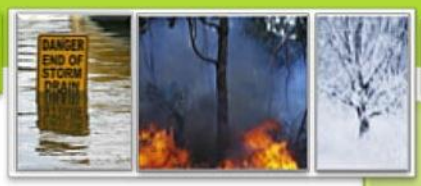

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Executive Summary

The Pennington County multi-jurisdictional, Pre-Disaster Mitigation Plan (PDM) was prepared in response to the Disaster Mitigation Act of 2000 (DMA 2000). The DMA 2000 requires state and local governments to prepare hazard mitigation plans; in order to remain eligible to receive pre-disaster mitigation funds that are made available in the wake of federally declared disasters.

The Pennington County PDM serves as a means to reduce future losses from natural or man-made hazard events before they occur. The plan was developed by the Pennington County Emergency Management Office and the local Planning (Steering Committee) Team to assist the County of Pennington and its municipalities in reducing and mitigating future losses from natural and man-made hazard events. The plan was coordinated and authored through the assistance of a consultant, Creative Outcomes.

The plan contains the necessary tools to identify specific hazards and effectively improve the disaster planning process by requiring participating municipalities to document their hazard mitigation planning process by identifying hazards, potential losses, mitigation needs, goals, and strategies.

Pennington County Multi-Jurisdictional Planning Process

The DMA 2000 requires states to submit comprehensive Hazard Mitigation Plans to the Federal Emergency Management Agency (FEMA) to be eligible for future pre-disaster mitigation funding. Local jurisdictions must also develop plans. To comply with such requirements, Pennington County and the six participating municipalities have developed this multi-jurisdictional, Pre-Disaster Mitigation Plan.

Following completion and adoption of this plan, it is the intention of the participating jurisdictions to continue working collaboratively to address data gaps while implementing complementary and collective mitigation actions.

To support the planning process, Pennington County and its participating jurisdictions accomplished the following functions:

- Formed a planning group with members from each municipality
- Identified hazards of concern

- Profiled and prioritized the identified hazards
- Estimated inventory at risk and potential losses associated with these hazards
- Developed mitigation strategies and goals to address hazards impacting highlighted areas

As required by DMA 2000, the participating jurisdictions led by the efforts of the Consultant, publically informed the population about the plan development and provided opportunities for public comment and input on the planning process. In addition, several agencies and stakeholders have participated as core or support members in providing input and expertise to the plan creation.

This Pre-Disaster Mitigation Plan documents the process and outcomes of the jurisdictions' mitigation planning efforts. All participating jurisdictions intend to incorporate mitigation planning as an integral component to daily government operations via existing processes and programs.

The plan is posted on the Pennington County web site and made available for review at city halls and the Pennington County Emergency Management Office. Updates to the plan will be similarly announced after annual plan reviews and five-year updates, with the next update to occur in 2018.

Hazard Identification

The Pennington County Emergency Management has identified *natural hazards*, *man-made hazards*, and *critical facilities* that repetitively and continuously affect the welfare of its citizens. These are summarized below and will be expanded upon throughout this plan.

A key component of a mitigation plan is the accurate identification of risks posed by a hazard along with the corresponding community impact. The process of identifying hazards of concern, profiling hazard events and conducting a vulnerability assessment is known as a risk assessment.

The following *natural* hazards are addressed:

- Flooding
- Drought
- Extreme Winter Weather
- Tornado/High Winds/Hail
- Wildfire
- Earthquake and Landslides
- Biological Pests and Disease

The following *man-made* and technological hazards are addressed:

- Hazardous Materials
- Terrorism

- Dam Failure
- Air Transportation Incident
- Seasonal Population Shift
- Power Failure
- Urban Fire
- Aquifer Contamination
- Communication Outage/Isolation

The list of *critical facilities* that would be most affected by an incident include:

- Electric power lines, sub-stations
- Water supply stations
- Telephone facilities
- Fire stations
- Law enforcement facilities
- Hospitals and clinics
- Transportation and evacuation routes

Pennington County Mitigation Strategies

The outcomes of the risk assessment, supplemented by community input, provided a basis to review past mitigation actions, future goals and objectives, and appropriate countywide and municipality-specific mitigation strategies. Many of the previous plan mitigation objectives were redundant and synthesized into an attainable objective. Additionally, there were several mitigation actions that were emergency response in nature and were removed to highlight mitigation specific activities that the jurisdictions can work toward and implement. The current plan was revised to reflect changes in priorities and in particular, the occurrence of the mountain pine beetle and the continued devastation to the Black Hills National Forest.

Several corresponding objectives accompany each goal, further defining specific strategies or implementation steps needed to attain the desired outcome. The goals, along with corresponding objectives, strongly relate to the development and evaluation of specific mitigation activities by the planning team.

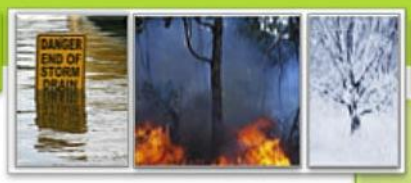
Potential mitigation activities were developed and analyzed by the Consultant and the planning committee during the summer and fall of 2012. Many of the mitigation objectives and action items were identified based on current programs and activities in Pennington County and jurisdictions involved in the planning process. The mitigation activities developed for this plan is grouped by hazard.

Implementation of this Plan

The Consultant conducted a simplistic "cost benefit review" as required by DMA 2000 in order to establish priority mitigation strategies. Priority was focused to maximize the benefit that the jurisdictions will gain from the activity, helping to ensure funds, allocated to this mitigation projects are being spent efficiently. Implementation of new and/or additional mitigation activities are dependent on approval of the local elected governing body as well as obtaining funding from outside sources if funding has not already been secured.

The entities involved in this Pre-Disaster Mitigation Plan will initiate ongoing mitigation efforts to implement, revise, and update the plan as needed. To monitor implementation, an annual review of the plan will be necessary, including the preparation of a summary report outlining plan updates and status. Mitigation evaluations will address changes as new hazard events occur and as more information is gathered about them and their impact on Pennington County communities.

The evaluation will include an assessment of whether the planning process and actions have been effective, whether development or other issues warrant changes to the plan or its priorities, if the communities' goals are being met, and whether changes are needed.



Chapter 1 – Introduction

A. Background

Mission

The Pennington County Emergency Management Office mission is to:

- In the event a disaster should occur, the mission is to maximize the survival and the preservation of property for the citizens of **Rapid City, Box Elder, New Underwood, Wall, Hill City, Keystone, and unincorporated areas within Pennington County**
    - The disaster may be natural, such as a flood, tornado, or earthquake; or
    - Man-made or technological, for example, a hazardous materials spill, fire, explosion, dam failure, or a communication breakdown
- Define the emergency and disaster responsibilities of county and municipal governments

Purpose

The **purpose of this plan** is to maximize the survival of the citizens of Rapid City, Box Elder, New Underwood, Wall, Hill City, Keystone, and within Pennington County preserve property, while working to lessen the environmental effect of a disaster.

This plan intends to familiarize elected and appointed officials with their collective emergency preparedness and mitigation responsibilities while involved within the county and city government.

The Pennington County Mitigation plan was developed to assist the counties in reducing and mitigating future losses from natural and man-made hazard events. The plan contains the tools to identify specific hazards along with aspects of existing and future mitigation efforts.

The **long-range outcome** of the plan is to establish a framework of research, information, and public education and citizen involvement that can be expanded in the future, to meet the county's needs.

These include:
- Providing a Methodical Approach to Mitigation Planning
- Enhancing Public Awareness and Understanding of Hazards

- Creating Decision-Making Tools for Policy Makers
- Promoting Compliance with State and Federal Program Requirements
- Assuring Inter-Jurisdictional Coordination of Mitigation-Related Programming
- Creating Jurisdiction Specific Hazard Mitigation Strategies for Implementation

B. Methodology

Mitigation planning is a process that communities employ to identify policies, activities, and tools to implement mitigation actions. The process that was used in the development of this plan consisted of the following recommended FEMA planning sections with action steps to align to the County's overall goals:

I. Planning Process
II. Hazard Identification and Risk Assessment
III. Mitigation Strategy
IV. Plan Review, Evaluation, and Implementation
V. Plan Adoption

I. Planning Process

Funding Approval

The County received funding approval from FEMA and the South Dakota Office of Emergency Management to prepare the mitigation plan in March 2011. The onset of planning was postponed until a new County Emergency Manager (EM) was hired in the fall of 2011. Once the EM had settled into his role, the Consultant and the Pennington County Emergency Management Office staff began discussing the scope and strategy for organizing, assessing, and developing the plan in late January 2012.

Scope of the Plan

The scope of this plan is "All-Hazard" and includes the identification of both natural and man-made (technological) hazards affecting Pennington County as identified by community input, hazard vulnerability analysis (HVA) risk assessments and the Planning Committee's study and input.

I. Flood, Drought, Extreme Heat, and Wildfire
II. Geological Hazards
III. Tornado, Thunderstorms and Severe Wind
IV. Winter Weather (Snow, Ice Storm and Extreme Cold)
V. Man-made and Technological Hazards

The Planning Committee's consideration of issues related to man-made hazards has been developed through recommendations from the 2005 plan and additional research included in this version of the plan.

Building the Informational Group and Planning Committee

The first task was to organize the group of appointed and elected officials, key stakeholders and subject matter experts as the Pennington County Disaster Mitigation Informational Group. Prior to the kick-off meeting, the Pennington County Emergency Management Coordinator wrote letters to prospective members, which included a brief description, need, and timeline for the completion of the Pre-Disaster Mitigation Plan. This assembly was comprised of representatives from state government, county and local government, community groups, local businesses, and Local Emergency Planning Committee (LEPC) committees. Individuals from the group attended the kick-off meeting in March 2012 and are kept informed of planning updates on a quarterly basis.

At the well-attended kick-off meeting, participants were invited to join and provide input as a volunteer to the core planning (steering) team. Additional members from county and local government were contacted and invited to join the team by the EM and his staff, due to their role as a resource for their jurisdiction while possessing the following attributes:

- An understanding of how hazards affect the counties and participating jurisdictions
- Substantial knowledge of municipal and county infrastructure systems
- Availability of resources such as maps or data on past hazard events

This appreciated and dedicated group attended the planning meetings, provided information and documents that were used to produce the plan, reviewed drafts of the plan as it was being assembled, and edited and approved the final version of the plan.

Public Input and Informational Meetings

After the Kick-Off Meeting, information was gathered through a series of public meetings in Hill City, Rapid City, and Wall. Public input was solicited (public notices in area newspapers, meetings, etc.) during the entire planning process. Opportunities for comments were made available at both the local and county government levels. Citizens could also access the status of the plan and provide comments to an online survey (Appendix G) through the Pennington County Emergency Management website, county government, and local government officials.

Feedback received from the public proved valuable in the development of the plan. Several remarks received led to the reconsideration of "suggested" priority mitigation actions, including some from residents of the rural portion of the county, which illustrated the need for options in the event of

severe storms, flooding, and wildfires. Maintenance and upgrade of specific culverts, and bridges, along with providing rural shelters, are activities now included in the natural hazard portion of the Pre-Disaster Mitigation Plan.

Planning Meetings

The planning meetings started in July to review the upcoming process for plan development, review of existing data and lastly, to begin systematic compiling of new information. The final plan review was held the last two weeks of October. The majority of the meetings were held at the Pennington County Emergency Management Office in Rapid City. An agenda was sent before the meetings, and all members of the team were invited to attend by email notification and prior meeting announcement.

Schedule of Events

March 2012: Email Introduction to Project and Consultant
Kick Off Meeting with Local Newspaper and TV Coverage

April: Online Community Hazard Identification Survey Launched

May: County Commission and Council Meeting Notification
Set of Three Public Notice Meetings

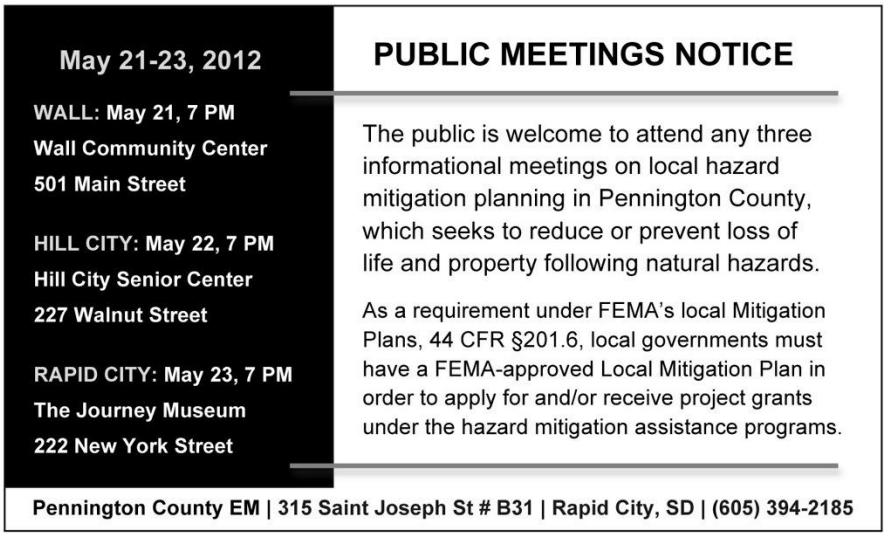
July: First In-person Planning Meeting

Aug/Sept: Series of In-person Planning Meetings

October: Final Plan Review

November/December: Submission to South Dakota Office of Emergency Management and FEMA

January/February 2013: City and County Adoption Presentations



Ad for the Rapid City Journal, informing the communities of upcoming public input meetings.

II. Hazard Identification and Risk Assessment

Step 1 – Map the Hazards and Conduct Risk Assessments

Participants identified areas where damage from historic natural disasters had occurred and areas where critical man-made facilities and other features may be at future risk to loss of life, property damage, environmental pollution, and other risk factors. Updates to the list of past hazard events were included from the information contained in the previous plan.

