of the plan is new, those jurisdictions that have submitted incomplete information in the 2009 PDM Plan will be requested to provide more complete data during the next five-year update and review of the Plan.

<b>4.18 BEADLE COUNTY ESTIMATED POTENTIAL DOLLAR LOSSES TO VULNERABLE STRUCTURES</b>						
<b>Type of Structure</b>	<b>Total Value of Structures</b>	<b>HAZARDS</b>				
		<b>Flood</b>	<b>Hail</b>	<b>Strong Winds</b>	<b>Tornado</b>	<b>Winter Storms</b>
Residential	99,693,146					
Commercial	15,265,670					
Industrial						
Agricultural	18,614,067					
Religious/ Non-profit						
Government						
Education						
Utilities						
<b>Total</b>						

Broadland—no data submitted

**4.19 TOWN OF CAVOUR  
ESTIMATED POTENTIAL DOLLAR LOSSES  
TO VULNERABLE STRUCTURES**

Type of Structure	Total Value of Structures	HAZARDS			
		# of Structures	% in Hazard Area	# of People In Community	% of People in Hazard Area
Residential	\$1,414,615	No data submitted	100%	141	141
Commercial	\$1,071,236		100%	0	0
Mobile Home	\$195,700	--	0	0	0
Agricultural	0	--	0	0	0
Religious/ Non-profit	0	--	100%		
Government	\$578,231	--	100%		
Fire Hall	\$90,000	1	100%		
Utilities	0	0	100%		
<b>Total</b>	<b>\$3,348,782</b>		<b>100%</b>	<b>141</b>	<b>141</b>

**4.20 TOWN OF HITCHCOCK  
ESTIMATED POTENTIAL DOLLAR LOSSES  
TO VULNERABLE STRUCTURES**

Type of Structure	Total Value of Structures	HAZARDS			
		# of Structures	% in Hazard Area	# of People In Community	% of People in Hazard Area
Residential	\$3,129,846	55	100%	108	108
Commercial	\$200,000	8	100%	0	0
Industrial	0	0	0	0	0
Agricultural	0	0	0	0	0
Religious/ Non-profit	\$250,000	1	100%		
Government	\$30,000	1	100%		
Education	UNKNOWN	1	100%		
Utilities	UNKNOWN	2	100%		
<b>Total</b>	<b>\$3,609,846</b>	<b>67</b>	<b>100%</b>	<b>108</b>	<b>108</b>

Iroquois- does not participate



**4.21 TOWN OF VIRGIL  
ESTIMATED POTENTIAL DOLLAR LOSSES  
TO VULNERABLE STRUCTURES**

Type of Structure	Total Value of Structures	HAZARDS			
		# of Structures	% in Hazard Area	# of People In Community	% of People in Hazard Area
Residential	\$194,425	9	100%	20	20
Commercial	\$11,500	1	100%	0	
Industrial	0	0	0	0	0
Agricultural	0	0	0	0	0
Religious/ Non-profit	Unknown	1	100%		
Government					
Education					
Utilities					
<b>Total</b>	<b>205,925</b>	<b>11</b>	<b>100%</b>	<b>20</b>	<b>20</b>

**4.22 TOWN OF WOLSEY  
ESTIMATED POTENTIAL DOLLAR LOSSES  
TO VULNERABLE STRUCTURES**

Type of Structure	Total Value of Structures	HAZARDS				
		Flood	Hail	Strong Winds	Tornado	Winter Storms
Residential	\$6,884,822	\$2,753,929	\$5,163,617	\$5,163,617	\$6,884,822	\$3,442,411
Commercial	\$2,104,730	\$841,892	\$1,578,548	\$1,578,548	\$2,104,730	\$1052365
Industrial	0	0	0	0	0	0
Agricultural	0	0	0	0	0	0
Religious/ Non-profit	\$5,000,000	2,000,000	\$1,500,000	\$1,500,000	\$5,000,000	\$2,500,000
Government	\$265,000	106,000	\$198,750	\$198,750	\$265,000	\$132,500
Education	\$4,500,000	1,800,000	\$3,375,000	\$3,375,000	\$4,500,000	\$2,250,000
Utilities	\$2,500,000	1,000,000	\$1,875,000	\$1,875,000	\$2,500,000	\$1,250,000
<b>Total</b>	<b>\$21,254,552</b>	<b>\$8,501,821</b>	<b>\$13,690,915</b>	<b>\$13,690,915</b>	<b>\$21,254,552</b>	<b>\$10,627,261</b>

<b>4.23 TOWN OF YALE ESTIMATED POTENTIAL DOLLAR LOSSES TO VULNERABLE STRUCTURES</b>					
<b>Type of Structure</b>	<b>Total Value of Structures</b>	<b>HAZARDS</b>			
		<b># of Structures</b>	<b>% in Hazard Area</b>	<b># of People In Community</b>	<b>% of People in Hazard Area</b>
Residential	\$1,501,019	No data submitted	100%	141	141
Commercial	\$530,006	--	100%	0	0
Mobile Home	\$218,345	--	0	0	0
Agricultural	0	--	0	0	0
Religious/ Non-profit	0	--	100%		
Government	\$468,894	--	100%		
Fire Hall	0	0	100%		
Utilities	0	0	100%		
<b>Total</b>	<b>\$3,348,782</b>		<b>100%</b>	<b>141</b>	<b>141</b>

<b>4.24 TOWN OF WESSINGTON ESTIMATED POTENTIAL DOLLAR LOSSES TO VULNERABLE STRUCTURES</b>					
<b>Type of Structure</b>	<b>Total Value of Structures</b>	<b>HAZARDS</b>			
		<b># of Structures</b>	<b>% in Hazard Area</b>	<b># of People In Community</b>	<b>% of People in Hazard Area</b>
Residential	\$1,695,316	112	100%	248	100
Commercial	\$1,465,805	33	100%		
Industrial					
Agricultural	\$136,026	1	100%		
Religious/ Non-profit	***	3			
Government	***	4	100%		
Education	***	1	100%		
Utilities	0	0	100%		
<b>Total</b>	<b>\$3,348,782</b>	<b>154</b>	<b>100%</b>	<b>248</b>	<b>100%</b>

\*\*\* Wessington has government and religious buildings, however did not provide the values or information for the plan.

