Churchill County and City of Fallon

Multi- Jurisdictional Hazard Mitigation Plan

2012

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BLM	United States Bureau of Land Management
CIA	Central Intelligence Agency
CDC	Center for Disease Control
cfs	cubic feet per second
CFR	Code of Federal Regulations
City	City of Fallon
County	Churchill County
DHS	Department of Homeland Security
DMA 2000	Disaster Mitigation Act of 2000
DOJ	Department of Justice
DOT	United States Department of Transportation
EHS	Extremely Hazardous Substance
EMPG	Emergency Management Planning Grant
EOC	Emergency Operation Center
EPA	United States Environmental Protection Agency
EPCRA	Emergency Planning and Community Right to Know Act
FEMA	Federal Emergency Management Agency
FBI	Federal Bureau of Investigation
GIS	Geographic Information System
HAZUS-MH	(abbreviation for **HAZ**ards **U**nited **S**tates) is a geographic information system-based natural hazard loss estimation software package developed and freely distributed by the Federal Emergency Management Agency
HMGP	Hazard Mitigation Grant Program
HMP	Hazard Mitigation Plan
InSAR	Interferometric Synthetic Aperture Radar
JAVMA	Journal of the Federal coordinator for Meteorology
M	Magnitude
MMI	Modified Mercalli Intensity
mph	miles per hour
NDEM	Nevada Division of Emergency Management
NDEP	Nevada Division of Environmental Protection
NDF	Nevada Division of Forestry
NDOT	Nevada Department of Transportation
NERMP	Nevada Earthquake Risk Mitigation Plan
NFIP	National Flood Insurance Program
NBMG	Nevada Bureau of Mines & Geology

NPS	National Park Service
NRC	National Response Center
NWS	National Weather Service
OFCM	Office of the Federal Coordinator for Meteorology
PDM	Pre-Disaster Mitigation
POC	Point of Contact
Planning Task Force	Hazard Mitigation Planning Task Force
SERC	State Emergency Response Commission
SFHA	Special Flood Hazard Area
SHMO	State Hazard Mitigation Officer
SPWB	State Public Works Board
Stafford Act	Robert T. Stafford Disaster Relief and Emergency Assistance Act
State	State of Nevada
SR	State Route
UBC	Uniform Building Code
UNR	University of Nevada Reno
URM	Unreinforced Masonry Buildings
URS	URS Corporation
USC	United States Code
USDA	US Department of Agriculture
USEPA	United States Environmental Protection Agency
USFS	United States Forest Service
USGS	United States Geological Survey
WMD	Weapons of Mass Destruction

Across the United States, natural and human-caused disasters have led to increasing levels of death, injury, property damage, and interruption of business and government services. The toll on families and individuals can be immense and damaged businesses cannot contribute to the economy. The time, money and effort to respond to and recover from these emergencies or disasters divert public resources and attention from other important programs and problems. Churchill County, Nevada, recognizes the consequences of disasters and the need to reduce the impacts of natural and human-caused hazards.

The elected and appointed officials of Churchill County and the City of Fallon also know that with careful selection, mitigation actions in the form of projects and programs can become long-term, cost effective means for reducing the impact of natural and human-caused hazards. Applying this knowledge, the Churchill County Hazard Mitigation Planning Committee prepared the *Churchill County, Nevada, Hazard Mitigation Plan*. With the support of various County and City officials, the State of Nevada, and the United State Department of Homeland Security/Federal Emergency Management Agency (FEMA), this plan is the result of several months worth of work to create a hazard mitigation plan that will guide the County and City of Fallon toward greater disaster resistance in full harmony with the character and needs of the community and region.

People and property in Churchill County are at risk from a variety of hazards that have the potential for causing widespread loss of life and damage to property, infrastructure, and the environment. The purpose of hazard mitigation is to implement actions that eliminate the risk from hazards, or reduce the severity of the effects of hazards on people and property. Mitigation is any sustained action taken to reduce or eliminate long-term risk to life and property from a hazard event. Mitigation encourages long-term reduction of hazard vulnerability. The goal of mitigation is to save lives and reduce property damage. Mitigation can reduce the enormous cost of disasters to property owners and all levels of government. In addition, mitigation can protect critical community facilities, reduce exposure to liability and minimize community disruption. Preparedness, response, and recovery measures support the concept of mitigation and may directly support identified mitigation actions.

The *Churchill County, Nevada Hazard Mitigation Plan* has been prepared in compliance with Section 322 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act or the Act), 42 U.S.C. 5165, enacted under Sec. 104 the Disaster Mitigation Act of 2000 (DMA 2000), Public Law 106-390 of October 30, 2000. This plan identifies hazard mitigation actions intended to eliminate or reduce the effects of future disasters throughout the County and City of Fallon.

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This section provides an overview of the Disaster Mitigation Act of 2000 (DMA 2000; Public Law 106-390), the adoption of the updated *Churchill County, Nevada, Hazard Mitigation Plan* (HMP) by the local governing body, and supporting documentation for the adoption.

1.1 DISASTER MITIGATION ACT OF 2000

The DMA 2000 was passed by Congress to emphasize the need for mitigation planning to reduce vulnerability to natural and human-caused hazards. The DMA 2000 amended the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act; 42 United States Code [USC] 5121-5206 [2008]) by repealing the act's previous Mitigation Planning section (409) and replacing it with a new Mitigation Planning section (322). In addition, Section 322 provides the legal basis for the Federal Emergency Management Agency's (FEMA's) mitigation plan requirements for mitigation grant assistance.

To implement the DMA 2000 planning requirements, the Federal Emergency Management Agency (FEMA) published an Interim Final Rule in the *Federal Register* on February 26, 2002. This rule (44 Code of Federal Regulations [CFR] Part 201) established the mitigation planning requirements for states, tribes, and local communities. The planning requirements are described in detail in Section 2 and identified in their appropriate sections throughout this Plan. In addition, a crosswalk documenting compliance with 44 CFR is included as Appendix E.

1.2 ADOPTION BY THE LOCAL GOVERNING BODY AND SUPPORTING DOCUMENT

The requirements for the adoption of an HMP by the local governing body, as stipulated in the DMA 2000 and its implementing regulations, are described below.

DMA 2000 REQUIREMENTS: PREREQUISITES

Adoption by the Local Governing Body

Requirement §201.6(c)(5): [The local hazard mitigation plan shall include] documentation that the plan has been formally adopted by the governing body of the jurisdiction requesting approval of the plan (e.g., City Council, County Commissioner, Tribal Council).

Element

Has the local governing body adopted the plan?

Is supporting documentation, such as a resolution, included?

Source: FEMA, March 2008.

Churchill County, to be referred to as Churchill County or the County throughout this plan and the City of Fallon to be referred to as Fallon or the City, are the jurisdictions represented in this HMP. There are no other political subdivisions within Churchill County. The HMP meets the requirements of Section 409 of the Stafford Act and Section 322 of the DMA 2000.

The local governing body of Churchill County (Churchill County Board of Commissioners) and City of Fallon (City of Fallon City Council) has adopted this HMP. The signed resolution is provided in Appendix A.

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This section provides an overview of the HMP. This includes a review of the purpose and authority of the HMP and a description of the document.

2.1 PLAN PURPOSE AND AUTHORITY

The DMA 2000, also referred to as the 2000 Stafford Act amendments, was approved by Congress on October 10, 2000. On October 30, 2000, the President signed the bill into law, creating Public Law 106-390. The purposes of the DMA 2000 are to amend the Stafford Act, establish a national program for pre-disaster mitigation, and streamline administration of disaster relief.

The HMP meets the requirements of the DMA 2000, which calls for all communities to prepare hazard mitigation plans. By preparing this HMP, Churchill County and the City of Fallon are eligible to receive Federal mitigation funding after disasters and to apply for mitigation grants before disasters strike. This HMP starts an ongoing process to evaluate the risks different types of hazards pose to the County and City, and to engage the County, City and the community in dialogue to identify the steps that are most important in reducing these risks. This constant focus on planning for disasters will make the County and City, including its residents, property, infrastructure, and the environment, much safer.

The local hazard mitigation planning requirements encourage agencies at all levels, local residents, businesses, and the non-profit sector to participate in the mitigation planning and implementation process. This broad public participation enables the development of mitigation actions that are supported by these various stakeholders and reflect the needs of the entire community.

States are required to coordinate with local governments in the formation of hazard mitigation strategies, and the local strategies combined with initiatives at the state level form the basis for the State Mitigation Plan. The information contained in HMPs helps states to identify technical assistance needs and prioritize project funding. Furthermore, as communities prepare their plans, states can continually improve the level of detail and comprehensiveness of statewide risk assessments.

For FEMA's Pre-Disaster Mitigation (PDM) grant program and Hazard Mitigation Grant Program (HMGP), a local jurisdiction must have an approved HMP to be eligible for PDM and HMGP funding for a presidentially declared disaster after November 1, 2004. Plans approved, any time after November 1, 2004, will allow communities to be eligible to receive PDM and HMGP project grants.

Adoption by the local governing body demonstrates the jurisdiction's commitment to fulfilling the mitigation goals and objectives outlined in the HMP. Adoption legitimizes the updated HMP and authorizes responsible agencies to execute their responsibilities. The resolutions adopting this HMP are included in Appendix A.

2.2 STAFFORD ACT GRANT PROGRAMS

The following grant programs require a State, tribe, or local entity to have a FEMA-approved State or Local Mitigation Plan.

Hazard Mitigation Grant Program (HMGP): HMGP provides grants to State, tribes, and local entities to implement long-term hazard mitigation measures after a major disaster declaration. The purpose of the HMGP is to reduce the loss of life and property as a result of natural disasters and to enable mitigation measures to be implemented during the immediate recovery from disaster. Projects must provide a long-term solution to a problem: for example, elevation of a home to reduce the risk of flood damages as opposed to buying sandbags and pumps to fight the flood. In addition, a project's potential savings must be more than the cost of implementing the project. Funds may be used to protect either public or private property or to purchase property that has been subjected to, or is in danger of, repetitive damage. The amount of funding available for the HMGP under a particular disaster declaration is limited. The program may provide a State or tribe with up to 20 percent of the total disaster grants awarded by FEMA. The cost-share for this grant is 75/25 percent (Federal/non-Federal).

Pre-Disaster Mitigation (PDM) Program: PDM provides funds to State, tribes, and local entities, including universities, for hazard-mitigation planning and the implementation of mitigation projects before a disaster event. PDM grants are awarded on a nationally competitive basis. Like HMGP funding, a PDM project's potential savings must be more than the cost of implementing the project. In addition, funds may be used to protect either public or private property or to purchase property that has been subjected to, or is in danger of, repetitive damage. Congress appropriates the total amount of PDM funding available on an annual basis. The cost-share for this grant is 75/25 percent (Federal/non-Federal).

Flood Mitigation Assistance (FMA): The FMA program provides funds on an annual basis so that measures can be taken to reduce or eliminate risk of flood damage to buildings insured under the National Flood Insurance Program (NFIP). FMA provides up to 75% Federal funding for a mitigation activity grant and/or up to 90% Federal funding for a mitigation activity grant containing a repetitive loss strategy.

Repetitive Flood Claims (RFC): The RFC program provides funds on an annual basis to reduce the risk of flood damage to individual properties insured under the NFIP that have had one or more claim payments for flood damages. RFC provides up to 100% Federal funding for eligible projects in communities that qualify for the program.

Severe Repetitive Loss (SRL): The SRL program provides funds on an annual basis to reduce the risk of flood damage to residential structures insured under the NFIP that have had one or more claim payments for flood damages. SRL provides up to 75% Federal funding for eligible projects in communities that qualify for the program.

2.3 PLAN ORGANIZATION

The remainder of this HMP consists of the following sections.

- *Section 3 - Community Description*

Section 3 provides a general history and background of the County and City and historical trends for population, demographic and economic conditions that have shaped the area. Trends in land use and development are also discussed.

- *Section 4 - Planning Process*

Section 4 describes the planning process, identifies Planning Committee members, and the key stakeholders within the community and surrounding region. In addition, this section documents public outreach activities and the review and incorporation of relevant plans, reports, and other appropriate information.

- *Section 5 - Risk Assessment*

Section 5 describes the process through which the Planning Committee identified and compiled relevant data on all potential natural hazards that threaten the County & City and the immediately surrounding area. Information collected includes historical data on natural hazard events that have occurred in and around the County and City and how these events impacted residents and their property.

The descriptions of natural hazards that could affect the County and City are based on historical occurrences and best available data from agencies such as FEMA, the U.S. Geological Survey (USGS), and the National Weather Service (NWS). Detailed hazard profiles include information on the frequency, magnitude, location, and impact of each hazard as well as probabilities for future hazard events.

- *Section 6 – Vulnerability Analysis*

Section 6 identifies potentially vulnerable assets such as people, housing units, critical facilities, infrastructure and lifelines, hazardous materials facilities, and commercial facilities. These data were compiled by assessing the potential impacts from each hazard using GIS and FEMA's natural hazards loss estimation model, HAZUS-MH. The resulting information identifies the full range of hazards that the County and City could face and potential social impacts, damages, and economic losses.

- *Section 7 - Capability Assessment*

Although not required by the DMA 2000, Section 7 provides an overview of the County and City's resources in the following areas for addressing hazard mitigation activities:

- Legal and regulatory resources
- Administrative and technical: The staff, personnel, and department resources available to expedite the actions identified in the mitigation strategy
- Fiscal: The financial resources to implement the mitigation strategy

- *Section 8- Goals, Objectives & Actions - Mitigation Strategy*

As Section 8 describes, the Planning Committee developed a list of mitigation goals, objectives, and actions based upon the findings of the risk assessment and the capability assessment. Based upon these goals, the Planning Committee reviewed and prioritized a comprehensive range of appropriate mitigation actions to address the risks facing the community. Such measures include preventive actions, property protection techniques, natural resource protection strategies, structural projects, emergency services, and public information and awareness activities.

- *Section 9 - Plan Maintenance Process*

Section 9 describes the Planning Committee's formal plan maintenance process to ensure that the HMP remains an active and applicable document. The process includes monitoring, evaluating, and updating the HMP; implementation through existing planning mechanisms; and continued public involvement.

- *Section 10 - References*

Section 10 lists the reference materials used to prepare this HMP.

- *Appendices*

The appendices include the Adoption Resolution, Maps, Planning Committee Meetings, and Public Involvement, and Maintenance Tools.

This section describes the history, location, and geography of the County and City as well as its government, demographic information, and current land use and development trends.

3.1 HISTORY, LOCATION, AND GEOGRAPHY

Churchill County is located in Northern Nevada approximately one hour east of Reno. The county name has no connection to Winston Churchill, according to local newspaper publisher David Henley. Instead, the county was named after Brevet Brigadier General Sylvester Churchill (1783-1862)**.** Churchill served as Inspector General of the Army for 20 years and was a hero in the Mexican War. The first Army fort established in Nevada was Ft. Churchill. Built on the banks of the Carson River in 1860 it was situated about twenty-five miles from Carson City.

Churchill County encompasses approximately 4,900 sq. miles of fertile agricultural lands, desert, mountains and valleys, and contains only one urban area, the City of Fallon and county seat. The most current population estimate of the County is between 26,000 and 27,000 persons. Of that number, approximately 9,200 persons reside within the city limits of Fallon. Churchill County is also the home of the Fallon Paiute-Shoshone Tribe and the U. S. Naval Air Station Fallon where the Naval Strike and Air Warfare Center host Naval and joint combat training. Churchill County is a leading producer of green energy.

Nevada's oldest and only wood-framed court house!

Built: 1903; Restored: 2000, Photo by Dave Faulk

Most of the population resides at an elevation of 4,000 ft above sea level. The average high summer temperature is 93 degrees and the average low winter temperature is 23 degrees. The average number of sunny days is 300 and average annual precipitation is 4 inches. The water for this county is obtained through the Truckee Canal system which is part of the Newlands Project established by Congress in The Reclamation Act of 1902. Without these water rights the County would be an arid desert. Most of the geography is high desert plains and the Carson River ends within the county boundary. A number of lakes, expansive wetlands and wildlife refuge areas (Lahontan Wetlands, Stillwater national Wildlife Refuge and Carson Lake) occupy the county.

3.2 GOVERNMENT

The local governing body is composed of a three-member elected representation called the County Commissioners. The Commissioners are elected by and accountable to the voters. All of the members of the Commission serve 4-year terms.

The County Commissioners appoint a County Manager to be responsible for the general direction, supervision, administration, and coordination of all affairs for the County. Below please see Churchill County key officials and departments.

Churchill County - Key Officials

County Commissioner District 1	County Manager	Emergency Manager
County Commissioner District 2	Assessor	Finance Director/Risk Manager
County Commissioner District 3	County Engineer	Fire Chief
	Clerk Treasurer	Judges
	Cooperative Extension Director	Planning Director
	Development Services Director	Recorder
	District Attorney	Sheriff

County Departments

Assessor	Emergency Management	Planning
Building	Facilities & Grounds Maintenance	Recorder
Cemetery	Fire	Roads
Clerk/Treasurer	Human Resources	School District
Commissioners	Justice Court	Sheriff
Comptroller	Juvenile Probation	Social Services
County Manager's Office	Library	Telephone Company
District Attorney	Museum	Veterans Services
District Courts	Parks and Recreation	

The City of Fallon governing body is composed of a five-member elected representation called the City Council and Mayor. The council members and mayor are elected by and accountable to the voters. All of the members of the council serve 4-year terms.

The Mayor is responsible for the general direction, supervision, administration, and coordination of all affairs for the City. Below please see City of Fallon key officials and departments.

City of Fallon – Key Officials

City Council	Mayor and Chief Executive Officer	Emergency Management Director
Convention & Tourism Board	City Attorney	Municipal Court Judge
Fire Board	City Clerk/Treasurer	Police Chief
	City Engineer	

City of Fallon Departments

City Attorney	Emergency Management	Police
City Clerk/Treasurer	Municipal Court	Public Works
City Engineering		

Fallon Paiute – Shoshone Tribe

The 1,297-member Fallon Paiute-Shoshone Tribe (FPST) traditionally known as the Toi Ticutta (cattail eaters), provides its people with a broad variety of services and activities from health care to a senior center. Their land encompasses 8200 acres and is located in the northeast part of Lahontan Basin, in the shadow of the sacred Fox Peak Mountain. FPST is currently drafting a Tribal Level Hazard Mitigation Plan.

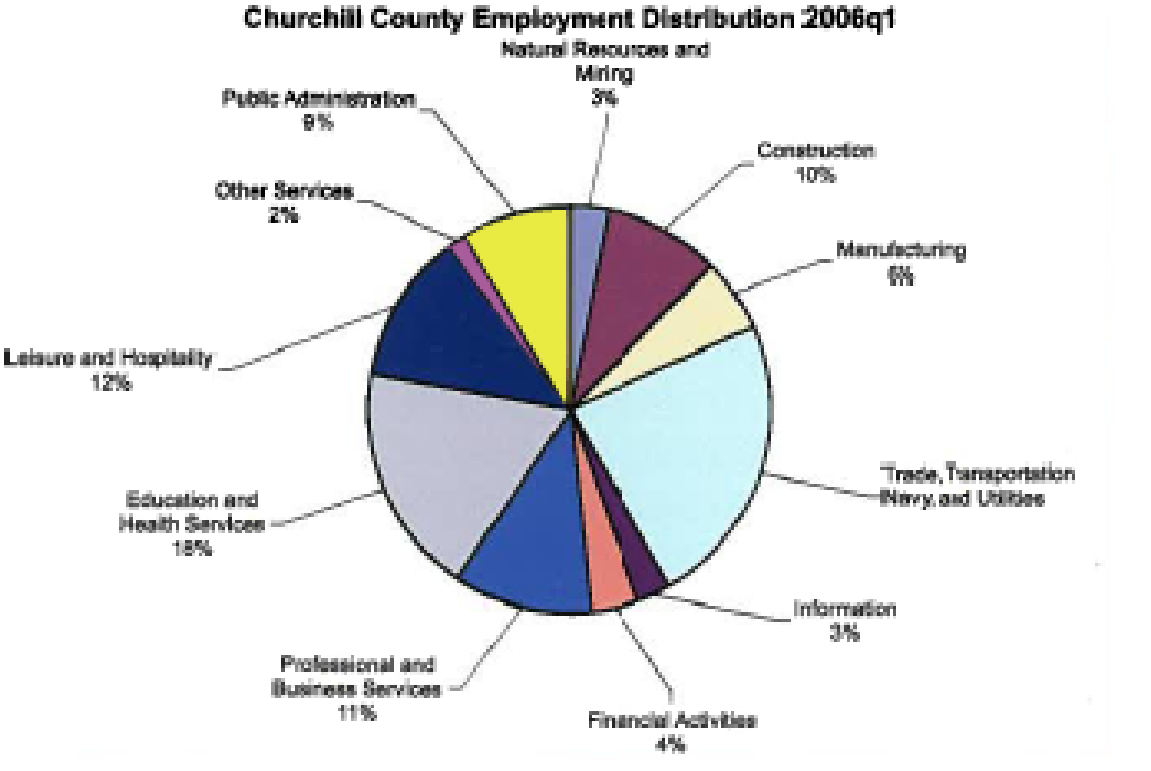
3.3 DEMOGRAPHICS

According to the U.S. Census Bureau 2010 census, the County's population is 24,877. The growth rate is less than 0.5%. 87% of the land in Churchill is publically owned which is much higher than the rest of the state which has much of its land owned by the Bureau of Land Management. Approximately 33 percent of the total population was under 18 years, 52 percent was between 18 and 64 years, and 15 percent was 65 years and over. While the County experienced a 3.4 percent growth rate from 2000 to 2010, it is well below the state average of 32.3 percent.

The County's nonfarm employment was 5,577 persons in 2010 (US Census Bureau). This is a 15% change from 2000 to 2010 showing a move from agricultural to nonfarm employment. The economic base of the County primarily consists of government, agricultural, service, leisure and manufacturing. See Figure below. The government category is primarily made up of the Fallon Naval Base which employs over 4,000 persons. The unemployment rate has been historically low, but has risen in the last two years to 11.4 percent, March 2010, according to the US Bureau of Labor Statistics. In 2010, the median household income was $52,005 according to the US Census.

The following figure represents the make up of employment within the county.

Figure 3-1: Churchill County Employment Distribution



Source: NV Commission on Economic Development

City of Fallon

The City of Fallon is located 50 miles east of Reno, NV, in the southwest portion of Churchill County on US Highway 50 east west traversing and US Highway 95 north south traversing. The geography of the city is flat land with the Carson River running just west and north of town. The estimated population is 8,606 with population growth since 2000 of 14.2%. The labor force population of 18 years and older is 5,164 or 60% of the population. The median household income in 2010 was $47,310 according to the US Census 2010. There are 3,403 households of which 1,358 are owner occupied households and 1,102 are single-family dwellings. The average household size is 2.45 persons.

3.4 LAND USE AND DEVELOPMENT TRENDS

Churchill is expecting residential development in the northwestern area of the county. The Desert Vista Planned Unit Development northwest of Wade and Moody Lanes consisting of approximately 500 acres is a proposed mix use development of 2,100 residential units. In expectation of this development Churchill has invested in a new Sand Creek Water Treatment plant and construction of a new sewage treatment plant.

In response to the planned increase in population Churchill is working on preserving jobs within the county. Churchill's economy is based one-third on NAS Fallon and one-third on agriculture. Therefore Churchill is working through its planning efforts to preserve the economic base through smart growth. The TDR (transfer of development rights) program is a conservation easement program that, in part, seeks to place agricultural lands surrounding the Navy base into conservation easements in order to limit future development and encroachments to the base. To date 2,000 acres of productive farmland, including 1,500 water-righted acres have been preserved in perpetuity.

The majority of the population of Churchill is located around the Carson River. A second example of smart growth is the Question 1 Conservation Program and the Federal Farm and Ranchland Protection Program which preserved, in perpetuity the Rambling River Ranch property. This 290 acre ranch, located along the Carson River, has been used for farming since 1916. The conservation easement will preserve the land for agricultural productivity and maintain water rights on the property and will also help protect the Carson River and the flood plain.

Additionally, growth in the industrial sector includes renewable energy plants using the geo-thermal resource natural to the area and solar energy.

Development of the residential parcels is estimated to be slow with an increase of less than 1% each year according to the NV State Demographer. A land use map is provided in Appendix B, Figure B-11.

This section provides an overview of the planning process; identifies Planning Committee members, and key stakeholders; documents public outreach efforts; and summarizes the review and incorporation of existing plans, studies, and reports used in the development of this HMP. Additional information regarding the Planning Committee and public outreach efforts is provided in Appendices C and D.

The requirements for the planning process, as stipulated in the DMA 2000 and its implementing regulations, are described below.

DMA 2000 Requirements: Planning Process

Documentation of the Planning Process

Requirement §201.6(b): In order to develop a more comprehensive approach to reducing the effects of natural disasters, the planning process shall include:

1. An opportunity for the public to comment on the plan during the drafting stage and prior to plan approval;
2. An opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, and agencies that have the authority to regulate development, as well as businesses, academia and other private and nonprofit interests to be involved in the planning process; and
3. Review and incorporation, if appropriate, of existing plans, studies, reports, and technical information.

Requirement §201.6(c)(1): [The plan shall document] the planning process used to develop the plan, including how it was prepared, who was involved in the process, and how the public was involved.

Element

- Does the new or updated plan provide a narrative description of the process followed to prepare the plan?
- Does the new or updated plan indicate who was involved in the planning process? (For example, who led the development at the staff level and were there any external contributors such as contractors? Who participated on the plan Committee, provided information, reviewed drafts, etc.?)
- Does the new or updated plan indicate how the public was involved? (Was the public provided an opportunity to comment on the plan during the drafting stage and prior to the plan approval?)
- Does the new or updated plan indicate that an opportunity was given for neighboring communities, agencies, businesses, academia, nonprofits, and other interested parties to be involved in the planning process?
- Does the updated plan document how the planning team reviewed and analyzed each section of the plan?
- Does the planning process describe the review and incorporation, if appropriate, of existing plans, studies, reports, and technical information?
- Does the updated plan indicate for each section whether or not it was revised as part of the update process?