Step 2 – Identify Critical Facilities and Areas of Concern

Participants identified facilities and areas that were deemed significant or crucial to the County for emergency management purposes or provision of utilities and community services, for evacuation routes and for recreational and social value.

III. Mitigation Strategy

Step 3 – Identify Existing Mitigation Strategies

After collecting detailed information on each critical facility in the county, the local planning committee members, Pennington County Emergency staff and the Consultant identified existing mitigation strategies relative to flooding, wind, fire, extreme weather events, landslides, seasonal population shifts and biological pests.

Step 4 – Identify Gaps in Existing Mitigation Strategies

The previous plan strategies were reviewed for coverage and effectiveness, as well as the need for improvement or downgrade of an existing strategy for a given area.

Step 5 – Identify Potential Mitigation Strategies

A list was developed of additional hazard mitigation actions and strategies for the region. A sampling of potential actions includes improving emergency services (*i.e., redundant communication systems*) and public information (*i.e., community evacuation programs*).

Step 6 – Prioritize and Develop the Action Plan

The proposed hazard mitigation actions and strategies were reviewed and each strategy was rated (good, average, or poor) for its effectiveness according to seven factors (e.g., technical and administrative applicability, political and social acceptability, legal authority, environmental impact,

financial feasibility). Each factor was then scored and all scores were totaled per strategy. Strategies were ranked by their overall score for preliminary prioritization then reviewed again under Step 7.

Step 7 – Determine Priorities

The preliminary list was reviewed in order to make changes and determine a final prioritization for new hazard mitigation actions and existing protection strategy improvements identified in the previous steps.

Step 8 - Develop Implementation Strategy

An implementation strategy was developed that included people responsible for implementation (who), a timeline for completions (when), and funding source and/or technical assistance source (how) for each identified hazard mitigation action.

IV. Plan Review, Evaluation, and Implementation

Step 9 – Review and Implementation

The Consultant compiled the results of Steps 1 through 8 in a draft document. The draft was reviewed by the following local agencies:

- Pennington County Emergency Manager
- Local Emergency Planning Committees
- Rapid City Fire Department
- Rapid City Airport Fire and Rescue
- Ellsworth Air Force Base Command
- Rapid City Ambulance
- Rapid City, Wall, Keystone, Box Elder, and Hill City Police Departments
- Pennington County Sheriff's Office
- Rapid City Regional Hospital
- City of Hill City
- City of Keystone
- City of New Underwood
- City of Rapid City
- City of Wall
- City of Box Elder
- Agency Personnel from Pennington County Departments

V. Plan Adoption

On _____, the Pennington County Commissions formally adopted this plan after approval from each participating jurisdiction. The 2012 Pre-Disaster Mitigation Plan is current and will be updated annually by the coordination of the Pennington County Emergency Management Office with jurisdiction and public input and planning.

C. Overarching Mitigation Goals

State Mitigation Goals

1. To guide South Dakota's mitigation program to reduce or eliminate destructive effects of significant hazards to the state; and

2. To serve as a public and private sector reference document and management tool for mitigation activities throughout South Dakota.

Local Mitigation Goals

1. Improve upon the protection of the general population; the citizens of Pennington County and visitors from all natural and man-made hazards.

2. Reduce the potential impact of natural and man-made disasters on Pennington County's Emergency Response Services.

3. Lessen the potential impact of natural and man-made disasters on the Critical Facilities in Pennington County.

4. Lower the potential impact of natural and man-made disasters on Pennington County's infrastructure.

5. Improve the County's Emergency Preparedness and Disaster Response and Recovery Capability.

6. Reduce the potential impact of natural and man-made disasters on private property in Pennington County.

7. Lessen the potential impact of natural and man-made disasters on Pennington County's economy.

8. Lower the potential impact of natural and man-made disasters on Pennington County's natural environment.

9. Decrease the County's liability with respect to natural and man-made hazards through a community education program.

10. Ease the potential impact of natural and man-made disasters on Pennington County's historic treasures.

11. Identify, introduce and implement cost-effective Hazard Mitigation measures to accomplish the County's Goals and Objectives while raising awareness and acceptance of Hazard Mitigation opportunities.

12. Integrate with the State of South Dakota's Hazard Mitigation Goals.

This plan addresses the significant hazard events of flooding, drought, winter/ice storms, tornadoes, landslides, and wildfires experienced in western South Dakota. These natural disasters have a history of occurrence with varying degrees of damage and economic loss. A cause and effect analysis assessment can be completed through the information contained in this plan and developed into prospective mitigation strategies to reduce or eliminate future damages from such events.

Pennington County concurred and adopted these goals and objectives.

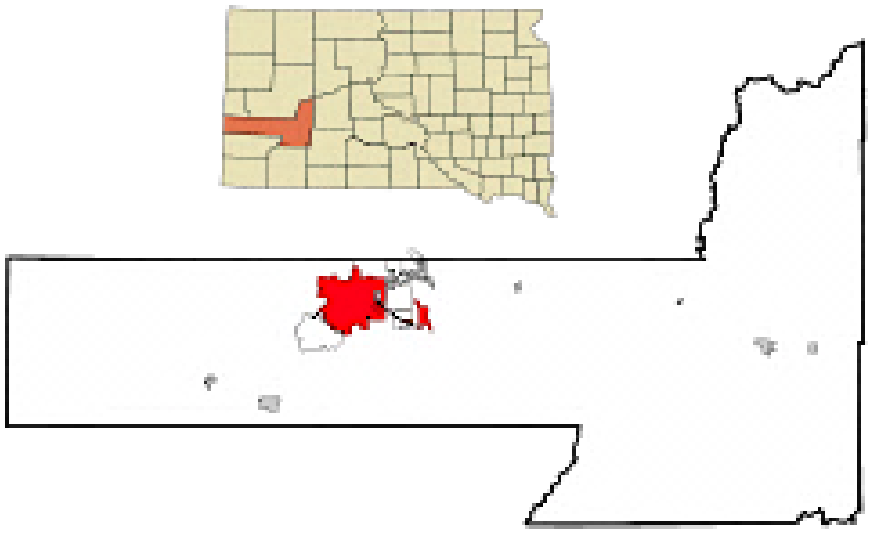
D. Acknowledgements

The Pennington County Emergency Management Office, Creative Outcomes and the Planning Committee extend special thanks to those that assisted and provided much of their time and expertise in the development of this plan:

- Local Emergency Planning Committees
- City of Hill City
- City of Keystone
- City of New Underwood
- City of Rapid City
- City of Wall
- City of Box Elder
- Agency Personnel from Pennington County Departments

Chapter 2 – Community Profile

A. Location and Setting

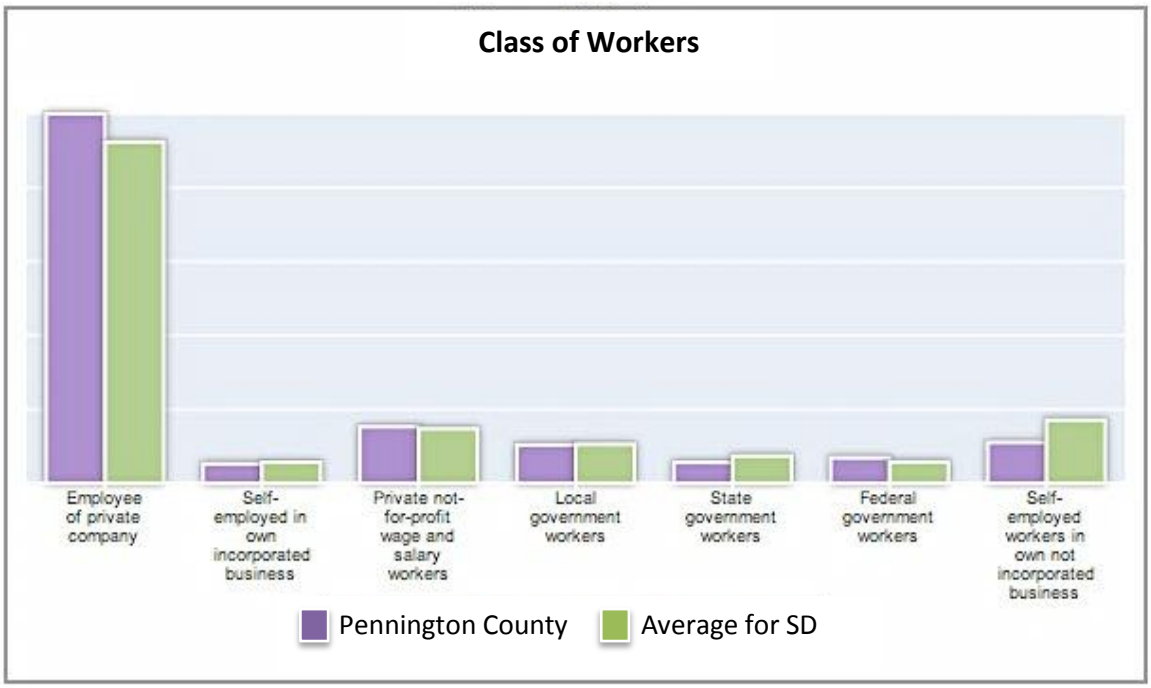


Pennington County is located in the western portion of South Dakota. The terrain of the County varies considerably depending on location. The western portion of Pennington County consists of the Black Hills. The eastern portion of the county consists of rolling prairie, the Badlands, and major wooded river draws. The County has a total area of 2,784 square miles (7,211 km), of which 2,776 square miles (7,190 km) are land and eight square miles (21 km) (0.29 %) are water.

Founded	January 11, 1875
Named for	John L. Pennington
Largest city	Rapid City
Area	
- Total	2,784 sq. mi (7,211 km)
- Land	2,776 sq. mi (7,190 km)
- Water	8 sq. mi (21 km²), 0.29 %%
Pop. Estimate	
- (2011)	102,815
- Density	36.22/sq. mi (13.98/km)

Accessed at: http://en.wikipedia.org/wiki/Pennington_County,_South_Dakota
and the 2010 US Census Bureau

There are eight (8) incorporated municipalities located within Pennington County. **They are; Box Elder, Hill City, Keystone, New Underwood, Rapid City, Wall, Quinn, and Wasta, with the last two opting to not participate in the development of the plan**. A map showing the location of each municipality has been provided in Appendix B. In addition to these incorporated towns and municipalities; there are unincorporated urban areas such as Rapid Valley, Rockerville, and Hisega. All of these areas fall under the jurisdiction of Pennington County. Pennington County is the most populous in the region with an estimated 102,815 residents as of July 1, 2011. This total reflected a 1.4 percent increase over the prior year. In 2010, 67,956 lived in Rapid City. Pennington County is also the fastest growing county in the region with a 14.0 percent growth rate between 2000 -2010, according to the 2010 US Census Bureau.



Accessed at: http://www.city-data.com/city/Rapid-City-South-Dakota.html

B. History

Pennington County's Harney Peak at 7,242 ft. is the highest point in North America east of the Rocky Mountains. During Custer's Expedition in 1874 into the Black Hills, history records that on July 31, Custer and some of his officers made the strenuous climb to the mountain's peak. At the top, they made a toast to General William S. Harney for whom the peak was named.

The 1874 Expedition's reports of gold brought thousands of miners into the Black Hills over the next few years. In spite of the 1868 Ft. Laramie Treaty with the Sioux Nation, small mining camps sprang up in the Black Hills, many in what would become Pennington County. In 1875, Pennington County was formed. It was named for John L. Pennington, the governor of the Dakota Territory at that time.

Many towns and cities in Pennington County were established because of mining activities in the Black Hills. Some of the towns, such as Rapid City, Wall, Keystone, and Hill City continued to grow while others declined and ultimately disappeared. In 1886, the first railroad reached Rapid City from Nebraska. Prior to this, all means of transportation were over land. Additional rail service was added in 1907 when the Northwestern and Milwaukee Railroads extended their lines across the Missouri River into Rapid City. Originally, the Black Hill National Forest started as a forest reserve in 1897 by order of President Grover Cleveland. Later in 1905, the forest reserve was transferred to the Department of Agriculture and in 1907 was renamed as the Black Hills National Forest. The Black Hills National Forest encompasses 1,246,966 acres of which 394,820 acres are located within Pennington County. The Department of Agriculture also manages the Buffalo Gap National Grassland in eastern Pennington County, which contains 199,410 acres.

In 1927, with a dedication speech by President Calvin Coolidge, the work on Mt. Rushmore began. Sculptor Gutzon Borglum started the remarkable work of art that would bring visitors from around the world to the granite cliff known as Mt. Rushmore. The sculpture he began that day would consume the last 14 years of his life and on October 31, 1941, the work was finally complete.

Located in Pennington County just east of Rapid City, Rapid City Army Air Base was established in 1942 to train B-17 crews. In 1947, after World War II, the base became the Rapid City Air Force Base for the B-29 Superfortress. In the following years, renamed in memory of Brig Gen Richard E. Ellsworth, Ellsworth Air Force Base (AFB) evolved with the country's strategic needs. During the Cold War, it became known as the "Showplace of SAC". It has been home to the B-36, B-52, Strategic Missile Wing and B-1B. Today Ellsworth AFB is the largest military installation in South Dakota.

Portion of information accessed from the Pennington County website at www.co.pennington.sd.us

NAME	POPULATION	ELEVATION	TOTAL HOUSING UNITS
Box Elder	7,908	3,163 feet	2,828
Hill City	948	5,098 feet	473
Keystone	337	4,363 feet	230
New Underwood	660	2,844 feet	280
Rapid City	67,956	3,202 feet	30,254
Pennington County	100,948	7,242 feet (Harney Pk.)	44,949

C. Past through Current Development Trends

Past Trends

The Black Hills landscape is dotted with cattle and buffalo ranches, wheat farms, timberlands, and various mining operations. Nearly half the population lives in rural areas or in small towns nestled in the foothills and valleys where trade, tourism, timber, and mining drive the local economy.