4.25 CITY OF HURON ESTIMATED POTENTIAL DOLLAR LOSSES TO VULNERABLE STRUCTURES							
Type of Structure	Total # of Structures	Total Value of Structures	HAZARDS				
			Flood	Hail	Strong Winds	Tornado	Winter Storms
Residential	4357	\$224,337,050	0	11,216,852	\$2,243,370	\$56,084,263	\$2,243,370
Commercial	551	\$119,923,782	0	5,996,189	\$1,199,237	\$29,980,945	\$1,199,237
Industrial	0	0	0	0	0	0	0
Agricultural	0	0	0	0	0	0	0
Religious/ Non-profit	No data submitted	unknown	unknown	unknown	unknown	unknown	unknown
Government	6	\$1,419,205	1,419,205	70,960	14192	14192	\$14192
Education	unknown	unknown	0	0	unknown	unknown	unknown
Utilities	unknown	unknown	0	0	unknown	unknown	unknown
<b>Total</b>	<b>4914</b>	<b>\$345,680,037</b>	<b>\$1,419,205</b>	<b>\$17,213,041</b>	<b>\$10,627,261</b>	<b>\$21,254,552</b>	<b>\$10,627,261</b>

4.26 DAKOTA ENERGY COOPERATIVE, INC ESTIMATED POTENTIAL DOLLAR LOSSES TO VULNERABLE STRUCTURES						
Type of Structure	Total # of Structures	Total Value of Structures	HAZARDS			
			Flood	Strong Winds	Tornado	Winter Storms
Poles	16,500	\$19,800,000	10%	100%	100%	100%
Underground Equipment	unknown	\$85,000	100%	0%	0%	0%
Transformers/ Wire	unknown	\$24,420,000	0%	0	100%	100%
Substations	8	7,200,000	0%	100%	100%	100%

#### METHODOLOGY FOR ESTIMATING POTENTIAL LOSSES

Planning team members discussed the methodology on how to prepare the estimates and came to the conclusion that due to the nature of the hazards that affect the jurisdiction of the plan that it is hard to identify vulnerable structures. For example, for a flood hazard we could simply identify structures located within the flood plain and label them as vulnerable and then determine an estimated potential of dollar losses for those structures. However, with hazards such as tornados, hail, strong winds, and severe winter storms, the entire jurisdiction is a risk or “vulnerable.” The small towns decided to use a “worst-case scenario” such as the town of Spencer, South Dakota which was completely destroyed by a tornado. The planning team thought it was very likely that if one of the small towns such as Broadland, Cavour, Hitchcock, Wessington, Wolsey, Yale, or Virgil could easily be wiped out by a tornado if it hit their town. The planning team also decided that most structures are equally as vulnerable to be destroyed by a tornado if it were to hit them. Those communities decided to estimate their potential dollar losses by using 100 percent of the replacement value for the entire town. The

values were taken from the assessors reports that are provided to each of the jurisdictions for the residential and commercial components. Government buildings are not included in the assessor's report, therefore the jurisdictions used the insurance values for the City-owned structures that are at risk. For the City of Huron, the chance of a tornado wiping out the entire town is less likely due to the larger size of the town and the characteristics of a typical tornado path and more stringent building codes for larger buildings, thus the City of Huron estimated its potential dollar loss for vulnerable structures at 25 percent of the replacement value for the entire town. The City of Huron used 25 percent because that would large enough to be considered catastrophic but also reasonable to expect if a tornado went right through the center of town. This same process was used for winter storms, strong winds, and hail. Since most of the towns do not have development within the flood plain, and since structures that are located within the flood plain can be easily identified, the same methodology was not used for flooding.

### **ASSESSING VULNERABILITY: ANALYZING DEVELOPMENT TRENDS**

*Requirement §201.6(c)(2)(ii)(C): [The plan should describe vulnerability in terms of] providing a general description of land uses and development trends within the community so that mitigation options can be considered in future land use decisions.*

The land use and development trends for each jurisdiction were identified by the representatives from each of the jurisdictions. The only community in Beadle County that is experiencing any growth and/or development at this time is Huron. The rest of the jurisdictions have experienced declining populations over the past 10 years and at this time are just trying to maintain the population they have. Due to the declining populations the smaller jurisdictions do not maintain plans for growth and development.

### **UNIQUE OR VARIED RISK ASSESSMENT**

*Requirement §201.6(c)(2)(iii): For multi-jurisdictional plans, the risk assessment must assess each jurisdiction's risks where they vary from the risks facing the entire planning area.*

After conducting the risk assessment for each jurisdiction, the group decided that all areas of the county have an equal chance of a natural hazard occurrence in their area. While the extent to which each jurisdiction is affected by such hazards varies slightly between the local jurisdictions, the implications are the same. Thus the planning team decided that all jurisdictions in Beadle County, with the exception of Huron because of its size, are equally affected by the types of hazards/risks that affect the PDM jurisdiction. Thus, the unique or varied risk requirement is not applicable to the Beadle County PDM Plan.

## V. MITIGATION STRATEGY

### CHANGES/REVISIONS TO THE MITIGATION SECTION:

Goal #1, Project #1 is ongoing. No changes were recommended, priority does not change.