Source: FEMA, March 2008.

4.1 OVERVIEW OF PLANNING PROCESS

The County and City assisted by KJ Consultants and the State of Nevada, Hazard Mitigation Officer prepared this HMP. Each section of the initial HMP plan was reviewed for content and the committee revised every section of the plan. The first step in the planning update process was to establish a Planning Committee composed of existing County and City of Fallon agencies. Ron Juliff of the County's Emergency Services and Steve Endacott of City of Fallon Emergency Services served as the primary Points of Contact (POC) for the County, City, and the public.

Once the Planning Committee was formed, the following five-step planning process took place during the 12-month period from October 2010 to October 2011.

- **Organize resources:** The Planning Committee identified resources, including County and City staff, agencies, and local community members, which could provide technical expertise and historical information needed in the development of the HMP.
- **Assess risks:** The Planning Committee identified the hazards specific to the County, and developed the risk assessment for the nine identified hazards. The Planning Committee reviewed the risk assessment, including the vulnerability analysis, prior to and during the development of the mitigation strategy.
- **Assess capabilities:** The Planning Committee reviewed current administrative and technical, legal and regulatory, and fiscal capabilities to determine whether existing provisions and requirements adequately address relevant hazards.
- **Develop a mitigation strategy:** After reviewing the risks posed by each hazard, the Planning Committee worked to develop a comprehensive range of potential mitigation goals, objectives, and actions. Subsequently, the Planning Committee identified and prioritized the actions to be implemented.
- **Monitor progress:** The Planning Committee developed an implementation process to ensure the success of an ongoing program to minimize hazard impacts to the County.

4.2 HAZARD MITIGATION PLANNING COMMITTEE

4.2.1 Formation of the Planning Committee

As previously noted, the planning process began in October 2010. Ron Juliff, Emergency Manager for Churchill County, formed the advisory body, known as the Planning Committee, utilizing staff from the Local Emergency Planning Committee (LEPC), relevant County and City agencies and community organizations. The Planning Committee members are listed in Table 4-1. The Planning Committee meetings are described in section 4.2.2. Meeting minutes are provided in Appendix C.

Table 4-1. Hazard Mitigation Planning Committee

Name	Department	
Chair: Ron Juliff	Churchill Co. Emergency Management	Chair of the Committee, chaired meetings, provided evaluation and information on the following sections, hazard profile, vulnerability analysis, risk assessment, mitigation strategies, plan maintenance, provided public outreach Attended meetings, reviewed drafts and provided input
Lead: Steve Endacott	City of Fallon, Emergency Management	Lead for City of Fallon, provided evaluation and information on the following sections, hazard profile, vulnerability analysis, risk assessment, mitigation strategies, plan maintenance, provided public outreach Attended meetings, reviewed drafts and provided input
Elizabeth Ashby	State Hazard Mitigation Officer	Provided information on tools, guidance, plan outline, state hazards, mitigation strategies, plan maintenance Attended meetings, reviewed drafts and provided input
Genie Azad	Carson River Sub conservancy District	Provided information on flood, mitigation strategies Attended meetings, reviewed drafts and provided input

Bob Bridges	Churchill Information Systems Management	Reviewed and provided revisions for telephone utility, Attended meetings, reviewed drafts and provided input
Steven Cole	NAS Fallon, Emergency Management	Provided information on NAS Fallon for mitigation strategy Attended meetings, reviewed drafts and provided input
Sonia Coleto	Fallon Paiute-Shoshone Tribe, Environmental	Provided hazard information Attended meetings, reviewed drafts and provided input
Jackie Conway	Fallon Paiute-Shoshone Tribe, Environmental	Provided hazard information, mitigation strategy Attended meetings, reviewed drafts and provided input
Preston Denney	Churchill Planning Dept., GIS	Provided GIS mapping. Information on vulnerability and mitigation strategy. Attended meetings, reviewed drafts and provided input
Jim Fine	Southwest Gas, Construction Management	Provided information on utility Attended meetings, reviewed drafts and provided input
Brad Goetsch	Churchill County Manager	Provided hazard information Attended meetings, reviewed drafts and provided input
Carmen Gonzales	Fallon Paiute-Shoshone Tribe, Environmental	Provided hazard information Attended meetings, reviewed drafts and provided input
Jon Haugen	Churchill Sherriff's Office	Provided hazard information, vulnerability and mitigation strategy Attended meetings, reviewed drafts and provided input
Rusty Jardine	Truckee Carson Irrigation District	Provided hazard information on flood and mitigation strategy. Reviewed drafts and provided input.
John Johnson	Churchill County School District	Provided building information on school district. Attended meetings, reviewed drafts and provided input
Alan Kalt	Churchill Controller	Provided vulnerability analysis Attended meetings, reviewed drafts and provided input
Eleanor Lockwood	Churchill Planning Dept. Flood Plain Manager	Provided information on local planning, flood and mitigation strategy Attended meetings, reviewed drafts and provided input
Rhett Milne	NOAA	Provided information on severe weather, reviewed drafts and provided input
Christopher Pierce	NAS Fallon, Training	Provided information on hazard profile Attended meetings, reviewed drafts and provided input
John Powell	CC Communication Network	Provided information on hazard profile Attended meetings, reviewed drafts and provided input
Bus Scharman	Western Nevada College	Provided information on college vulnerability Attended meetings, reviewed drafts and provided input
Frank Shyne	Fallon Police Dept.	Provided information on City of Fallon Attended meetings, reviewed drafts and provided input
Geof Stark	Churchill, PIO	Provided information on hazard profile Attended meetings, reviewed drafts and provided input
Ryan Swirczek	Fallon Public Works	Provided information on vulnerability analysis & mitigation strategy Attended meetings, reviewed drafts and provided input

Steven Towne	Banner Health	Provided information on hazard profile, vulnerability Attended meetings, reviewed drafts and provided input
Mark Turner	Banner Health, Plant Operations & Safety	Provided information on hazard profile, vulnerability Attended meetings, reviewed drafts and provided input
Rick Whimple	Churchill Planning	Provided information on vulnerability, mitigation strategy Attended meetings, reviewed drafts and provided input
Paul Willcoxon	Amateur Radio Services	Attended meetings, reviewed drafts and provided input Attended as member of the public
Barry Wood	NAS Fallon, EOC Manager	Provided information on NAS Fallon for mitigation strategy Attended meetings, reviewed drafts and provided input
Mitch Young	Fire Marshall Office	Provided information on wildfire, mitigation strategy Attended meetings, reviewed drafts and provided input
Jim Walker	Nevada Dept. of Transportation	Provided information on roads and bridges for vulnerability assessment
Larry Werner	City Engineer	Provided information through City Planning and Building Dept. on buildings and planning
Bob Withers	Charter Communications	Provided information on utilities Attended meetings, reviewed drafts and provided input

4.2.2 Participants

- Churchill County
- City of Fallon
- Churchill County Sherriff's Department
- Churchill County School District
- Churchill County Fire Department
- Truckee Carson Irrigation District
- Carson River Sub-conservancy District
- Banner Healthcare System
- Western Nevada College
- Southwest Gas
- Charter Communications
- Churchill County Communications Network

4.2.3 Planning Committee Meetings

- *October 2010*

During the kick-off meeting, at the Churchill County Administrative Building the Committee discussed the objectives of the DMA 2000, the hazard mitigation planning process, the public outreach process, and the steps involved in developing the HMP and achieving the County's goals. The planning process was discussed including the purpose of the plan. The Committee

approved the committee By-Laws. The 18 potential hazards from the original Nevada State HMP were reviewed (Section 5) and modifications to the hazards list were discussed. A hazard identification table was completed. The exercise identified the specific hazards that the Planning Committee wanted to address in the HMP.

A press release and notification letter to neighboring communities and relevant agencies of the HMP preparation was completed. The Committee completed the Incorporation of Existing Plans/Study Table to identify all the plans/studies available (as shown in section 4.4). The Planning Committee completed a Hazard Profiling Worksheet. The exercise used group averaging to prioritize the hazards into high, medium and low categories.

- *November & December 2010*

Coordinated with the Planning Department to gather data for the mapping to include copies of their Land Use Map and Flood Plain Map. Coordinated with UNR, Bureau of Mines and Geology to gather earthquake data. As information was gathered, additions were made to the developing plan. Started the hazard profiling.

- *January 2011*

Committee reviewed and provided input for the flood and earthquake profile. Committee determined that terrorism would not be included in plan. Epidemic section was reviewed by healthcare committee members.

- *February 2011*

Continued to develop hazard profiles and public awareness questionnaire.

- *March 2011*

The Planning Committee reviewed and provided input for the Severe Weather, Hazardous Materials Release and Wildfire profiles of the risk assessment.

- *May 10, 2011*

The Planning Committee reviewed and provided input for the Volcano, Drought, Infestation. The Mitigation Questionnaire and was reviewed and approved.

- *July 10, 2011*

County and City Emergency Managers distributed the Mitigation Questionnaire and provided input for the vulnerability assessment.

- *September, 2011*

The Planning Committee reviewed the initial analysis of the vulnerability assessment, describing which assets were analyzed and how values were estimated. The Planning Committee reviewed goals and actions, identified additional actions. Planning Committee used STAPLE+E form to prioritize actions.

With the information from the prioritization process the Planning Committee selected the top actions they felt were feasible and realistic to be completed during this iteration of the HMP. With this information they completed the Mitigation Action matrix.

- *October 2011*

The completed plan was distributed to the Planning Committee for their review. The plan was provided to the NV State Hazard Mitigation Officer for review and submission to FEMA.

See Appendix D for a list of attendees, meeting handouts and minutes.

4.3 PARTICIPATION AND PUBLIC INVOLVEMENT

In May 2011, the County distributed a questionnaire to the public through County and City offices. The questionnaire and the results can be found in Appendix D and where used by the Planning Committee during their development of the mitigation strategy. The response to the questionnaire was low and may be due to the fact it was only available at County and City offices. The County and City were unable to mail the questionnaire due to funding limitations and alternate distribution methods should be considered in the next update.

A press release was posted on the County web site and an e-mail was sent out to the Lahontan Valley News. The press release can be found in Appendix C.

The County mailed letters (see Appendix C) regarding the update of the HMP to the following entities:

- FEMA
- State NDEM, NDOT, NDWR
- State Assembly & Senate Representatives
- Counties of Washoe, Lander, Lyon, Nye, Pershing and Mineral
- City of Fallon Municipal Airport
- Truckee Carson Irrigation District
- Carson River Sub-conservancy District
- Fallon Chamber of Commerce
- National Weather Service
- Fallon Paiute-Shoshone Tribe

4.4 INCORPORATION OF EXISTING PLANS AND OTHER RELEVANT INFORMATION

During the planning process, the Planning Committee reviewed and incorporated information from existing plans, studies, reports, and technical reports into the HMP. A synopsis of the sources used follows.

- ***Carson River Geographic Response Plan****:* This is a regional plan covering five counties in two states. The plan was developed to protect the health, safety, environment, and property (both public and private) from the effects of hazardous materials incidents in or near the Carson River.
- ***Carson River Watershed Regional Floodplain Management Plan*** **(Carson Water Sub conservancy District, 2008)***:* This plan provides strategies for floodplain management that can be applied regionally as well as locally.

- ***Churchill County Building Code*****:** These regulations concern zoning districts, variances, and general development standards within the Churchill County and includes the 2006 IBC.
- ***Churchill County Fire Plan (*****Resource Concepts Incorporated*****)***: Community Guidelines.
- ***Fallon/Churchill Fire Code*** **(Updated every 3 Years)*:*** This document includes a wildland/urban interface section that delineates regulations for building and maintaining homes in wildland fire prone areas.
- ***Churchill Hazardous Materials Response Plan****:* This plan provides guidance to emergency response personnel on the general plan of action for a response to a hazardous materials emergency and provides for a resource directory.
- ***Churchill Mass Illness Plan*** **(In Draft):** This plan addresses the County's response to a pandemic/influenza outbreak.
- ***Churchill County Master Plan –*** **(Churchill County Planning 2010):** Guiding principle includes Section 4 which addresses mitigation and Section 3 which encourages floodplain management strategies.
- ***Community Wildfire Protection Plan, RCI*** **(November 2004):** This document includes findings and recommendations for mitigating the threat to property from wildland fires.
- ***Design, Estimating and Construction Review Truckee Canal Risk Assessment (March 2008):*** This document evaluates the Truckee Canal system and provides a risk assessment.
- ***Emergency Operations Plan (*****Churchill County Emergency Management 2010*****)****:* This document is the main reference source for managing disasters and large scale emergencies in Churchill County. Mitigation is discussed in Annex P.
- ***Lahonton Dam Table Top Flood Exercise (October 2009*****)** This exercise document provides a review of reduction in loss of life and minimize property damage.
- ***State of Nevada Multi-Hazard Mitigation Plan****:* This plan, prepared by NDEM, was used to ensure that the County's HMP was consistent with the State's Plan.
- ***State Maintained Highways of Nevada (January 2011):*** This report provides descriptions and Maps of Highways by County.
- ***FEMA Flood Insurance Study for Churchill County, NV (*****FEMA 2009*****)****:* This outlined the principal flood problems and floodplains within the County.

The following FEMA guides were also consulted for general information on the HMP process:

- ***How-To Guide #1: Getting Started: Building Support For Mitigation Planning*** **(FEMA 2002c)**
- ***How-To Guide #2: Understanding Your Risks – Identifying Hazards and Estimating Loss Potential*** **(FEMA 2001)**
- ***How-To Guide #3: Developing the Mitigation Plan: Identifying Mitigation Actions and Implementing Strategies*** **(FEMA 2003a)**
- ***How-To Guide #4: Bringing the Plan to Life: Implementing the Hazard Mitigation Plan*** **(FEMA 2003b)**

A complete list of the sources consulted is provided in Reference, Section 10.

A hazard analysis includes the identification and screening of each hazard and subsequent profiling of each hazard. Hazard identification is the process of recognizing the natural and human-caused events that threaten an area. Natural hazards result from unexpected or uncontrollable natural events of sufficient magnitude. Human-caused hazards result from human activity and include technological hazards and terrorism. Technological hazards are generally accidental or result from events with unintended consequences, for example, an accidental hazardous materials release. Terrorism is defined as the calculated use of violence or thereat of violence to attain goals that are political, religious, or ideological in nature.

Even though a particular hazard may not have occurred in recent history in the study area, all hazards that may potentially affect the study area are included in the screening process. The hazards that are unlikely to occur or for which the risk of damage is accepted as being very low, are eliminated from consideration.

All identified hazards will be profiled by describing hazards in terms of their nature, history, magnitude, frequency, location, and probability. Hazards are identified through the collection of historical and anecdotal information, review of existing plans and studies, and preparation of hazard maps of the study area. Hazard maps are used to determine the geographic extent of the hazards and define the approximate boundaries of the areas at risk.

5.1 HAZARD IDENTIFICATION AND SCREENING

The requirements for hazard identification, as stipulated in DMA 2000 and its implementing regulations, are described below.

DMA 2000 Requirements: Risk Assessment – Overall

Identifying Hazards

§201.6(c)(2)(i): [The risk assessment shall include a] description of the type of all natural hazards that can affect the jurisdiction.

Element

- Does the new or updated plan include a description of all the types of all natural hazards that affect the jurisdiction?

Source: FEMA, March 2008.

The first step of the hazard analysis is the identification and screening of hazards, as shown in Table 5-1. During the first HMP meeting, the Planning Committee (comprised of representatives from the County agencies, City agencies, local businesses, State Division of Emergency Management, NAS Fallon and Western Nevada College) reviewed the State's identified hazards from the State of Nevada Hazard Mitigation Plan and identified 15 possible hazards (13 natural hazards and 2 human-caused hazards).

Table 5-1. Identification and Screening of Hazards

Hazard Type	Should It Be Profiled?	Explanation
Avalanche	No	No historical record of this hazard in the County
Drought	Yes	Statewide drought declarations were issued in 2002 and 2004.
Earthquake	Yes	Several active fault zones pass through the County.
Epidemic	Yes	This hazard was addressed in the State Multi-Hazard Mitigation Plan.
Expansive Soils	No	No historical record of this hazard in the County
Extreme Heat	No	No historical record of this hazard in the County
Flood (Including Dam/Levee Failure)	Yes	Flash floods occur during thunderstorms. Carson River flooded numerous times in recent history.
Hazardous Material Event	Yes	Churchill has several facilities that handle or process hazardous materials. Hazmat travels through the City on the 2 intersecting highways.
Infestations	Yes	Weed Infestations are known.
Land Subsidence & Ground Failure	No	No historic events.
Severe Weather Snow/Ice/Windstorm/Tornado	Yes	Churchill is susceptible to severe weather. Previous events have caused damage to property. Tornado warnings occur frequently
Seiche	No	No recent historic events have occurred.
Volcano	Yes	No significant historic events have occurred in the County. However a young volcano resides in the County and Mammoth has a small chance of an event occurring.
WMD / Terrorism	No	This hazard is not addressed due to committee determining this is a moderate hazard and should not be addressed in a public document. Probability and extent could not be determined.
Wildland Fire	Yes	The terrain, vegetation, and weather conditions in the region are favorable for the ignition and rapid spread of wildland fires.

Assigning Vulnerability Ratings

During a Committee meeting the members were tasked to prioritize the hazards by their total impact in the community. An exercise requiring the committee to complete a form which tabulated their ratings of each hazard was accomplished. The exercise formula took into account the historical occurrence of each respective hazard, the potential area of impact when the disaster does occur, and the magnitude. Please see Table 5-2 below for scoring criteria.

It is important to note that hazards of the same magnitude and the same frequency can occur in similar sized areas; however, the overall impact to the areas would be different because of population densities and property values in the areas impacted.

Table 5-2. Vulnerability Ratings Rubric

		Magnitude	Duration	Economic	Area Affected
Lowest	1	Insured Loss	1-3 Days	Community	Community
	2	Local	4-7 Days	City / Town	City / Town
	3	State	8-14 Days	County	County
	4	Federal Emergency	15-20 Days	State	State
Highest	5	Federal Disaster	20 + Days	Federal	Federal

		Frequency	Degree of Vulnerability	State & Community Priorities
Lowest	1	10+ years	1-5% damaged	Advisory
	2	6-9 years	6-10%	Considered further Plan
	3	1-5 years	11-25%	Prompt Action
	4	2-12 months	26-35%	Immediate Action
Highest	5	0-30 days	36-50%	Utmost immediacy

The Committee referenced the NV DEM historical records, Resource Concepts Inc. (RCI) plans and HAZUS runs from Nevada Bureau of Mines and Geology (NBMG) for scientific data that was used for magnitude, economic and frequency scores based on historical frequencies and / or projected probabilities of the hazards identified.

Upon obtaining total scores for each hazard, the team utilized the scores to analyze and prioritize the hazards to focus upon during the profiling, vulnerability assessment and mitigation strategy. Table 5-3 is a summary of the hazards scoring results of both the members present at the meeting and those that supplied feedback via e-mail after the meeting. The Committee only used the scores from the present members in their priority determination; however there was no substantial change to the rankings.

In reviewing the results hail & thunderstorm, severe winter storm, and severe windstorm were combined as the majority of the respondents combined these categories.

The Planning Committee determined that nine hazards pose a threat to the County: drought, earthquakes, epidemic, floods, hazardous materials events, infestation, severe weather, volcano, and wildland fires. The Committee then discussed the results of the ranking and through Committee deliberation, earthquake and flood are considered very high hazards, drought, and hazardous materials are considered high hazards, epidemic and severe weather are considered moderate hazards, volcano and wildfire are considered low hazards and infestation is considered very low.

Table 5-3: Hazard Ranking Results
Churchill County

Hazard Type	Frequency	Magnitude/Duration/ Economic Impact	Planning Significance
Natural			
Drought	High	High	High
Earthquakes	High	Very High	Very High
Epidemic	Low	Moderate	Moderate
Flood (Includes dam failure & canal failure)	High	Very High	Very High
Infestations	Very Low	Low	Very Low
Severe Weather (thunderstorm, snow tornado, windstorm)	High	Moderate	Moderate
Volcano	Very Low	Low	Low
Wildfire	Low	Low	Low
Human Caused			
Hazmat	High	Moderate	High

Table 5-3 cont'd - City of Fallon

Hazard Type	Frequency	Magnitude/Duration/ Economic Impact	Planning Significance
Natural			
Drought	High	High	High
Earthquakes	High	Very High	Very High
Epidemic	Low	Moderate	Moderate
Flood (Includes dam failure & canal failure)	High	Very High	Very High
Infestations	Low	Low	Very Low
Severe Weather (thunderstorm, snow tornado, windstorm)	High	Moderate	High
Volcano	Very Low	Low	Low
Wildfire	Low	Low	Low
Human Caused			
Hazmat	High	High	High

City of Fallon ranked Earthquake and flood as very high and drought, epidemic and severe weather as high. Hazardous material is considered moderate and volcano, and wildfire is considered low with infestation as very low.

The remaining hazards excluded through the screening process were considered to pose no threat to life and property in the County due to the low likelihood of occurrence or the low probability that life and property would be significantly affected. Should the risk from these hazards increase in the future, the HMP can be updated to incorporate a vulnerability analyses for these hazards. The committee determined that Terrorism should not be addressed in this public document.

The very high, high and moderate ranked hazards will be carried through to the Risk Assessment and will be addressed in the Mitigation Strategy. The hazards with a "low" rating will have a Hazard Profile developed but will not be carried through to the Risk Assessment or Mitigation Strategy, as currently and historically those hazards have occurred in unpopulated areas having little to no impact, measureable magnitude, or feasible mitigation actions. The "low" ranked hazards will be profiled for future reference in order to monitor the possible impact of these hazards in relation to the growth within the county and increasing visitor appeal. The Churchill County's Hazard Rating results generally correspond with ratings determined in the State of Nevada Standard Hazard Mitigation Plan. Drought was rated low in the state plan but high in Churchill due to the agricultural nature of the community. Hazardous Materials was rated high which may be due to a recent event in the City of Fallon and the travel corridor that bisects the City.

Table 5-4: Hazard Ranking

Very High Risk	High Risk	Medium Risk	Low Risk
Earthquake Flood	Drought Hazardous Materials	Epidemic Severe winter storm	Infestation Volcano Wildfire

5.2 HAZARD PROFILE

The requirements for hazard profile, as stipulated in the DMA 2000 and its implementing regulations, are described below.

DMA 2000 Requirements: Risk Assessment – Profiling Hazards

Profiling Hazards

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

Element

- Does the risk assessment identify the **location** (i.e., geographic area affected) of each natural hazard addressed in the plan?
- Does the risk assessment identify the **extent** (i.e., magnitude or severity) of each hazard addressed in the plan?
- Does the plan provide information on **previous occurrences** of each hazard addressed in the plan?
- Does the plan include the **probability of future events** (i.e., chance of occurrence) for each hazard addressed in the plan?

Source: FEMA, March 2008.

The specific hazards selected by the Planning Committee for profiling have been examined in a methodical manner based on the following factors:

- Nature
- History
- Location of future events
- Extent of future events
- Probability of future events

The hazards profiled for the County are presented in Section 5.2 hazards in alphabetical order. The order of presentation does not signify the level of importance or risk. Low hazards were not profiled.

5.2.1 Drought

Planning Significance - Churchill County – High City of Fallon - High

5.2.1.1 Nature

Drought is a normal, recurrent feature of virtually all climatic zones, including areas of both high and low rainfall, although characteristics will vary significantly from one region to another. Erroneously, many consider it a rare and random event. It differs from normal aridity, which is a permanent feature of the climate in areas of low rainfall. Drought is the result of a natural decline in the expected precipitation over an extended period of time, typically one or more seasons in length. Other climatic characteristics, such as high temperature, high wind, and low relative humidity, impact the severity of drought conditions.

Drought can be defined using both conceptual and operational definitions. Conceptual definitions of drought are often utilized to assist in the widespread understanding of drought. Many conceptual definitions portray drought as a protracted period of deficient precipitation resulting in extensive damage to agricultural crops and the consequential economic losses. Operational definitions define the beginning, end, and degree of severity of drought. These definitions are often used to analyze drought frequency, severity, and duration for given periods of time. Such definitions often require extensive weather data on hourly, daily, monthly, or other time scales and are utilized to provide a greater understanding of drought from a regional perspective. Four common definitions for drought are provided as follows:

- Meteorological drought is defined solely on the degree of dryness, expressed as a departure of actual precipitation from an expected average or normal amount based on monthly, seasonal, or annual time scales.
- Hydrological drought is related to the effects of precipitation shortfalls on stream flows and reservoir, lake, and groundwater levels.
- Agricultural drought is defined principally in terms of soil moisture deficiencies relative to water demands of plant life, usually crops.
- Socioeconomic drought associates the supply and demand of economic goods or services with elements of meteorological, hydrologic, and agricultural drought. Socioeconomic drought occurs when the demand for water exceeds the supply as a result of weather-related supply shortfall. This may also be called a water management drought.

A drought's severity depends on numerous factors, including duration, intensity, and geographic extent as well as regional water supply demands by humans and vegetation. Due to its multi-dimensional nature, drought is difficult to define in exact terms and also poses difficulties in terms of comprehensive risk assessments.

Drought differs from other natural hazards in three ways. First, the onset and end of a drought are difficult to determine due to the slow accumulation and lingering of effects of an event after its apparent end. Second, the lack of an exact and universally accepted definition adds to the confusion of its existence and severity. Third, in contrast with other natural hazards, the impact

of drought is less obvious and may be spread over a larger geographic area. These characteristics have hindered the preparation of drought contingency or mitigation plans by many governments.