In its past, the eastern part of Pennington County was primarily developed as a result of homesteads. While in the western part of Pennington County, located in the Black Hills, existing land use patterns reflect the hundreds of mining surveys and patents that were issued from 1876 to 1900. Pennington County continues to deal with private lands that were once established mines or had the potential to be mined. The location and size of these mining surveys have posed a particular set of elements to consider when reviewing planning and development projects. Many of the mining claims have legal access and floodplain issues.

Early in the 20th century, the Black Hills began to emerge as a tourist destination with the carving of Mt. Rushmore. In addition, the Badlands National Park, Wall Drug, and other nearby attractions such as Custer State Park, Jewel and Wind Caves, Crazy Horse Monument, and the Sturgis Motorcycle Rally have brought ever-increasing numbers of tourists to Pennington County.

In the last 65 years, the growth of four (4) communities has had the greatest impact on development trends in Pennington County. The growth of Rapid City, Box Elder, Hill City, and Keystone have changed land use patterns. As Rapid City has grown, the county has seen an increase in urbanization. Many rural developments, such as Countryside, Countryside South, Hart Ranch, and development in Rapid Valley act as quasi-bedroom developments for Rapid City. The establishment of Ellsworth Air Force Base in the 1940s served as a strong stimulus for the growth of Box Elder, and still does to the present day. Similarly, Hill City and Keystone have both contributed to development in their general areas. Although, the amount and density of development around these smaller communities have not been the same as Rapid City's, they continue to grow and thrive.

Current and Future Trends

To the casual observer Pennington County might appear to have ample areas for development with over 2,700 square miles of land. Nonetheless, many areas are not suitable or available for development. The majority of County land is owned or controlled by the Federal Government. Moreover, many areas are not conducive to development due to physical limitations such as flood hazard, poor soil conditions, steep terrain, or lack of water. Basic services, such as police and fire protection, utilities, and road infrastructure are severely lacking in portions of the county.

The commercial developments occurring in Pennington County vary from area to area. Most of the developments are found along major U.S. or state highways as commercial development is drawn to major transportation routes. A commercial land use corridor extends from Rapid City south towards Keystone and Hill City. The majority of commercial activity taking place in this corridor is directly related to the tourist industry. This type of commercial activity includes motels, campgrounds, gas stations, eateries, tourist attractions, and retail outlets. The primary services required by the residents of the county are typically found within or in close proximity to the various municipalities.

Most industrial activities are located within the towns and municipalities of Pennington County. Nonetheless, there are a few notable exceptions to this. There is a concentration of industrial land uses found between Rapid City and the Meade County line. The mining of limestone and other minerals is the primary focus of these industrial land uses, which occur in the North SD Highway 79 area. An additional area where industrial activities are evident is found along South Highway 79 south of Rapid City.

Rapid City, Hill City, Keystone and Wall rely on tourism as a major portion of their economy. Elements of the local economy focusing on tourism also impacts land use. Pennington County has a significant number of land uses that cater to tourism, such as bed and breakfast establishments, temporary and commercial campgrounds, hotels, and restaurants. Seasonal tourism means peak demands for the service industry in the summer.

Jurisdiction Specific Trends

Box Elder has had a 175% increase in its population since the 2000 census. The median resident age is one of the lowest in South Dakota; which is a direct result of the community's proximity to Ellsworth Air Force Base. Assuming the status of the base is secure, Box Elder has an opportunity for further economic development.

Hill City has seen moderate population growth in the last decade. However, because of its unique positioning along scenic Hwy 16, it has become an important connector between the northern and southern hills. Property values have skyrocketed in the last decade.

Keystone has limited capacity for expansion due to geographical constraints, but remains a vibrant seasonal tourist community, which serves as the gateway to Mt. Rushmore. As have other communities located in the Black Hills portion of Pennington County, Keystone has seen a dramatic rise in property values over the last decade.

New Underwood is located in the central portion of Pennington County. It has a higher median household income than the whole of South Dakota. Positioned further from the geographic constraints of the western portion of the county and with proximity to I-90, there seems to be considerable future economic expansion opportunities.

Wall is located in the eastern part of Pennington County. The town is famous among travelers who come from all over the world to get a glimpse of Wall Drug, a highly advertised and promoted tourist destination (advertising signage for Wall Drug can be seen in Japan). Located along I-90, it enjoys its largest economic activity during the summer months. It is also the closest respite for visitors to the Badlands National Park.

Rapid City is South Dakota's second largest city and an economic hub that draws people from the surrounding states of Wyoming, Montana, Nebraska and Colorado. Situated along I-90 at the base of the Black Hills, it is the epicenter of the tourist industry for the entire state and gateway to the Black Hills. It is the center of the corridor for the mining and forestry industries and serves as the center of industry-related service providers. The Pennington County Master Transportation Plan, through its Connecting Hills and Plains Study (CHAPS) has made a strong statement of its commitment for both short and long-term County transportation issues that impact both private and public concerns.

Chapter 3 – Hazards in Pennington County, Black Hills Region

The first step in planning for natural hazards is to identify hazards that may affect Pennington County and the Region. Some communities are more susceptible to certain hazards (i.e., landslides, forest fires, structural fires, flash floods, tornadoes, earthquakes, blizzards, and drought). These incidents have caused millions of dollars in property damage and the loss of several hundred lives. All of the approved hazards identified in the 2005 PDM, were retained in this current 2012 version, while one additional hazard was included, biological pests and disease.

These hazards were identified through an extensive process that included the review of State Emergency Management disaster declarations in the county, the current Flood Insurance Rate Maps (FIRMs), federally funded studies, input from citizens and risk assessments completed by the Pennington County Emergency Management Office.

A. What are the Hazards and the Associated Vulnerability to the County?

A low vulnerability hazard is one that has very low damage potential to either life or property (minor damage to less than 5% of the jurisdiction). A “medium” vulnerability hazard is unlikely to threaten human life, although some people may be at risk and may pose moderate damage potential (causing partial damage to 5% to 10% of the jurisdiction, on an irregular occurrence). A “high” vulnerability hazard may threaten human life, and more than ten percent of the jurisdiction may be at risk on a regular occurrence.

To formulate the risk rating level, several factors are considered: the environment and history of the area. There are hazards that have not occurred in this area, and because of this unknown; we have identified the possibility of such a hazard and where and how it could affect the communities.

All natural and man-made hazards that have been identified as a concern for the Pennington County area are listed below. These have been given a low, moderate or a high-risk rating level.

Natural Hazards

Flood/Flash Flood: Medium Risk, Flood and High Risk, Flash Flood

Included in this section for floods are erosion, mudslides, rapid snowpack melt, river/creek ice jams, and dam breach and/or failure (dam failure is a natural hazard highlighted on page 31).

Identified By the Following Means:

- Review of FIRMs
- Past disaster declarations
- NFIP repetitive loss
- Risk assessments
- Public Input from Community Meetings

Need to Identify:

- Associated with the effects of past flooding, which have hit and affected Rapid City and Pennington County
- The western-most drainage system of South Dakota is found in the Black Hills region. The major drainage creeks of Alkali, Battle, Bear Butte, Beaver, Box Elder, Elk, French, Rapid, Spearfish, Spring, and Whitewood are all capable of heavy flooding and flood-related damage. These eleven creeks drain about 7,500 square miles of land

Vulnerability: All residents and campgrounds along Rapid Creek, Grizzly Bear Creek, Battle Creek, Box Elder Creek and Spring Creek. In addition, populations along the various creeks in Box Elder, Rapid City, Hill City, and Keystone are vulnerable.

Risk: The probability of occurrence is rated at medium level for a flood/flash flood with population and environmental consequences that will occur on a historical average at least once or more every five years. Consequences can include loss of life and injury plus loss of residences and public structures as well as an economic loss. Other consequences can include blocked transportation corridors, loss of utilities, evacuation of residents and debris clearance/removal.

Pennington County participates in the National Flood Insurance Program (NFIP). Rapid City, with a Community Rating System (CRS) rating of eight, is South Dakota's only current participant in the CRS. Maps 1-6, shows both the 100-year and 500-year flood plains for each jurisdiction in Pennington County. Moreover, the City of Wall does not participate in the NFIP. This is due to its location outside any major flood hazard area.

Drought: Medium Risk

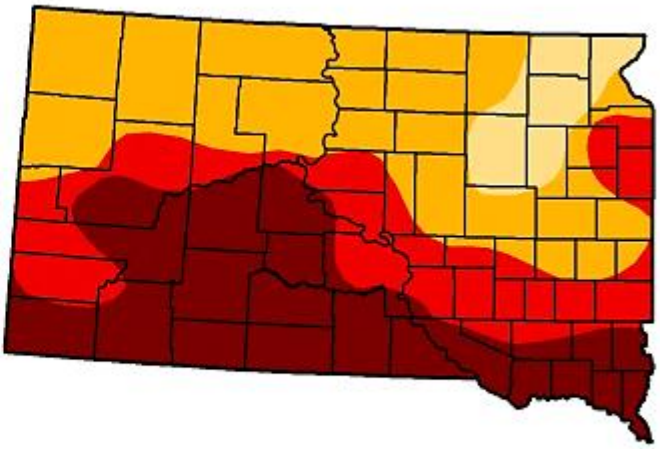
This hazard can cause massive losses in farming and ranching businesses along with water shortages for drinking and recreation. South Dakota's climate is characterized by cold winters and warm to hot

summers. Semiarid conditions prevail in the western portion of the state. This combination of hot summers and limited precipitation in a semi-arid geography places South Dakota in a potential drought situation in any given year.

November 2012 US Drought Monitor for South Dakota
Accessed from the National Drought Mitigation Center

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	0.00	100.00	100.00	93.09	54.85	32.57
Last Week (11/13/2012 map)	0.00	100.00	100.00	93.09	54.71	32.57
3 Months Ago (08/21/2012 map)	0.00	100.00	82.78	59.29	17.95	0.00
Start of Calendar Year (12/27/2011 map)	48.14	51.86	13.86	2.11	0.00	0.00
Start of Water Year (09/25/2012 map)	0.00	100.00	100.00	74.69	50.53	6.72
One Year Ago (11/15/2011 map)	59.49	40.51	11.46	2.11	0.00	0.00



Intensity:

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

Identified By the Following Means:

- County and state records
- Public Input
- National Oceanic and Atmospheric Administration and USDA Reports

Need to Identify:

- Immediate and continuing impact to region's economy
- Impact on wildfire hazard

Vulnerability: All agricultural areas in the county are at risk for drought. This applies to cropland and grass for livestock. All cropland/grassland, not under irrigation could be damaged. Drought conditions expose the environment to disease, fire and infestation while the severity is proportionate to the length of the drought. Prolonged drought will also affect the livelihood of producers as their livestock could perish, or they could be forced to sell their animals.

Risk: The probability of occurrence is at medium level and is cyclical in nature depending upon the weather. The county has suffered drought conditions at least once or more every five years. The consequences of occurrence could range from low to high depending upon the length of the drought and how widespread it is. Business consequences can include economic complications as commodity prices rise.

Extreme Winter Weather: High Risk

This section including heavy snowstorms and ice storms that may occur from early fall to late spring. They vary in intensity from mild to very severe. Blizzards are storms that contain heavy snowfall, strong winds, and cold temperatures. The combination of these elements creates blinding snow with near zero visibility, deep snowdrifts, and life-threatening wind chills.

Identified By the Following Means:

- Review of past disaster declarations
- Review of storm records

Need to Identify:

- Area is subject to extremely heavy snowfalls
- Moderate risk county-wide due to snow, ice and extreme cold
- Heavy winter storms often lead to spring flooding

Vulnerability: The entire county is vulnerable to a severe winter storm. Particular populations that are susceptible include rural homeowners, the elderly, and special needs residents. Facilities at risk include hospitals, nursing homes, schools, etc. Other areas/items in danger include transportation corridors, utilities and livestock.

Risk: The probability of occurrence is high that a severe winter storm will occur on a historical average of at least once or more every five years. Exceptions have occurred outside this timeframe however. Consequences can include loss of life and injury to humans as well as livestock loss.

Tornado/High Winds/Hail: Medium Risk, Tornado and High Risk, High Winds and Hail

Along with tornado and high winds downbursts and lightning strikes causing wildfires and severe damage to property and even loss of life. Tornadoes mostly occur 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.

Hail causes damage to property such as crops, vehicles, windows, roofs, and structures. The County and its jurisdictions are vulnerable to hail.

Identified By the Following Means:

- Review of past disaster declarations
- NWS data and meteorological resources
- Input from residents and weather spotters
- Diagnoses of risk assessments

Need to Identify:

- Tornado occurrence is well documented in Pennington County
- Pennington County has a large hazard incidence of high winds and hail

Vulnerability: The greatest vulnerability exists to the 5000+ mobile/manufactured homes in the county. Historically, tornadoes have not been a high threat to the area, but they do occur. Loss of life has not occurred from this hazard, but the potential is there. Property and environmental damage may be significant should this hazard occur.

Pennington Co. Tornadoes from 2006-2011

Date	F-level	Death	Injury
6-10-2008	1	0	0
7-08-2009	1	0	0
6-20-2010	0	0	0
5-09-2011	0	0	0

Fujita level (F1): winds range from 73-112 mph

Risk: The probability of occurrence is medium that a tornado will occur on a historical average of at least once or more every five years. The potential for damaging high winds is also a significant risk. The consequences could be severe and result in the loss of life and major property damage.

Wildfire: High Risk

Includes wild and grass fires, affecting residential and recreational areas. The Black Hills region has been fighting severe wildfires for many years. They are prevalent due to the drought conditions and the infestation of the mountain pine beetle.