Goal #2 Project #1 is ongoing, no changes were recommended; priority is still high. Project #2 is ongoing. Project #3 should be changed to read: "Develop or update severe weather procedures for businesses or locations that have an occupancy over 20 persons." The project is ongoing and timeframe should be changed to read seasonally. Project #4: should include the words "in the City of Huron" after the words warning system.

Goal #3, Project #1 will be eliminated from the new plan because there is no one to accept the responsibility of maintaining the siren. Project #2 is still needed. Only two new storm shelters were built at the north and south fire stations. Some additional locations that could use storm shelters are Memorial Park Campground, Broadland, Virgil, Yale, Cavour, all of the Huron Sports Complexes, and all 5 of the trailer courts within the City limits of Huron. The statement at the bottom of page 71 will be eliminated since environmental review records are required for all projects that involved construction on land that has not been previously disturbed. Project #3 will be changed to read: "Identify winter weather storm shelters in each local jurisdiction and equip with source of power/backup generators." Timeframe will be changed from 2005 to 2011. Oversight will read emergency management and local jurisdictions. Project #4, is still needed and should also include Hwy 37 and all municipalities throughout the County. Project 4 cannot be completed until the shelters are identified, but will remain in the plan. Project #5, is ongoing. Bodies of local government will continue to encourage private businesses to build privately owned storm shelters. Project #6 removing trees along streets, roads, highways. This project should stay in the plan as an ongoing project. Project #7, purchase of generators for small communities, will stay in the plan as a high priority. Project #8-no changes. Project #9, mandatory school closure during winter storms- removed from plan.

Section II: Mitigation Activities for Fire Drought Hazards, Goal #1, Project #1 is a continuous/ongoing project and will be left in the plan. The cost/benefit section will need to be revised to reflect changes since 2003. Goal #2, Increase fire fighting capabilities is a continuous/ongoing project. The group identified a need for training a younger generation of firefighters. Goal #3, Project #1 and #2 will be removed from the plan due to lack of necessity in the jurisdiction for such projects.

Section III: Mitigation activities for flooding. Goal #1, Project #1 eliminated specific areas and made the goal much broader. Goals #2-Prevent flooding of township roads, Projects #1, 2, and 3. eliminate specific township roads as some projects have been completed and no townships were present to represent individual interests. Project #4 can be eliminated from the plan because the project has been completed. Goal #3 Use HAZUS software to estimate losses in flooding situation was removed.

Section IV: Mitigation Activities for man-made hazards. Goal #1, Project #1 removed from the PDM plan because chemical and fuel storage locations are already require to comply with State and Federal Laws which would override any requirements set forth by the County. Project #2 does not belong in the PDM Plan, not a mitigation action and is addressed in the county HAZMAT plan. Project # 3 is also required by the HAZMAT plan and is addressed elsewhere, thus it will be removed. Goal #2, Project #1 has been partially completed, changes made. Project #2 will be removed from the plan, as it is not a mitigation action. Project #3, will be kept in the plan, no changes. Goal #3 eliminated from the plan. **Additional projects submitted by individual communities were added at the end of the mitigation section.**

## **MITIGATION REQUIREMENTS**

*Requirement §201.6(c)(3)(i): [The hazard mitigation strategy shall include a] description of mitigation goals to reduce or avoid long-term vulnerabilities to the identified hazards.*

*Requirement §201.6(c)(3)(ii): [The mitigation strategy shall include a] section that identifies and analyzes a comprehensive range of specific mitigation actions and projects being considered to reduce the effects of each hazard with particular emphasis on new and existing buildings and infrastructure.*

*Requirement §201.6(c)(3)(ii): [The mitigation strategy shall include a] section that identifies and analyzes a comprehensive range of specific mitigation actions and projects being considered to reduce the effects of each hazard with particular emphasis on new and existing buildings and infrastructure.*

## **MITIGATION OVERVIEW**

After meetings with the local jurisdictions and opportunities for public input, a series of mitigation goals were devised to best aid the County in reducing and lessening the effects of hazards. Projects previously identified in the 2003 PDM were carefully analyzed and discussed to determine which of the projects had enough merit to be included in the updated plan and to determine if the projects meet the hazard mitigation needs of the county. These projects were evaluated based on a cost/benefit ratio and priority. A *high* priority classification means that the project should be implemented as soon as possible and would minimize losses at a very efficient rate. A *moderate* classification means that the project should be carefully considered and completed after the high priority projects have been completed. A *low* priority means that the project should not be considered in the near future. However, it is a potential solution and should not be eliminated until further evaluation can be completed. Such projects may be completed in light of failures of all other projects striving toward the same goal.

A timeframe for completion, oversight, funding sources, and any other relevant issues were addressed. These implementation strategies are geared toward the specific goal and area. Often, these projects will not encounter any resistance from environmental agencies, legal authorities, and political entities. Where these are a concern, address is made.

## **SECTION I: MITIGATION ACTIVITIES FOR SEVERE WEATHER HAZARDS**

**Goal #1:** Increase public awareness and education on winter storm issues. With existing and newly developed education materials, the public can be warned of the dangers of winter storms. Some items to be considered are news releases, emergency checklists, and brochures, disseminated by public awareness campaigns. Some of the issues that may be addressed within the information would include: safety issues on downed power lines, electrical and fire dangers, the necessity for generators and advice on using them, survival strategies during storms, and purchasing of back-up power for various household and farming operations.

Project #1:

Educate the public on the dangers of traveling during severe, particularly winter, weather.

Priority: **High**  
Funding sources: Private, City, County, Federal  
Timeframe: Improvements and updates needed annually  
Oversight: County, City of Huron  
Cost/Benefit: Cost of public ed. would be outweighed by cost of mobilizing emergency responders who would be risking their lives in blizzard conditions. Partial cost could be passed on to the party who was stranded.