5.2.1.2 History

Churchill County lies within Nevada's Northwestern climate division 1. The drought data are reported from 1895 to the present by the National Climatic Data Center (NCDC). In the Northwestern division there were 110 observed months in the time span from 1895—2006 that were rated as Extreme Drought, -4 or less. The major drought years in this division were 1924, 1926, 1928, 1928, 1931, 1934, 1947, 1954, 1955, 1959, 1988, 1992, 1994, and 2001-2004. The worst years were 1992, 2002, and 2003, in which 11 out of 12 months were below –4 with July 1992 being the most severe, peaking out at –6.12.

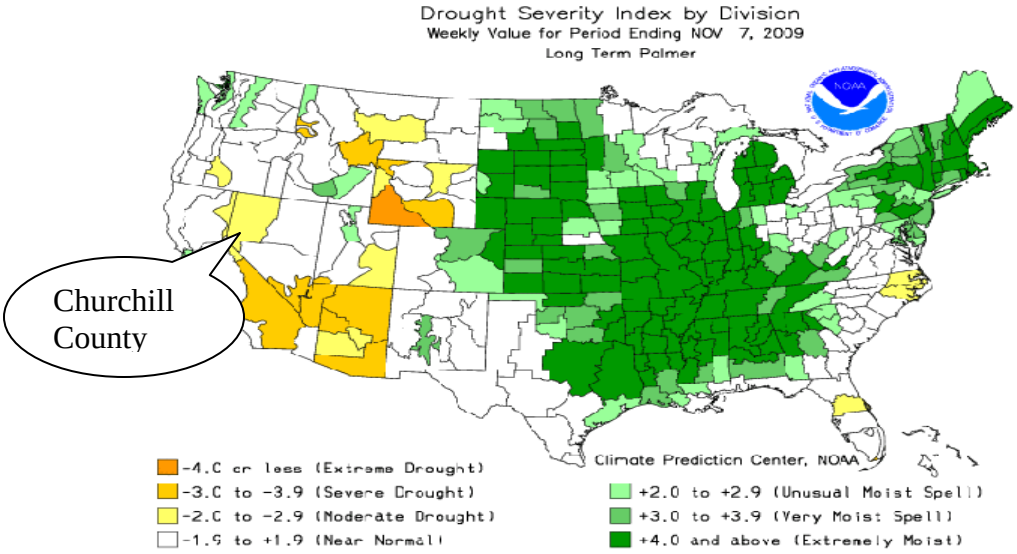
In 2002, 2004, and 2008 the U.S. Department of Agriculture designated all 17 counties in Nevada as drought affected. The U.S. Seasonal Drought Monitor classified the majority of Nevada as being in a D3 extreme drought intensity. Implications from this drought include increased risk of wildfires, water shortages, insect infestations, and crop damages.

5.2.1.3 Location, Extent, and Probability of Future Events

In Churchill County, moderate, severe and extreme drought conditions (D-0 to D4-rated intensities on the U.S. Seasonal Drought Monitor) have persisted over the past five years except for the winter of 2010 to 2011 in which 180% of water run off from the Sierras occurred. Churchill County is dependant on water from other counties delivered through the canal system. This canal system also recharges the ground water aquifer which feed local wells. With decreases in the amount of precipitation the canals would deliver a decreased amount of water as well as decreased water quality. Drought would affect the County economically due to the large amount of water usage from agriculture and the many homes on wells. Wells would need to be modified for a lower ground water table and agriculture would require reduced water usage crops or water delivery systems which would minimize water loss.

The U.S. Seasonal Drought Outlook forecasts that Nevada, including Churchill County, will continue to be affected by drought. However, the longer-term forecasting by the Palmer Drought Severity Index estimates that Churchill County can expect severe or extreme drought at least 10 percent of the time in the future. Please see Figures below.

Figure 5-1: Drought Severity Index



Source USGS; http://www.cpc.ncep.noaa.gov/products/analysis_monitoring/regional_monitoring/palmer.gif

5.2.2 Earthquake

Planning Significance – Churchill Co. -Very High City of Fallon – Very High

5.2.2.1 Nature

An earthquake is a sudden motion or trembling caused by a release of strain accumulated within or along the edge of the earth's tectonic plates. The effects of an earthquake can be felt far beyond the site of its occurrence. Earthquakes usually occur without warning and, after just a few seconds, can cause massive damage and extensive casualties. The most common effect of earthquakes is ground motion, or the vibration or shaking of the ground during an earthquake.

The severity of ground motion generally increases with the amount of energy released and decreases with distance from the fault or epicenter of the earthquake. Ground motion causes waves in the earth's interior, also known as seismic waves, and along the earth's surface, known as surface waves. There are two kinds of seismic waves. P (primary) waves are longitudinal or compressional waves similar in character to sound waves that cause back-and-forth oscillation along the direction of travel (vertical motion). S (secondary) waves, also known as shear waves, are slower than P waves and cause structures to vibrate from side to side (horizontal motion). There are also two kinds of surface waves: Raleigh waves and Love waves. These waves travel more slowly and typically are significantly less damaging than seismic waves.

In addition to ground motion, several secondary hazards can occur from earthquakes, such as surface faulting. Surface faulting is the differential movement of two sides of a fault at the earth's surface. Displacement along faults, both in terms of length and width, varies but can be significant (e.g., up to 20 feet), as can the length of the surface rupture (e.g., up to 200 miles). Surface faulting can cause severe damage to linear structures including railways, highways, pipelines, and tunnels.

Earthquake-related ground failure due to liquefaction is another secondary hazard. Liquefaction occurs when seismic waves pass through saturated granular soil, distorting its granular structure and causing some of the empty spaces between granules to collapse. Porewater pressure may also increase sufficiently to cause the soil to behave like a fluid for a brief period and cause deformations. Liquefaction causes lateral spreads (horizontal movements of commonly 10 to 15 feet, but up to 100 feet), flow failures (massive flows of soil, typically hundreds of feet, but up to 12 miles), and loss of bearing strength (soil deformations causing structures to settle or tip). Liquefaction can cause severe damage to property.

The effects of earthquake waves at the surface can be measured using the Modified Mercalli Intensity (MMI) Scale, which consists of arbitrary rankings based on observed effects, or the Richter Magnitude Scale, a mathematical basis that expresses the effects of an event in magnitude (M).

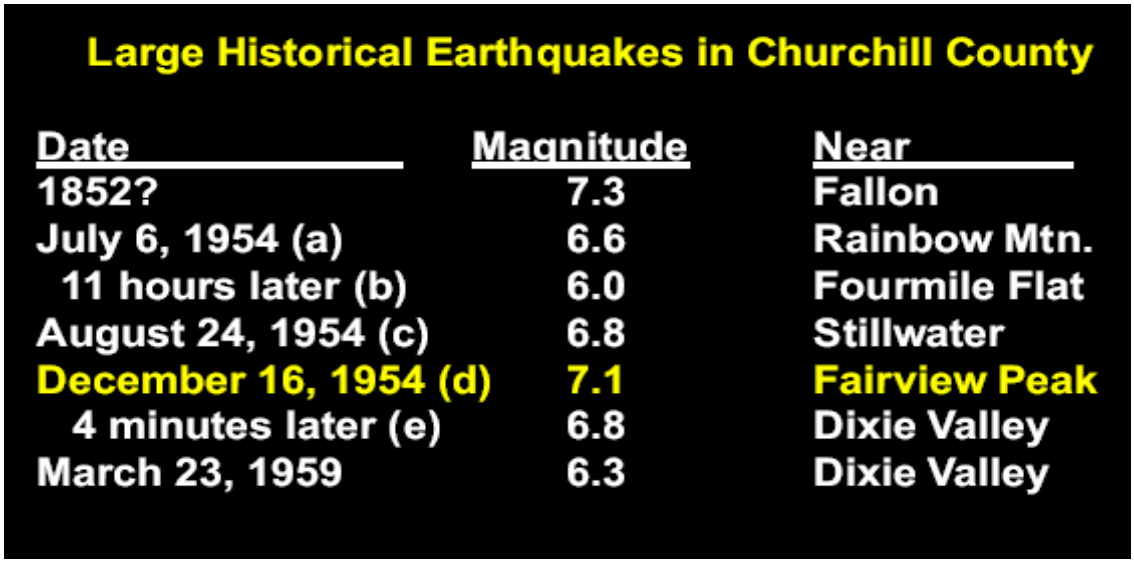
5.2.2.2 History

Nevada is ranked third in the states having the highest number of large earthquakes. The Sierra Nevada-Great Basin seismic belt includes earthquakes along the eastern side of the Sierra

Nevada and appears to be a northern continuation of the Eastern California seismic belt. The Central Nevada seismic belt, shown on the map below, which trends north-south in the west-central part of the state, includes the largest historic earthquakes in Nevada in the 20th century. Churchill County sits within both belts.

The figure below provides the historical earthquakes in Churchill County.

Figure 5-2

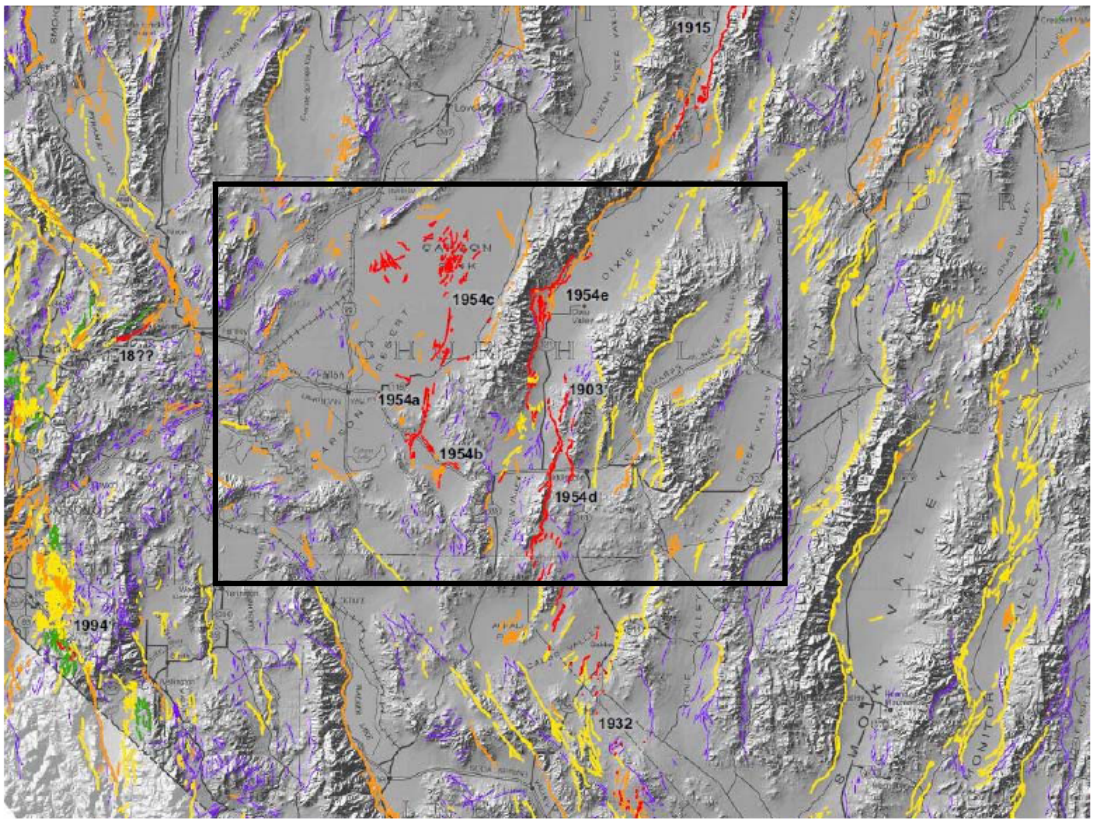


Source: UNR, NBMG 2010

5.2.2.3 Location, Extent, and Probability of Future Events

The location of damage from an earthquake would have the greatest impact in the City of Fallon with the highest population density. The figure below provides a map of the major faults in Churchill. The map in Appendix B, Figure B-9 shows greater detail of the fault lines in Churchill. There are no fault lines within the City of Fallon.

Figure 5-3: Major Faults Churchill County



Source: UNR, NBMG 2010
http://www.nbmg.unr.edu/EQ/Earthquake_Hazards_in_Churchill_County_11February2010.pdf

The Nevada Earthquake Safety Council, in part through the services of the Nevada Bureau of Mines and Geology (NGMG) and the Nevada Seismological laboratory, provides assistance of Earthquake risk assessment and earthquake mitigation activities for the State of Nevada. The Planning Committee will utilize the Nevada Earthquake Risk Mitigation Plan (NERMP) for consideration in identifying mitigation strategies.

The Executive Summary of the NERMP states that Nevada is earthquake country, ranking third in the nation in the number of major earthquakes. Since the 1850s, 62 earthquakes have occurred in Nevada that have had potentially destructive magnitudes of 5.5 (Richter Scale) or greater. Nevada is a national leader in population growth, and the risk of harm and loss from earthquakes increases proportionally with population and development. We can expect earthquakes to continue to occur in Nevada and some of these will strike our growing urban centers and communities.

"The occurrence rates of major historical earthquakes in western Nevada produced 1 ½ to 7 times higher probabilities of having a major earthquake than estimates based on instrumental seismicity and geological data sets." NBMG Open-File Report 03-3, Nevada Bureau of Mines and Geology, 2003. The extent & probability for the City of Fallon is shown in the figure below was provided by the Nevada Bureau of Mines & Geology and is the probability of earthquakes of various magnitudes occurring within 50 years within 50 kilometers. This probability is used for the entire county as 90 percent of the population lives within 50 kilometers of the City.

Figure 5-4: Earthquake Probability

County	% of Probability of magnitude greater than					Rank by Probability
	5.0	5.5	6.0	6.5	7.0	
Fallon	80-90	~60	35	20-25	6-8	5 th highest in the state of NV

Source: Bureau of Mines & Geology, UNR, Estimated Losses from Earthquakes Near NV Communities, 2009

5.2.3 EPIDEMIC

Planning Significance – Churchill Co. –Moderate
City of Fallon - High

5.2.3.1 Nature

A disease is a pathological (unhealthy or ill) condition of a living organism or part of the organism that is characterized by an identifiable group of symptoms or signs. Disease can affect any living organism, including people, animals, and plants. Disease can both directly (via infection) and indirectly (via secondary impacts) harm these living things. Some infections can cause disease in both people and animals. The major concern here is an epidemic, a disease that affects an unexpected number of people or sentinel animals at one time. (Note: an epidemic can result from even one case of illness if that illness is unheard of in the affected population, i.e., smallpox)

Of great concern for human health are infectious diseases caused by the entry and growth of microorganisms in man. Most, but not all, infectious diseases are communicable. They can be spread by coming into direct contact with someone infected with the disease, someone in a carrier state who is not sick at the time, or another living organism that carries the pathogen. Disease-producing organisms can also be spread by indirect contact with something a contagious person or other carrier has touched and contaminated, like a tissue or doorknob, or another medium (e.g., water, air, food).

According to the Centers for Disease Control and Prevention (CDC), during the first half of the twentieth century, optimism grew as steady progress was made against infectious diseases in humans via improved water quality and sanitation, antibiotics, and inoculations (October 1998). The incidences and severity of infectious diseases such as tuberculosis, typhoid fever, smallpox, polio, whooping cough, and diphtheria were all significantly reduced during this period. This optimism proved premature, however, for a variety of reasons, including the following: antibiotics began to lose their effectiveness against infectious disease (e.g., Staphylococcus aureus); new strains of influenza emerged in China and spread rapidly around the globe; sexually transmitted diseases resurged; new diseases were identified in the U.S. and elsewhere (e.g., Legionnaires's disease, Lyme disease, toxic shock syndrome, and Ebola hemorrhagic fever); acquired immunodeficiency syndrome (AIDS) appeared; and tuberculosis (including multidrug-resistant strains) reemerged (CDC, October 1998).

In a 1992 report titled *Emerging Infections: Microbial Threats to Health in the United States*, the Institute of Medicine (IOM) identified the growing links between U.S. and international health, and concluded that emerging infections are a major and growing threat to U.S. health. An emerging infectious disease is one that has newly appeared in a population or that has been known for some time, but is rapidly increasing in incidence or geographical range. Emerging infectious diseases are a product of modern demographic and environmental conditions, such as global travel, globalization and centralized processing of the food supply, population growth and increased urbanization.

In response to the threat of emerging infectious diseases, the CDC launched a national effort to protect the US public in a plan titled *Addressing Emerging Infectious Disease Threats*. Based on

the CDC's plan, major improvements to the US health system have been implemented, including improvements in surveillance, applied research, public health infrastructure, and prevention of emerging infectious diseases (CDC, October 1998).

Despite these improvements, infectious diseases are the leading cause of death in humans worldwide and the third leading cause of death in humans in the U.S. (American Society for Microbiology, June 21, 1999). A recent follow-up report from the Institute of Medicine, titled *Microbial Threats to Health: Emergence, Detection, and Response*, notes that the impact of infectious diseases on the U.S. has only grown in the last ten years and that public health and medical communities remain inadequately prepared. Further improvements are necessary to prevent, detect, and control emerging, as well as resurging, microbial threats to health. The dangers posed by infectious diseases are compounded by other important trends: the continuing increase in antimicrobial resistance; the diminished capacity of the U.S. to recognize and respond to microbial threats; and the intentional use of biological agents to do harm (Institute of Medicine, 2003).

The CDC has established a national list of over 50 nationally reportable diseases. A reportable disease is one that, by law, must be reported by health providers to report to federal, state or local public health officials. Reportable diseases are those of public interest by reason of their communicability, severity, or frequency. The long list includes such diseases as the following: AIDS; anthrax; botulism; cholera; diphtheria; encephalitis; gonorrhea; Hantavirus pulmonary syndrome; hepatitis (A, B, C); HIV (pediatric); Legionellosis; Lyme disease; malaria; measles; mumps; plague; polio (paralytic); rabies (animal and human); Rocky Mountain spotted fever; rubella (also congenital); Salmonellosis; SARS; Streptococcal disease (Group A); Streptococcal toxic-shock syndrome; *Streptococcus pneumoniae* (drug resistant); syphilis (also congenital); tetanus; Toxic-shock syndrome; Trichinosis, tuberculosis, Typhoid fever; and Yellow fever (Centers for Disease Control and Prevention, May 2, 2003).

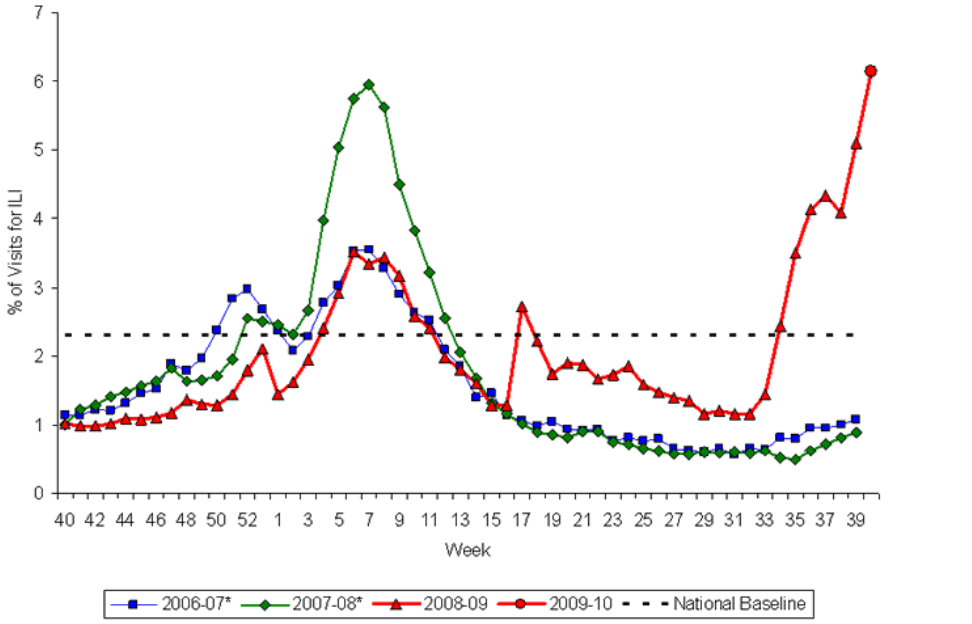
Many other hazards, such as floods, earthquakes or droughts, may create conditions that significantly increase the frequency and severity of diseases. These hazards can affect basic services (e.g., water supply and quality, wastewater disposal, electricity), the availability and quality of food, and the public and agricultural health system capacities. As a result, concentrated areas of diseases may result and, if not mitigated right away, increase, potentially leading to large losses of life and damage to the economic value of the area's goods and services.

5.2.3.2 History

The influenza pandemic of 1918 and 1919, known as the Spanish Flu, had the highest mortality rate in recent history for an infectious disease. More than 20 million persons were killed worldwide, some 500,000 of which were in the U.S. alone (Centers for Disease Control and Prevention, October 1998). More recent incidences of major infectious diseases affecting people in the U.S. include the following:

- **H1N1,** an influenza strain that was first recognized in Mexico and entered the US in Southern California in April 2009. H1N1 was recognized as a world wide pandemic by the World Health Organization in May 2009. The CDC graph below illustrates the number of office visits due to the flu and demonstrates how easily the US medical system can be overwhelmed by a pandemic.

Figure 5-5: Percentage of Visits for Influenza-like Illness (ILI)



*There was no week 53 during the 2006-07 or 2007-08 influenza seasons, therefore the week 53 data point for those seasons is an average of weeks 52 and 1.

Source: U.S. Outpatient Influenza-like Illness Surveillance Network (ILINet), National Summary 2008-2009 and Previous Two Seasons (Posted October 16, 2009, 7:30 PM ET, for Week Ending October 10, 2009)

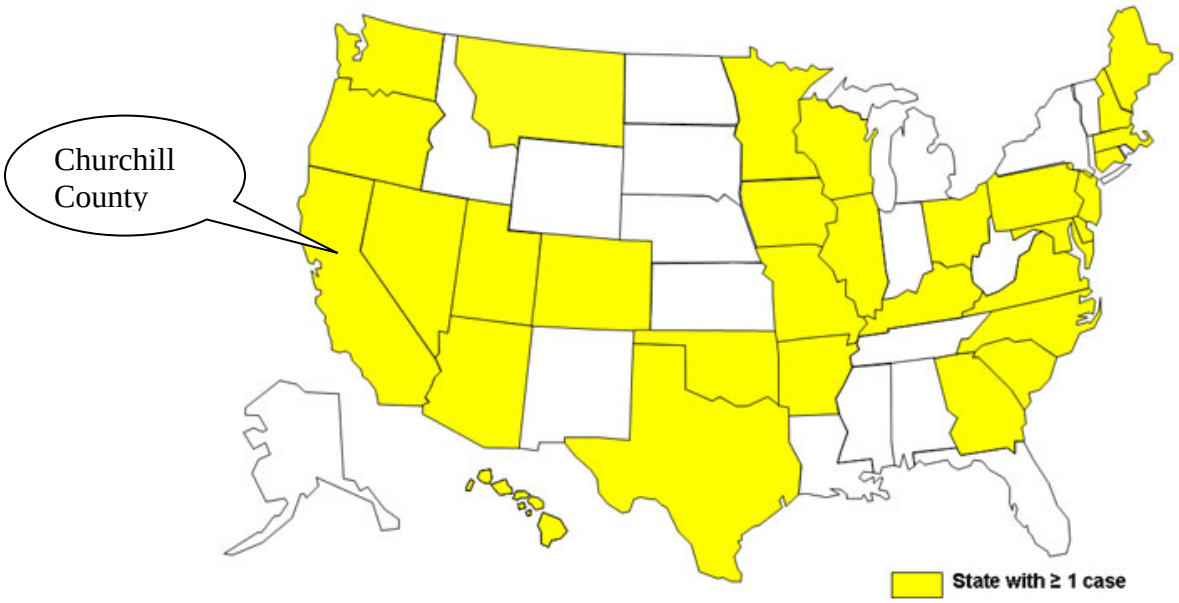
H1N1 varies from other influenzas in that it doesn't seem to affect populations born after 1950 due to that group's immunity to a similar strain. The CDC has taken an aggressive approach to this highly contagious strain and is in the process of inoculating the US public through vaccinations. Although H1N1 has a less than 1% mortality rate due to the high contagion rate this could lead to a significantly higher than normal number of deaths for the 2009-2010 flu season. (Centers for Disease Control and Prevention, October 2009)

- **West Nile Virus (WNV)**, a seasonal infection transmitted by mosquitoes, caused an epidemic which grew from an initial U.S. outbreak of 62 disease cases in 1999 to 4,156 reported cases, including 284 deaths, in 2002. However due to communities' aggressive approach to mosquito control the number of cases dropped to 1356 with 44 deaths in 2008 (Centers for Disease Control and Prevention, October 2009).
- **Severe acute respiratory syndrome (SARS**), which is estimated to have killed 774 and infected 8,098 worldwide. In the U.S., there were 175 suspect cases and 8 confirmed cases all who traveled to other parts of the world, although no reported deaths (Centers for Disease Control and Prevention, October 2009).
- **Norovirus** - CDC estimates that 23 million cases of acute gastroenteritis are due to norovirus infection, and it is now thought that at least 50% of all food borne outbreaks of

gastroenteritis can be attributed to noroviruses (Centers for Disease Control and Prevention, October 2009).

- Escherichia coli **(abbreviated as *E. coli*)** are a large and diverse group of bacteria. Although most strains of *E. coli* are harmless, others can make you sick. Some kinds of *E. coli* can cause diarrhea, while others cause urinary tract infections, respiratory illness and pneumonia, and other illnesses. Experts think that there may be about 70,000 infections with *E. coli* O157 each year in the United States. (Centers for Disease Control and Prevention, October 2009).