Identified By the Following Means:

- Review of past and current disaster declarations
- Input from residents
- USDA and National Forest Service Reports
- Diagnosis of risk assessment areas

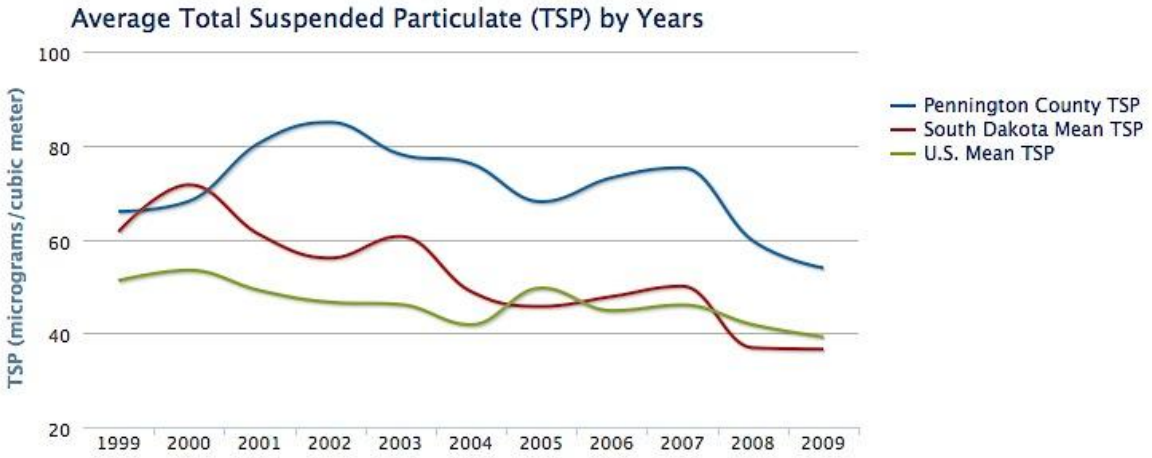
Need to Identify:

- Pennington County has both grasslands and forested terrain
- Drought exacerbates the flammable condition of the landscape
- Natural conditions (lightening) and seasonal population shifts create a high probability of grasslands and forests combustion

Vulnerability: The Black Hills National Forest covers most of western Pennington County and grasslands cover a significant portion of central and eastern Pennington County. The population at risk includes year-round residents plus seasonal population gains through tourism. The seasonal shift occurs primarily between Memorial Day and Labor Day. Property at risk includes all public and private structures in the fire's path. Environmental consequences from a wildfire could include rain runoff into streams from burned cover and increased ash sediment. Along with the physical effects of fire, the quality of the air is also linked to the increased number of burning fires and blowing dust.

Total Suspended Particulate (TSP)

Tiny airborne particles or aerosols that are less than 100 micrometers are collectively referred to as total suspended particulate matter (TSP).



Risk: The probability of occurrence is high that one or more wildfires will occur annually and can include loss of life, injury, reduced forest economic sustainability, reduced recreation opportunities and diminished tourism dollars.

Biological Pests and Infectious Diseases: High Risk, Pests and Medium Risk for Diseases

The Black Hills have been experiencing extreme outbreaks of the mountain pine beetle. These pests are killing large swaths of forests on private and public lands and raising concerns over the increased

number of dead trees, increasing the risk of wildfire. Additionally, zoonotic illnesses caused by organisms such as bacteria, viruses, fungi and parasites are a hazard to livestock and people.

Identified By the Following Means:

- Input from State Department of Agriculture
- Review of USDA records
- Input from residents and landowners
- Risk assessment areas diagnosed by County

Need to Identify:

- Western Pennington County is covered in forested land
- Dead trees, dry condition and lightning strikes can cause fires
- Tourism and recreation is compromised

Vulnerability: The mountain pine beetle has caused extensive ponderosa pine mortality throughout the Black Hills during the last decade. A multi-area, landscape-level episode of mountain pine beetle-caused mortality is in full cycle and is continuing to escalate. Entire slopes have faded in unison, in some cases with just a few green survivors. The mountain pine beetle activity is elevated across most of the Black Hills.

Risk: The probability of occurrence is high the current epidemic population of mountain pine beetles will cause an elevated risk of catastrophic wildfire due to the epidemic in Pennington County.

Earthquakes and Landslides: Earthquakes, Low Risk and Landslides, Medium Risk

Along with slope stability and other geologic hazards, Pennington County-area historical earthquake activity is above the South Dakota state average. It is 87% smaller than the overall U.S. average.

Identified By the Following Means:

- Review of state geological records
- Review of seismic activity
- Input of landowners

Need to Identify:

- Minor earthquakes occur in the Black Hills area with surprising frequency although, they cause little damage
- Economic development and construction create conditions that are conducive to landslides

Vulnerability: The Black Hills is the primary area of vulnerability. Residents and their property in this area are at risk should an earthquake occur. This hazard manifests itself primarily on hills that have been disturbed due to road, bridge or building construction. Persons and property are both at risk if they are in or below the area when a tremor and/or slide occurs.

Risk: The probability that a devastating earthquake will occur is low. However, earthquakes in the 2.0 Richter scale range have occurred near Mt Rushmore. There are no known or mapped earthquake faults in the County. Consequences that could occur include loss of life, injury, property damage and infrastructure damage such as roads and bridges.

The probability of a significant landslide occurring in the county is low. However, the risk could increase in periods of extreme moisture and potentially unstable hillsides. Consequences could be significant were a large-scale landslide is found in a populated area.

Man-Made Hazards

In addition to the preceding natural hazards, Pennington County is susceptible to many types of technological disasters classified under man-made hazards. The transportation systems in the County (highways, air, pipelines, utilities, and rail) could have serious emergencies escalate into major disasters, if not handled properly. Hazardous materials spills, terrorist-style activities, military accidents, or dam failure may also cause emergencies in the City and County. Though these hazards are hard to quantify, they cannot be dismissed as an unlikely occurrence.

Hazardous Materials: High Risk

With the area's agricultural, medical, and manufacturing need for chemicals and radiological materials carried by railroad cars and along transportation corridors throughout the County, the occurrence of a disaster resulting from a spill, incorrect usage or containment of a hazardous material to humans and the environment is a definite possibility for Pennington County.

Identified By the Following Means:

- Through existing county hazardous material (HAZMAT) programs

Need to Identify:

- Increasing vulnerability of and threat to the public from this type of incident

Vulnerability: A hazardous material and/or a radiological incident can occur at any given location in the County. Primary transportation corridors include Interstate 90, US 16 and SD Highways 79 and 44. Primary fixed-facility locations include those facilities that store, use or distribute extremely hazardous substances, including medical radiological materials. In addition, the KANEB pipeline that runs primarily along SD 79 south of Rapid City is also vulnerable to an incident.

Risk: The probability of occurrence is high that one or more HAZMAT/radiological incidents will occur annually. Primary consequences are to individuals and the environment through hazardous substance contamination. Other associated risks are fire and explosion.

Terrorism: Low Risk

Although the likelihood is low, precautions should be taken. Threats to the County are focused on Rapid City, Mt. Rushmore National Monument, and Ellsworth Air Force Base.

Identified By the Following Means:

- September 11th attack on the United States
- The U.S. Department of Homeland Security

Need to Identify:

- Terrorism focuses on hi-visibility targets that obstruct daily life through instilling fear. Pennington County is in the American heartland. It has several national landmarks and events that draw millions of people each year to the area.

Vulnerability: Although the entire county could be vulnerable to this hazard, there are several targets of opportunity that present themselves as a more likely scenario. These include; Mt Rushmore National Memorial, Pactola Dam, and a portion of the Sturgis Bike Week events taking place in Rapid City. Populations and property at risk include those people and buildings and structures in the vicinity of the hazard.

Risk: The probability of occurrence for terrorism is low. This kind of incident can be hard to distinguish between a hazardous materials incident. Consequences could include loss of life, injury, fire, explosion and/or a contaminated environment.

Dam Failure: Low Risk

A portion of Rapid City and Hill City are vulnerable to dam failure and since the devastating 1972 flood of Rapid Creek, it has been a priority for the area to mitigate the occurrence of another tragic incident.

Identified By the Following Means:

- Awareness of vulnerability through historical records and the 1972 flood recovery process.

Need to Identify:

- Continuing vulnerability of Rapid City and Hill City to the effects of two dam failures

Vulnerability: Pactola Dam sits on Rapid Creek approximately 34 miles upstream from Rapid City. Residents and businesses located below the dam are the primary populations and property at risk. Pactola Dam directly affects Rapid City and the Sylvan Lake Dam drainage places Hill City at risk.

Risk: The probability of occurrence for a dam failure is very low. However, the consequences to persons, property and the environment are high if the Pactola or Sylvan Lake dams were to fail. Widespread flooding and the potential loss of life and injury are a concern. Other consequences to the citizens' health would be the large amount of debris from floodwater and the mold from slow receding water within homes and businesses.

Aftermath of Rapid City Flood, 1972. Deaths - 238, Injured - 3,057, and 118 hospitalized

Air Transportation Incident: Low Risk

This hazard centers on Ellsworth Air Force Base, Rapid City the Box Elder.

Identified By the Following Means:

- FAA airport safety requirements

Need to Identify:

- Density of air traffic from both Rapid City Regional Airport and Ellsworth Air Force Base increases the risk of this type of an incident in the populated portions of Pennington County

Vulnerability: The aforementioned airports/airstrips are the primary areas of concern. However, this hazard is not limited exclusively to areas that accommodate landings and takeoffs. An air transportation incident could occur anywhere in the county.

Risk: The probability of an air transportation incident resulting in fatalities is low. However, consequences could be severe if a commercial airliner or a multi-passenger general aviation aircraft were to crash. Crashes normally result in a loss of life, explosion and fire.

Seasonal Population Shift: High Risk

The amount of tourism dedicated to visiting Mt. Rushmore National Monument, Crazy Horse Monument and the Sturgis Motorcycle Rally (which affects the entire region) provides population booms from thousands to millions in a few weeks.

Identified By the Following Means:

- Brainstorming with city and county entities
- SD State Department Tourism and Black Hills Convention and Visitors Bureau

Need to Identify:

- Emergency services must be sizable to handle the increase of additional activities versus normal population figures.

Vulnerability: The entire county is vulnerable to a seasonal population shift, but it occurs primarily from Wall, west on Interstate 90 to Rapid City and then south on US 16 to the Mt. Rushmore-Keystone and Hill City area.

Risk: The probability of occurrence is high that a seasonal population shift will occur on an annual basis. In a rural environment, all community elements are directly affected, including population, property and the environment.

Power Failure: Low Risk, Full-scale Outage and High Risk for Intermittent Outages

All populated areas are negatively affected by power outages but with the extreme weather patterns and rugged terrain, power outages are a major concern for Pennington County and its citizens.

Identified By the Following Means:

- Recent infrastructure studies
- Observation of power failures within South Dakota and across the nation

Need to Identify:

- Increasing electrical consumption is straining capacity.
- County residents are becoming solely reliant on electricity for basic needs

Vulnerability: The entire county is at risk for a power loss. Three primary electric utility companies serve area residents. Two of the companies are purchasers and distributors of the power it sells while the other electric utility is self-sufficient in that it produces, transmits and distributes its own power.

Risk: The probability of occurrence is low for a massive power failure countywide and high for an occasional localized power failure based upon historical averages. The consequences of occurrence range from a nuisance to a severe emergency depending upon the length and location of the outage.

Urban Fire: High Risk

All manner of fire is a high risk to public and private structures and life.

Identified By the Following Means:

- Urban fire history in Pennington County
- Ongoing fire prevention and mitigation programs

Need to Identify:

- Massive impact to communities, e.g. 2003 Keystone fire
- Interface with wildfires

Vulnerability: A structural or urban fire can occur within the towns and municipalities of the county at any given time. All occupied and unoccupied structures are vulnerable.

Risk: The probability of occurrence is high that one or more urban/structural fires will occur annually. Consequences can include loss of life, injury and the loss of economic impact.

Aquifer Contamination: Low Risk

Special concerns over drinking water are important to the region.

Identified By the Following Means:

- Input from the South Dakota Schools of Mines
- Studies from the South Dakota Department of Environment and Natural Resources
- SDSU Cooperative Extension Service reports

Need to Identify:

- Awareness of aquifer entry points allowing contamination to Rapid City's water source

Vulnerability: Access to the aquifers deep under the Black Hills area is difficult. However, "sinks" exist in creeks west of Rapid City, where the creek disappears and then re-appears later downstream. Dye tests have demonstrated that it takes approximately 30 days for a substance to "disappear" and then re-appear again in the well water used for the majority of the Rapid City water supply. These tests point to the possibility of water supply/well contamination if an accident/incident occurs that might introduce a hazardous/chemical substance to the aquifer.

Risk: Although, this is not a likely occurrence the possibility of contamination should not be dismissed. The consequences could be significant and could result in loss of life and a polluted environment.

Communication Outage/Isolation: Medium Risk

Loss of communication is a formidable hazard in remote areas.

Identified By the Following Means:

- Record review with Emergency Services Communications Center

Need to Identify:

- Emergency services rely on dedicated Radio Frequency (RF), computer, and telephonic networks to respond to emergencies/disasters.

- Businesses rely on dedicated Radio Frequency (RF), broadband and wireless, and telephonic networks to conduct routine operations.
- The public relies on communication networks to conduct personal affairs.
- The public's link to government emergency services is through the Emergency Telephone Network (911).

Vulnerability: Electronic communications (audio, video, data-stream, etc.) are critical to Pennington County's residents, visitors, business, government, and emergency services. Disruptions in any portion of the county's communications infrastructure have an immediate effect ranging from mere annoyance to life threatening. Regrettably, as communication has increasingly become more significant and specialized, so has its vulnerability. Elimination of any form of communication immediately degrades the proper functioning of; personal affairs, business, government activities, and emergency services in Pennington County.