**Goal #2:** Improve public awareness regarding summer storms.

Project #1:

Educate the public. While seasonal information and training opportunities exist, the program needs to be expanded into a multi-training safety course. An intense advertising campaign is essential to this project. This may include brochures, news releases, or television commercials. Homeowners need to be able to identify safe places in and/or around their homes. Individuals will also need decision-making information. This would include tornado warning procedures and information that would allow homeowners to apply financial resources to the best projects for safeguarding their homes and families.

Priority: **High**  
Funding sources: Local, State, Federal  
Timeframe: Needed next year.  
Oversight: Emergency Management, NWS  
Cost/Benefit: Cost of public ed. outweighed compared by reduction in loss of life and injuries during a tornado or severe windstorm.

Project #2:

Find more storm spotters. Encourage citizens to look out for severe weather and report it to the correct authorities. In the past, the general public has provided vital information that professionals have not. This information has been used to alert communities and has saved lives.

Priority: **High**  
Funding sources: County, NWS  
Timeframe: Ongoing  
Oversight: Emergency Management, NWS  
Cost/Benefit: Training is provided by NWS Sioux Falls every other year free of charge with the only cost to the individual being time and mileage.

Project #3:

Develop or update severe weather procedures for businesses or locations that have an occupancy over 20 persons.

Priority: Moderate-High  
Funding sources: City, County, Private enterprises  
Timeframe: Seasonally

Oversight: Individual businesses or locations in conjunction with  
Emergency Management  
Cost/Benefit: Minimal cost for a large safety factor.

Project #4:

Increase use of indoor warning system by the City of Huron by notifying entities which have the capabilities and putting additional facilities in the system. Also expand the system so that businesses that cannot hear warnings in their facilities can be notified of impending weather. Some target facilities include Banner, Dakota Central, Ellwein's, and James Valley Christian School, which has 170 students.

Priority: Moderate-High  
Funding sources: Private enterprises, City  
Timeframe: Seasonally  
Oversight: Individual facilities  
Cost/Benefit: The potential of saving lives greatly outweighs the minimal cost for updating the system in necessary locations and time spent.

**Goal #3:** Improve public safety during severe weather.

Project #1:

(removed from plan)

Project #2:

Construction of additional storm shelters in the City of Huron, particularly at the South Dakota state fairgrounds, Memorial Park Campground, all of the Huron sports complexes, 5 trailer courts.

Priority: High  
Funding sources: City, County, State, Federal  
Timeframe: As funding becomes available  
Oversight: City  
Cost/Benefit: \$50,000 per shelter, with the exception of the shelter at the State Fair Grounds. A shelter at the fair grounds might cost \$1 million if it were large enough for a thousand people. A preliminary evaluation would need to be done to determine which of the aforementioned areas are highest risk.

Project #3:

Identify winter weather storm shelters in each local jurisdiction and equip with source of power/backup generators. Compile a list of those shelters and make arrangements for the opening of shelters when severe weather threatens.

Priority: Moderate  
Funding sources: City/County budget  
Timeframe: 2011  
Oversight: Emergency Management Office & Local Jurisdictions  
Cost/Benefit: The cost of time spent would be well worth the investment.



Project #4:

Put up road signage along the Highways 281, 37, and 14, notifying visitors and residents of shelter locations. Also placement of directional signs along main roads and on the shelter buildings.

Priority: High  
Funding sources: City/County Budget, State, Federal  
Timeframe: Ongoing  
Oversight: DOT and Beadle County Emergency Management Office  
Cost/Benefit: A road sign would cost \$500-\$1000 including labor. To aid motorists to get to safety during severe weather is a high benefit. A study could be completed to evaluate the program and how much the signs were used.

Project #5:

Construction of additional storm shelters. This project encompasses a broad range of possibilities. One aspect would be that of private shelters. A shelter that would serve 6-8 persons would cost roughly \$2,000. Cost would vary depending on style and company. Most residents have basements or other secure location where they can go in the event of a storm. However, some residents feel that getting to a shelter location is not necessary, even in the severest situations. Another aspect would be erecting public shelters. Project #3 proposes to evaluate existing structures as to their sheltering abilities. Further shelters may need to be constructed in Huron as the city continues to develop.

Priority: Moderate  
Funding sources: Private, City, County, State, Federal  
Timeframe: Ongoing  
Oversight: Private residents, various governments (Dependent upon location and serviced area)  
Cost/Benefit: An initial survey of locations in need of more shelter space would need to be conducted. Results of this survey would lead to a cost/benefit analysis of the project. A wide range of costs could be expected.

Project #6:

Tree removal along streets, roads, and highways. Aging, dead, or listing trees near state, county, city, and township roads become a hazard during high winds, lightning, or ice. Trees that have potential to injure and kill motorists or pedestrians should be removed.

Priority: Moderate  
Funding sources: State, Federal  
Timeframe: Ongoing  
Oversight: State Forestry Dept., County Highway Dept., City Street & Parks & Recreation Dept.  
Cost/Benefit: The cost for felling a large, rural tree is typically \$200-\$300. The chance of persons getting hurt while traveling on a road is not very high. A more detailed cost/benefit is needed along with a schedule of priority areas.

Project #7:

Purchase emergency generators to power critical facilities. All small communities including Broadland, Cavour, Virgil, Yale, Wessginton, Hitchcock as well as the City of Huron are in need of generators. Wolsey purchased generators after the 2009 blizzard and thus does not need any more.