Figure 5-6: States Where Persons Infected with the Outbreak Strain of E. coli O157:H7, Live United States, by State March 1, 2009 to June 22, 2009



Centers for Disease Control; http://www.cdc.gov/ecoli/

Table 5-5: Historic Occurrences of Epidemics Registered in Nevada

Date	Details
February 1992	Cholera outbreak confirmed. At least 26 passengers from Aerolineas Argentinas Flight 386 that brought a cholera outbreak to Los Angeles traveled on to Las Vegas, where 10 showed symptoms of the disease. Cholera or cholera-like symptoms developed in 67 passengers of Flight 386.
Spring 2000	Five cases of the measles confirmed. Outbreak identified and confirmed, Clark County Health District (CCHD) Office of Epidemiology (OOE) worked with the Immunization Clinic and the media to alert the community about the prevention of the spread of the disease.
October 2004	Norovirus confirmed at a major public accommodation facility on the Strip. Details regarding the spread of this disease and the exact number affected are still under investigation and pending at time of print of this plan.

April 2009	H1N1 virus confirmed by the WHO as a worldwide epidemic. The CDC is currently working on vaccinating the public for the 2009-2010 flu season.

5.2.3.3 Extent and Probability of Future Events

The probability and magnitude of disease occurrence, particularly an epidemic, is difficult to evaluate due to the wide variation in disease characteristics, such as rate of spread, morbidity and mortality, detection and response time, and the availability of vaccines and other forms of prevention. A review of the historical record (see above) indicates that disease related disasters do occur in humans with some regularity and varying degrees of severity. There is growing concern, however, about emerging infectious diseases as well as the possibility of a bioterrorism attack.

Epidemics constitute a significant risk to the population of Nevada, particularly as it relates to the frequency in which the Churchill County population travels and the proximity of Las Vegas and Reno's tourist population. Of highest concern is in the Reno area, in various entertainment venues, and Reno/Tahoe International Airport. The transient nature of the Washoe County population, coupled with dense population gatherings increase the potential for an epidemic as well as for its spread into neighboring counties such as Churchill.

5.2.3.4 Location

An epidemic in Churchill would affect a regional response requiring coordination among Banner Churchill Community Hospital, Churchill, neighboring counties, state and federal agencies. Segments of the population at highest risk for contracting an illness from a foreign pathogen are the very young, the elderly, or individuals who currently experience respiratory or immune deficiencies. These segments of the population are present within the County.

5.2.3.5 Warning Time

Due to the wide variation in disease characteristics, the warning time for a disease disaster can vary from no time to months, depending upon the nature of the disease. No warning time may be available due to an extremely contagious disease with a short incubation period, particularly if combined with a terrorist attack in a crowded environment. However, there are agencies in place that have capabilities to prevent, detect, and respond to these types of diseases, such as the Centers for Disease Control (CDC), and the Nevada State Health Division (NSHD). This provides a positive, balancing influence to the overall outcome of a disease disaster event.

5.2.4 Flood

Planning Significance – Very High County
Very High Fallon

5.2.4.1 Nature

Flooding as defined by the National Flood Insurance Program is "A general and temporary condition of partial or complete inundation of two or more acres of normally dry land area or of two or more properties from:

- Overflow of inland or tidal waters;
- Unusual and rapid accumulation or runoff of surface waters from any source;
- Mudflow, (a river of liquid and flowing mud on the surfaces of normally dry land areas, as when earth is carried by a current of water, or
- Collapse or subsidence of land along the shore of a lake or similar body of water as a result of erosion or undermining caused by waves or currents of water exceeding anticipated cyclical levels that result in a flood as defined above.

Floodplains are lowlands adjacent to water bodies that are subject to recurring floods. Floods are natural events that are considered hazards only when people and property are affected.

Nationwide, floods result in more deaths than any other natural hazard. Physical damage from floods includes the following:

- Inundation of structures, causing water damage to structural elements and contents.
- Erosion or scouring of stream banks, roadway embankments, foundations, footings for bridge piers, and other features.
- Impact damage to structures, roads, bridges, culverts, and other features from high-velocity flow and from debris carried by floodwaters. Such debris may also accumulate on bridge piers and in culverts, increasing loads on these features or causing overtopping or backwater effects.
- Destruction of crops, erosion of topsoil, and deposition of debris and sediment on croplands.
- Release of sewage and hazardous or toxic materials as wastewater treatment plants are inundated, storage tanks are damaged, and pipelines are severed.

Floods also cause economic losses through closure of businesses and government facilities; disrupt communications; disrupt the provision of utilities such as water and sewer service; result in excessive expenditures for emergency response; and generally disrupt the normal function of a community.

In Churchill County, flooding is most commonly associated with unusually heavy rainfall in the area and can be influenced by both frontal systems out of the Northern Pacific Ocean and tropical storms coming from the South. Due to the aridity of the County, the area is dry except during and shortly after these storms. When a major storm develops, water collects rapidly in a short period of time. As a consequence, flows are of the flash-flood type. Flash floods are generally understood to involve a rapid rise in water level, high velocity, and large amounts of debris, which can lead to significant damage that includes the uprooting of trees, undermining of buildings and bridges, and scouring of new channels. The intensity of flash flooding is a function of the intensity and duration of rainfall, steepness of the watershed, stream gradients, watershed vegetation, natural and artificial flood storage areas, and configuration of the streambed and floodplain.

In areas where alluvial fans are present, the flow paths of flash floods lack definition. Flow depths with alluvial fan flooding are generally shallow with damage resulting from inundation, variable flow paths, localized scour, and the deposition of debris.

Canal and Dam Failures

Dam or canal failures involve unintended releases or surges of impounded water resulting in

downstream flooding. The high-velocity, debris-laden wall of water released from dam failures results in the potential for human casualties, economic loss, lifeline disruption, and environmental damage. Failures may involve either the total collapse of a dam, or other hazardous situations such as damaged spillways, overtopping from prolonged rainfall, or unintended consequences from normal operations. Severe storms with unusually high amounts of rainfall within a drainage basin, earthquakes, or landslides may cause or increase the severity of the failure.

Factors causing failure may include natural or human-caused events, or a combination of both. Dam failures usually occur when the spillway capacity is inadequate and water overtops the dam. Piping, when internal erosion through the dam foundation occurs, is another factor in a dam failure. Structural deficiencies from poor initial design or construction, lack of maintenance or repair, or gradual weakening from aging are factors that contribute to this hazard.

5.2.4.2 History

Figure 5-7

Flooding within the Churchill County portion of the Carson River Watershed is very different from the upstream reaches due to the Lahontan Dam and Reservoir system. Lahontan Dam and Reservoir were not constructed as flood control facilities and are not recognized by FEMA or the State of Nevada as a flood control structure. The reservoir does help alleviate potential flooding impacts to the County provided there is adequate storage available in the reservoir when upstream flooding occurs. Historically, severe flooding of Churchill County and the City of Fallon has been mitigated via pro-active "precautionary releases" of water from the Lahontan Reservoir, orchestrated by the Bureau of Reclamation (BOR). These releases create more reservoir flood storage and the procedures are part of a BOR Emergency Operations Plan for the Lahontan Dam. The decision to conduct precautionary releases is based upon predictive models of weather impacts upon the current snow pack in the Carson River watershed. The major concern for future flooding include: as flood mitigation efforts improve upstream of Lahontan Reservoir, any water flow efficiencies might give less time for the BOR to react, making the precautionary releases less effective.

The flooding from Carson River in the County is typically localized, however many homes and businesses have been constructed within the floodplain area of the Carson River so they can be directly impacted during flood events. Storm water run-off is also a concern particularly during condition when soils are highly saturated. Storm water run-off can be problematic in urban areas to include negative impacts to water quality. There is a general public concern regarding the association of storm water and waste water problems based on health considerations.

The table below provides historical flooding in and near Churchill County and the City of Fallon. Flooding to areas above the Lahontan Dam and outside of Churchill are included as they demonstrate how the Reservoir system can be impacted by floods. Lahontan Reservoir was not built as a flood control facility, it was designed as part of an irrigation system. It can provide some storage of floodwaters if there is storage capacity available.

Table 5-6: Historical Floods in the Carson River Drainage –

Date	Location	Description
3/1907	Fallon	Carson River flood (see picture above). Carson Valley flooded with agriculture and homes impacted.
1/1914	Churchill	Carson River flood. Homes impacted.
3/1928	Churchill	Little damage occurred.
6/1983	Fallon	Late spring runoff produced flood conditions in the Fallon area. Flooding was accentuated by floodwater releases from Lahontan Reservoir.
June 14, 1984	Dayton	Isolated heavy thunderstorms caused flash flooding which closed Highway 50 on the afternoon of the 14th.
March 10, 1995	Storey County, Carson City, Douglas County (Johnson Lane), Lyon County	Six Mile Canyon, between Virginia City and U.S. Highway 50 was closed due to flash flooding caused by very heavy rainfall (about 0.2 to 0.5 in. per hour in the afternoon and evening hours, with moderate rainfall from 10am to 10pm, with 12 hour totals of from 1 to 3.5 inches). In Carson City, flash flooding caused water over three feet deep in many parts of the city, stranding people in their cars all over the City. Over $2 million in damage due to small stream flooding occurred in Douglas County, where 4 homes and 8 businesses were damaged in Genoa. In northern Douglas County, the Johnson Lane area again sustained major flood damage...over $300,000 in damages to homes, drainage structures and roads. Heavy rain in the northern Pine Nut Mountains caused the Hughes Gavel Pit near Dayton to flood, causing about $300,000 damage to the pit and mining equipment. Also, a subdivision about 5 miles northeast of Dayton flooded, causing about $60,000 damage.
June 26, 1995	Carson City and Douglas County	Strong thunderstorms dropped heavy rain across western NV, causing flash flooding in Carson City and Douglas County. Rainfall rates of from 1 to 2 inches per hour were reported by spotters in these areas. About a dozen homes were damaged, as basements, garages and yards were flooded, and many roads were inaccessible. U.S. 395 through Gardnerville was closed for many hours.
Dec. 12, 1995	Carson City, Gardnerville, Dayton	Many roads closed and some businesses flooded due very heavy rainfall.
Feb. 4, 1996	Dayton, Fernley,	Several homes and trailers flooded or needed to be sandbagged. Extensive

Table 5-6: Historical Floods in the Carson River Drainage –

Date	Location	Description
	Stagecoach, Silver Springs	damage to one of Nevada's oldest cemeteries in Dayton.
June 26, 1996	Fallon	A strong, cold low pressure system brought strong thunderstorms to the eastern Sierra. Up to 0.5 inch of rain fell in less than 30 minutes in the Fallon area with resultant widespread urban flooding.
Jan. 1-3, 1997	Carson Basin	Extremely heavy rainfall combined with snow levels above 10,000 feet and complete melt-off of a heavy low-elevation snow pack cause moderate to severe flash flooding and small stream flooding on streams coming out of the mountains throughout the Carson Basin. Churchill County estimated to have sustained $345K in damages (per CWSD).
July 23, 1998	14 Miles N of Fallon (Upsal Hogback)	Just north of Upsal Hogback, about 14 miles north of Fallon, about 60 4th grade children were camped with their teachers on a dry lake bed on a desert survival" overnight camping trip. Their camp was flooded to a depth of 4 to 6 inches at about 10pm from an extremely heavy downpour. There were no injuries, but children and teachers were forced to carry all their soaked camping gear back to their buses over 2 miles away in complete darkness in the middle of the night.
Dec 31, 2005 Jan 1, 2006 New Year's Flood	Northern Nevada	FEMA 1629, New Years Flood – Flooding occurred in Carson City, Douglas Elko, Lyon, Storey, and Washoe Counties.
January 2008	Fernley	Truckee Canal breach caused extensive flooding. FEMA 1738, Fernley Flood

Canal and Dam Failure

The Truckee Canal breach in Fernley occurred in January of 2008. There have been no dam failures.

The following is a list of Dams in Churchill County. Figure B-7 provides a dam location map.

Table 5-7: Dams in Churchill County

Dam	Location
Carson Diversion Dam	Carson River Below Lahontan Dam
Lahontan Dam	Lahontan Reservoir
Sheckler Dam	Sheckler Reservoir
S Line Dam (Coleman Rd. Diversion Dam)	Grimes Pt.
Stillwater Point Dam	Foxtail Lake
Source: http://nevada.hometownlocator.com/features/cultural,class,dam,startrow,151.cfm	

5.2.4.3 Location, Extent, and Probability of Future Events

Flooding, whether localized or basin-wide, is a common phenomenon in the Carson River Watershed and occurs with some regularity over the historic period of record. There is no reason to assume this will change now or in the future. Earlier snowmelt or less overall snow accumulation (in favor of more rain at higher elevations) may occur in response to climate

change. This change could increase the potential flooding and change the historic run-off patterns. However, both localized and regional-scale flooding will continue to be of concern to communities living on or near flood-prone areas. From the USGS website http://nevada.usgs.gov/crfld/floodhistory.cfm#

In 2008 the Carson Water Subconservancy District (CWSD) working with the State of Nevada, FEMA and the Carson River Coalition (a large stakeholder group with representatives from throughout the watershed) developed a regional floodplain management plan. This plan was formally adopted by all five counties along the Carson River. The main goals of the plan are to help protect community members from flooding hazards, reduce flood-related costs, lower flood insurance rates, and to provide proactive strategies for floodplain management that can be applied regionally and locally. The CWSD is a FEMA Cooperating Technical Partner and is working with all of the counties in the watershed, the State of Nevada and other organizations to develop workable, locally approved approaches to reducing flood hazards, providing outreach to community members and developing projects to address incorrect modeling and mapping data on the flood insurance rate maps.

Floods are described in terms of their extent (including the horizontal area affected and the vertical depth of floodwaters) and the related probability of occurrence. Flood studies often use historical records, such as stream flow gages, to determine the probability of occurrence for floods of different magnitudes. The probability of occurrence is expressed as a percentage for the chance of a flood of a specific extent occurring in any given year.

Factors contributing to the frequency and severity of flooding include the following:

- Rainfall intensity and duration (or warm snow in a pineapple express storm)
- Antecedent moisture conditions
- Single event, warm rain on Sierra snowpack, resulting in premature and rapid melting of the snowpack (also known as pineapple express condition)
- Watershed conditions, including steepness of terrain, soil types, amount and type of vegetation, and density of development
- The existence of attenuating features in the watershed, including natural features such as swamps and lakes and human-built features such as dams
- The existence of flood control features, such as levees and flood control channels
- Velocity of flow
- Availability of sediment for transport, and the erodibility of the bed and banks of the watercourse

These factors are evaluated using (1) a hydrologic analysis to determine the probability that a discharge of a certain size will occur, and (2) a hydraulic analysis to determine the characteristics and depth of the flood that results from that discharge.

The magnitude of flood used as the standard for floodplain management in the United States is a flood having a 1 percent probability of occurrence in any given year. This flood is also known as the 100-year flood or base flood. The most readily available source of information regarding the 100-year flood is the system of Flood Insurance Rate Maps (FIRMs) prepared by FEMA. These maps are used to support the National Flood Insurance Program (NFIP). The FIRMs show 100-year floodplain boundaries for identified flood hazards. These areas are also referred to as

Special Flood Hazard Areas (SFHAs) and are the basis for flood insurance and floodplain management requirements. The FIRMs also show floodplain boundaries for the 500-year flood, which is the flood having a 0.2 percent chance of occurrence in any given year. FEMA has prepared a FIRM for Churchill County, dated 2009 and this was used by the Churchill County Flood Plain Manager to create the flood map, see Appendix B, Figure B-5 which uses the 100-year flood as a basis and provides the areas susceptible to flood.

The river below the Lahontan Dam is very different than the reaches above the reservoir due to the Newlands Irrigation Project and associated irrigation canals. Much of the flooding problems in this area is the result of alluvial fan flooding and storm water drainage issues. Bafford Bridge has been identified by Churchill County as a flood hazard due to low capacity and sediment clogging. The river corridor is highly urbanized. Approximately 50% of the property along the river has homes in close proximity to the channel.

Churchill County in and around the City of Fallon has a .8cm slope making it very flat and therefore a flood impacts a large area. Additionally, Churchill County (near Fallon) and the City of Fallon have a high water table in some cases up to 1 ft. underground. In the case of flooding the slope of the underground is changed from its normal flow towards Carson River to flooding away from the river. This impacts the wells, septic system leach fields and sewer systems and results in pesticides, fertilizers and hormones from agriculture and sewer system water ending up in shallow wells.

Figure 5-8: Homes along Carson River in Fallon

Source: CWSD

Canal or Dam Failure

There is also concern regarding flooding from the Truckee Canal System originally built in 1903. A flood in the City of Fernley occurred in 2008 due to heavy storm waters breaching the banks of the canal system. The Lahontan Valley Environmental Alliance (LVEA) is a non profit organization which was created in 1993 and is comprised of representatives from Churchill County, City of Fallon, City of Fernley, Truckee-Carson Irrigation District and the Stillwater and Lahontan Conservation Districts. The alliance works to educate the public and coordinate efforts to protect the natural resources of the communities within the Newlands Project and has been assisting Churchill County and TCID with addressing the flooding hazards associated with the

Truckee Canal. Reducing the flow in the canal results in a shortage of water to the Lahontan Reservoir and does not allow the aquifers to recharge. These aquifers provide the main source of water for local wells (domestic and quasi municipal wells).

The Planning Committee felt there was a high rate of probability for canal failure within Churchill County and the City of Fallon due to the Fernley Canal failure in 2008. The reason for the failure is still under investigation but may have been due to animal burros. Churchill County has requested the Army Corp of Engineers complete a detailed study of the canals and provide the necessary maintenance. A map is included in Appendix B of the canals however the potential areas for levee breaks will not be available until after this plan is completed. Lidar imaging is currently underway which will allow a study of the areas of impact for a levee break. There is not currently an impact analysis. The Fernley Canal failure can be used as a basis for evaluating the extent of a failure which would include a few hundred homes, the probability is considered high by the committee.

All the dams except for the Lahontan dam feed into the canal system and failure would direct water into the canal system which would provide a low extent of damage. A failure of the Lahontan dam however would be extensive along the Carson River drainage and impact the entire City of Fallon and the majority of the residents of Churchill as the major highways would be impacted. The Committee felt there was a low rate of probability for dam failure. A map is included in Appendix B with dam locations.

NFIP

Churchill County participates in the NFIP and has a CRS rating of 10. Although the County does not participate in the CRS the Building Department works closely with the public to ensure that construction standards are met and there is a good understanding of impacts from flooding and measures to minimize impacts. The County and City does not permit building in the floodway.

Repetitive Loss

The state is working with a variety of stakeholders to reduce the number of properties considered to be repetitive loss properties and to prevent severe repetitive loss properties from developing. The CWSD as a FEMA CTP is working to help identify and reduce impacts associated with repetitive loss properties

FEMA's Severe Repetitive Loss (SRL) Program was designed in 2004 to provide funding to reduce or eliminate the long-term risk of flood damage to SRL structures insured under the National Flood insurance Program (NFIP).

An SRL property is defined as a residential property that is covered under an NFIP flood insurance policy and:

(a) That has at least four NFIP claim payments (including building and contents) over $5,000 each, and the cumulative amount of such claims payments exceeds $20,000; or

(b) For which at least two separate claims payments (building payments only) have been made with the cumulative amount of the building portion of such claims exceeding the market value of the building.

For both (a) and (b) above, at least two of the referenced claims must have occurred within any ten-year period, and must be greater than 10 days apart.

Nevada has no severe repetitive loss properties. FEMA's Repetitive Flood Claims (RFC) grant program was authorized to assist States and communities in reducing flood damages to insured properties that have had one or more claims to the National Flood Insurance Program (NFIP). Table 3-20 below is a summary of the number of repetitive loss cases and claims paid due to floods for communities in the State of Nevada. Churchill County has one property that qualifies.

Table 5-8: Summary of Repetitive Loss Due to Flood for Communities in the State of Nevada

Community Name	*Number of Properties*	*Total Claims Paid*
Churchill County	1	$6,997
Clark County	4	$103,087
Carson City	3	$99,799
Douglas County	4	$216,889
City of Las Vegas	3	$265,640
City of Reno	11	$2,089,412
City of Sparks	23	$5,685,185
Washoe County	8	$687,794

Note: The data contained on this report contains repetitive loss properties only. It does not include mitigated properties. Data as of 7/31/2009

Source: NV State Flood Plain Manager

5.2.5 Hazardous Materials Events

Planning Significance – High for County and Moderate for Fallon

5.2.5.1 Nature

Hazardous materials may include hundreds of substances that pose a significant risk to humans. These substances may be highly toxic, reactive, corrosive, flammable, radioactive, or infectious. Hazard materials are regulated by numerous Federal, State, and local agencies including the U.S. Environmental Protection Agency (EPA), U.S. Department of Transportation (DOT), National Fire Protection Association, FEMA, U.S. Army, and International Maritime Organization.

Hazardous material releases may occur from any of the following:

- Fixed site facilities (such as refineries, chemical plants, storage facilities, manufacturing, warehouses, wastewater treatment plants, swimming pools, dry cleaners, automotive sales/repair, and gas stations)
- Highway and rail transportation (such as tanker trucks, chemical trucks, and railroad tankers)
- Air transportation (such as cargo packages)
- Pipeline transportation (liquid petroleum, natural gas, and other chemicals)

Unless exempted, facilities that use, manufacture, or store hazardous materials in the United States fall under the regulatory requirements of the Emergency Planning and Community Right to Know Act (EPCRA) of 1986, enacted as Title III of the Federal Superfund Amendments and Reauthorization Act (42 USC 11001–11050; 1988). Under EPCRA regulations, hazardous materials that pose the greatest risk for causing catastrophic emergencies are identified as Extremely Hazardous Substances (EHSs). These chemicals are identified by the EPA in the *List of Lists – Consolidated List of Chemicals Subject to the Emergency Planning and Community Right-to-Know Act (EPCRA) and Section 112 of the Clean Air Act*. Releases of EHSs can occur during transport to and from fixed site facilities. Transportation-related releases are generally more troublesome because they may occur anywhere, including close to human populations, critical facilities, or sensitive environmental areas. Transportation-related EHS releases are also more difficult to mitigate due to the variability of locations and distance from response resources.

In addition to accidental human-caused hazardous material events, natural hazards may cause the release of hazardous materials and complicate response activities. The impact of earthquakes on fixed facilities may be particularly serious due to the impairment or failure of the physical integrity of containment facilities. The threat of any hazardous material event may be magnified due to restricted access, reduced fire suppression and spill containment, and even complete cut-off of response personnel and equipment. In addition, the risk of terrorism involving hazardous materials is considered a major threat due to the location of hazardous material facilities and transport routes throughout communities and the frequently limited antiterrorism security at these facilities.

On behalf of several Federal agencies including the EPA and the DOT, the National Response Center (NRC) serves as the point of contact for reporting oil, chemical, radiological, biological, and etiological discharges into the environment within the United States.

5.2.5.2 History

The Nevada Division of Environmental Protection reports that since 1999, oil and chemical spills have occurred within the County as shown in the table below.

Table 5-9: Hazardous Material Release in Churchill County

Location	Date	Substance	Description
EW Site 70 in Dixie Valley NAS Fallon	2/11/2005	Diesel Fuel	Mechanical malfunction of diesel generator caused >25 gal. of diesel to be released. Soil excavated.
11 Miles N. of Fallon, Kennemetal Corp	2/12/2005	Neutralization Water	200 gal. from equipment failure.
Hanger 1 NAS Fallon	3/9/2005	Aircraft Fuel	>50 gal. of aircraft fuel spilled from tank incorrectly stored.
Stillwater Geothermal Plant	3/14/2005	Fuel	Soil around Turbine/Generators contaminated by an unknown amount of fuel.
NAS Fallon	5/31/2005	Diesel	150 gal. leaked into soil from tank.
US 95 27 Miles South of Fallon	3/9/2006	Diesel	70 gal. from traffic accident
US 50 West of Fallon	8/21/2007	Diesel	200-300 cy. from parked vehicles over time
Electronic Warfare Site Dixie Valley	9/12/2007	Diesel Fuel	>15 gal. from failed "O" ring caused diesel to spew.
Transport Yard NAS Fallon	5/29/2008	Sewage	1000 gal. of sewage release when sewage line backed up.
Unknown	6/13/2008	Diesel	1400 gal. of fuel release mid air jet collision.
Railroad Fuel Off-Load Facility, Hazen	7/18/2008	Diesel Fuel	79 gal. spill due to operator error.
W. NV Railroad Park, Hazen	3/26/2009	Diesel Fuel	>15 gal. from pulled hose of rail car.
11 Miles N. of Fallon, Kennemetal Corp	7/19/2010	Effluent Water	17,250 gal released which contain gypsum and iron from leaking filter overnight
Hanger 5, NAS Fallon	10/6/2010	Diesel Fuel	Unknown qty. historic releases from aircraft parked near hanger. Detection from soil samples.
Fallon			
US 50 @ York	8/29/2005	Diesel Fuel	100 gal. spill from ruptured saddle tank.
MP 12.11 of Fallon Lead Industrial	8/29/2005	Diesel Fuel	50 gal. spill from traffic accident.
Former Standard Industrial Minerals Site	Unknown	Arsenic	400,000 cy arsenic in barite tails and ore from mil
283 Sherman St.	10/9/2006	Diesel Fuel	700-800 gal. spill from tank rupture.
Bus Barn Sherman Way	11/14/2006	Heating Oil	900 gal. heating oil from tank rupture
Pine Grove Sewage Plant	1/7/2007	Sewage	80-100 gal partially treated sewage release unknown
A&K Hazen Sand & Gravel off US 50	8/3/2007	Diesel	500-700 gal. spill because operator error during filling
McDonalds	10/2/2007	Grease	200 gal. grease released into street & sewer during a

Table 5-9: Hazardous Material Release in Churchill County

Location	Date	Substance	Description
			transfer from McDonalds to truck
Transport Station Carson Rd.	3/19/2008	Sewage	200 gal. of sewage release when truck backed over cleanout station and pump came on.
Fallon Water Treatment Plan	8/23/2010	Hydrochloric Acid	1000 gal released from storage tank into chemical storage room
Fallon Water Treatment Plan	8/31/2010	Hydrochloric Acid	330 gal released from spill during off loading.