Risk: The risk of communications isolation is medium. Though reliability of the county's communications infrastructure is high, experience and research has revealed that it is all too easy to cripple portions of the infrastructure.

B. Past Hazard Events

The planning team reviewed all hazard occurrences that have been reported in the last 6 years, since the previous 2005 PDM was drafted. The information provided in Table 1 is not a complete history report, but rather an overview of reported natural weather related hazard events, capturing the trends for the county. The complete storm list from the National Oceanic and Atmospheric Association (NOAA) is included in Appendix C. Table 2 lists the number of wildfires and acres that have affected South Dakota's Black Hills and Pennington County from 2006-2012.

Table 1: Significant Natural Hazard Occurrences Reported in Pennington County, 2006-2011

Type of Hazard	Number of Occurrences
Drought*	1
Flood	8
Hail	119
Lightning, major strikes	2
Tornado/Funnel Cloud	4
Snow & Ice	36
Thunderstorms/High Winds	51

***Drought from 2000-2007**

Table 2: Major Wildfires in SD centered in the Black Hills and covering Pennington Co., 2006-2012

Year	Number of Wildfires	Number of Acres Affected
2012	2,490	260,221
2011	1,248	97,230
2010	732	6,175
2009	823	10,056
2008	957	8,936
2007	1,505	78,013
2006	2,342	237,807

Accessed from the National Interagency Fire Center, Incident Management Statistics

C. Hazard Vulnerability Assessment (HVA)

The Pennington County hazard vulnerability analysis reflects the comprehensive study of all hazards that may affect the County's municipalities. It is based on the best available information describing those hazards that have occurred and which ones are most likely to occur in the future. The analysis includes information on each hazard, the risk level, impact, and priority to address the hazards.

Table 3: HVA, All-hazard Priority Matrix for Pennington County

All- Hazards	* Risk (1-5)	X	Impact (1-3)	=	Priority Score
Extreme Winter Storm	5		3		15
Biological Pests/Disease	4		3		12
Terrorism/Civil Disturbance	2		2		6
Dam Break	1		3		3
Drought	4		3		12
Earthquake	1		2		2
Power Failure	2		3		6
Fire – Forest/Grass	5		3		15
Fire – Urban	5		2		10
Flooding – Flash	4		3		12
Flooding – Slow-rising	4		2		8
Hailstorm	5		2		10

High Winds	5		3		15
Seasonal Population Shift	5		2		10
Landslide	3		2		6
Thunderstorm/Lightning	5		2		10
Tornado	3		3		9
Transportation – Air	2		3		6
Transportation – Highway	3		2		6
Transportation – Rail	2		3		6
Aquifer Contamination	5		2		10

3 very high priority hazards (13-15), gray shading
8 high priority hazards (10-12), green shading
7 medium priority hazards (6-9), white
2 low priority hazards (2-5), yellow shading

*** Risk column: 5 = High Risk, 4-3= Medium Risk and 2-1 = Low Risk**

Once past incidents have been identified, the next step in the planning process is to determine what structures or areas could be affected. This requires the team to determine which facilities and areas in the community are considered critical and why they are designated as such.

Chapter 4 – Prioritizing Critical Facilities and Areas of Concern

The Pre-Disaster Mitigation Plan for Pennington County identifies critical facilities located in the county and the pre-disposed hazards affecting them. A critical facility is defined as a facility in either the public or private sector that provides essential products or services to the general public, is otherwise necessary to preserve the welfare and quality of life in the county, or fulfills important public safety, emergency response, and/or disaster recovery functions.

The next step in the Hazard Mitigation Planning process is to prioritize the facilities and areas of concern that were initially identified in relation to community importance. It is vital for the community to determine what resources are needed to protect the facilities in an incident.

The critical facilities identified in the County are categorized, prioritized and described throughout the next few pages.

- **Emergency Response Services**
  - The first category contains facilities needed for Emergency Response in the event of a disaster.

- **Non-emergency Response Facilities**
  - The second category contains Non-Emergency Response Facilities that have been identified by the committee as non-essential. These are not required in an emergency response event, but are required for everyday operation.

- **Facilities/Populations to Protect**
  - The third category contains Facilities/Populations that the committee wishes to protect.

- **Potential Resources for Services/Supplies**
  - The fourth category contains Potential Resources, which can provide services or supplies in a disaster.

Category I: Emergency Response Services

The Planning Team identified the following facilities as the highest priority.

1. Emergency Operations Center Pennington County EOC
   Alternate EOC (PC Highway Dept.)
   Backup ESCC at Fire Station 6

2. State Area EOC for western South Dakota
   (SD National Guard HQ, Camp Rapid)

Category 2: Emergency Communications and Warning Systems

Dispatch

1. 911 Dispatch
   Great Plains Interagency Dispatch Center

2. SD State Radio Dispatch Center
   Black Hills LifeFlight

Broadcast

Radio	Television	Cable/Sat Television
KBHB	KBHE	Golden West
KBHE	KEVN	Mid Continent
KLMP/KSLT	KNBN	Knology
KKLS/KKIMK/KRCS	KOTA	
KOTA/KZLK/KZZI	KCLO	
KOUT/KIMM		
KTOQ/KIQK/KSKY		
KXFS		

Telephonic (Land line and Mobile)

Emergency Telephone Network	Public Switched Network
Century Link	Golden West Knology MidContinent Communications Mt. Rushmore

Mobile Telephone	
Verizon	AT&T

Warning Systems

Sirens/No Public Address	Emergency Alert System
Pennington County Box Elder New Underwood Rapid City Rapid Valley Wall Hill City Keystone	Pennington County Doppler Radar at New Underwood

Category 3: Law Enforcement

- Pennington Co. Sheriff's Office
- Box Elder Police Department
- South Dakota Game, Fish, and Parks Department
- United States Forest Service
- Federal Bureau of Investigations
- Rapid City Police Department
- South Dakota Highway Patrol
- Badlands National Park Rangers
- United States Marshall Service
- Air Force Office of Special Investigations
- Mt. Rushmore Park Service

Category 4: Fire Services

Pennington County Fire Departments

Rapid City

Station 1	10 Main Street
Station 3	102 Federal Street
Station 4	700 East Fairmont Boulevard
Station 5	(Rescue) 2902 Park Drive
Station 6	(Hazmat) 1920 Promise Drive
Station 7	Tish Boulevard
Station 8	RC Regional Airport

Volunteer Fire Services

Box Elder	Hayward	Hill City	Johnson Siding
Keystone	New Underwood	North Haines	Quinn
Rapid Valley	Rochford	Rockerville	Scenic
Silver City	Wall	Wasta	Whispering Pines

Adjacent Department

Ellsworth Air Force Base

Category 5: Emergency Medical Services

Ambulance Services

Ellsworth Air Force Base	Hill City Ambulance	Wall Ambulance
Rapid City Fire EMS	LifeFlight Air Ambulance	Keystone Ambulance
SDNG Air Medivac	Piedmont (not in Penn Co)	

First Responder Units

Black Hawk VFD	Box Elder VFD	Doty VFD
Hayward VFD	Hermosa VFD	Johnson Siding VFD
North Haines VFD	Piedmont VFD	Rapid City Fire Department
Rapid Valley VFD	Rochford VFD	Whispering Pines VFD
Keystone VFD		

VFD: Volunteer Fire Department

Search and Rescue

RCFD Dive Rescue Team
Pennington County Search and Rescue Team
Regional Response

Emergency Power

a. Substations (All are on loop so can be operated if one feed is lost)

(1) Black Hills Electric Cooperative
    (a) Rapid City – WAPA
    (b) Rushmore Sub – WAPA
(2) Black Hills Power & Light
    (a) Ben French – BHP&L
    (b) Rapid City – WAPA
(3) West River Electric Association substations:
    (a) Rapid City Sub – WAPA
    (b) Rushmore Sub – WAPA
    (c) Elk Creek Switchyard – WAPA

b. Generators (backups for utility)

(1) Black Hills Power & Light
(2) West River Electric Association
(3) Pennington County Courthouse Complex
(3) Rapid City Regional Airport (terminal)
(4) Rapid City Regional Hospital

Emergency Fuel

Pennington County Courthouse Complex – 1500 gallon diesel
Pennington County Highway Department – 1500 gallon diesel and gasoline

Emergency Transportation

Pennington County Highway Depart
Pennington County Search and Rescue
Private trucks, buses, and trailers
Rapid City Rapid Ride Mass Transit
Rapid City Area Schools
Rapid City Regional Airport
Rapid City Streets Department
South Dakota Department of Transportation
South Dakota National Guard

Evacuation Routes

In natural or technological emergencies/disasters, the decision to evacuate endangered areas will be made by the Incident Commander (IC). Governing officials will be notified of the situation as soon as possible and consulted about the evacuation, if time permits. Decisions on weather-related incidents will be made with advice from the National Weather Service.

Box Elder	Hill City	Keystone
New Underwood	Rapid City	Wall

Bridges Located on Evacuation Routes

Box Elder - 2 bridges; designations unknown
Hill City - 7 bridges; 236-392 1-308-01, 239-394 1-308-1, 238-402 1-308-01, 261-399 4-363-01, Old Hill City Rd-Sec 32 (No name), 268-412 2-323-01, 271-411 2-323-02
Keystone - 2 bridges; 311-432 2-323-03, 312-433, 2-323-03
New Underwood - 4 bridges; I-90, 609-290 2-414-03, 608-295, 1-468-02, 608-298 1-468-06
Wall - 1 bridge; I-90

Emergency Shelters: Primary Reception and Care Centers within Rapid City

NORTHWEST	**Capacity**
Canyon Lake Elementary, 1500 Evergreen	90
Kibben Kuster School, 3302 St. Cloud St.	90
Lincoln Elementary, 1315 W. Quincy St.	90
Pinedale Elementary, 4901 W. Chicago St.	90
South Canyon Elementary, 218 Nordbye Ln.	90
Stevens High School, 1200 44th St.	325
West Middle School, 1003 Soo San Dr.	125
Black Hawk Elementary, 210 Seeaire	90

SOUTHWEST	**Capacity**
Agnes Parr Media Center, Cleghorn Canyon Rd.	90
Meadowbrook Elementary, 3125 W. Flormann	90
Southwest Middle School, 4503 Park Dr.	400

NORTHEAST	Capacity
Central High School, 433 Mt. Rushmore Rd.	500
Dakota Middle School, 6th & Columbus St.	300
Horace Mann Elementary, 902 Anamosa St.	90
Knollwood Elementary, 1701 Downing St.	200
Valley View Elementary, Homestead St.	90

SOUTHEAST	Capacity
Grandview Elementary, 3301 Grandview Dr.	90
Jefferson Resource Center, 21 St. Joseph St.	50
Rapid Valley Elementary, 2601 Covington St.	90
Robbinsdale Elementary, 424 E. Indiana St.	90
South Middle School, 2 Indiana St.	125
South Park Elementary, 207 Flormann St.	90
Wilson Elementary, 827 Franklin St.	90

Emergency Shelters: Primary Reception and Care Centers outside Rapid City

New Underwood Schools
Wall Schools
Douglas Schools (Box Elder)
Hill City Schools
Keystone Community Center

Category 6 - Non Emergency Response and Services

The Planning Team has identified the following essential non-emergency facilities for the everyday operation of Pennington County.

Public Works

Pennington Co. Highway Department
South Dakota Department of Transportation
Rapid City Street Department

Power Utilities

Company Substation Control Head
Black Hills Power and Light Ben French, Rapid City
West River Electric Association
Black Hills Electric Coop Rapid City, Rushmore
Montana Dakota Utilities
Rapid City, Rushmore, Elk Creek Switchyard

Water Supply

Municipality	Water Source
Box Elder	Well
Hill City	Well
Keystone	Wells
New Underwood	Wells
Rapid City	Ground/Surface
	Pactola/Wells
Wall	Deep Wells

Wastewater Treatment

Municipality	Type of Service
Box Elder	Lagoon
Hill City	Residential
Keystone	Aeration
New Underwood	Pond
Rapid City	Collection/Treatment
Wall	Lagoon

Transportation

Dakota Minnesota & Eastern Railroad	Greylines of the Black Hills

Hospitals/Clinics

HOSPITALS

Rapid City Regional, 353 Fairmont Blvd., 382 beds, AC-261, PSYCH-56, REHAB-34, Nursery-31
Sioux San, 3200 Canyon Lake Dr., 35 beds, No surgical suite
Rapid City Regional West, Mt View Rd

CLINICS

Hill City Medical Center	Wall Clinic
Rapid Care-North	EmergiClinic

NURSING HOMES/EXTENDED CARE FACILITIES

Black Hills Retirement Center, 1620 N. 7th St.
Clarkson Mt. View Guest Home, 1015 Mt. Vie Rd.
Bella Vista Nursing Center, 302 St. Cloud
Meadowbrook Manor, 2500 Arrowhead Dr.
Rapid City Care Center, 916 Mt. View Rd.
West Hills Village, 255 Texas
Wesleyan Health Care Center, 2000 Wesleyan Blvd.
Good Samaritan Center of New Underwood
Echo Ridge, 718 Fox Run Dr.

NOTE: The above named hospitals, clinics, and nursing care facilities can convert to emergency treatment centers for emergencies/disasters, be used as casualty collection points to handle mass casualties.

Category 7 - Facilities/Populations to Protect

The third category contains particularly vulnerable people and facilities that need to be protected in event of a disaster.

1. Special Needs Population – Identified "populations" including, but not limited to, the following:
    - Oxygen-dependent people
    - People on a lifeline
    - People assisted by Home Health
    - Shut-ins and disabled
    - Mentally challenged
    - Elderly
    - Hearing impaired
    - Sight impaired

2. Additional Facilities to Protect
    - Mobile Home Parks
    - Campgrounds and RV Parks
    - Assisted Living Facilities/Senior Centers
    - Childcare & Pre-school Centers

Category 8 - Miscellaneous Resources

Private Non-Profit Organizations

American Red Cross, 1221 N. Maple Ave.
No funds available for the indigent; disaster relief only.