Priority: High  
Funding sources: City, State, Federal  
Timeframe: A possible 5-year plan could be implemented.  
Oversight: City, Towns  
Cost/Benefit: A cost range for generators is \$1,000 to \$75,000. Benefits would include the ability to care for the public and those with special needs during severe weather (and terrorist) situations.

Project #8:

Enact Building Inspection authority and mandatory reconstruction requirements for buildings damaged during severe weather. Specific structural improvements may be as follows:

- \*Reinforced garage doors: adding girts across door panels and strengthening wheel tracks helps to insure garage doors from blowing away or blowing inward to damage property within.
- \*Gable-end roof framing: gable-end roofs have a higher risk of suffering damage by high winds than hip or flat roofs. A gable end would present a wind obstacle, receiving the brunt of the impact.
- \*Hurricane clips: these metal straps that are nailed or screwed to roof trusses, extend down wall studs. The purpose is to anchor the roof trusses to the walls.
- \*Foundation anchor bolts: anchor bolts protrude through the foundation walls and attach to wall sills by washers and nuts. The structures are tied to the foundation.
- \*Shutters: shutters placed around windows can be moved in place to block debris from breaking windows.
- \*Double doors: double doors, because they span a wider area, increase the risk of failure under intense winds. Heavy deadbolts, a central door post, slide bolts at the top and bottom, or longer screws extended into the frame would all help to reinforce double doors.

These recommendations would also serve as aid to Goal 2, Projects 1 & 3 and Goal 3, Projects 1,2, 4, and 7.

Priority: Low  
Funding sources: City, State, Federal  
Timeframe: Ongoing  
Oversight: City  
Cost/Benefit: A cost to individuals would be a burden and the idea would be unpopular. However, this project should not be written off until further investigation has been conducted and the project modified as to how it can best suit the area and/or community targeted. This project would need to be heavily scrutinized and evaluated before any implementation should be undertaken.

## SECTION II: MITIGATION ACTIVITIES FOR FIRE AND DROUGHT HAZARDS

**Goal #1:** Educate residents of Beadle County regarding drought situations.

Project #1:

Disseminate information regarding water usage allowances and camping restrictions during dry weather. In addition, make information regarding hunting safety and starting fires available to the seasonal population.

Priority: **High**  
Funding sources: Federal, City, County, Private enterprises  
Timeframe: Annually/Ongoing  
Oversight: Emergency Management  
Cost/Benefit: A distribution cost of \$3,610.64 (8206 households x 0.44 per envelope sent in the mail) would be incurred to give each resident of Beadle County a brochure. A cost of printing and labor would be determined by the shipper. This project has the potential to decrease fires and therefore reduce damage to cropland and property. It would be necessary to find the average damages incurred and how much could be reduced with education.

**Goal #2:** Increase fire fighting capabilities through on-going training and replacement of obsolete equipment and recruiting a younger generation of firefighters.

Project #1:

Hold training courses for volunteers. Beadle County relies on rural volunteer fire departments to help extinguish uncontrolled conflagrations.

Priority: Moderate  
Funding sources: Local, County, Federal  
Timeframe: Ongoing  
Oversight: State/Local Fire Offices  
Cost/Benefit: Continuing training courses will be through existing budgets and any Federal grant money. Cost is primarily time. Quick responses to uncontrolled conflagrations are vital.

## Section III: MITIGATION ACTIVITIES FOR FLOODING HAZARDS

**Goal #1:** Prevent flooding of county highways.

Project #1: Installation and resizing of culverts

Priority: Low  
Funding sources: Federal, County  
Timeframe: As funding is available  
Oversight: County  
Cost/Benefit: Unknown at this time.

**Goal #2:** Prevent flooding of township roads.

Project #1: Raise township roads

Priority: Moderate  
Funding sources: Federal, State, County  
Timeframe: As soon as funding is available  
Oversight: County  
Cost/Benefit: Roads which provide links for rural firefighters and emergency facilities would be top priority. Better access for emergency vehicles and roads that are often used by local citizens to sell crops would be top priority. Benefits of this would include easier access to homes in danger of fire, flooding, or other hazards, and an increased revenue because of the routes that are open for farmers to sell crops. Completely rural and sporadically traveled roads would not have a benefit worth the cost.

**Section IV: MITIGATION ACTIVITIES FOR MAN-MADE HAZARDS**

**Goal #1:** Keep the public informed regarding potential hazards.

Priority: **Moderate**  
Funding sources: City, County  
Timeframe: Ongoing  
Oversight: County  
Cost/Benefit: The cost would be less than \$2,000. Benefits would yield a public awareness of hazards and how to respond in an incident involving themselves or their property.

**Goal #2:** Improve public safety in specified areas of the County.

Project #1:

Remove the old water tower from the town of Virgil. The water tower is a safety hazard.

Priority: Moderate-High  
Funding Sources: City, County, State, Federal  
Timeframe: 3 years (with available funding)  
Oversight: City, County  
Cost/Benefit: Benefits would include reduction in injuries and removal of a fire hazard. Specifics should be gathered to determine that this is the best possible use of funds and that other projects should not receive priority.

Project #2

Remove or limit access to the low-head potential from the low-head dam across the James River in Huron. During times of high water flow there exists a dangerous boil just below the dam. During the past 20 years there have been at least 5 individuals lose their lives in this boil.

Priority: **High**  
Funding sources: City, County, Federal

Timeframe: As funding becomes available  
Oversight: City  
Cost/Benefit: This project would remove the low-head dam, greatly reducing the possibility of drowning and keep the dam intact and continue to allow use of the area by fishermen.

### **MULTI-JURISDICTIONAL PLAN REQUIREMENTS**

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

### **Dakota Energy Cooperative Mitigation Goals and Projects:**

**Goal:** Reduce the extent to which utility mishaps affect areas during severe weather situations.

Project #1: Upgrading of utility lines. There are three identified areas with this project.