5.2.5.3 Location, Extent, and Probability of Future Events

The Nevada Department of Public Safety shows 133 facilities that are permitted to handle hazardous waste within the County all but 10 are listed in the City of Fallon; and none are active and/or archived Superfund sites. The larger fixed facilities that pose a higher risk to the County and City include the Water Treatment Plants for Churchill and the City of Fallon, the Oil Re-Refinery, the Western Nevada Rail Park and the Asphalt Batch Plants. While several of the small, fixed facilities (e.g., body shops) have varying uses of hazardous chemicals, in general these facilities do not pose a significant risk to the County or the City. The Naval Air Station at Fallon historically shows releases of fuel.

In addition to fixed facilities, hazardous material events have the potential to occur along Interstate 50, Interstate 80 and State Route 95. The trucks that use these transportation arteries commonly carry a variety of hazardous materials including gasoline, other crude oil derivatives, and other chemicals known to cause human health problems.

Comprehensive information on the probability and magnitude of hazardous material events from all types of sources (such as fixed facilities or transport vehicles) is not available. Wide variations among the characteristics of hazardous material sources and among the materials themselves make such an evaluation difficult. While it is beyond the scope of this HMP to evaluate the probability and magnitude of hazardous material events in the County in detail, it is possible to determine the exposure of population, buildings, and critical facilities should such an event occur. Areas at risk for hazardous material events include any area within a 1-mile radius of Interstate 50, Interstate 80 and State Route 95 and EHS fixed facilities, which are within the City of Fallon area, see Appendix B, Figure B-8 & B-9.

5.2.6 Infestation

Planning Significance – Churchill County – Low and City of Fallon – Very Low

5.2.6.1 Nature

An "invasive species" is defined as a species that is:

1) Non-native (or alien) to the ecosystem under consideration and
2) Whose introduction causes or is likely to cause economic or environmental harm or harm to human health.

Invasive species can be plants, animals (including aquatic species) and other organisms (e.g., microbes). Source: United States Dept. of Agriculture, National Agriculture Library (10/5/2007)

Infestations impact Nevada's economy through the destruction of crops and natural resources which also impacts tourism. Some of the plant infestations are highly flammable and assist in the spread of wildfires. Human actions are the primary means of introduction and spread of invasive species.

5.2.6.2 History

The following noxious weeds currently can be found in Churchill County; Yellow Starthistle – Centaurea solstilitalis and Diffuse Knapweed – Centaurea diffusa, Russian Knapweed – Acroptilon repens, and Perennial Pepperweed – Lepidium latifolium. However this may change in the near future and therefore all noxious weeds are listed below. This information was found in the Enhanced Nevada State Hazard Mitigation Plan.

The Nevada Department of Agriculture monitors the introduction and spread of noxious weeds in the state. They have developed a categorization scheme for control of noxious weeds with Category "C" being the most widespread and subject to active eradication. Below is the Nevada Department of Agriculture's Nevada Noxious Weed List as designated by application of NRS 555.

NEVADA NOXIOUS WEED LIST

NRS 555.130 Designation of noxious weeds. The State Quarantine Officer may declare by regulation the weeds of the state that are noxious weeds, but a weed must not be designated as noxious which is already introduced and established in the State to such an extent as to make its control or eradication impracticable in the judgment of the State Quarantine Officer.

NAC 555.010 Designation and categorization of noxious weeds. (NRS 555.130)

The plants listed below are designated noxious weeds and categorized as follows:

- **Category A weeds** are generally not found in or limited in distribution throughout the State. Such weeds are subject to active exclusion from the State and active eradication wherever found and active eradication from the premises of a dealer of nursery stock.
- **Category B weeds** are generally established in scattered populations in some counties of the State. Such weeds are subject to active exclusion where possible and active eradication from the premises of a dealer of nursery stock.
- **Category C weeds** are generally established and widespread in many counties of the State and are subject to active eradication from the premises of a dealer of nursery stock.

Table 5-10. Noxious Weeds

Category A Weeds:			
African rue	(*Peganum harmala*)	Iberian starthistle	(*Centaurea iberica*)
Austrian fieldcress	(*Rorippa austriaca*)	Malta starthistle	(*Centaurea melitensis*)
Black henbane	(*Hyoscyamus niger*)	Mayweed chamomile	(*Anthemis cotula*)
Camelthorn	(*Alhagi pseudalhagi*)	Mediterranean sage	(*Salvia aethiopis*)
Common crupina	(*Crupina vulgaris*)	Perennial sowthistle	(*Sonchus arvensis*)
Common St. Johnswort Crimson fountain grass	(*Hypericum perforatum*) (*Pennisetum setaceum*)	Purple loosestrife	(*Lythrum salicaria, L. virgatum* & cultivars)
Dalmatian toadflax	(*Linaria dalmatica*)	Purple starthistle	(*Centaurea calcitrapa*)
Dyer's woad	(*Isatis tinctoria*)	Rush skeletonweed	(*Chondrilla juncea*)
Eurasian watermilfoil	(*Myriophyllum spicatum*)	Spotted knapweed	(*Centaurea maculosa*)
Giant reed	(*Arundo donax*)	Squarrose knapweed	(*Centaurea virgata*)
Giant salvinia	(*Salvinia molesta*)	Sulfur cinquefoil	(*Potentilla recta*)
Goatsrue	(*Galega officinalis*)	Swainsonpea	(*Sphaerophysa salsula*)
Houndstongue	(*Cynoglossum officinale*)	Syrian beancaper	(*Zygophyllum fabago*)
Hydrilla	(*Hydrilla verticillata*)	Yellow starthistle	(*Centaurea solstitialis*)
		Yellow toadflax	(*Linaria vulgaris*)

Category B Weeds:			Category C Weeds:	
African mustard	(*Brassica tournefortii*)		Canada thistle	(*Cirsium arvense*)
Diffuse knapweed	(*Centaurea diffusa*)		Hoary cress	(*Cardaria draba*)
Horsenettle	(*Solanum carolinense*)		Johnsongrass	(*Sorghum halepense*)
Leafy spurge	(*Euphorbia esula*)		Perennial pepperweed	(*Lepidium latifolium*)
Medusahead	(*Taeniatherum caput-medusae*)		Poison-hemlock	(*Conium maculatum*)
Musk thistle	(*Carduus nutans*)		Puncturevine	(*Tribulus terrestris*)
Russian knapweed	(*Acroptilon repens*)		Salt cedar (tamarisk)	(*Tamarix* spp.)
Scotch thistle	(*Onopordum acanthium*)		Spotted water hemlock	(*Cicuta maculata*)
Silverleaf nightshade	(*Solanum elaeagnifolium*)			

Other invasive plants that are too widely distributed in Nevada to be included in the noxious weed list but present problems in Nevada are listed below:

- *Bromus tectorum L. or Cheatgrass* is an annual grass that forms tufts up to 2 feet tall. The leaves and sheathes are covered in short soft hairs. The flowers occur as drooping, open, terminal clusters that can have a greenish, red, or purple hue. These annual plants will germinate in fall or spring (fall is more common) and senescence usually occurs in summer. Cheatgrass invades rangelands, pastures, prairies, and other open areas. Cheatgrass has the potential to completely alter the ecosystems it invades. It can completely replace native vegetation and change fire regimes. It occurs throughout the United States and Canada, but is most problematic in areas of the western United States with lower precipitation levels such as Nevada. Cheatgrass is native to Europe and parts of Africa and Asia. It was first introduced into the United States accidentally in the mid 1800s.

- *Bromus rubens L. or Red brome:* In the North American region red brome is reported to be invasive because it faces low herbaceous competition. Once established, it has the potential to compete with other grasses. The accumulation of litter and necromass has the potential to increase fire frequency in the desert. Red brome-fueled fires result in the loss of native perennial species in invaded areas, resulting in disturbed areas that are ideal for increased growth of red brome.

- *Lepidium latifolium or Tall White Top or Pepperweed*. The robust, spreading roots and numerous seeds of this perennial make control difficult to impossible. It is found in waste places, wet areas, roadsides, ditches and croplands, including alfalfa fields. It can be transported in water ways or hay bales.

Animal infestations - Insects

The following is a list of invasive insect species infestations currently affecting Nevada:

- *Africanized honey bees:* Imported and bred with European honey bees to increase honey production in South America. The Africanized honey bees are more aggressive than European honeybees with a negative impact on the honey production industry.

- *Scolytus schevyrewi or Bark Beetle* came from Asia. It was first collected in insect traps in Aurora Colorado. The beetle infests and breeds in elm trees stressed by drought.

- *Solenopsis Invicta or Fire Ants:* About 1930, the light fire ant was introduced from South America into the Mobile area, and has since spread to its current range. The ants nest in the soil of open areas, pastures and agronomic fields, but are found occasionally in wooded areas. Mounds are generally dome-shaped in contrast to those of other fire ant species, and the sting, characterized by an intense burning sensation, is more severe. A pustule (not seen in the sting of other species) is formed at the sting site in a day or so, which may become infected. Sensitive individuals can swell up as a result of stings and occasionally die. The ants have a serious impact on agriculture since the hardened mounds interfere with the mechanical cultivation of fields and the ants' painful stings interfere with livestock grazing and the harvesting of crops by farm workers.

Mormon crickets are flightless, ground dwelling insects native to the western United States. They eat native, herbaceous perennials (forbs), grasses, shrubs, and cultivated forage crops, reducing feed for grazing wildlife and livestock. In large numbers, their feeding can contribute to soil erosion, poor water quality, nutrient depleted soils, and potentially cause damage to range and cropland ecosystems. Drought encourages Mormon cricket outbreaks, which may last several years (historically 5 to 21 years) and cause substantial economic losses to rangeland, cropland, and home gardens.

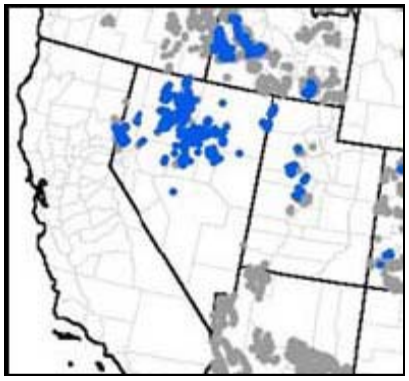


Figure 5-9. Regional Distribution of Mormon Crickets, August 2005

(blue = high density, gray =low density)

Source: University of Nevada, Cooperative Extension – Identification and Management of Mormon Crickets fact sheet 06-16

Animal infestations – aquatic species

Aquatic species that have become a particular concern in Nevada in recent years are: zebra mussels, quagga mussels, Asian clams, and New Zealand mud snails.

Zebra mussels were first found at Lake Mead in 2004 and quagga mussels were found there in 2007. Since that time, the population has exploded, now numbering in the trillions. Both mussels are nuisance invasive species that reproducing quickly and in large numbers. They are biofoulers that obstruct pipes in municipal and industrial raw-water systems, requiring millions of dollars annually to maintain. They produce microscopic larvae that float freely in the water column, and thus can pass by screens installed to exclude them. Monitoring and control of these mussels cost millions of dollars annually. As filter feeders, zebra and quagga mussels remove suspended material from the habitat in which they live. This includes the planktonic algae that are the primary base of the food web. Thus these mussels may completely alter the ecology of water bodies in which they invade. As yet no quagga or zebra mussels have been found in Lake Tahoe or any other northern Nevada lakes and reservoirs but zebra mussels have been found in a northern California reservoir southeast of San Francisco, and a UNR reaearcher has determined that Lake Tahoe water can support these species. Proactive measures are being taken by a number of groups to prevent the spread of these species into Lake Tahoe and the Truckee watershed.

For the past two years the Tahoe Resource Conservation District's invasive species program has included a boat inspection effort in the Tahoe Basin to prevent the introduction of quagga and zebra mussels into the area.

The Truckee Meadows Water Authority is funding a new program with more than $231,000 from the Truckee River Fund, money collected from utility bills to pay for projects and protect the Truckee River. In spring 2010 the program efforts will include monitoring lakes and reservoirs within the Truckee River system for the presence of adult or juvenile mussels. A program to inspect boats launching into at least one lake, such as Boca Reservoir, should also begin this spring and will later be expanded.

The Asian clam is a relatively new aquatic invasive species that is becoming established in Lake Tahoe. Asian clams can impact Lake Tahoe's environment by:

- Releasing nitrogen and phosphorus to the lake, resulting in algal blooms.
- Negatively impacting drinking water by clogging intake pipes.
- Littering beaches with their sharp shells, negatively impacting recreation.

There is an ongoing current project in 2010 by the Tahoe Resource Conservation District to physically remove Asian clams from south shore areas of Lake Tahoe and install large plastic bottom barrier sheets to cover and terminate Asian clam populations by reducing oxygen and food availability.

New Zealand Mudsnail *Potamopyrgus antipodarum*

The New Zealand mudsnail is a nuisance aquatic species now reported in a few Nevada streams along the periphery of the state (see map in Figure 3-21). It is reported in all western states, except New Mexico and is listed as an invasive species in California. It reproduces rapidly and competes for food with native gastropods and other species and is detrimental to trout populations because of its lack of nutritional value. It is not yet a huge problem but is being monitored in the state and may become more of a problem in the future.

5.2.6.3 Location, Severity and Probability of Future Events

Nevada Division of Forestry is currently funding a GIS data set project with the Nevada Department of Agriculture and the Weed Management Program to provide better mapping for all of Nevada. This will not be available until 2013 and should be included in the next update of this plan. In 2009, the Nevada Natural Heritage Foundation developed limited maps for the State. These maps showed Diffuse Knapweed and Tall White Top/Perennial Pepperweed along the western portion of Highway 80, in the Truckee Canal and in Still Water and Russian Knapweed and Yellow Starthistle near Fallon. The Nevada Division of Forestry provided a map of Cheat Grass (due to its high fire hazard) and this is provided in Appendix B, Figure B-The Highway 80 corridor provides transportation of weed seed and the area around Fallon is agricultural land with water as well as a transportation corridor from Highway 50. The severity of noxious weed infestations is continuously monitored by the State Department of Agriculture's A, B, C categorization of noxious weeds described in the previous section. There is currently no known infestations of insects or aquatic species however the infestation of insects could affect the agricultural crops around the Fallon area and aquatic species could affect the Lahontan Reservoir, Carson River and the canals. The probability for infestations causing damage is low in the County and very low in the City of Fallon.

The Nevada Hazard Mitigation Planning Subcommittee agreed that plant, insect, and aquatic organism infestations will continue to occur throughout the state as recreation and commerce continue to move people and property across state lines. Cooperative efforts are necessary among state, federal, agencies and other interested regional groups to implement programs to control and mitigate the effects of infestations on all aspects of the state's environment and economy.

5.2.7 Severe Weather

Planning Significance – County Moderate
City of Fallon High

5.2.7.1 Nature

Thunderstorms, hailstorms, tornadoes, windstorms, and winter storms were combined into the category of severe weather. Thunderstorms are further defined due to the numerous threats associated with them.

Thunderstorms:

Thunderstorms are formed from a combination of moisture, rapidly rising warm air, and a force capable of lifting the air, such as warm and cold fronts or mountainous terrain. A thunderstorm produces lightning, thunder, and rainfall and can develop in just minutes. Thunderstorms may occur singly, in clusters, or in lines. As a result, it is possible for several thunderstorms to affect one location in the course of a few hours. The main threats from thunderstorms are hail, wildfires, deadly lightning, tornadoes, flash floods, and downburst winds. Flash floods and wildfires are detailed in this plan.

Hailstorms:

Hail is a form of solid precipitation which consists of balls or irregular lumps of ice, that are individually called hail stones. Hail stones consist mainly of water ice and measure between 0.20” and 6.00” (5 and 150 millimeters) in diameter, with the larger stones coming from severe and dangerous thunderstorms. Hail is possible with most thunderstorms as strong rising air currents in the thundercloud transport moisture laden air well above the freezing level converting super-cooled water vapor into hail stones. The stronger the updraft into the thunderstorm, the longer these initially small hails stones stay suspended in the storm, allowing them to grow to in size to the point where they eventually become too heavy for the updraft to keep them aloft, and they fall to the surface.

Tornadoes:

A tornado is a violent, rotating column of air which is in contact with both the surface of the earth and a thunderstorm cloud. Tornadoes come in many sizes but are typically in the form of a visible condensation funnel, whose narrow end touches the earth and is often encircled by a cloud of debris. Most tornadoes have wind speeds between 65 mph and 110 mph, are approximately 250 feet across, and travel less than a mile before dissipating. Some attain wind speeds of more than 300 mph, stretch more than a mile across, and stay on the ground for dozens of miles.

Downburst Winds:

A downburst is created by an area of significantly rain-cooled air that, after hitting ground level, spreads out in all directions producing strong winds. Unlike winds in a tornado, winds in a downburst are directed outwards from the point where it hits land or water. Dry downbursts are

associated with thunderstorms with very little rain, while wet downbursts are created by thunderstorms with high amounts of rainfall. Downburst winds are often termed microbursts, macrobursts, or outflow thunderstorm winds. Most downburst winds that impact the County occur as dry downbursts due to the high cloud bases of the associated thunderstorms, which allows for much of the rainfall to evaporate before reaching the ground. They are also usually microbursts compared to macrobursts since the area affected is typically less than 2.5 miles. Macrobursts do occur in the region when individual thunderstorm cells organize into a line or cluster, but are less common. Downburst winds are typically 35 to 75 mph, but can exceed over 100 mph in rare cases.

Downburst winds typically damages fences, roofs, weakened structures, trees, and power lines. Downbursts do pose a significant risk to aviation, especially to aircraft taking off and landing due to strong winds that change direction over very short distances. In addition, small aircraft on the ground can incur damage if not secured. Downburst winds do pose a significant risk to new lightning induced wildfire starts, allowing small fires to grow quickly. During periods of drought, dust storms result from downburst winds and cause visibilities to drop below ½ mile, creating hazardous driving conditions. Downburst winds from thunderstorms are common in Churchill County from late spring through early fall.

Down-slope Wind Storms:

Winds are horizontal flows of air that blow from areas of high pressure to areas of low pressure. Wind strength depends on the difference between the high- and low-pressure systems and the distance between them. Therefore, a strong pressure gradient results from a large pressure difference over short distance between places and causes strong winds.

Strong and/or severe winds often precede or follow frontal activity, including cold fronts, warm fronts, and dry lines. Down-slope wind storms are common in Churchill County during the winter months when winter storms approach the Sierra. Strong winds ahead of a cold front are ducted down to the surface due to mountain waves, enhancing wind speeds that are often stronger than Down-slope wind storms seen in the rest of the United States. Down-slope winds in the lee of the Sierra typically produce sustained southwest winds of 30 to 50 mph with gusts to 70 mph. During the strongest down slope wind storms, winds can exceed over 100 mph and last numerous hours.

Down-slope wind storms and can overturn mobile homes, tear roofs off of houses, down fences, topple trees, snap power lines, shatter windows, and sandblast paint from cars. Other associated hazards include utility outages, arcing power lines, and dust storms.

In addition to strong and/or severe winds caused by large regional frontal systems, locally strong winds caused from the funneling of winds through mountain peaks or drainages do occur. Areas impacted by these local winds are much smaller in scale, although wind speeds can be equally as strong as those caused by large scale weather systems.

Winter Storms:

Winter storms can bring heavy rain, snow, high winds, extreme cold, and freezing rain to the region. In Nevada, winter storms are massive low-pressure weather systems originating in the North Pacific Ocean that sweep across the western states. Winter storms can also plunge southward from arctic regions and drop heavy amounts of snow and ice. The severity of winter storms is generally minor. However, a heavy accumulation of snow or ice can create hazardous

conditions. Additionally, a large winter storm event can also cause exceptionally high rainfall that persists for days, resulting in heavy flooding. Winter storms that are able to tap into subtropical moisture are the ones most likely to lead to flooding due to heavy warm rain. Flooding is exacerbated by warm heavy rains falling on low elevation snowpack.

5.2.7.2 History

The Nevada Climate Office under the direction of Dr. Jeff Underwood provided the following summary of information derived from the National Climate Data Center's website. Damage-causing storm events reported by the National Climate Data (1959-2009). http://www4.ncdc.noaa.gov/cgi-win/wwcgi.dll?wwevent~storms

Churchill County

Total damage reported as $11,000 with 1 person being injured.

By Type

Dust Devil: 1

Hail: 11

Thunderstorm Wind: 20

Funnel Cloud: 4

Tornado: 5

Lightning: 1-

Snow occurs in smaller amounts in Churchill County & the City of Fallon than some other northern counties in Nevada. Two stations were used as representatives within the county; Lahontan Dam, and Fallon NAS. All the stations had low levels of snow. To qualify as an 'extreme' event the snowfall had to be above the 15th percentile of overall snowfall at that particular station. The average value at the 15th percentile was any amount over **0.26** inches in one day. The summary of the snowfall events above the 15th percentile follow:

Lahontan Dam - Days > 15th = 209; Freq = 2.96 days/year

Fallon NAS - Days > 15th = 128; Freq = 2.47 days/year

The National Climate Data Center identified no major winter storms in the County and FEMA declared 1 Snow Emergency in the County and City of Fallon between 1996 and 2010.

- On January 2 through 10, 2005, a storm which dropped heavy snow, shutting down roads and requiring snow removal. FEMA 3204.

Between 2000 and 2010, a total of 12 severe windstorms were reported in the County with three in or near the City of Fallon. The severe winds reported were independent or in advance of thunderstorm activities. The following highlights these events.

- On June 18, 2003 Thunderstorm outflow winds estimated at 75 mph caused scattered damage across Fallon including 5 downed power poles, a large tree blown into a fuel storage tank and a destroyed home gazebo.

- On July 16, 2007, a trained weather spotter located 4 miles SSW of Fallon reported a thunderstorm wind gust of 61 knots (70 mph).
- On July 21, 2008, a trained weather spotter reported that wind gusts estimated at 61 knots (70 mph) destroyed wire fencing near Lahontan Reservoir. One-half-inch-diameter hail also occurred with the thunderstorm**.**

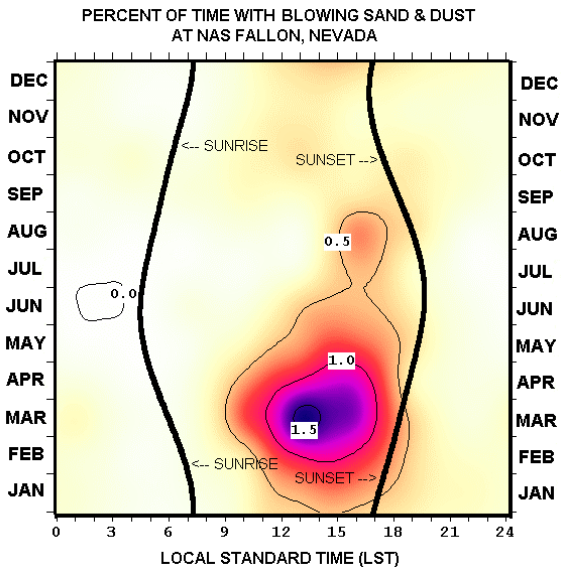
The narrative below was provided by NAS Fallon weather department.

"Surface Winds. The speed and direction of surface winds at NAS Fallon are depicted in the Daily Extreme Peak Gust figure below. These winds reflect a combination of prevailing storm tracks and local topography. The major patterns of wind throughout the year are associated with the general atmospheric circulation.

Summer winds are normally light and variable in the morning and tend to blow toward areas of highest temperatures during the afternoon, as previously discussed earlier in this chapter.

During winter, migratory storms will cause wind velocities to undergo much greater variation. Local winds are generally light and variable increasing to southerly as frontal systems approach the Sierra. Sustained winds of 20 to 30 knots with gusts up to 40 knots frequently occur prior to frontal passages. Post frontal winds are northwesterly to northerly and usually subside within 12 to 18 hours of frontal passage. Quite frequently, winds exceeding or meeting warning criteria decrease well below advisory criteria generally about 3-5 hours after sunset, even if frontal passage only occurred just several hours prior to sunset. This is not always the case, but it has been noted on many occurrences and requires consideration."

Figure 5-10



5.2.7.3 Location, Extent, and Probability of Future Events

Thunderstorms that produce hail and downburst winds occur in the County and the City of Fallon every year. An active thunderstorm pattern, resulting from monsoon moisture over the Southwestern United States being transported into Nevada can lead to a prolonged period of thunderstorms and severe weather. In addition, weak weather systems moving over Nevada after a period of hot weather often leads to dry thunderstorms with strong downburst winds. The

frequency of tornado occurrence is 1 in 25 years with most being categorized as weak tornadoes (EF0 or EF1 on the Fujita Scale).

Hailstorms are a common occurrence in the County and the City of Fallon, especially during the late spring through early fall months when thunderstorms are most frequent. Hail sizes are typically between pea and marble size, but can get larger than golf balls during the strongest storms that impact the area. A Severe Thunderstorm for hail, as defined by the National Weather Service, is a thunderstorm capable of producing hail stones greater than 1" in diameter, which usually occurs once every decade.

Tornadoes are rare in the County and the City of Fallon due to the mountainous terrain which prevents them from spinning up. Historically, tornadoes in the region are usually weak, often categorized as EF0 (65-85 mph) or EF1 (86-110 mph) on the Enhanced Fujita Scale. An upper level low pressure system is often required for tornado development in Churchill County and the City of Fallon due to the need for sufficient wind shear in the lower atmosphere, which is necessary to create an environment favorable for tornado genesis.