Catholic Social Services, 918 5th St.

Church of Jesus Christ of Latter Day Saints, Social Services, 2525 W. Main St.

- Will provide food and shelter for members of their Church and others. Church Response, 30 Main St.
- Has a food pantry and gives out food to families. No shelter; sends people to the Salvation Army

Corner Stone Mission, 30 Main St.

- Will provide food and shelter for up to 14 days unless situation warrants more time

Salvation Army, 405 N. Cherry

- Will provide vouchers for one night in motel plus food. NOTE: Existing programs to feed and shelter indigent and the homeless

Chapter 5 – Determining the Effects of Defined Hazards

In Chapter 3, starting on page 21, the hazards were analyzed in terms of the level of the community or county's vulnerability to the hazard. Vulnerability to the hazard is the susceptibility of life, property, and the environment to injury or damage if a hazard occurs. Representatives from each participating jurisdiction and the Planning Team rated their perception to hazard vulnerability for their specific geographical location and for countywide risks.

The hazards have been given a low, moderate or a high-risk rating level. To formulate the risk rating level, several factors are considered: including both the environment and history of the area. Hazards categorized as low might not have occurred in the area although the team identified a possibility of such a hazard and where and how it could affect the communities.

The greatest hazard threats were found in the following categories:

I. Flood, Drought, Extreme Heat, and Wildfire
III. Tornado, Thunderstorms and Severe Wind
IV. Winter Weather (Snow, Ice Storm and Extreme Cold)

A. Identifying Vulnerable Facilities

It is important to determine which critical facilities are the most vulnerable while estimating their potential loss. The fist step is to identify the facilities most likely to be damaged in an incident. To do this, the locations of Category 1 critical facilities, illustrated on maps 1-6, were compared to the location of various topographical elements, floodplains, roads and water bodies. Comparing their location to possible hazard events subsequently identified vulnerable facilities. For example, all of the facilities within the 100-year and 500-year flood plains were identified and used in conducting the potential loss analysis.

B. Calculating the Potential Loss

The next step in completing the loss estimation is to assess the level of damage from an event as a percentage of the facility's structural value. The Federal Emergency Management Agency (FEMA) and the National Institute of Building Sciences (NIBS) have developed a regional multi-hazard loss

estimation model, called HAZUS. The HAZUS software is a powerful risk assessment methodology for analyzing potential losses from floods, hurricane, and earthquakes. In HAZUS, current scientific and engineering knowledge is coupled with the latest geographic information systems (GIS) technology to produce estimates of hazard-related damage before, or after, a disaster occurs.

Potential loss estimates analyzed in HAZUS include:

- Physical damage to residential and commercial buildings, schools, critical facilities, and infrastructure;
- Economic loss, including lost jobs, business, repair and reconstruction costs; and
- Social impacts, including estimates of shelter requirements, displaced households, and population exposed to scenario floods, earthquakes, and hurricanes.

Primarily local, state and regional officials would use these loss estimates to plan and stimulate efforts to reduce risks from multi-hazards and to prepare for emergency response and recovery.

In Pennington County, the assessed values were determined for every structure, identified in the floodplain maps 1-6. The potential loss was calculated by multiplying the assessed value of the structure by the percent of damage expected from a hazard event (i.e., 100-year, 4-foot flood, etc.). For example, FEMA estimates that in the event of a 100-year, 4-foot flood, 76% of residential structures in the 100-year floodplain would be affected.

Estimating Dollar Losses to Structures Due to Hazards other than Flood

Within the state's codified laws, South Dakota SDCL 58-10-10, it states that *insurance against, fire, tornado or lightning must measure damages where property is wholly destroyed the amount of insurance written in the policy shall be understood conclusively, to be the true value of the property insured and the true amount of loss and measure of damages.*

The insurance industry guidelines, for example, are established within Marshall, Swift and Boeckh. These guides contain the information to determine the local replacement cost and cost less depreciation for single or multi-family dwellings, high value dwellings, mobile-manufactured homes, commercial, industrial, agricultural and institutional building types. Each guide includes a base cost for six construction types. Also, included are adjustments for story height, substructure, exterior wall type, heating and cooling types, miscellaneous additions, and construction quality and area/perimeter relationship. These publications furnished a guide for making general estimates of costs to replace specific types of construction and summarized the potential loss estimates to structures (residential and non-residential) due to natural or man-made hazard events.

Summary of Analysis

On the following pages, charts were run from the HAZUS model software supplied by the South Dakota State Office of Emergency Management for Pennington County. The charts on the following pages are summary of the loss by flood, for critical structures for Pennington County. Many values within the charts are zero, which means these structures are not in the flood plain, and the probability is low that they would sustain flood damage.

Chart 1 and 2 present the relative distribution of value with respect to the general occupancies by Study Region and Scenario, respectively. The total economic loss estimated for the flood is 29.40 million dollars, which represents 5.17 % of the total replacement value of the scenario buildings.

Chart 1: Study Region = Pennington County

Building Exposure by Occupancy Type for the Study Region

Occupancy	Exposure ($1000)	Percent of Total
Residential	3,859,727	68.8%
Commercial	1,279,800	22.8%
Industrial	192,690	3.4%
Agricultural	26,773	0.5%
Religion	140,215	2.5%
Government	29,964	0.5%
Education	77,470	1.4%
Total	**5,606,639**	**100.00%**

Chart 2: Scenario=Flood

Building Exposure by Occupancy Type for the Scenario

Occupancy	Exposure ($1000)	Percent of Total
Residential	434,036	76.3%
Commercial	83,284	14.6%
Industrial	20,950	3.7%
Agricultural	11,395	2.0%
Religion	12,540	2.2%
Government	4,468	0.8%
Education	2,088	0.4%
Total	**568,761**	**100.00%**

Building Related Losses

Building losses are broken into two categories: direct building losses and business interruption losses. The direct building losses are the estimated costs to repair or replace the damage caused to the building and its contents. The business interruption losses are the losses associated with inability to operate a business because of the damage sustained during the flood. Business interruption losses also include the temporary living expenses for those people displaced from their homes from flood.

The total building-related losses were 29 million dollars. 1% of the estimated losses were related to the business interruption of the region. The residential occupancies made up 57.40% of the total loss. Chart 3 below provides a summary of the losses associated with the building damage.

Chart 3: Building-Related Economic Loss Estimates (in millions of dollars)

Category	Area	Residential	Commercial	Industrial	Others	Total
Building Loss						
	Building	10.82	1.58	0.57	0.66	13.62
	Content	5.99	5.06	1.19	2.45	14.69
	Inventory	0.00	0.18	0.29	0.22	0.69
	Subtotal	**16.80**	**6.82**	**2.06**	**3.33**	**29.00**
Business Interruption						
	Income	0.01	0.05	0.00	0.01	0.06
	Relocation	0.03	0.01	0.00	0.00	0.04
	Rental Income	0.02	0.01	0.00	0.00	0.02
	Wage	0.02	0.05	0.00	0.21	0.28
	Subtotal	**0.08**	**0.11**	**0.00**	**0.22**	**0.40**
ALL	**Total**	**16.88**	**6.92**	**2.06**	**3.54**	**29.40**

For **Essential Facilities**, there are 2 hospitals in the region with a total bed capacity of 390 beds. There are 59 schools, 8 fire stations, 6 police stations and 1 emergency operation center.

Chart 4: Expected Damage to Facilities

		# Facilities		
Classification	Total	At Least Moderate	At Least Substantial	Loss of Use
Fire Stations	8	0	0	0
Hospitals	2	0	0	0
Police Stations	6	0	0	0
Schools	59	0	0	0

Debris Generation

HAZUS estimates the amount of debris that will be generated by the flood. The model breaks debris into three general categories: 1) **Finishes** (dry wall, insulation, etc.), 2) **Structural** (wood, brick, etc.) and 3) **Foundations** (concrete slab, concrete block, rebar, etc.). This distinction is made because of the different types of material handling equipment required to handle the debris.

The model estimates that a total of 5,549 tons of debris will be generated. Of the total amount, **Finishes** comprises 39% of the total, **Structure** comprises 28% of the total. If the debris tonnage is converted into an estimated number of truckloads, it will require 222 truckloads (@25 tons/truck) to remove the debris generated by the flood.

Shelter Requirements

HAZUS estimates the number of households that are expected to be displaced from their homes due to the flood and the associated potential evacuation. HAZUS also estimates those displaced people that will require accommodations in temporary public shelters. The model estimates 460 households will be displaced due to the flood. Displacement includes households evacuated from within or very near to the inundated area. Of these, over 800 people will seek temporary shelter in public shelters.

Building Value

HAZUS estimates that there are 38,977 buildings in the region, which have an aggregate total replacement value of 5,607 million (2006 dollars). Chart 5 provides a general distribution of the building value by State and County.

Chart 5: Building Value, Pennington County

		Building Value (thousands of dollars)		
	Population	Residential	Non-Residential	Total
South Dakota				
Pennington	88,565	3,859,727	1,746,912	5,606,639
Total	**88,565**	**3,859,727**	**1,746,912**	**5,606,639**
Total Study Region	**88,565**	**3,859,727**	**1,746,912**	**5,606,639**

Chapter 6 – Existing Hazard Mitigation Programs

With the hazards identified, the Planning Team's next step in the planning process, is to outline existing community strategies that have a mitigation component to deter hazards that might affect the communities and plans that align with mitigation in the form of prevention and response. This section outlines those programs and recommends improvements or changes to them, to ensure they are up-to-date and responsive to community needs and short to long-range planning efforts.

A. Other Community Plans

The 2010 Pennington County Emergency Operations Plan describes the preparation and emergency response necessary for the county to react to emergencies requiring area resources. The plan also provides information on the Emergency Response Organization, its members and their roles and responsibilities in an incident. The remainder of the plan contains the procedures for the various Emergency Support Functions or ESF's and the functional roles of each department.

An additional resource for mitigation projects and reference is the Rapid City Comprehensive Plan. Local governments have integrated some of the hazard mitigation principles from their local mitigation strategies into their comprehensive plans. The intent is to focus on the use of comprehensive planning and land use strategies to reduce future damage to property and public facilities, avoid development in hazardous areas and provide emergency routes and public shelters.

In addition to the Local Emergency Operations Plan, the County has a variety of planning, prevention, mitigation, response and development projects and programs. Table 4, outlines the existing hazard mitigation programs in the area, the responsible party and the areas of the County these programs protect.

Overlooking businesses and residences in Hill City

Table 4: Existing Mitigation Strategies and Proposed Improvements					
Existing Protection Program	**Description**	**Area Covered**	**Enforcement Department**	**Effectiveness**	**Improvements or Changes Needed**
Flood Damage Prevention Ordinance	Flood Prevention	All Pennington	County Commissioners	High	Update needed, last rev. 5/98
Rapid City Airport Emergency Plan	Airport disasters	All areas of the County	Airport Manager & City Council	High	Annual review
Ellsworth Air force Base Emergency Plan	Airport and facility disasters	Ellsworth and Box Elder	Base Manager and City Council	High	Annual review
Rapid City Regional Hospital Emergency Response Plan	Mass Casualty, Bio-terrorism, Evacuation, and Infectious Diseases	Regional	Hospital Administration	High	Annual review
Pennington County POD Plan	Pandemic/ Counter Measure	Local Area	Department of Health	N/A	Update needed
Elevation and Minimum Build Ordinances	Flood Prevention	Rapid City	City Commission	High	Needs review
'03 Rapid City Comprehe-hensive Plan	Development, ordinances and land use	Rapid City	City Commission	Medium	Needs review
Storm Water and Quality Manual	Erosion and Sediment Control	Pennington	County Commission	High	Frequent review, last rev. 01/11
Subdivision Regulations	Sewer, Water, Fire Mitigation, Streets, and Utilities	Pennington	County Commission	High	Frequent review, last rev. 11/08
Air Quality Ordinances	Air quality, emissions and burning	Pennington	County Commission	Medium	Needs review
Transportation Study	New roads, bridges and land use	Pennington	Highway Department	N/A	Annual review Created, 6/12
Community Wildfire Protection Plan	Fuel emissions and pest infestation	Pennington	County Fire Administrator	High	Frequent review, last rev. 10/10

Existing Protection Program	Description	Area Covered	Enforcement Department	Effectiveness	Improvements or Changes Needed
Flood Damage Prevention Ordinance	Flood Prevention	City of New Underwood	Common Commission	N/A	Update needed
Flood Damage Prevention Regulations #491	Flood Prevention	City of Box Elder	Common Council/Floodplain Administrator	Medium	2010
Fire Prevention Code Title 5	Fire Prevention	City of Hill City	City Council	Medium	Update needed
Flood Damage Prevention	Flood Prevention	Town of Keystone	Board of Trustees	Medium	Update needed
Pennington County Pandemic Plan	Pandemic/ Counter Measure	Regional and Local	Pennington County, SD DoH, Area hospitals, clinics and EMS	High	Updated Regularly

Chapter 7 – Plan Goals and Objective Development

This chapter discusses goals and actions that have been developed in response to the risk assessment and hazard analysis completed in previous chapters.

A. Goals, Objectives and Actions

This plan bases our community's mitigation goals on the findings of the local and state risk assessments. It describes a long-term vision for hazard reduction and enhancement of mitigation capabilities. The goals are intended to identify the overall improvements that Pennington County wants to achieve. They are general guidelines that describe what our communities would like to ensure over a period of time (short, medium and long-term). The goals in the document provide a long-range vision and are less likely to be subject to change.