1. Dakota Energy Cooperative to advise of future construction projects when appropriate.
2. Burial of utility lines.
3. Require upgrading of overhead lines when age or disaster provide opportunity.

Specific upgrades that could help Beadle County reduce the risk of utility mishap in any situation are as follows

Underground: during severe ice storms, tornadoes and other catastrophic conditions, burying underground wire will not be subject to the severe weather conditions therefore enhancing service reliability.

Dead-end poles: by using additional dead-end poles, reliability will be increased.

Overhead lines: rebuilding overhead lines should be evaluated in place of underground if costs are substantially less than underground and constructed with a minimum of #2 ACSR 7/1 Class 4 Poles and 250 spans or less.

Priority: Moderate  
Funding Sources: Private enterprises, utility companies, State/Federal  
Timeframe: 5 years  
Oversight: Appropriate electrical companies  
Cost/Benefit: Utility upgrades would range from several hundred dollars to hundreds of thousands of dollars. After damage from storms or replacement of old poles and lines, upgrades need to be considered. Each company must determine what costs are present and determine what is in the best interest of the citizens. There is no authority to mandate this action for a regional basis.

Project #2: Removal of trees from power lines. High winds that are prevalent throughout the county frequently toss tree limbs into power lines. This is particularly dangerous for rural residents with limited communication and shelter access.

Priority: Moderate (most felling occurs within regularly scheduled practices)

Funding Sources: Private, Federal, State

Timeframe: Ongoing

Oversight: Forestry Service/Private enterprises

Cost/Benefit: Several hundred dollars can remove several trees from dangerous electrical encounters. Communications, power, and safety would be benefits far outweighing the cost.

### **City of Huron Mitigation Goals and Projects**

Goal: Decrease the impact of flooding in our community

Action: make the spillway of the Third Street Dam safer without impacting fishery

Action: improve flood dikes around city facilities such as wastewater treatment plant, municipal pool, and Riverside Park.

Goal: Increase public awareness and education on severe winter storms

Action : continue to provide Public Service Announcements

Goal: Improve public awareness regarding severe summer storms, i.e. tornados, hail and wind storms

Action: continue to provide Public Service Announcements for summer storms

Action: install signage so the public (including travelers) know the location of storm shelters

Goal: Improve public safety during severe summer storms

Action: construct tornado storm shelters for residents who do not have adequate shelters in their homes, i.e. mobile home park residents and for visitors/attendees of the South Dakota State Fair and Huron Sports Complexes.

Action: conduct a study to evaluate public facilities (city, school, state, and federal) to determine the usefulness of each as a summer storm shelter for the public.

Action: remove dead and dying trees along public streets to decrease probability of trees falling during storms.

Action: provide backup electrical power to critical city facilities, i.e, FAA Flight Service Building, City Airport maintenance building, the Fine Arts Center.

Cost estimates will be acquired for each action as the City decides to move forward with each of the projects. The implementation strategy for each of the projects, if not already in place, will align with the City of Huron's comprehensive plan and five year plan. All projects will be contingent upon funding availability.

### **Town of Broadland Mitigation Goals and Actions**

Goal: Decrease the impact of severe winter weather in the community

Action: identify a structure in the community that could be used as an winter storm emergency shelter and equip with backup generator.

Goal: Decrease the impact of severe summer storms in the community

Action: identify an existing structure or construct a new structure to use as a summer storm shelter.

### **Town of Cavour Mitigation Goals and Actions**

Goal: Decrease the impact of winter storms

Action: no actions submitted

Goal: Decrease the impact of summer storms including tornados, hail, and strong winds.

Action: no action submitted

Goal: Decrease the impact of wildfire

Action: Make improvements to the City waterlines and fire hydrants for ensure adequate protection against fire.

### **Town of Hitchcock Mitigation Goals and Actions**

Goal: Decrease the impact of winter storms on the community by planning for power outages

Action: Identify a facility to be used as an emergency shelter and equip with a backup generator.

Action: purchase a backup generator for the water tower

Goal: Decrease the impact of severe summer storms

Action: Identify or construct a storm shelter

### **Town of Yale Mitigation Goals and Actions**

Goal: Decrease the impact of winter storms

Action: identify facility to be used as an emergency shelter and equip with backup generator

Goal: decrease the impact of flooding in the community

Action: address drainage issues by cleaning out ditches

Action: Increase the size of the lagoon to prevent spillage

### **Town of Virgil Mitigation Goals and Actions**

Goal: Decrease the impact of severe summer storms

Action: remove the old water tower as it is a hazard to the residents if strong winds or a tornado were to occur in the area

Action: construct a summer storm shelter to be used by the public in the event of a tornado in the area.

### **Town of Wessington Mitigation Goals and Actions**

Goal: Decrease the impact of severe summer storms

Action: Identify or construct a storm shelter

Goal: Decrease the impact of winter storms on the community by planning for power outages

Action: Identify a facility to be used as an emergency shelter and equip with a backup generator.

### **Town of Wolsey Mitigation Goals and Actions**

Goal: To decrease the impact of flooding in our community.