Severe wind events in the County and the City of Fallon occur every year and are the result of two weather events known as the "Nevada Low" and the Southwest Monsoon Flow. The Nevada low is a local name given to a low or deep trough that develops over California and Nevada between February and April in advance of an associated cold front moving down from the north. A well developed Nevada low system can sustain 17-23 mph winds with 34-46 mph gusts through the County. However, the County and City has recorded severe winds speeds of nearly 70 mph. The County and City also experiences local thermally driven winds due to the areas valley/mountain topography. These wind cause brown outs on Highway 50 – alternate and Highway 95 South.

Winter storms that generate heavy rainfall that leads to flooding in the County and the City of Fallon generally occur once every several years. Snowfall accumulation in the County and City from the bigger snowstorms can often be between 6-10 inches over a 24-hour period. Heavy snowfall events are generally associated with a strong low pressure system dropping out of the Gulf of Alaska with the higher elevations receiving the greatest amount of snow. See Appendix B, Figure B-5 for Potential Winter Storm Areas.

5.2.8 Volcanic Activity

Planning Significance – Churchill County –Low and City of Fallon - Very Low

5.2.8.1 Nature

A volcano is an opening, or rupture, in a planet's surface or crust, which allows hot, molten rock, ash and gases to escape from below the surface. Volcanic activity involving the extrusion of rock tends to form mountains or features like mountains over a period of time.

Volcanoes are generally found where tectonic plates pull apart or come together. By contrast, volcanoes are usually not created where two tectonic plates slide past one another. Volcanoes can also form where there is stretching and thinning of the earth's crust (called "non-hotspot intra plate volcanism"), such as in the Rio Grande Rift in North America.

5.2.8.2 History

There is a history of ancient volcanic action in State of Nevada; however, the risk is not considered significant within the State's geographic area. Volcanic activity surrounding the State of Nevada could potentially cause some ash fall over portions of the State. However this is predicted to cause little or no damage or significant disruptions. There is no immediate indication of renewed volcanic activity in State of Nevada. (U.S. Geological Survey)

5.2.8.3 Location, Extent, and Probability of Future Events

Any volcanic activity that produces ash would impact the County's water for a short period of time. The ash would also affect agriculture depending on the time of year. The probability is very low of an event occurring. The following Forum Report, on volcanic hazard risks in Nevada, was made available to the Hazard Mitigation Steering Committee from the Nevada Bureau of Mines and Geology.

Volcanic Hazards

Jon Price, State Geologist and Larry Garside, Research Geologist, Nevada Bureau of Mines and Geology. 6/04/02

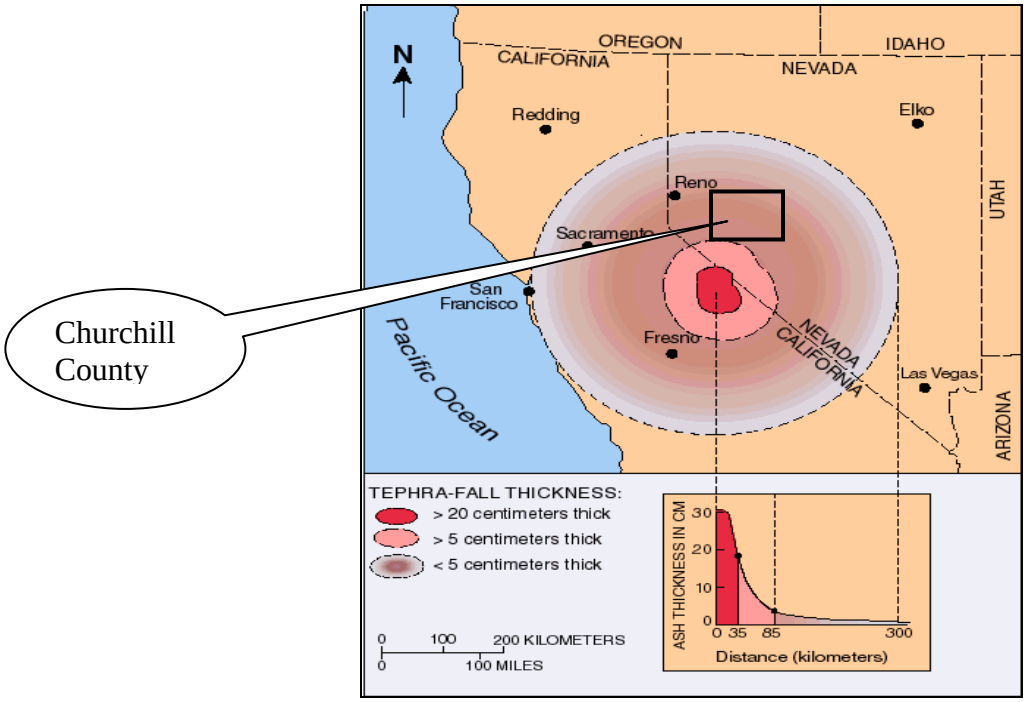
"The most likely volcanic hazard for Nevada is an eruption from the Mono Craters area near Lee Vining and Mono Lake in Eastern California. Small eruptions from these volcanoes have sent ash into Nevada as recently as about 260 years ago. Other volcanoes that could deposit ash in Nevada include Mount Lassen, Mount Shasta and the Long Valley Caldera in California and volcanoes in the Cascade Mountains in Oregon.

The biggest threat for Nevada from eruptions in California and Oregon is damage to flying aircraft. Ash from eruptions in California or Oregon is not likely to cause long-term problems in Nevada, because the ash deposits are likely to be thin, typically only a few inches thick at most.

A massive eruption from the Long Valley Caldera near Mammoth Lakes, California over 700,000 years ago devastated a considerable area in Owens Valley when thick, hot flows of ash were deposited as far south as Bishop. Air-fall ash from these eruptions did collect as thick piles

of ash in parts of Nevada, and some of the ash may have been hot enough or thick enough to devastate the landscape locally. Scientist would expect to see strong indications from seismographs before another eruption of this magnitude. The U.S. Geological Survey continues to monitor the area around Mammoth Lakes, and will issue warnings prior to any subsurface changes that could precede a major eruption. Below please see the volcanic ash dispersal map for the Long Valley Caldera. ”

Figure 5-11. Volcanic Ash Dispersal Map for the Long Valley Caldera



Source: USGS Volcano hazards program; C.D. Miller, J. Johnson; http://lvo.wr.usgs.gov/zones/TephraFall.html

Eruptions inside Nevada are not likely in the near future, judging from past activity and lack of earthquakes that would suggest current movement of magma. This opinion may change if seismic signals indicate possible movement of magma in the future. Our ability to monitor small tremors associated with magma at depth is limited by the number of seismographs that are operated in Nevada. The Nevada Seismological Laboratory and the U.S. Geological Survey have joint responsibilities for earthquake monitoring and warnings. The Advanced National Seismic System, which is authorized by Congress but currently has been funded at only a fraction of its intended size, will help to monitor for earthquakes and pending volcanic eruptions.

The Soda Lake and Little Soda Lake (near Fallon in Churchill County) maars (volcanoes that form by explosions when magma rises near the surface of the earth and boils the groundwater) are probably the youngest volcanoes within the borders of the State. They have not erupted in recorded history, although they definitely are younger then the last high stand of Lake Lahontan, about 13,000 years ago because deposits from these volcanoes overlie sediments deposited in the lake. On the basis of preliminary helium isotopic studies (Thure Cerling, University of Utah,

personal communication, 1997), the eruption at Soda Lake may be younger then 1,500 years before present.

Other relatively young volcanoes occur in the Crater Flat – Lunar Crater Zone, Nye County, which includes basaltic volcanoes ranging in age from about 38,000 to 1 million years old (Smith, E.I. Keenan, D.L., Plank, T. 2002, Episodic Volcanism and Hot Mantle: Implications for Volcanic Hazard Studies at the Proposed Nuclear Waste Repository at Yucca Mountain, Nevada: GSA Today, v.12, no.4, p. 4-10); in Clayton Valley, near Silver Peak in Esmeralda County; near Winnemucca in Humboldt County; and near Reno in Storey County. Most of these are basaltic volcanoes, which typically form small cinder cones and small lava flows. There are also some one million-year-old rhyolitic lava flows in the Reno area near Steamboat Hot Springs, but volcanoes in this area are thought to be extinct.

5.2.9 Wildland Fire

Planning Significance – Churchill County – Low City of Fallon - Low

5.2.9.1 Nature

A wildland fire is a type of wildfire that spreads through consumption of vegetation. It often begins unnoticed, spreads quickly, and is usually signaled by dense smoke that may be visible from miles around. Wildland fires can be caused by human activities (such as arson or campfires) or by natural events such as lightning. Wildland fires often occur in forests or other areas with ample vegetation. In addition to wildland fires, wildfires can be classified as urban fires, interface or intermix fires, and prescribed fires.

The following three factors contribute significantly to wildland fire behavior and can be used to identify wildland fire hazard areas.

- **Topography:** As slope increases, the rate of wildland fire spread increases. South-facing slopes are also subject to more solar radiation, making them drier and thereby intensifying wildland fire behavior. However, ridge tops may mark the end of wildland fire spread, since fire spreads more slowly or may even be unable to spread downhill.
- **Fuel:** The type and condition of vegetation plays a significant role in the occurrence and spread of wildland fires. Certain types of plants are more susceptible to burning or will burn with greater intensity. Dense or overgrown vegetation increases the amount of combustible material available to fuel the fire (referred to as the "fuel load"). The ratio of living to dead plant matter is also important. The risk of fire is increased significantly during periods of prolonged drought, as the moisture content of both living and dead plant matter decreases. The fuel's continuity, both horizontally and vertically, is also an important factor.
- **Weather:** The most variable factor affecting wildland fire behavior is weather. Temperature, humidity, wind, and lightning can affect chances for ignition and spread of fire. Extreme weather, such as high temperatures and low humidity, can lead to extreme wildland fire activity. By contrast, cooling and higher humidity often signals reduced wildland fire occurrence and easier containment.

The frequency and severity of wildland fires also depends upon other hazards, such as lightning, drought, and infestations. If not promptly controlled, wildland fires may grow into an emergency or disaster. Even small fires can threaten lives and resources and destroy improved properties. In addition to affecting people, wildland fires may severely affect livestock and pets. Such events may require emergency watering/feeding, evacuation, and shelter.

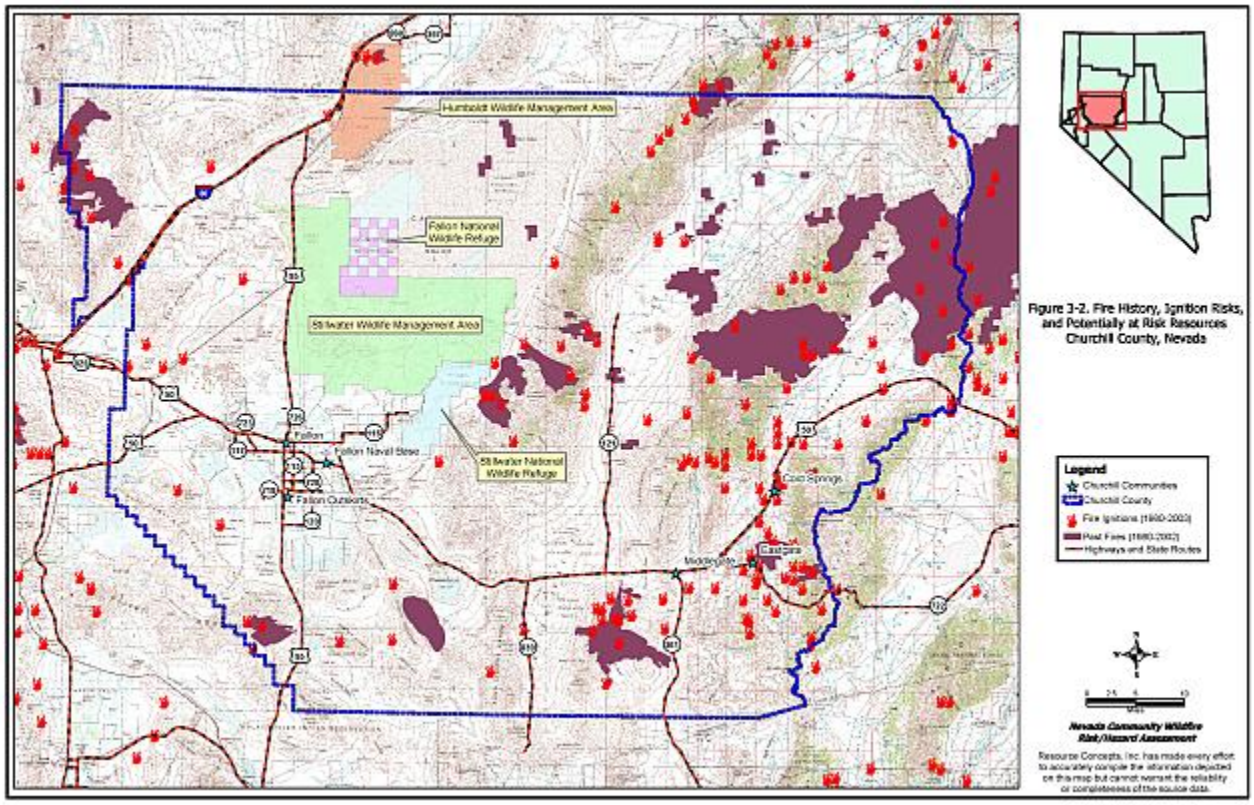
The indirect effects of wildland fires can be catastrophic. In addition to stripping the land of vegetation and destroying forest resources, large, intense fires can harm the soil, waterways, and the land itself. Soil exposed to intense heat may lose its capability to absorb moisture and support life. Exposed soils erode quickly and enhance siltation of rivers and streams, thereby increasing

flood potential, harming aquatic life, and degrading water quality. Lands stripped of vegetation are also subject to increased debris flow hazards, as described above.

5.2.9.2 History

Fire in Churchill County and the City of Fallon fire are managed by the Fallon/Churchill Fire Department. Churchill County over the past ten years has had 87 wildland fires all of small acreage according to the Nevada Division of Forestry. Please see the figure below for historical fire locations map.

Figure 5-11: Fire History Map



The vegetation in Churchill County doesn't lead to large fires. Most fires in the wildland urban interface start by human causes and these brush fires are quickly extinguished. The largest brush fire in the last 5 years was less than 20 acres. Fires in Churchill County and the City of Fallon fire are managed by the Fallon/Churchill Fire Department an all volunteer fire department.

5.2.9.3 Location, Extent, Probability of Future Events

Communities in Churchill have a varying degree of risk from Wildfire. This risk is varied, largely due to past fire activity and the type of moisture received during the winter months. Lengthy rainy seasons tend to increase the production of grasses which can create fast moving fires in the brush and grass areas of the County. Drought seasons tend to decrease the fuel

moisture in the large fuels (trees and large brush) and create high output British thermal unit (BTU) fires that are difficult to control and can extend for days.

Depending upon the type and amount of moisture received, the risk to a given community in the County can change from season to season. Churchill has developed a Community Wildfire Protection Plan to help guide the community and its residents on where and how to focus fuel reduction efforts. The Community Wildfire Protection Plan generally speaks to protecting the built environment from the threats of wildland fire. The Assessment Results are as follows.

Table 5- 11: Wildfire Assessment Summary by Community

Community	Hazard Rating
Cold Springs	Moderate
Eastgate	High
Fallon (City of)	Low
Fallon Naval Air Station	Low
Fallon Outskirts (City of)	Low
Middlegate	Moderate
Source: RCI County Wide Assessment Results, www.rci-nv.com/reports/churchill/section04.html	

The Planning Committee determined through discussion that the Eastgate community, although ranked high by Resource Concepts Incorporated in their wildfire risk assessment, the threat of wilfire was low. This was due to the area only having one ranch, which is privately owned, and no previous fire history. The high risk rating was given as there was no fire department within the immediate area.

Based on historical records, Churchill can anticipate nearly eight wildland fire starts per year. While a very small percentage (less than 1%) of the fires will exceed 20 acres. See Appendix B, Figure B-11 for Wildland Urban Interface for the Fallon area.

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A vulnerability analysis predicts the extent of exposure that may result from a hazard event of a given intensity in a given area. The analysis provides quantitative data that may be used to identify and prioritize potential mitigation measures by allowing communities to focus attention on areas with the greatest risk of damage. A vulnerability analysis consists of the following six steps: assets inventory, methodology, data limitations, exposure analysis, and summary of impacts.

6.1 ASSET INVENTORY

Asset inventory is the first step of a vulnerability analysis. Assets within each community that may be affected by hazard events include population, residential and non residential buildings, and critical facilities and infrastructure. Assets and insured values throughout the County are identified and discussed in detail below.

6.1.1 Population and Building Stock

Population data for the County and City was obtained from the NV State Demographer estimate of 2010 and shown in Table 6-1. The Nevada State Demographer's Office maintains annual population estimates by county. Estimated numbers and replacement values for residential and nonresidential buildings, as shown in Table 6-1, were obtained from the County Assessor's office and were verified by photo and by parcel data. To achieve a value, the net assessed value was not used due to the value being a depreciated value and not reflective of replacement cost, therefore the building count was multiplied by an average replacement value of $141,000 which represents a 1,200 sq. ft. home at $116/sq. ft. building cost.

The residential buildings considered in this analysis include single-family dwellings, mobile homes, multi-family dwellings, temporary lodgings, and nursing homes. Nonresidential buildings were also analyzed including commercial, industrial, agricultural, government, educational, and religious centers.

The HAZUS-MH 2009 run for earthquake by the Bureau of Mines & Geology, UNR, was reviewed the HAZUS-MH software presents a data limitation by which this software identifies nonresidential buildings by square footage resulting in some nonresidential buildings not being counted. Additionally, the County's Assessor Office supplied residential and non-residential costs as much higher than the HAZUS-MH software and it was determined by the Committee Chair to use the Assessor's values as this represents the County's actual property tax base. The buildings' values were calculated by adding 20% to the net assessed value of buildings to get the market value. This was done by Denny Preston from Churchill County Planning Department. Un-reinforced masonry (URM) building information was obtained from Wayne Carlson of the Nevada Insurance Pool and Advanced Data Systems, Inc. who are compiling a statewide inventory.

Although the building count or value may not be precise, whether residential or nonresidential, this analysis will meet the intention of DMA 2000 by providing County and City residents with an accurate visual representation of their community's risk by hazard. This data is the most complete dataset available at the time and will be updated in future version of the HMP.

Table 6-1: Estimated Population and Building Inventory

Population	Residential Buildings		Nonresidential Buildings	
NV Demographer Projected 2010 Population	Total Building Count	Total Value of Buildings (in millions)	Total Building Count	Total Value of Buildings (in millions)
Churchill County				
26,360	10,826	1,526	958	502
City of Fallon				
8,903	3,403	480	497	370

Source: State of Nevada Demographer Churchill County Assessor's Office, Churchill County Planning Department

6.1.2 Critical Facilities and Infrastructure

A critical facility is defined as a public or private facility that provides essential products and services to the general public, such as preserving the quality of life in the County and City and fulfilling important public safety, emergency response, and disaster recovery functions. They are identified in Table 6-2.

Similar to critical facilities, critical infrastructure is defined as infrastructure that is essential to preserve the quality of life and safety in the County. Existing County and City roads were not critical to evacuation or response. Critical infrastructure is identified in Table 6-2.

Table 6-2: Churchill County Critical Facilities and Infrastructure

Category	Type	Number	Estimated Value Per Structure/Mile (millions of $)
Churchill County			
Critical Facilities	Sherriff Stations/Jail	5	6.3
	Fire Stations	4	5.2
	EOC & County Admin	1	8.9
	Public Primary and Secondary Schools	7	137.7
	Hospital/Emergency Room & Urgent Care/Ambulance	3	30.0
	Communication Facilities (County Owned)	14	31.1
Critical Infrastructure	State and Federal Highways (miles)	340	1.934.
	Airport Facilities	1	17.1
	Bridges	67	Included in Highway
	Utilities (Water, Waste Water)	7	12
City of Fallon			
Critical Facilities	Police Stations	2	2.6
	Fire Stations	1	2
	EOCs	0	0
Critical Infrastructure	State and Federal Highways (miles)	4	14.6
	Bridges	0	0
	Utilities (Water, Waste Water, Gas, Electrical)	n/a	660

Source: FEMA HAZUS-MH, Churchill County and City of Fallon Emergency Management, Churchill County Planning, NV Division of Emergency Management, Banner Healthcare, CC School District, NV Dept. of Transportation.

6.2 METHODOLOGY

A conservative exposure-level analysis was conducted to assess the risks of the identified hazards. Hazard areas were determined using information provided by the U.S. Seasonal Drought Monitor, HAZUS, Nevada Bureau of Mines and Geology, and NWS. This analysis is a simplified assessment of the potential effects of the hazard on values at risk without consideration of probability or level of damage.

Using GIS, the building footprints of critical facilities were compared to locations where hazards are likely to occur. If any portion of the critical facility fell within a hazard area, it was counted as impacted. Using census block level information, a spatial proportion was used to determine the percentage of the population and residential and nonresidential structures located where hazards are likely to occur. Census blocks that are completely within the boundary of the hazard area were determined to be vulnerable and were totaled by count. A spatial proportion was also used to determine the amount of linear assets, such as highways and pipelines, within a hazard area. The exposure analysis for linear assets was measured in miles. For drought, population was the only asset analyzed, as drought mainly affects people and agricultural lands.

Replacement values or insurance coverage were developed for physical assets. These values were obtained from the County's Assessor's Office, School District, Planning, Public Works, and HAZUS-MH 2009 run. For facilities that did not have specific values per building in a multi-building scenario (e.g., schools), the buildings were grouped together and assigned one value. For each physical asset located within a hazard area, exposure was calculated by assuming the worst-case scenario (that is, the asset would be completely destroyed and would have to be replaced). Finally, the aggregate exposure, in terms of replacement value or insurance coverage, for each category of structure or facility was calculated. A similar analysis was used to evaluate the proportion of the population at risk. However, the analysis simply represents the number of people at risk; no estimate of the number of potential injuries or deaths was prepared except for earthquake (HAZUS-MH 2009).

6.3 DATA LIMITATIONS & FUTURE DEVELOPMENT

The vulnerability estimates provided herein use the best data currently available, and the methodologies applied result in an approximation of risk. These estimates may be used to understand relative risk from hazards and potential losses. However, uncertainties are inherent in any loss estimation methodology, arising in part from incomplete scientific knowledge concerning hazards and their effects on the built environment, as well as approximations and simplifications that are necessary for a comprehensive analysis.

The resulting analysis was complied to the highest degree possible with the hardware, software and data availability limitations discovered during plan preparation. HAZUS was able to determine the population and critical facilities within a given hazard area and from there a limited assessment was derived. In the situation of Drought & Epidemic, where structures would not usually be affected the term N/A (not applicable) is used.

It is also important to note that the quantitative vulnerability assessment results are limited to the exposure of people, buildings, and critical facilities and infrastructure to a hazard. It was beyond

the scope of this HMP to develop a more detailed or comprehensive assessment of risk (including annualized losses, people injured or killed, shelter requirements, loss of facility/system function, and economic losses). Such impacts may be addressed with future updates of the HMP such as with URM information.

6.3.1 Future Development

Churchill County and the City of Fallon have historically low growth with an average of 1% per year for population. The State Demographer estimated a 1% per year increase from 2009 to 2030. As discussed at the end of Section 3 – Community Description, there is a significant amount of land in the County that has the potential to be developed for residential and commercial growth. Some of the undeveloped land has already received development approval from the County-over 8 residential planned unit developments were approved in 2004-2006 with an estimated build-out of over 4,000 residential units. However, due to the economic downturn, most of these developments have not commenced construction and build out is highly unlikely for 20-30 years. There are a number of renewable energy projects, in particular, geothermal production, that are currently in various stages of implementation. Although a significant number of people can be employed during construction of a renewable energy plant, permanent positions created are relatively few. All development will incorporate existing or future building codes and regulations that include mitigation measures and will not pose a significant vulnerability.

Population growth for the overall state is down along with high unemployment rates for the state which affect all counties. The population decline and economic issues for the State of Nevada are having enormous impacts on residential and non-residential growth. For the purposes of this plan significant growth over the next five years is not expected, growth from 2016 to 2030 is expected at less than 1%. Therefore the numbers and values of the figures in the Table 6-3 and 6-4 below are viewed as accurate. During the plan maintenance activities this should be reviewed and during the next plan update process growth can be revisited.

6.4 EXPOSURE ANALYSIS

The requirements for a risk assessment, as stipulated in the DMA 2000 and its implementing regulations, are described below.

DMA 2000 Requirements: Risk Assessment, Assessing Vulnerability, Overview

Assessing Vulnerability: Overview

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

Element

- Does the new or updated plan include an overall summary description of the jurisdiction's vulnerability to each hazard?
- Does the new or updated plan address the impact of each hazard on the jurisdiction?

Source: FEMA 2008.

DMA 2000 Recommendations: Risk Assessment, Assessing Vulnerability, Identifying Structures

Assessing Vulnerability: Identifying Structures
Requirement §201.6(c)(2)(ii)(A): The plan should describe vulnerability in terms of the types and numbers of existing and future buildings, infrastructure, and critical facilities located in the identified hazard area.
Element
- Does the new or updated plan describe vulnerability in terms of the types and numbers of existing buildings, infrastructure, and critical facilities located in the identified hazard areas?
- Does the new or updated plan describe vulnerability in terms of the types and numbers of future buildings, infrastructure, and critical facilities located in the identified hazard areas?

Source: FEMA 2008.

DMA 2000 Recommendations: Risk Assessment, Assessing Vulnerability, Estimating Potential Losses

Assessing Vulnerability: Estimating Potential Losses
Requirement §201.6(c)(2)(ii)(B): [The plan should describe vulnerability in terms of an] estimate of the potential dollar losses to vulnerable structures identified in paragraph (c)(2)(i)(A) of this section and a description of the methodology used to prepare the estimate.
Element
- Does the new or updated plan estimate potential dollar losses to vulnerable structures?
- Does the new or updated plan reflect changes in development in loss estimates?
- Does the new or updated plan describe the methodology used to prepare the estimate?