Examples of Goal Statements:

- Protect and expand essential facilities
- Improve the quality of life in the community
- Ensure that public funds are used in the most efficient manner

Objectives define strategies or steps to achieve the goals that have been set. They are more specific and narrow in scope than goals. It is important that the objectives be attainable and measurable so the communities will have the best opportunity to successfully implement the strategies. The public has been invited to participate in the development of the community's goals and objectives to ensure fair representation of all citizens.

Examples of objectives:

- Move or retrofit homes in the Rapid Creek floodplain.
- Increase awareness and preparedness activities for New Underwood citizens.
- Practice responsible land management in drought ridden terrain to prevent wildfires in the Black Hills.

For each hazard, the plan presents a goal reflecting the desired outcome for obtaining, as part of this plan. For each goal, objectives have been identified that work toward the completion of the goal and they are listed on the following pages. Objectives are separated into action items that need to be addressed and actions that are a continuation of existing programs. These items are most likely to change over time as needs change and opportunities arise, and are highly contingent upon the availability of funding sources.

Below are the overarching goals and objectives for each of the hazards. The most noteworthy and measureable objectives will be developed into a comprehensive strategy outlining attainable actions.

Flooding

Goal: Lessen the occurrence of flooding and damage to flood prone structures.

Objectives:

1. Regulate development in flood prone areas.
2. Promote appropriate storm water drainage systems.
3. Identify and develop additional physical barriers and greenbelts as needed in the community.
4. Ensure flash flood warning systems are operable and installed in new developments.

Drought

Goal: Assist in lessening the damage to drought prone areas.

Objectives:

1. Regulate county and city water usage.
2. Promote appropriate water saving practices.
3. Incorporate fire, fireworks and camping restrictions.
4. Increase public education and awareness.

Fire

Goal: Reduce the loss of property and life.

Objectives:

1. Assure that fire departments are adequately equipped and properly trained to respond to wildfires and grassfires.
2. Practice responsible land management to prevent wildfires.
3. Decrease fuel loading and thinning on private and public lands.

Earthquakes and Landslides

Goal: Increase the understanding and building restrictions on landslide prone terrain.

Objectives:

1. Regulate building and new development practices on landslide prone area, especially in the Black Hills.
2. Identify and develop additional prevention and mitigation projects for landslides affecting property owners.

Tornadoes/High Winds/Hail

Goal: Reduce injuries and the loss of life during violent weather.

Objectives:

1. Provide adequate warnings when violent weather is imminent.
2. Ensure that people have proper shelter from damaging high winds and/or tornadoes.
3. Promote the use of and training for the Sky Warn weather spotting volunteer program.
4. Increase public education and awareness on warning devices and preparedness actions that individuals and families can employ.

Severe Winter Weather

Goal: Decrease the effects of a power loss on the population during severe winter storms.

Objectives:

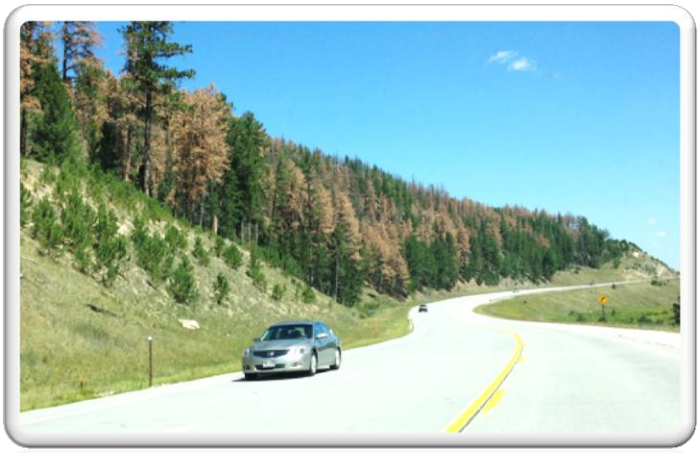
1. Upgrade existing emergency power systems with generators or transfer switches.
2. Ensure that citizens are informed of shelter locations when power to residences or businesses is lost.
3. Promote the statewide Severe Winter Weather campaign and encourage citizens to participate in severe winter weather preparedness actions.

Biological Pests/Infectious Disease

Goal: Prevent and lessen the spread of a biological pest on property and forestland or a contagion on the population.

Objectives:

1. Ensure that effective and rapid counter measures are available to the public.



Swath of dead forest from mountain pine beetle infestation

2. Provide education and information to citizens on the control and abatement of the pest or disease.
3. Promote an eradication program and awareness to its effects on the pest and the surrounding land.

Terrorism

Goal: Reduce the loss of life, injury, fire, explosion and contaminated environment.

Objectives:

1. Enforce the large-crowd law enforcement plans.
2. Increase mutual aid agreements with neighboring jurisdictions.

Hazardous Materials

Goal: Identify and contain all hazardous materials in the community.

Objectives:

1. List and map all hazardous material in and around county (intra highways and railways).
2. Increase training for local fire departments and law enforcement to handle materials and respond to spills.
3. Promote the continued use of the HAZMAT areas response team.
4. Encourage the updating of plans and exercise training within hospitals and surgery centers for safe disposal of radiological medical waste.

Air Transportation Incident

Goal: Decrease the vulnerability to aircraft crashes resulting in loss of life, explosion and/or fire.

Objectives:

1. Promote regular full-scale operational training at Rapid City Regional and Ellsworth Air Force base.
2. Have mass casualty and mass fatality plans in place along with alternate care site agreements for families of loved ones.

Seasonal Population Shift

Goal: Increase the multi-jurisdictional emergency, medical and law enforcement presence during large-scale events and tourist areas.

Objectives:

1. Enhance partnerships between jurisdictions to handle population shifts.

2. Provide training and equipment upgrades for all emergency services agencies.
3. Increase fire safety awareness to visitors along the highways (i.e. grassfires from cigarettes) and in state and federal land (i.e. campfires)

Urban/Structural Fire

Goal: Reduce the loss of life, injury and the economic impact of lost businesses, jobs and residences.

Objectives:

1. Assure that fire departments are adequately equipped and properly trained to respond to urban/structural fires.
2. Promote preparedness programs in the community, in schools and in businesses.
3. Increase smoke and fire alarm awareness programs in schools and in homes.

Power Failure

Goal: Lessen the vulnerability to a power failure and resulting emergency situation in an event that occurs during high heat or severe winter weather.

Objectives:

1. Encourage power providers to move away from a single node of failure to a partially redundant transmission and distribution system.
2. Ensure backup generators are available for critical facilities and shelters
3. Provide public education to citizens and businesses on mitigation of power outages.

Dam Failure

Goal: Ensure structure is safe.

Objectives:

1. Provide yearly and thorough dam inspections.
2. Confirm sensors are working probably and upgraded regularly.
3. Promote emergency contingency plans for residents in the direct line of flooding.
4. Increase public awareness on warning systems through various mediums.

Pactola Reservoir and Dam on Rapid Creek, 34 miles upstream from Rapid City.

Aquifer Contamination

Goal: Decrease the possibility of water source contamination.

Objectives:

1. Provide frequent "sink" and aquifer testing.
2. Ensure the hazardous substance detection devices at wellheads are working properly.
3. Promote sensor use for private wells.

Communication Isolation

Goal: Reduce the occurrence of communication disruption to residents, visitors, business, government and emergency services.

Objectives:

1. Provide frequent transmission tower, switching centers and overall infrastructure inspections.
2. Increase interoperable communications between jurisdictions through redundancy and diversity of systems.

Chapter 8 – Potential Mitigation Strategies

Building on the work in the previous chapters, the hazard mitigation planning team can set mitigation goals, develop the objectives and begin defining the hazard mitigation strategy or action plan. A hazard mitigation action plan provides direction for the community's efforts to reduce the potential losses identified in the risk assessment. If the strategy is to be implemented, it should be based on existing local authorities, policies, programs and resources. The approach should be flexible enough to be expanded, reduced and/or improved upon if existing conditions change.

A benefit-cost review of proposed hazard mitigation actions is helpful in establishing priorities for the strategy because such an analysis, studies the effectiveness of the actions with respect to their cost. FEMA's hazard mitigation plan review criteria, requires each community participating in a multi-jurisdictional planning effort to identify the specific actions they will undertake.

A. Potential Mitigation Strategies

Hazard mitigation strategies to reduce specific risks can vary from basic to complex. They are comprised of one or more hazard mitigation actions. There are many different hazard mitigation actions, which are best classified into the following six categories:

- Prevention
- Property protection
- Structural projects
- Emergency services
- Critical facilities protection
- Public education and awareness

Prevention

Prevention measures are intended to keep a hazard risk from getting worse and ensure that future development does not increase hazard losses. Communities can achieve significant progress

towards hazard resistance through prevention actions. This is particularly true in undeveloped and redeveloped areas. Examples of prevention measures or actions are:

- Planning and zoning (floodplain regulations)
- Building codes
- Capital improvement planning (no infrastructure extended into hazard area)
- Land development regulations (a large lot)
- Open space preservation (parks and recreation areas)
- Storm water management (clear ditches/larger retention basins)

Property Protection

Property protection is used to modify buildings or their surroundings, rather than to prevent the hazard from occurring since they directly impact people and property. A community may find these to be inexpensive actions because they are usually implemented or cost-shared with property owners. Examples of property protection measures are; **acquisition, relocation, rebuilding** and **flood-proofing.**

Acquisition is public procurement and management of lands that are vulnerable to damage from hazards. Public acquisition includes:

- Full market value purchase
- Purchase of foreclosure or tax delinquent property or bargain sales
- Donations
- Leases and easements

Relocation involves permanent evacuation to safer areas and includes:

- Physical removal of buildings to a safe and future use area
- Substitution of current use to another that is less vulnerable to the hazard(s) like utility relocation by burying or flood proofing

Rebuilding or modifying structures to reduce damage along with adoption and enforcement of building codes. They include some of the following actions:

- Masonry structures can be retrofitted to lessen damage in landslides
- Manufactured homes can be anchored for high wind speeds
- Lightning protection for elevated structures

Flood-proofing is meant to protect flood-prone buildings by either dry flood-proofing, which seals a structure by making the lower level watertight, or wet flood-proofing, in which water enters the building and is allowed to minimize pressure on the structure.

Structural Projects

Structural projects involve construction of manmade projects to lessen or abate a hazard, ultimately protecting people and property at risk. Protection measures include:

- Placement of anemometers
- Dams and reservoirs
- Spillways
- High flow diversions
- Channel modifications
- Detaining walls
- Storm sewers
- Elevated roadways
- Enclosing hazardous facilities
- Detention/retention basins
- Larger culverts
- Higher flood standards for construction projects

Emergency Services

Some examples of emergency services include:

- Local regional mutual aid agreements for assistance
- Resources and alternate care sites for casualties/patients
- Protection of critical facilities
- Regular health and safety maintenance
- Inventory of all assets and resources in the area
- Annual multi-jurisdictional exercises
- Annual review of operational plans

Critical Facilities Protection

Protecting critical facilities are essential for the community to respond and recover from an incident. Damage or the closing of a critical facility can disrupt and impact the population and needed services.

Critical facilities include:

- Police stations, fire stations, emergency operation centers, hospitals, and other structures/entities that are involved in the response effort.
- Facilities that care or house special needs populations, such as nursing homes, boarding schools, assisted living centers and prisons.

- Power plants and hazardous materials production or storage facilities that in itself create a secondary hazard
- Water supply sources
- Sewage treatment facilities

Public Education and Awareness

It is highly beneficial for the public be aware of educational activities in the community. These components would include:

- Provision of map information
- Informational mass mailings especially to property owners in hazard-prone areas
- Posters in high traffic areas
- Real estate disclosure of flood hazards
- Hughes and Pennington County Emergency Management website updates
- Tabbed page in local phone books
- Public announcements through print ads
- Radio and public access TV which provide updates on emergency situations

The following chart, Table 5 identifies several potential mitigation strategies to eliminate or reduce the effects of the county's identified hazards along with subcategories of concern. Recognizing that hazards exist, occur locally and can be very damaging to the community is the primary step in the mitigation process. Specific mitigation projects should be addressed and prepared for on a local level, with the knowledge that if the incident overwhelms the community, regional and state assistance is available.