Action: installation of storm sewer

Goal: Increase public awareness and education on severe winter storms

Action: continue to provide Public Service Announcements

Goal: Improve public awareness regarding severe summer storms (such as - wind storms and hail, tornados)

Action: Continue to encourage residents to be aware of Public Service Announcements for summer storms

Goal: Improve public safety during severe summer storms

Action: Make public aware of storm shelter at St. John's Lutheran Church

\*\*\* The plan author acknowledges that more information regarding the above listed mitigation actions is desired; however, the information included in the Plan is provided by the communities. Those reviewing the plan should take into consideration that it is common in Rural South Dakota communities to have city council members, board members, and finance officers from the local jurisdictions who serve their jurisdictions on a part-time basis for minimal wages and sometimes even on a volunteer basis. In most cases the representatives are not compensated for the work completed or time spent attending meetings and gathering data for the PDM plan update. Local jurisdictions were asked to provide the best available data and to participate and encourage public involvement within their communities. Unfortunately, amidst their best efforts to get people involved, no one from the public participated, which is the reason for vague goals and actions.\*\*\*\*



**NATIONAL FLOOD INSURANCE PROGRAM PARTICIPATION**

*Requirement: §201.6(c)(3)(ii): [The mitigation strategy] must also address the jurisdiction’s participation in the National Flood Insurance Program (NFIP), and continued compliance with NFIP requirements, as appropriate.*

Beadle County participates in the National Flood Insurance Program. There are three communities located in Beadle County that are not located in the flood plain and thus do not participate in NFIP. Those communities are: Hitchcock, Virgil, and Yale. All of the other jurisdictions participate in NFIP. Those who participate include Huron, Cavour, Broadland, Wessington, and Wolsey. The county will continue to participate and ensure compliance of the participating local jurisdictions located within the flood plain.

<b>5.1 BEADLE COUNTY NFIP PARTICPATION</b>	
<b>Participants</b>	<b>Non-participants</b>
Beadle County	Hitchcock
Broadland	Virgil
Cavour	Yale
Huron	
Wessington	
Wolsey	

**IMPLEMENTATION OF MITIGATION ACTIONS**

*Requirement: §201.6(c)(3)(iii): [The mitigation strategy section shall include] an action plan describing how the actions identified in section (c)(3)(ii) will be prioritized, implemented, and administered by the local jurisdiction. Prioritization shall include a special emphasis on the extent to which benefits are maximized according to a cost benefit review of the proposed projects and their associated costs.*

Upon adoption of the updated Beadle County PDM plan, each jurisdiction will become responsible for implementing its own mitigation actions. The planning required for implementation is the sole responsibility of the local jurisdictions and private businesses that have participated in the plan update. All of the municipalities have indicated that they do not have the financial capability to move forward with projects identified in the plan at this time, however, all will consider applying for funds through the State and Federal Agencies once such funds become available. If and when the municipalities are able to secure funding for the mitigation projects, they will move forward with the projects identified. Since most of the local jurisdictions only had one mitigation action/goal, prioritization was not necessary. The City of Huron and Dakota Energy had several mitigation projects and thus, will prioritize those projects in a manner that will ensure benefit is maximized to the greatest extent possible. A benefit cost analysis will be conducted on an individual basis after the decision is made to move forward with a project.

## VI. PLAN MAINTENANCE

### **CHANGES/REVISIONS TO PLAN MAINTENANCE:**

The entire Monitoring section in the 2003 Plan was only two paragraphs. Both of those paragraphs are still included in the Plan Maintenance section of the updated plan; however everything else in this section is new.

### **MONITORING, EVALUATING, AND UPDATING THE PLAN**

*Requirement §201.6(c) (4)(i): [the plan maintenance process shall include a] section describing the method and schedule of monitoring, evaluating, and updating the mitigation plan within a five-year cycle.*

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

During the process of implementing mitigation strategies, the county or communities within the county may experience lack of funding, budget cuts, staff turnover, and/or a general failure of projects. These scenarios are not in themselves a reason to discontinue and fail to update the Pre-Disaster Mitigation Plan. A good plan needs to provide for periodic monitoring and evaluation of its successes and failures and allow for appropriate changes to be made.

### **ANNUAL REPORTING PROCEDURES**

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

1. The County Elected body will receive an annual report and/or presentation on the implementation status of the plan;
2. The report will include an evaluation of the effectiveness and appropriateness of the mitigation actions proposed in the plan; and
3. The report will recommend, as appropriate, any required changes or amendments to the plan.
- 4.

### **FIVE YEAR PLAN REVIEW**

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

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

The goals, objectives, and mitigation strategies will be readdressed and amended as necessary based on new information, additional experience and the implementation progress of the plan. The approach to this plan update effort will be essentially the same as the one used for the original plan development.

The Emergency Manager will meet with the PDM Planning Committee for review and approval prior to final submission of the updated plan.

### **PLAN AMENDMENTS**

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

### **INCORPORATION INTO EXISTING PLANNING MECHANISMS**

*Requirement: §201.6(c)(4)(ii): [The plan shall include a] process by which local governments incorporate the requirements of the mitigation plan into other planning mechanisms such as comprehensive or capital improvement plans, when appropriate.*

Huron is the only jurisdiction located in Beadle County that has a comprehensive or capital improvements plan. All of the other jurisdictions do not have the resources, staff, funding, or need for such planning mechanisms. The City of Huron will consider the mitigation requirements, goals, actions, and projects when it considers and reviews the other existing planning documents such as the capital improvements plan. The Huron mitigation projects will be considered and prioritized in conjunction with non-mitigation projects, such as water and wastewater infrastructure improvements, new construction of schools, libraries, parks, etc.