Source: FEMA 2008.

The results of the exposure analysis are summarized in Tables 6-3 and 6-4 and in the discussion below. The results in this exposure analysis were greatly affected by the hardware, software and data availability limitations described above. The significant hazards designated as high and moderate are included in the exposure analysis below.

Table 6-3: Potential Hazard Vulnerability Assessment – Population and Buildings

Hazard	Population[4]	Buildings			
		Residential		Nonresidential	
	Number	Number[3]	Value ($)[1]	Number[3]	Value ($)[1]
Total for Churchill County	26,360	10,826	1,526	958	502
Drought	26,360	10,826	N/A	958	N/A
Earthquake –Magnitude 6.0[2] (30-40% chance in 50 years)	26,360	1,076	152	47	65
Epidemic	26,360	N/A	N/A	N/A	N/A
Flood - 100-Year Flood Zone	1,654	622	87.7	25	31.3
Flood – 500 – Flood Zone	936	352	49.6	80	100
Hazardous Materials Event – 1-mile radius hazardous facilities	1,252	372	52	12	15
Hazardous Materials Event – 1-mile buffer transport corridors	1,252	372	52	12	15
Infestation	0	0	0	0	0
Severe Weather – High – 25% of population & .5% buildings	6,590	54	7.6	5	2.5
Wildland Fires – Extreme[5]	10	8	1.1	0	0
Volcano/Ash	26,360	10,826	N/A	958	N/A
Total for City of Fallon	8,903	3,403	480	497	370
Drought	8,903	3,403	N/A	497	N/A
Earthquake –Magnitude 6.0[2]	8,903	373	52.8	16	20
Epidemic	8,903	N/A	N/A	N/A	N/A
Flood - 100-Year Flood Zone	936	352	49.6	12	15
Flood – 500 Year Flood Zone	13	5	.7	0	0
Hazardous Materials Event – 1-mile radius hazardous facilities	423	127	18	12	15
Hazardous Materials Event – 1-mile buffer transport corridors	423	127	18	12	15
Infestation	0	0	0	0	0
Severe Weather – High – 25% of population & .5% buildings	2,226	17	2.4	2	1.8
Wildland Fires – Extreme[5]	0	0	0	0	0
Volcano/Ash	8,903	3,403	N/A	497	N/A

[1] Value = Estimated Market value Million Data acquired from HAZUS N/A = Not Applicable
[2] Data acquired from Nevada Bureau of Mines and Geology Open-file Report 09-8, HAZUS-MH, http://www.nbmg.unr.edu/Pubs/of/of09-8/of09-8.pdf
[3] Data acquired from Churchill County Assessors Office and Planning Dept.
[4] Data source Nevada State Demographer
[5] Data source Resource Concepts Report, http://www.rci-nv.com/home/rci-reports/

Table 6-4: Potential Hazard Vulnerability Assessment – Critical Facilities

	EOC & Admin Offices		Sheriff Stations Jail (5)		Fire Station (4)		Hospital/ Ambulance Urgent Care Facilities (3)		Schools (7)		Communication Facilities (6)		Water / Sewer Facilities (2)	
Hazard	Number	Value ($)[1]	Number	Value ($)[1]	Number	Value ($)[1]	Number	Value ($)[1]	Number	Value ($)[1]	Number	Value ($)[1]	Number	Value ($)[1]
Churchill County														
Drought	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Earthquake - Magnitude 6.0[2]	1	8.9	1	9	4	3	0	0	7	137.7	1	.03	2	13
Epidemic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Flood - 100-Year Flood Zone	0	0	0	0	0	0	0	0	0	0	0	0	1*	1
Flood – 500 – Year Flood Zone	0	0	0	0	0	0	0	0	0	0	0	0	Lift Station*	1
Hazardous Materials Event – 1-mile radius hazardous facilities	1	8.9	2	5.4	1	1.3	1	20	6	118	0	0	Lift Stations	4
Hazardous Materials Event – 1-mile buffer transport corridors	0	0	0	0	1	1.3	1	20	5	98	0	0	Lift Stations	4
Infestation	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Severe Weather	0	0	0	0	0	0	1	.25	0	0	1	.3	0	0
Wildland Fire	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Volcano/Ash	0	0	0	0	0	0	1	.2	7	.5	0	0	2	.2

$ Value in Millions

*Various Sewage Lift Station.

Table 6-4 cont'd Potential Hazard Vulnerability Assessment – Critical Facilities

	Police Stations (1)		Fire Station/EOC (1)		Water / Sewer Facilities (2)	
Hazard	Number	Value ($)[1]	Number	Value ($)[1]	Number	Value ($)[1]
City of Fallon						
Drought	0	0	0	0	0	0
Earthquake - 100yr Magnitude 6.0[2]	2	2.6	1	2	2	13
Epidemic	N/A	N/A	N/A	N/A	N/A	N/A
Flood - 100-Year Flood Zone	0	0	0	0	1[3]	1
Flood – 500 Year Flood Zone	0	0	0	0	1[3]	1
Hazardous Materials Event – 1-mile radius hazardous facilities	1	2	1	2	Vaious[3]	3
Hazardous Materials Event – 1-mile buffer transport corridors	1	2	1	2	Vaious[3]	3
Infestation	0	0	0	0	0	0
Severe Weather	0	0	0	0	0	0
Wildland Fire	0	0	0	0	0	0
Volcano/Ash	0	0	0	0	2	.2

[1]Value in Millions

[2] Data acquired from Nevada Bureau of Mines and Geology Open-file Report 09-8, HAZUS-MH, http://www.nbmg.unr.edu/Pubs/of/of09-8/of09-8.pdf

[2]Sewage Lift Stations

6.4.1 Drought

According to the U.S. Seasonal Drought Monitor, the entire area of the County and City is at equal risk to a drought event. The entire population of the County, 26,360,and City 8,903 may be affected by the drought however building and critical facilities would just be limited in their use but would not be damaged.

In addition to building inventory drought would affect agriculture, recreation, wetlands, hydro-generation, and geothermal generation all which rely on water continuing to flow through the canals. The County agriculture yields a wide variety of crops and livestock and the economic activity generated by agriculture in the county is $175 million per year. The Lahontan reservoir supplies the water that operates the three hydro-generation plants during the irrigation season and the interrelationship between the deep geothermal aquifer and the upper aquifers is being studied. The four geothermal power generating properties generate some of the highest amounts of property tax in the County.

6.4.2 Earthquakes

Using HAZUS-MH earthquake perimeters of a 6.0 magnitude event which has a 30-40% chance of happening in the next 50 years according to NBMG, 12% of the buildings will be at least moderately damaged. This includes the addition of all structures including sheds, carports, detached garages and other auxiliary buildings. The 12% estimated damages sustained from moderate to severe could be up to 1,299 residential buildings (worth $183 million), and 114 non-residential buildings (worth $60 million) all within close proximity to fault lines.

The HAZUS run indicated that the hospital will have minor damage limiting its bed availability by 60% for 30 days as value was included at 10% of the total building value. The EOC which is housed in the County Administrative building would have moderate damage. All 7 schools, 3 (1 County and 2 City) police stations and the 3 fire stations would be affected by more than 50% functionality. The communication facilities for the County and City would have an estimated damage of $300K and the water/sewer facilities had estimated damages of $13M for the County and $13M for the City. The Planning Committee determined that due to the proximity of the faults that numerous critical facilities are at risk to perceived severe shaking; they include:

Churchill County:

Churchill County Administrative & EOC Offices ($8.9 million)
Churchill County Court House ($3 million)
Fire Houses (4 $3 million)
All Schools in the School District (7 $137.7 million)
Banner Community Hospital & Ambulance Facility ($30 million)

City of Fallon:

City Hall ($2 million)
City Police Station ($2.6 million)
Fire House ($2 million)

The entire population of the County and City (26,360) is considered impacted by an earthquake due to potential road and utility damage, critical infrastructure damage leading to reduced services, in addition to building damage. The HAZUS-MH estimates that 2 deaths, 7 hospitalizations and 27 injuries requiring medical attention will occur.

The percentage of building damage (12%) was obtained from the HAZUS-MH run dated August 14, 2009 from the Bureau of Mines and Geology. The assessor's office total building numbers and values were used instead of the HAZUS estimates. The affected population, building inventories, and values were calculated from the County's Assessors Office and the Nevada State Demographer.

Nevada Bureau of Mines and Geology has a contract with Advanced Data Solutions to inventory the un-reinforced masonry buildings within the State. During the writing of this update the data was made available. The report showed that 178 Commercial Buildings (1.6M sq ft) and 192 residential buildings (358K sq ft) were constructed of un-reinforced masonry. These buildings would have significantly more damage during an earthquake than other buildings. Unreinforced masonry buildings accounted for 358K square feet or $41.5M (using $116/sqft) in residential

buildings and 1.6M square feet or $280M (using $175/sqft) in commercial buildings. The data from the report can be used by the County and City to identify and target structures for reinforcement. UNR will be using the data to up-grade information for the HAZUS runs and it is recommended that the County and City identify these structures on a map for the next HM Plan update.

6.4.3 Epidemics

Epidemic was included as a possible hazard to the citizens of the county. The entire population of the County (26,360) and City (8,903) may be affected by the illness however building and critical facilities would just be limited in their use but would not be damaged.

6.4.4 Floods

Digital FIRMs, from 2008, were used for the County and City area to estimate at risk population and buildings. Within the 100-year floodplain area, the population at risk is 1,654 (County) and 936 (City). The risk posed by the 100-year flood is high with 622 (County) and 352 (City) homes and 25 (County) and 12 (City) commercial buildings within or immediately adjacent to the 100-year floodplain. The exposure to residential buildings is $87.7 million (County) and $49.6 million (City), exposure to the nonresidential buildings is $31.3 million (County), and $15 million (City), which includes exposure to the following critical facilities – a County and a City sewage lift station. The affected population, building inventories, and values were calculated from the State Demographer and Churchill County Assessor's office. There is one repetitive loss structure and no severe repetitive loss structures (as defined by NFIP) within the 100-year flood plain.

Regarding canal failure, the committee speculated that a few hundred homes may be impacted however; there is no engineering data currently available. The US Army Core of Engineers (USACE) is working on a canal failure risk assessment and LIDAR maps are being created and when completed should be included in the next update of this plan.

Dam failure was rated as low probability and the entire City of Fallon was considered within the flood area which includes 8,903 residents, 3,403 residential buildings ($480 million) and 497 non residential buildings ($370 million). Most County residents (26,360) and 10,826 residential buildings ($1,526M) and 958 nonresidential buildings ($502M) would be inundated or severely affected by a dam failure.

6.4.5 Hazardous Materials Events

Using GIS mapping of a one mile radius of hazardous facilities and a one mile radius from Highway 50 and Highway 95 intersections (a central transportation corridor), see Figure B-3, the Churchill County GIS Planning, estimated that 1,252 (County) and 423 (City) people are within the 1-mile buffer for both. Building exposure includes 372 or $52 million (County) and 127 or $18 million (City) residential buildings and 12 or $15 million (County) and 12 or $15 million (City) non-residential for a hazardous materials event. The affected population, building inventories, and values were calculated from the County's Assessors Office information using GIS mapping for the percentage affected.

The critical facilities exposure to a hazardous materials spill is high since most of the facilities reside within the one-mile radius. They include the following:

County:

EOC & Administration Offices ($8.9 million)
Sheriff Station & Jail ($5.4 million)
Fire Station ($1.3 million)
Banner Hospital & Ambulance Services ($20 million)
Churchill County School District (6 Schools $118 million)
Various Sewage Lift Stations ($4 million)

City:

City Hall/Police Station ($2.6 million)
Fire Station ($2 million)
Various Sewage Lift Stations ($3 million)
Public Works/Electrical Dept. (unknown)

6.4.6 Infestation

The County buildings and infrastructure are not at risk to infestation. County agriculture and jobs however would be at risk to a significant infestation however the variables for an infestation are too many to adequately determine the financial loss to the County or City.

6.4.7 Severe Weather

Using winter storm data provided by the National Weather Service (NWS), risk posed by winter storms were calculated for the County and City. All population and buildings are within the severe winter storm hazard area however homes and buildings within the area are built to withstand a degree of severe weather. The Planning Committee determined that a severe winter storm or wind event may affect 25% of population (due to road closures) and .5% of the buildings which are 6,590 County residents and 2,226 City residents, 39 County residential buildings (worth $5.55 million) and 13 City residential buildings (worth $1.8M), 2 County nonresidential buildings (worth $1.6M) and one City nonresidential building (worth $500K) which include four critical facilities (worth $1.1 million). The affected population, building inventories, and values were calculated from the Nevada State Demographer and the County's Assessors office.

6.4.8 Wildland Fires

According to the Nevada Community Wildfire Risk/Hazard Assessment Project, by Resource Concepts Inc. (RCI), dated November 2004, for Churchill County, the risk posed by wildland fire is rated low to moderate. The LEPC determined the risk to be low. The Cold Springs area is categorized as high hazard if evaluated separately. Exposed within this moderate and high wildland fire hazard area, are 10 people, 8 residential buildings (worth $1.1 million). There is no

extreme wildfire risk in the City according to the RCI report. The affected population, building inventories, and values were calculated from the RCI report.

6.4.9 Volcano

The volcano risk is mainly due to ash fall out from a volcano in the Mammoth, CA area to the south. Although the total population (County -26,360 and City 8,903) is at risk to illness from ash in the air, the damage to buildings is limited to ventilation systems which may be contaminated from the ash and need replacement. The critical facilities included the hospital ($200,000) and the 7 schools ($500,000), which may have damage to their HVAC systems and the County and City sewer/water facility of $200,000 each for debris removal costs. The property damage values were calculated by the County planning department.

While not required by the DMA 2000, an important component of a hazard mitigation plan is a review of the County's and City's resources to identify, evaluate, and enhance the capacity of those resources to mitigate the effects of hazards. This section evaluates the County's & City's resources in three areas—legal and regulatory, administrative and technical, and financial—and assesses capabilities to implement current and future hazard mitigation actions.

7.1 LEGAL AND REGULATORY CAPABILITIES

The County and City currently supports hazard mitigation through its regulations, plans, and programs. The County's Building Code outlines hazard mitigation-related ordinances. Additionally, the County Master Plan identifies goals, objectives, and actions for natural hazards, including floods, drought, and earthquakes. In addition to policies and regulations, the County carries out hazard mitigation activities by participating in the National Flood Insurance Program (NFIP) see section 7.4.1.

The following table, Table 7-1, summarizes the County's and City's hazard mitigation legal and regulatory capabilities.

Table 7-1. Legal and Regulatory Resources Available for Hazard Mitigation

Regulatory Tool	Title	Effect on Hazard Mitigation
Plans	County Master Plan	Updated 2010. Lists goals for coordination, neighborhood design, public awareness, floodplain & hazard area development, and geologic hazards to guide land use planning.
	Carson River Regional Floodplain Management Plan	Provides flood identification and habitat remediation.
	Carson River Geographic Response Plan	The plan was developed to protect the health, safety, environment and property form the effects of hazardous materials incidents in or near Carson River.
	Carson River Watershed Regional Floodplain Management Plan	2008 plan provides strategies for floodplain management that can be applied regionally & locally.
	Economic Development Plan	Business Development
	Community Wildfire Protection Plan	Provides Wildfire hazards. Enables the County to mitigate fuel loads.
	Hazmat Plan	2010 Provides emergency response to reduce impact of HAZMAT spill.
	Churchill Emergency Operations Plan	2011 Provide directives to reduce future hazard impact
	City of Fallon Emergency Operations Plan	Provide directives to reduce future hazard impact
	Banner Churchill Community Hospital Emergency Operations Plan	This plan provides health directives.
	Lahontan Dam Table Top Flood Exercise	2009 exercise document provides a review of reduction in loss of life and minimize property damage.

Table 7-1. Legal and Regulatory Resources Available for Hazard Mitigation

Regulatory Tool	Title	Effect on Hazard Mitigation
Programs	National Flood Insurance Program	Churchill County & City of Fallon adopts and enforces a floodplain management ordinance to reduce future flood damage. In exchange, the NFIP makes Federally backed flood insurance available to homeowners, renters, and business owners
Ordinances and Policies	Building Code (IBC 2006) County & City	Master Plan, Land Use Plan Element, Building, Fire and Zoning codes and ordinances. Provides regulations to reduce hazard impact.
	Fire Code County & City	
	Zoning Ordinances	
	Special purpose ordinances	Floodplain management, storm water management, wildfire ordinances, hazard set back requirements

7.2 ADMINISTRATIVE AND TECHNICAL CAPABILITIES

The administrative and technical capability assessment identifies the staff and personnel resources available within the County & City to engage in mitigation planning and carry out mitigation projects. The administrative and technical capabilities of the County and City are listed in Table 7-2.

Table 7-2. Administrative and Technical Resources for Hazard Mitigation

Staff/Personnel Resources	Department / Agency
County	
Planner(s) or engineer(s) with knowledge of land development and land management practices	Building, Planning & County Engineer
Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	Building & County Engineer
Planner(s) or engineer(s) with an understanding of manmade or natural hazards	Building, Planning, Fire Dept.
Staff with education or expertise to assess the community's vulnerability to hazards	Building, Fire, County Engineer, Emergency Manager
Floodplain manager	Planning
Personnel skilled in GIS and/or HAZUS-MH	Planning
Scientist familiar with the hazards of the community	UNR, Bureau of Mines & Geology for Earthquakes
Emergency Services	Fire Department, Emergency Management, Sherriff
Finance (purchasing) – Fiscal Management	Comptroller
Public Information Officers, Planner(s)	Sheriff's Office, Fire Dept, Executive Staff
City of Fallon	
Planner(s) or engineer(s) with knowledge of land development and land management practices	Building, Planning & Public Works
Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	Building & Public Works
Planner(s) or engineer(s) with an understanding of manmade or natural hazards	Building, Planning, Fire Dept., Emergency Mgmt., Police Dept.

Staff with education or expertise to assess the community's vulnerability to hazards	Building, Emergency Management, Public Works
Floodplain manager	City Building
Personnel skilled in GIS and/or HAZUS-MH	Building/Planning
Scientist familiar with the hazards of the community	UNR, Bureau of Mines & Geology for Earthquakes
Emergency Services	Fire Department, Emergency Management, Police
Finance (purchasing) – Fiscal Management	City Clerk
Public Information Officers, Planner(s)	Police, Mayor's Office

7.3 FINANCIAL CAPABILITIES

The fiscal capability assessment lists the specific financial and budgetary tools that are available to the County and City for hazard mitigation activities. These capabilities, which are listed below include both local and Federal entitlements.

Table 7-3. Financial Resources for Hazard Mitigation

Financial Resources	Effect on Hazard Mitigation
Local (County & City)	
Authority to levy taxes for specific purposes	Yes. Upon approval of the County Board of Commissioners or City of Fallon City Council, staying within the stipulations set forth in the Nevada Revised Statues.
Capital Improvement Plans and Impact Fees	Assigns impact development fees to finance fire and flood control capital improvement programs.
Community Development Block Grants	Yes. Subject to grant from Fed/State.
Incur debt through general obligation bonds	Yes. Staying within the stipulations set forth in the Nevada Revised Statues.
Incur debt through special tax and revenue bonds	Yes. Upon voter approval, staying within the stipulations set forth in the Nevada Revised Statues.
Incur debt through private activity bonds	Yes. Upon voter approval, staying within the stipulations set forth in the Nevada Revised Statues.
Withhold spending in hazard-prone areas	Yes.
State	
Question #1 State Bond	Funding for Parks which can include re-vegetation.
Federal	
FEMA Hazard Mitigation Project Grants (HMPG) and Pre-Disaster Mitigation (PDM) grants	Provides technical and financial assistance for cost-effective pre-disaster and post-disaster mitigation activities that reduce injuries, loss of life, and damage and destruction of property.
FEMA Flood Mitigation Grant Program (FMA)	Mitigate repetitively flooded structures and infrastructure.
USFA Assistance to Firefighters Grant (AFG) Program	Provide equipment, protective gear, emergency vehicles, training, and other resources needed to protect the public and emergency personnel from fire.
FEMA/DHA Homeland Security Preparedness Technical Assistance Program (HSPTAP)	Build and sustain preparedness technical assistance activities in support of the four homeland security mission areas (prevention, protection, response, recovery) and homeland security program management.

Table 7-3. Financial Resources for Hazard Mitigation

Financial Resources	Effect on Hazard Mitigation
US HUD Community Block Grant Program Entitlement Communities Grants	Acquisition of real property, relocation and demolition, rehabilitation of residential and non-residential structures, construction of public facilities and improvements, such as water and sewer facilities, streets, neighborhood centers, and the conversion of school buildings for eligible purposes.
EPA Community Action for a Renewed Environment (CARE)	Through financial and technical assistance offers an innovative way for a community to organize and take action to reduce toxic pollution (i.e., storm water) in its local environment. Through CARE, a community creates a partnership that implements solutions to reduce releases of toxic pollutants and minimize people's exposure to them.
EPA Clean Water State Revolving Fund (CWSRF)	A loan program that provides low-cost financing to eligible entities within state and tribal lands for water quality projects, including all types of non-point source, watershed protection or restoration, estuary management projects, and more traditional municipal wastewater treatment projects
CDC Public Health Emergency Preparedness (PHEP) Cooperative Agreement.	Funds are intended to upgrade state and local public health jurisdictions' preparedness and response to bioterrorism, outbreaks of infectious diseases, and other public health threats and emergencies.

7.4 CURRENT MITIGATION CAPABILITIES & ANALYSIS

The County's current mitigation programs, projects, and plans, as shown in Table 7-4, are listed as follows.

Table 7-4. Churchill County Local Mitigation Capability Assessment

Agency Name (Mission/ Function)	Programs, Plans Policies, Regulations, Funding, or Practices	Point of Contact Name and Phone	Effect on Loss Reduction			Comments
			Support	Facilitate	Hinder	
Building	Code Enforcement, Permitting, Flood Plain Mgmt.	Cliff Van Woert 428-0255	✓	✓		Engineering and Flood Management
Planning Dept.	Economic Development	Eleanor Lockwood 775-423-7627	✓	✓		Planning support
Roads Dept.	Roads	Patti Lingenfelter 775-423-4133	✓	✓		Construction and culverts
Utilities & Capital Projects	Water, sewer, capital projects, building maintenance, parks, pool	Milorad Stojicevic 209-743-6523	✓	✓		Engineering, detailed knowledge of infrastructure
Emergency Management	Emergency Management, Mitigation Plan	Ron Juliff 775-423-4188	✓	✓		Familiar w/mitigation grants, knowledge of vulnerability
County Fire Marshall Volunteer Fire	Fuels mitigation, public education,	Mitch Young 775-423-0665	✓	✓		Detailed knowledge of vulnerability

School District	Identify and implement mitigation actions for school property	John Johnson 775-427-9231	✓	✓		Familiar w/school district infrastructure
Sherriff's Office	Public Safety	Ben Trotter 775-423-4116	✓	✓		Familiar w/terrorist mitigation
Health/Human Services	Public Health Officer	Dr. Timothy Huckleberry 775-423-3174	✓	✓		Familiar w/ epidemic and CDC grants, health capability
Truckee Canal Irrigation District	Canals	Rusty Jardine 775-423-2141	✓	✓		Control Flood Channels

The programs, plan, policies and regulations listed above provide a basic framework for mitigation projects. These programs cover the County's infrastructure and program needs and are effective. However, the funding for mitigation projects may not always be available.

The County being small in population has individuals wearing multiple hats however it does have strong legal, administrative and financial capabilities in relation to smaller rural counties within Nevada. The County, is able to enforce the International Building Code & International Fire Code, Building Code Title 12.09 and 15.05 which restrict building within a floodway, and is a member of the NFIP, in addition to programs for public safety, health and human services, public works and the school district. These programs are run by trained County staff, who are provided the resources to implement and promote the programs. Future implementation may be constrained by budget reduction in the next few years due to the recession.

The City's current mitigation programs, projects, and plans, as shown in Table 7-5, are listed as follows.

Table 7-5. City of Fallon Local Mitigation Capability Assessment

Agency Name (Mission/ Function)	Programs, Plans Policies, Regulations, Funding, or Practices	Point of Contact Name and Phone	Effect on Loss Reduction			Comments
			Support	Facilitate	Hinder	
Building & Planning Dept.	Code Enforcement, Economic Development, Flood Plain Management	James Souba 775-423-5107	✓	✓		Engineering and planning support
Public Works	Roads, water, sewer, capital projects, building maintenance, parks, pool	James Souba 775-423-5107	✓	✓		Engineering, detailed knowledge of infrastructure
Emergency Management	Emergency Management, Mitigation Plan	Steve Endecott 775-427-5356	✓	✓		Knowledge of vulnerability
State Fire Marshall Volunteer Fire	Fuels mitigation, public education,	Fred Rogne 775-423-6521	✓	✓		Detailed knowledge of vulnerability
Police	Public Safety	Kevin Goehman 775-423-0167_	✓	✓		Familiar w/terrorist mitigation

The City, being small in population, has individuals wearing multiple hats however it does have a strong legal, administrative and financial capability in relation to smaller rural cities within Nevada. The City, is able to enforce the International Building Code & International Fire Code, Building Code Title 12.09 and 15.05 which restrict building within a floodway, and is a member of the NFIP, in addition to programs for public safety, health and human services, and public works. These programs are run by trained City staff, who are provided the resources to implement and promote the programs. Future implementation may be constrained by budget reduction in the next few years due to the recession.