Table 5: Potential Mitigation Strategies

Hazard	Prevention	Property Protection	Structural Projects	Emergency Services	Critical Facilities Protection	Public Awareness and Education
Loss of electrical service for emergency operations	Purchase generators for emergency facilities	N/A	N/A	Backup system for emergency services	Ensure every critical facility has one or more generators	N/A

Terrorism on a Local and Regional Level (bomb threat)	1. Mutual Aid Agreements on the Regional level to address this problem 2. Evacuation plans for all schools	N/A	N/A	1. Communication systems in all communities on same frequency 2. Designate what departments are responsible for action	1. Knowledge of evacuation routes and procedures 2. Bomb threat and fire training of SOPs within LEOPs	1. Educate public on local terrorism and to be aware of suspicious occurrences and people 2. Parent and Student Ed and regular drills
Flooding	1. Address 100 and 500- year flood risks by all county jurisdictions in their land use maps and land use planning and zoning	1. Sandbagging, sump pumps, and extra flood insurance for homeowners 2. Adoption of floodplain mapping and zoning in the city's official land use map and in its zoning ordinances	1. Require all culvert replacement and other road projects to be conducted in accordance with NFIP standards 2. Control and oversee new development on the 100-year floodplain	1. Know which routes would potentially be blocked in flood and plan accordingly 2. Able to oversee resources to counteract or lessen the effect of flood waters	Sandbagging and evacuation of building if needed. Alternate sites used with agreements in place	Educate community about potentially flooded routes and encourage them to avoid in heavy storms
Storms in Recreational Areas	Develop an emergency evacuation plan for each facility	N/A	Determine the stability and capacity of structures (if any) at the facility and make appropriate upgrades	Share the emergency evacuation plan with each department	N/A	Lightning education. Post evacuation procedure in visible location, including cable access channel. Participation in development of the plan
Fire (wildfire or urban)	1. Controlled burning 2. Posting of daily fire hazard	1. Family education and fire routes mapped. 2. Smoke alarms correctly installed and monitored	N/A	Designate what departments are responsible for action	1. Call 911 2.Fire training of SOPs within Emergency Operation Plans	Community education on wildfire prevention and fire within the home
Tornadoes, High winds and Hail	Compile Severe Storm Evacuation Plan that addresses responsibilities, evacuation procedures, safety pre-cautions, etc.	1. Storm protection for elevated and/or exposed structures 2. Tie downs for mobile homes	Storm protection for elevated and/or exposed structures	1. Rapid storm detection 2. Identify the responsibilities of each city/ town department	Follow SOPS's within Emergency Operation Plans	1. Encourage more volunteers to become active in the severe storm spotters network 2. Severe storm education of tornadoes and high winds

Severe Emergency Throughout the Town/Region	Regional Communication System with communication system on the same frequencies	N/A	N/A	1. Initiate ICS 2. Mobile EOC 3. Training and exercises to be prepared for severe emergency	1. Inventory of all assets (equipment, personnel, etc.) in each City or town. 2. Backup important files/databases 3. Facility shutdown sequence checklist 4. Evacuation plan and exercises	1. Publish locations of shelters 2. Information disseminated from the mobile EOC/exercise 3. Pre-planned radio frequency between cities in the region
Severe Winter Storm	1. Improve severe storm warning system for all county residents 2. Protect people and county infrastructure from the impacts of severe weather 3. Assess adequacy of existing civil defense sirens	Evaluate the readiness of all homes and public buildings for preventing damage	1. Require that all new local electrical distribution lines be placed underground 2. Modify county codes to control tree growth near power lines; encourage cities to do the same	1. Ensure that emergency management personnel are notified as soon as possible in the event of a severe storm 2. Improve access to real-time weather data, ensure that all sectors of the county have immediate access to severe weather warnings	Follow SOPS's within Emergency Operation Plans	1.Develop guidelines for homeowners describing what they can do to protect home 2. Understand the need for Shelter-in-Place or know where designated community shelter is 3. Have supplies at home to last at least 72 hrs.
HAZMAT Unit Development	1. Properly contain hazardous materials 2. List and map of all hazardous areas	N/A	N/A	Exercise and training on how to handle for each substance	Safety and Hazardous training for employees	Educating public on who to contact if aware of an incident 2. Identify alternate travel routes
Landslides	1. Land use planning and regulation 2. Building codes 3. Assessment in hazard prone areas	1. Understand the possible effects to home and finances with construction 2.Retrofit or stabilize foundations	1. Evaluate engineering/ construction approaches 2. Landslide risk analyses and mapping 3. Landslide mechanics	1. Specific training on how to respond to a landslide 2. Alternate evacuation routes	1. No future construction of critical facilities in prone areas	Develop a comprehensive education program for the community and local elected and appointed officials
Water System Security	Protection of urban and rural water system to insure safe drinking water	N/A	N/A	Emergency notification system set up on all water towers that notify police in an emergency	Protection of water supply and backup of fresh water	Educate the public to foster a "Crime Watch" attitude to protect the water system

Chapter 9 – Feasibility and Prioritization of Mitigation Strategies

The goal of each strategy is to reduce or prevent damage from a hazard event while an important criterion is whether the proposed action mitigates, the particular hazards or potential losses. Is it effective in reducing flood damage? What will be the degree of impact in flood damage losses if this action is taken? Consider that although some proposed actions might not reduce the hazards or associated damages when done alone, they may be small and important steps toward more effective actions.

Additionally, each action should also be reviewed for its congruency with other goals. For example, actions the community wishes to make, that mitigates a particular hazard while coordinating with other community priorities and the hazard mitigation goals of federal and state agencies.

The advantages of coordination include:

- Improved access to technical assistance and financial resources
- Wide-ranging solutions developed for multiple problems
- Broader support provided for implementation
- Reduced chances of duplicating or conflicting with existing efforts

Additional questions that should be asked, include does this action affect the environment? Another issue is timing: How quickly does the action have to take place for it to be effective? Which actions will produce quicker results? This is particularly important to consider if funding sources have application time limits.

In order to determine their effectiveness in accomplishing this goal, a set of criteria was applied to each proposed strategy. The STAPLEE method analyzes the Social, Technical, and Administrative, Political, Legal, Economic and Environmental aspects of a project and is used by public administration officials and planners as a decision-making tool.

- ***Social***: Is the proposed strategy socially acceptable to the community? Are there equity issues that would mean one segment of the community is treated unfairly? Will the action cause social disruption?

- ***Technical***: Will the proposed action work? Will it create more problems than it solves? Does it solve a problem or only a symptom? Is it the most useful action in light of other goals?

- ***Administrative***: Can the community implement the action? Is there someone to coordinate and lead the effort? Is there sufficient funding, staff and technical support available? Are there ongoing administrative requirements that need to be met?

- ***Political***: Is the strategy politically acceptable? Is there public support both to implement and to maintain the project?

- ***Legal***: Is the community authorized to implement the proposed action? Is there a clear legal basis or precedent for this activity? Are there legal side effects? Is the proposed action allowed by the comprehensive plan, or must the plan be amended to allow the proposed action. Will the community be liable for action or lack of action? Will the activity be challenged?

- ***Economic***: What are the costs and benefits of this action? Do the benefits exceed the costs? Is initial, maintenance and administrative costs taken into account? Has funding been secured for the proposed action? If not, what are the potential funding sources (public, non-profit and private)? How will this action affect the fiscal capability of the community? What burden will this action place on the tax base or local economy? The actions contribute to other community goals, such as capital improvements or economic development? What benefits will the action provide? (This can include the dollar amount of damages prevented, potential for funding under the HMGP or the FEMA program, etc.)

- ***Environmental***: How will the action impact the environment? Will the action need environmental regulatory approvals? Will it meet local and state regulatory requirements? Are endangered or threatened species likely to be affected?

In drafting this initial prioritization of the mitigation actions the STAPLEE criteria, assisted the team in determining if each action was met or was likely to be completed. The criteria that were considered "met" are identified with a "3", and the criteria that were considered they would be more difficult to meet are identified with a "1". The methodology also allows for a "-"designation when impacts are expected to be negative although, none of the mitigation actions were marked as adverse. The participants in this process have defined High, Medium, and Low priorities to be assigned as follows:

- High: Meets at least six of the seven STAPLEE criteria, in green color on the chart
- Medium: Meets at least five of the seven STAPLEE criteria, in brown color on the chart
- Low: Meets at least four of the seven STAPLEE criteria, in blue color on the chart

This prioritization is found in Appendix D and is considered preliminary and should be revisited on an annual basis by Pennington County Emergency Management Office and the participating municipalities or as funding becomes available.

Chapter 10 – Mitigation Actions and Implementation Schedule

Pennington County and participating entities' greatest needs are mitigating flood hazards, backup generators for critical infrastructure, construction of storm shelters, and public awareness.

After focusing on damage caused by past events, and what could be done to ensure that future damage will be lessened or eliminated, and the completion of the risk assessment (identification of hazards, probability of hazards and vulnerability to hazards), it was the mutual consensus of the Planning Team that the mitigation strategies would focus on the following hazards: severe winter and summer storms, flooding, fires (wild/urban), and power outages.

When identifying goals and objectives to the activities/ projects it was agreed upon, to include broad reaching benefits but due to scope or varying levels of importance to individual jurisdictions. In some instances, no specific cost, timeframe, or priority was assigned. Likewise, many infrastructure projects and policies throughout the communities would mitigate hazards but were not located in the most vulnerable areas. For example, all communities benefit from flood proofing critical structures or burying above ground electric utility lines.

In order to select the project actions that will achieve the community's hazard mitigation needs, the Planning Team establishes a formal minimum threshold. Of the actions that meet the minimum threshold, the team will select those that are the most likely to reduce damages while encompassing a majority of the community's acceptability criteria.

Once the actions have been selected, the Planning Team will prioritize them and focus on what is most effective in reducing overall damages. A few of the actions will be achieved in a short amount of time with little effort while the many of the major activities will not be executed so easily, due to lack of funding, current regulations, or lack of technical or staff support.

It is recommended the team highlight a couple of "achievable projects" as top priorities, such as a public education program or development of an online information portal. This will assist the jurisdictions in building "small successes" at the onset of the project and encourages them to continue with more challenging projects. The more complex and time-consuming actions can remain top priorities and be implemented through the lifespan of the project.

Upon adoption of the updated 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.

With the formulation of our mitigation strategies, the action plan will be developed to begin a timeline for implementation of the activities. In this section, the action plan is outlined with information on whom is responsible for implementing each of the prioritized strategies, as well as when and how the actions will be implemented.

The following questions were asked to assist the planning team in developing an implementation schedule for the priority mitigation strategies.

- **WHO?** Who will lead the implementation efforts? Who will put together funding applications?

- **WHEN?** When will these actions be implemented, and in what order?

- **HOW?** How will the community fund these projects? How will the community implement these projects? What resources and partnerships will be needed?

Appendix E includes the Action Plan. The following information is provided for each action:

- The primary hazard being addressed with the associated action
- The party(s) primarily responsible for implementing the action
- The time frame to accomplish the action
    - "Short Term, ST" means actions that are intended to be initiated within one year
    - "Mid Term, MT" is for actions that will be begin within 1-4 years
    - "Long Term, LT" is for actions that are not anticipated to launch for at least five years
- Potential sources of funding
    - The estimated cost - estimates for many of the actions were obtained from knowledgeable sources based on current information
- The local priority rating

Funding sources can make or break a successful project. Many worthy programs and projects are never implemented due to funding restraints. Given the existing financial reality of municipal and county budgets, most of the proposed actions, would not commence without substantial grant assistance that would otherwise put a large burden on small local budgets.

Funding resources are available from FEMA through the South Dakota Office of Emergency Management and include the Hazard Mitigation Grant Program, Pre-Disaster Mitigation grant program, and Flood Mitigation Assistance grant program. Other possible sources of funding include:

- **State and Federal Government, Organizations and Programs**
  - Small Business Administration (SBA) Disaster Loans
  - FEMA Assistance to Firefighters Grant program
  - SD Conservation District Association
  - Central South Dakota Water Development District
  - SD Department of Environment and Natural Resources
  - SD Department of Transportation
  - US Department of Agriculture Rural Development Office
  - FEMA Public Assistance
  - Housing and Urban Development (HUD)
  - Economic Development Administration (EDA)
  - Environmental Protection Agency (EPA)
  - Community Development Block Grant Program
  - Economic Development Administration
  - Homeland Security (HLS) Annual Grants
  - SD Community Foundation Grants

- **Local Government**
  - Year-end money
  - Post-disaster recovery
  - Capital improvement budget
  - Economic development funds
  - Staff time (in-kind)
  - Tax Increment Financing (TIF) districts
  - General obligation bonds
  - Revenue bonds

- **Private-sector**
  - Time and labor
  - Subject Matter Experts (consultants)
  - Materials and resources
  - Private contributions

Chapter 11 – Monitoring, Evaluating and Updating the Plan

Annual Review

The Pre-Disaster Mitigation Plan shall be reviewed annually, or as the situation dictates following a disaster declaration. The Emergency Manager is responsible for initiating the yearly review and should consult with members of the Local Emergency Planning Committee and the Hazard Mitigation Planning Team. The evaluation process will include public notification of planning/review meetings through press releases in the local newspapers and radio stations.

The EM will review the plan annually and ensure the following:

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

Plan amendments will be considered by the County EM during the plan's annual review to take place the end of each fiscal year. Changes should be analyzed with the STAPLEE tool, an updated timeframe, the community's priorities and funding sources in mind. Priorities that that received a lower rating should be reviewed as well during this time to determine the possibility of a need for future implementation or removal.

Changes made to the plan should accommodate projects that have failed or are no longer considered practical, sufficient or altered due to different scenarios.

- Some actions will be carried out by the public sector, and some by the private sector
- Certain actions will be accomplished pre-disaster and some will not be feasible until after a disaster when post-disaster funding sources are available
- A few actions can be accomplished in the short term and others will may require years to accomplish

In keeping with the process of adopting the 2012 Pennington County Pre-Disaster Mitigation Plan, the Local Emergency Management Office shall conduct public hearings to receive input and comment on the Plan. Updates should be held during the annual review period and the final product adopted by the various Boards of Commissioners.

The process of adoption demonstrates community commitment to hazard mitigation efforts prepares the community for what they can expect before and after a disaster, ensures continuity of loss reduction efforts and guarantees eligibility for other federal programs.

Five Year Review

Recognizing that many mitigation projects are ongoing and that while in the implementation stage communities may suffer budget cuts, experience staff turnover, or projects may fail, a good plan needs to provide for periodic monitoring and evaluation of its successes and failures and allow for updates when necessary.

In the absence of a disaster, a thorough review should be conducted every five years (a DMA 2000 requirement) to initiate a full update of the Pre-Disaster Mitigation Plan. All information in the plan will be evaluated for completeness and accuracy based on new information or data sources and the full planning and research process will be repeated.

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

Other Plan Incorporation

The Pennington County Pre-Disaster Mitigation Plan shall be a part of any future Zoning Ordinances or Comprehensive Plans developed and approved in Pennington County and should be referenced while implementing appropriate sections of the PDM, where applicable.

All municipality mitigation projects should be considered and prioritized in conjunction with non-mitigation projects, such as water and wastewater infrastructure improvements, new construction of residential areas, schools, libraries, parks, etc. In addition, all mitigation requirements, goals, actions, and projects should be studied during the budget process. Budget preparation is a favorable times to review the plan since municipalities are considering expenditures during this time.

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