The rest of the local jurisdictions cannot incorporate the requirements of the mitigation plan into other planning mechanisms because they do not have any other planning mechanisms that currently exist. The risk assessment which was conducted for the purpose of this plan is specific to mitigation actions and projects included in the Plan and thus is not tied into any other mechanisms that would initiate conversations or actions by the city councils to move forward with actions or projects outlined in the Plan. Absence of such mechanisms creates a problem for the local jurisdictions because ideas, projects, and actions identified as a result of the PDM Plan update process often never move forward because they are forgotten about and no mechanism exists to initiate the process of completing such projects. Thus, the local jurisdictions identified one unrelated mechanism, that could be used to remedy the problem of mitigation projects getting lost in a bookshelf. Municipalities are required by State law to prepare budgets

for the upcoming year and typically consider any expenditure for the upcoming year at that time. South Dakota Codified Law 9-21-2 provides that:

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

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

## **POTENTIAL FUNDING SOURCES**

Although all mitigation techniques will likely save money by avoiding losses, many projects are costly to implement. None of the local jurisdictions have the funds available to move forward with mitigation projects at this time, thus, the Potential Funding Sources section was included so that the local jurisdictions can work towards securing funding for the projects. Inevitably, due to the small tax base and small population most of the local jurisdictions do not have the ability to generate enough revenue to support anything beyond the basic needs of the community. Thus mitigation projects will not be completed without a large amount of funding support from State or Federal programs. The Beadle County jurisdictions will continue to seek outside funding assistance for mitigation projects in both the pre- and post-disaster environment. Primary Federal and State grant programs have been identified and briefly discussed, along with local and non-governmental funding sources, as a resource for the local jurisdictions

### **Federal**

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

<p><b>Title: Pre-Disaster Mitigation Program</b> Agency: Federal Emergency Management Agency</p>
<p>Through the Disaster Mitigation Act of 2000, Congress approved the creation of a national program to provide a funding mechanism that is not dependent on a Presidential Disaster Declaration. The Pre-Disaster Mitigation (PDM) program provides funding to states and communities for cost-effective hazard mitigation activities that complement a comprehensive mitigation program and reduce injuries, loss of life, and damage and destruction of property.</p>
<p>The funding is based upon a 75% Federal share and 25% non-Federal share. The non-Federal match can be fully in-kind or cash, or a combination. Special accommodations will be made for "small and impoverished communities", who will be eligible for 90% Federal share/10% non-Federal.</p>

FEMA provides PDM grants to states that, in turn, can provide sub-grants to local governments for accomplishing the following eligible mitigation activities: State and local hazard mitigation planning,  
Technical assistance (e.g. risk assessments, project development), Mitigation Projects, Acquisition or relocation of vulnerable properties, Hazard retrofits, Minor structural hazard control or protection projects  
Community outreach and education (up to 10% of State allocation)

**Title: Flood Mitigation Assistance Program**

Agency: Federal Emergency Management Agency

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

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

**Title: Hazard Mitigation Grant Program**

Agency: Federal Emergency Management Agency

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

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

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

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

<p><b>Title: Public Assistance (Infrastructure) Program, Section 406</b>  Agency: Federal Emergency Management Agency</p>												
<p>FEMA's Public Assistance Program, through Section 406 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act, provides funding to local governments following a Presidential Disaster Declaration for mitigation measures in conjunction with the repair of damaged public facilities and infrastructure. The mitigation measures must be related to eligible disaster related damages and must directly reduce the potential for future, similar disaster damages to the eligible facility. These opportunities usually present themselves during the repair/replacement efforts.</p> <p>Proposed projects must be approved by FEMA prior to funding. They will be evaluated for cost effectiveness, technical feasibility and compliance with statutory, regulatory and executive order requirements. In addition, the evaluation must ensure that the mitigation measures do not negatively impact a facility's operation or risk from another hazard.</p> <p>Public facilities are operated by state and local governments, Indian tribes or authorized tribal organizations and include:</p> <table border="0"> <tr> <td>*Roads, bridges &amp; culverts</td> <td>*Water, power &amp; sanitary systems</td> </tr> <tr> <td>*Draining &amp; irrigation channels</td> <td>*Airports &amp; parks</td> </tr> <tr> <td>*Schools, city halls &amp; other buildings</td> <td></td> </tr> </table> <p>Private nonprofit organizations are groups that own or operate facilities that provide services otherwise performed by a government agency and include, but are not limited to the following:</p> <table border="0"> <tr> <td>*Universities and other schools</td> <td>*Power cooperatives &amp; other utilities</td> </tr> <tr> <td>*Hospitals &amp; clinics</td> <td>*Custodial care &amp; retirement facilities</td> </tr> <tr> <td>*Volunteer fire &amp; ambulance</td> <td>*Museums &amp; community centers</td> </tr> </table>	*Roads, bridges & culverts	*Water, power & sanitary systems	*Draining & irrigation channels	*Airports & parks	*Schools, city halls & other buildings		*Universities and other schools	*Power cooperatives & other utilities	*Hospitals & clinics	*Custodial care & retirement facilities	*Volunteer fire & ambulance	*Museums & community centers
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<p><b>Title: SBA Disaster Assistance Program</b>  Agency: US Small Business Administration</p>
<p>The SBA Disaster Assistance Program provides low-interest loans to businesses following a Presidential disaster declaration. The loans target businesses to repair or replace uninsured disaster damages to property owned by the business, including real estate, machinery and equipment, inventory and supplies. Businesses of any size are eligible, along with non-profit organizations. SBA loans can be utilized by their recipients to incorporate mitigation techniques into the repair and restoration of their business.</p>

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

## **Local**

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

## **Non-Governmental**

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

## **CONTINUED PUBLIC PARTICIPATION/INVOLVEMENT**

*Requirement: §201.6(c)(4)(iii): [the plan maintenance process shall include a] discussion on how the community will continue public participation in the plan maintenance process.*

During interim periods between the five year re-write, efforts will be continued to encourage and facilitate public involvement and input. The plan will be available for public view and comment at the Beadle County Emergency Management Office located in the Huron Municipal Building and the NECOG office. Comments will always be received whether orally, written or by e-mail.

All ongoing workshops and trainings will be open to the public and appropriately advertised. Ongoing press releases and interviews will help disseminate information to the general public and encourage participation.

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