7.4.1 National Flood Insurance Program

DMA 2000 Requirements: Mitigation Strategy – National Flood Insurance Program

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

- Does the updated plan document how the planning team reviewed and analyzed this section of the plan and whether this section was revised as part of the update process?
- Does the new or updated plan describe the jurisdiction(s) participation in the NFIP?)
- Does the mitigation strategy identify, analyze and prioritize actions related to continued compliance with the NFIP?

Source: FEMA, March 2008.

The County and City have identified special flood-hazard areas. They entered the NFIP in 1985 and 1999 respectively. The County and City do not actively participate in the Community Rating System (CRS). The CRS is a voluntary program for the NFIP-participating communities. The goals of the CRS are to reduce flood losses, to facilitate accurate insurance rating, and to promote the awareness of flood insurance. County and City are a CRS Class 10 community. The County and City outlined mitigation actions listed under goals for flood detailed below in Table 8-3, Mitigation Goals and Potential Actions. There is one repetitive loss property and no severe repetitive loss properties (as defined by the NFIP) within the County or City. Current building code within the County and City restricts future building within a floodway.

The following provides an overview of the four-step process for preparing a mitigation strategy: developing mitigation goals, identifying and analyzing potential actions, prioritizing mitigation actions, and implementing an action plan.

8.1 MITIGATION GOALS AND OBJECTIVES

The requirements for the local hazard mitigation goals, as stipulated in the DMA 2000 and its implementing regulations, are described below.

DMA 2000 Requirements: Mitigation Strategy – Local Hazard Mitigation Goals

Local Hazard Mitigation Goals

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

Element

- Does the new or updated plan include a description of mitigation goals to reduce or avoid long-term vulnerabilities to the identified hazards?

Source: FEMA, March 2008.

Mitigation goals are defined as general guidelines that explain what a community wants to achieve in terms of hazard and loss prevention. Goal statements are typically long-range, policy-oriented statements representing community-wide visions. The Planning Team developed 9 goals to reduce or avoid long-term vulnerabilities to the identified hazards (Table 8-1). All hazards identified by the County and City have a specific goal except for Infestation and Volcano. Both hazards are rated as low hazards for the County and City and Goals One and Two will address those hazards.

Table 8-1: Mitigation Goals

Goal Number	Goal Description
1	Promote increased and ongoing County and City involvement in hazard-mitigation planning and projects.
2	Build and support local capacity to enable the public to prepare for, respond to, and recover from disasters
3	Reduce the possibility of damage and losses due to drought
4	Reduce the possibility of damage and losses due to earthquakes
5	Reduce the possibility of threat to life and losses due to epidemic
6	Reduce the possibility of damage and losses due to floods
7	Reduce the possibility of damage and losses due to severe weather
8	Reduce the possibility of damage and losses due to wildland fires
9	Reduce the possibility of damage and losses due to hazardous materials release

8.2 IDENTIFYING MITIGATION ACTIONS

The requirements for the identification and analysis of mitigation actions, as stipulated in the DMA 2000 and its implementing regulations, are described below.

DMA 2000 Requirements: Mitigation Strategy

Identification and Analysis of Mitigation Actions

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

Element

- Does the plan identify and analyze a comprehensive range of specific mitigation actions and projects for each hazard?
- Do the identified actions and projects address reducing the effects of hazards on new buildings and infrastructure?
- Do the identified actions and projects address reducing the effects of hazards on existing buildings and infrastructure?
- Does the mitigation strategy identify actions related to the participation in and continued compliance with the NFIP?

Source: FEMA, March 2008.

Mitigation actions are usually grouped into six broad categories: prevention, property protection, public education and awareness, natural resource protection, emergency services, and structural projects. Individual members of the Planning Committee were tasked to provide mitigation actions. As such, Table 8-3 lists the goals and potential actions selected for this HMP. As stated above the Planning Committee felt that actions under Goals One and Two were sufficient to address the low hazards of Infestation and Volcano specifically 1.A, 1.C, 1. D, 1.E, 2.A, and 2.C.

Table 8-3: Mitigation Goals and Potential Actions

Goals	County/ City	Action	New or Existing Bldgs.	Description
Goal 1: *Promote increased and ongoing involvement in hazard-mitigation planning and projects*	County	1.A	N	Update the Master Plan to be consistent with the hazard area maps and implementation strategies developed in the HMP every 10 years. Review & update ordinances & code every 3 years.
	Both	1.B	N/E	Annually review the County's & City's Emergency Operations Plan and identify needed plan updates
	Both	1.C	N/E	Increase GIS and mapping capability to assess the risk in the County and City
	Both	1.D	N/E	Continue planning and coordination with multi-agency/regional planning for multi-hazards (applies to Goals 3-9)
	Both	1.E	N/E	Integration of new information (i.e. LIDAR, USACE Canal Report) into County & City planning documents.
Goal 2: *Build and support local capacity to enable the public to prepare for, respond to, and recover from disasters*	Both	2.A	N/E	Utilize social media as a communication tool, as well as an education tool for hazard loss prevention
	Both	2.B	E	Conduct a minimum of one disaster exercise each year
	Both	2.C	N/E	Prepare, develop, & distribute appropriate public information about hazard mitigation programs and projects at County and City-sponsored events
Goal 3 *Reduce the possibility of damage and losses due to drought*	Both	3.A	N/E	Pursue studies and formalized agreements with upstream agencies to minimize impacts of drought conditions, including aquifer water quality, ground stabilization, economic impacts and municipal/private well water supply.
	Both	3.B	N/E	Encourage public participation in drought strategies through public information programs on water conservation and drought resistant landscaping and through building code ordinances.
Goal 4: *Reduce the possibility of damage and losses due to*	Both	4.A	N	Continue to enforce the International Building Code (IBC) provisions pertaining to grading and construction relative to seismic hazards. Update County Codes to IBC 2012 when it is released.
	Both	4.B	E	Implement an Unreinforced Masonry (URM) building program that determines the structural safety of critical facility and infrastructure, and retrofit buildings, if necessary

Table 8-3: Mitigation Goals and Potential Actions

Goals	County/ City	Action	New or Existing Bldgs.	Description
earthquakes	Both	4.C	E	Implement an Unreinforced Masonry (URM) building program that determines the structural safety of existing building inventory, and retrofit buildings, if necessary
Goal 5: *Reduce the possibility of threat to life and losses due to epidemic*	County	5.A		Improve communication, collaboration and integration among stakeholders and promote awareness of epidemic threats
	Both	5.B		Create & implement a training and exercise program relative to epidemics
Goal 6: *Reduce the possibility of damage and losses due to floods*	Both	6.A	N/E	Review and update flood plans that would include coordination with adjacent counties, cities, and special districts supporting a regional approach to flood control
	Both	6.B	E	Install new flood facilities including upgrade of the existing storm drain system to current standards including culverts and channel improvements
	Both	6.C	E	Protect and enhance existing water conveyance structures, storage, and treatment facilities to reduce impact from flood
	Both	6.D	N/E	Formalize agreements to utilize federal lands to spread flood and precautionary release waters.
	Both	6.E	E	Land acquisition of repetitive loss structures
	County	6.F	N/E	Improve natural waterways in County for drainage.
	Both	6..G	N/E	Implement multiple diversion projects for flood reduction along the Carson River and canal system.
Goal 7: *Reduce the possibility of damage and losses due to Severe Weather*	Both	7.A	E	In areas at risk to severe weather, retrofit public buildings to withstand snow loads and sever winds to prevent roof collapse/damage
	Both	7.B	E	Enhance shelter facilities to withstand severe weather events (electrical, structural, etc.)
Goal 8: *Reduce the*	Both	8.A	E	Develop partnerships for a community based vegetation management program including chipping programs

Table 8-3: Mitigation Goals and Potential Actions

Goals	County/ City	Action	New or Existing Bldgs.	Description
possibility of damage and losses due to wildland fires				
Goal 9: *Reduce the possibility of damage and losses due to hazardous materials release*	Both	9.A	N/E	Enforce zoning ordinances to reduce public health risks from hazardous materials releases

8.3 EVALUATING AND PRIORITIZING MITIGATION ACTION

The requirements for the evaluation and implementation of mitigation actions, as stipulated in DMA 2000 and its implementing regulations, are described below.

DMA 2000 Requirements: Mitigation Strategy - Implementation of Mitigation Actions

Implementation of Mitigation Actions

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

Element

- Does the mitigation strategy include how the actions are prioritized? (For example, is there a discussion of the process and criteria used?)
- Does the mitigation strategy address how the actions will be implemented and administered? (For example, does it identify the responsible department, existing and potential resources, and timeframe?)
- Does the prioritization process include an emphasis on the use of a cost-benefit review (see page 3-36 of *Multi-Hazard Mitigation Planning Guidance*) to maximize benefits?

Source: FEMA, March 2008.

The mitigation actions were finalized during the Planning Committee meeting in September of 2011. At this time the Planning Committee evaluated and prioritized each of the actions. To complete this task, the Planning Committee completed the STAPLE+E evaluation criteria using rankings of one for lowest and five for highest priority, acceptance, feasibility etc. The rankings

for each action were totaled and the actions with the highest number of points were evaluated by the committee. See Table 8-4 for the evaluation criteria.

Table 8-4: STAPLE+E Evaluation Criteria for Mitigation Actions

Evaluation Category	Discussion "It is important to consider..."	Considerations
Social	The public Support for the overall mitigation strategy and specific mitigation actions	Community acceptance; adversely affects population
Technical	If the mitigation action is technically feasible and if it is the whole or partial solution	Technical feasibility; Long-term solutions; Secondary impacts
Administrative	If the community has the personnel and administrative capabilities necessary to implement the action or whether outside help will be necessary	Staffing: Funding allocation; Maintenance/operations
Political	What the community and its members feel about issues related to the environment, economic development, safety, and emergency management	Political support; Local champion; Public support
Legal	Whether the community has the legal authority to implement the action, or whether the community must pass new regulations	Local, State, and Federal authority; Potential legal challenge
Economic	If the action can be funded with current or future internal and external sources, if the costs seem reasonable for the size of the project, and if enough information is available to complete a FEMA Benefit Cost Analysis	Benefit/cost of action; Contributes to other economic goals; Outside funding required; FEMA Benefit Cost Analysis
Environmental	The impact on the environment because of public desire for a sustainable and environmentally healthy community	Effect on local flora and fauna; Consistent with community environmental goals; Consistent with local, State and Federal laws

Upon review by the Planning Committee, mitigation actions were selected for the County and City that best fulfill the goals of the HMP and were appropriate and feasible to implement during the 5-year lifespan of this version of the HMP. In reviewing the actions the Planning Committee considered the following:

- Actions that strengthen, elevate, relocate, or otherwise improve buildings, infrastructure, or other facilities to enhance their ability to withstand the damaging impacts of future disasters
- Actions in which the benefits (which are the reduction in expected future damages and losses) are greater than the costs considered as necessary to implement the specific action
- Actions that either address multi-hazard scenarios or address a hazard that present the greatest risk to the jurisdiction

The actions are shown in Table 8-5.

8.4 IMPLEMENTING A MITIGATION ACTION PLAN

A Mitigation Action Plan Matrix was prepared for the County and City detailing the priority of the mitigation actions, how the overall benefit-cost were taken into consideration, and how each mitigation action will be implemented and administered. The County and City priority ratings were the same for all actions except for 1.A, 5.A, 6.E and 6.F which are County only actions. This matrix is Table 8-5.

Table 8-5: Action Plan Matrix

Action Number	Action Item	Department / Division	Potential Funding Source	Implementation Timeline	Economic Justification	Priority Level
Churchill County						
1A.	Update the Master Plan to be consistent with the hazard area maps and implementation strategies developed in the HMP every 10 years. Update Ordinances every 3 years.	County Planning City Planning	Local Gen. Fund, HUD	24-36 months	Protection of lives due to pre-planning.	High County only
1.B	Annually review the City's EOP & update & integrate w/local Hazard Mitigation Plan	Emergency Mgr. Fire Dept.	HMGP, PDM, SERC, EMPG, USEPA, NDEP, NDCNR; DHS, Local Gen. Fund	Ongoing	Protection of lives and property due to pre-planning.	High
1.C	Increase GIS and mapping capability to assess the risks in the County & City	County Planning	Local Gen. Fund	Ongoing	Protection of lives and property due to pre-planning	High
1.D	Continue planning and coordination with multi-agency/regional planning for multi-hazards (applies to Goals 3-9)	County & City Planning Emergency Mgr. TCID, Carson River Subconservancy, NAS Fallon, USACE	HMGP, PDM, SERC, EMPG, USEPA, NDEP, NDCNR; DHS, Local Gen. Fund	Ongoing	Protection of lives and property due to pre-planning	High
1.E	Integration of new information (i.e. LIDAR, USACE Canal Report) into County & City planning documents.	County & City Planning	USACE, PDM, HMGP, Local Gen. Fund	Ongoing	Protection of lives and property due to pre-planning	Medium
2.A	Utilize social media as a communication tool, as well as an education tool for hazard loss prevention	Emergency Mgmt., Fire Dept., Sherriff, School District, Health Dept.	Local Gen Fund	Ongoing	Protection of homes, businesses, infrastructure, and critical facilities.	Medium
2.B	Conduct minimum of one disaster exercise/year	Emergency Mgr. Fire Dept.	EMPG, SERC, USEPA, NDEP, NDCNR, Local Gen Fund	Ongoing	Protection of lives and property due to pre-planning.	High County only
2.C	Prepare, develop, & distribute	Emergency Mgmt.,	Local Gen. Fund	Ongoing	Protection of homes, businesses,	Medium

Table 8-5: Action Plan Matrix

Action Number	Action Item	Department / Division	Potential Funding Source	Implementation Timeline	Economic Justification	Priority Level
	appropriate public information about hazard mitigation programs and projects at County & City sponsored events	Fire Dept., Sherriff, School District, Health Dept			infrastructure, and critical facilities.	
3.A	Pursue studies and formalized agreements with upstream agencies to minimize impacts of drought conditions, including aquifer water quality, ground stabilization, economic impacts and municipal/private well water supply.	County & City Water Utilities, Emergency Mgmt.	Local Utility Charge, Local Gen. Fund, HMGP, PDM, NDEP, USACE, TCID	24-36 months	Protection of homes, businesses, infrastructure, and critical facilities	Medium
3.B	Encourage public participation in drought strategies through public information programs on water conservation and drought resistant landscaping and through building code ordinances.	County & City Water Utilities, Emergency Mgmt.	Local Utility Charge, Local Gen. Fund, , NDEP, TCID, Carson River Sub. Conservancy	12 months	Protection of homes, businesses, infrastructure, and critical facilities	Medium
4.A	Continue to enforce the International Building Code (IBC) provisions pertaining to grading and construction relative to seismic hazards. Update County & City Codes to IBC 2012 when it is released	County & City Bldg. Dept. & Planning Dept.	Local Gen Fund	Ongoing	Protection of lives, homes, businesses, infrastructure, and critical facilities	Medium
4.B	Implement an Unreinforced Masonry (URM) building program that determines the structural safety of critical facility and infrastructure, and retrofit buildings, if necessary	County & City Building, Planning & Public Works	HMGP, PDM, US HUD, Local Gen. Fund	24-48 months	Protection of lives, homes, businesses, infrastructure, and critical facilities	Low
4.C	Implement an Unreinforced Masonry (URM) building program that determines the structural safety of existing building inventory, and	County & City Building, Planning & Public Works	HMGP, PDM, US HUD, Local Gen. Fund	24-48 months	Protection of lives, homes, businesses, infrastructure, and critical facilities	Low

Table 8-5: Action Plan Matrix

Action Number	Action Item	Department / Division	Potential Funding Source	Implementation Timeline	Economic Justification	Priority Level
	retrofit buildings, if necessary					
5.A	Improve communication, collaboration and integration among stakeholders and promote awareness of epidemic threats	Health Dept.	NV Health & Human Services, CDC	6-12 months	Protection of lives due to pre-planning.	Medium County only
5.B	Create & implement a training and exercise program relative to epidemics	Health Dept.	NV Health & Human Services, CDC, Banner Hospital	6-12 months	Protection of lives due to pre-planning	Medium
6.A	Review & update flood plans for coordination w/adjacent counties, cities, and special districts supporting a regional approach to flood	Public Works	PDM, HMGP, FMA, RFC, USDA, NDEP, USEPA, NDRCS, Local, PW	24-36 months	Protection of homes, businesses, infrastructure, and critical facilities while strengthening regional coordination.	High
6.B	Install new flood facilities & update storm drain system	Public Works	PDM, HMGP, FMA, RFC, USDA, NDEP, USEPA, NRCS, Local, PW	24-36 months	Protection of homes, businesses, infrastructure, and critical facilities.	High
6.C	Protect & enhance existing municipal water conveyance structures, storage & treatment facilities	Public Works	PDM, HMGP, FMA, RFC, USDA, NDEP, USEPA, NRCS, FEMA, 319(h) grants (Clean Water Act), PW	24-36 months	Protection of homes, businesses, infrastructure, and critical facilities.	High
6.D	Formalize agreements to utilize federal lands to spread flood and precautionary release waters.	Public Works	PDM, HMGP, FMA, RFC, USDA, NDEP, USEPA, NRCS, FEMA, 319(h) grants (Clean Water Act), PW	24-36 months	Protection of homes, businesses, infrastructure, and critical facilities.	High
6.E	Land acquisition of repetitive loss structures	Flood Plain Manager - Planning	PDM, HMGP, FMA, RFC, NDEP, USEPA, NRCS,	24-36 months	Protection of homes, businesses, infrastructure, and critical facilities.	Low County only
6.F	Improve natural waterways in the	County Public	PDM, HMGP, FMA,	18-24 Months	Protection of homes, businesses,	Low –

Table 8-5: Action Plan Matrix

Action Number	Action Item	Department / Division	Potential Funding Source	Implementation Timeline	Economic Justification	Priority Level
	County for drainage	Works, TCID	RFC, USDA, NDEP, USEPA, NRCS, FEMA, 319(h) grants (Clean Water Act), USGS, Local Gen. Fund, USACE		infrastructure, and critical facilities	County Only
6.G	Implement multiple diversion and detention basin projects for flood reduction along the Carson river and canal system	County & City Public Works, TCID	PDM, HMGP, FMA, RFC, USDA, NDEP, USEPA, NRCS, FEMA, 319(h) grants (Clean Water Act), USGS, Local Gen. Fund, USACE	18-48 Months	Protection of homes, businesses, infrastructure, and critical facilities	High
7.A	In areas at risk to severe weather, retrofit public buildings to withstand snow loads and severe winds to prevent roof collapse/damage	County & City Public Works	PDM, HMGP, Local Gen. Fund	12-14 months	Protection of infrastructure, and critical facilities.	Medium
7.B	Enhance shelter facilities to withstand severe weather events (electrical, structural, etc.)	County & City Public Works	PDM, HMGP, Local Gen. Fund, School Bond	12-14 months	Protection of infrastructure, and critical facilities.	High
8.A	Develop partnerships for a community based vegetation management program including chipping programs	NV Div. of Forestry, Fire Dept.	NDF, BLM, National Fire Monies, USFS, Local General Fund	6-12 Months	Mitigation Project will ensure a greater number of residential structures and critical facilities and infrastructure benefit from actions to protect lives and property from wildfire.	Low
9.A	Enforce zoning ordinances to reduce public health risks from hazardous materials release	County & City Bldg. Dept., Fire Dept.	Local General Fund, NDEP, USEPA	12-24 Months	Protection of lives, homes, businesses, infrastructure, and critical facilities	Low

BLM= Bureau of Land Management
PW = Public Works
DHS= Dept. of Homeland Security
EMPG = Emergency Management Performance
HMGP = Hazard Mitigation Grant Program
HUD=Housing & Urban Development
NDEP = Nevada Division of Environmental Protection
RFC=Resource Finance Corporation
SERC = State Emergency Response Commission
USDA = U.S. Department of Agriculture
USEPA = U.S. Environmental Protection Agency

Grant
FMA=Flood Management Assistance
NDF = Nevada Department of Forestry
NDRCS=Nevada Dept. Resource Conservation Services
PDM = Pre-Disaster Mitigation
USFS = U.S. Fire Service
USGS = US Geological Survey

This section describes a formal plan maintenance process to ensure that the HMP remains an active and applicable document. It includes an explanation of how the County, City and the Planning Committee intend to organize its efforts to ensure that improvements and revisions to the HMP occur in a well-managed, efficient, and coordinated manner.

The following three process steps are addressed in detail below:

- Monitoring, evaluating, and updating the HMP
- Implementation through existing planning mechanisms
- Continued public involvement

9.1 MONITORING, EVALUATING, AND UPDATING THE HMP

The requirements for monitoring, evaluating, and updating the HMP, as stipulated in the DMA 2000 and its implementing regulations, are described below.

DMA 2000 Requirements: Plan Maintenance Process - Monitoring, Evaluating, and Updating the Plan

Monitoring, Evaluating and Updating the Plan
Requirement §201.6(c)(4)(i): [The plan maintenance process shall include a] section describing the method and schedule of monitoring, evaluating, and updating the mitigation plan within a five-year cycle.
Element
- Does the new or updated plan describe the method and schedule for monitoring the plan? (For example, does it identify the party responsible for monitoring and include a schedule for reports, site visits, phone calls, and meetings?)
- Does the new or updated plan describe the method and schedule for evaluating the plan? (For example, does it identify the party responsible for evaluating the plan and include the criteria used to evaluate the plan?)
- Does the new or updated plan describe the method and schedule for updating the plan within the five-year cycle?

Source: FEMA 2008.

The County and City Emergency Managers recognize the need for plan maintenance and wanted to include tools into the plan for maintenance. The HMP was prepared as a collaborative effort between the County and City Emergency Management, the County Planning Department, the Local Emergency Management Committee (LEPC) and the Nevada Division of Emergency Management. To maintain momentum and build upon this hazard mitigation planning effort, the Planning Committee will monitor, evaluate, and update the HMP. The Planning Committee will be responsible for implementing the Mitigation Action Plan. The County Emergency Manager along with the City Emergency Manager will serve as the primary points of contact and will coordinate all local efforts to monitor, evaluate, and revise the HMP.

The LEPC will conduct an annual review of the progress in implementing the HMP, particularly the Mitigation Action Plan. As shown in Appendix F, the Annual Review Questionnaire and Mitigation Action Progress Report will provide the basis for possible changes in the overall Mitigation Action Plan by refocusing on new or more threatening hazards, adjusting to changes to or increases in resource allocations, and engaging additional support for the HMP implementation. The County Emergency Manager will initiate the annual review one month

prior to the month of date of adoption. The findings from this review will be presented annually to the County and City Managers. The review will include an evaluation of the following:

- Participation of County and City agencies and others in the HMP implementation.
- Notable changes in the County and City's risk of natural or human-caused hazards.
- Impacts of land development activities and related programs on hazard mitigation.
- Progress made implementing the Mitigation Action Plan (identify problems and suggest improvements as necessary).
- The adequacy of resources for implementation of the HMP.

The process of reviewing the progress on achieving the mitigation goals and implementing the Mitigation Action Plan activities and projects will also be accomplished during the annual review process. During each annual review, a Mitigation Action Progress Report will be submitted to the Planning Committee and provide a brief overview of mitigation projects completed or in progress since the last review. As shown in Appendix E, the report will include the current status of the mitigation project, including any changes made to the project, the identification of implementation problems and appropriate strategies to overcome them, and whether or not the project has helped achieve the appropriate goals identified in the plan.

In addition to the annual review, the Planning Committee will update the HMP every five years. To ensure that this occurs, in the third year following adoption of the HMP, the Planning Committee will undertake the following activities:

- Thoroughly analyze and update the County's and City's risk of natural and man-made hazards.
- Provide a new annual review (as noted above), plus a review of the three previous annual reports.
- Provide a detailed review and revision of the mitigation strategy.
- Prepare a new action plan with prioritized actions, responsible parties, and resources.
- Prepare a new draft HMP and submit it to the County and City Board for adoption.
- Submit an updated HMP to the Nevada State Hazard Mitigation Officer and FEMA for approval.

9.2 IMPLEMENTATION THROUGH EXISTING PLANNING MECHANISMS

The requirements for implementation through existing planning mechanisms, as stipulated in the DMA 2000 and its implementing regulations, are described below.

DMA 2000 Requirements: Plan Maintenance Process - Incorporation into Existing Planning Mechanisms

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

DMA 2000 Requirements: Plan Maintenance Process - Incorporation into Existing Planning Mechanisms

Element

- Does the new or updated plan identify other local planning mechanisms available for incorporating the requirements of the mitigation plan?
- Does the new or updated plan include a process by which the local government will incorporate the requirements in other plans, when appropriate?

Source: FEMA 2008.

After the adoption of the HMP, the Committee will continue to ensure that the HMP, in particular the Mitigation Action Plan, is incorporated into existing planning mechanisms. Each member of the Planning Committee will achieve this incorporation by undertaking the following activities.

- Conduct a review of the community-specific regulatory tools to assess the integration of the mitigation strategy. These regulatory tools are identified in Table 7-1.
- Work with pertinent divisions and departments to increase awareness of the HMP and provide assistance in integrating the mitigation strategy (including the action plan) into relevant planning mechanisms. Implementation of these requirements may require updating or amending specific planning mechanisms.

9.3 CONTINUED PUBLIC INVOLVEMENT

The requirements for continued public involvement, as stipulated in the DMA 2000 and its implementing regulations, are described below.

DMA 2000 Requirements: Plan Maintenance Process - Continued Public Involvement

Continued Public Involvement

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

Element

- Does the new or updated plan explain how **continued public participation** will be obtained? (For example, will there be public notices, an ongoing mitigation plan committee, or annual review meetings with stakeholders?)

Source: FEMA 2008.

The County and City is dedicated to involving the public directly in the continual reshaping and updating of the HMP. Hard copies of the HMP will be provided to each department. In addition, a downloadable copy of the plan and any proposed changes will be posted on the County's Web site. This site will also contain an e-mail address and phone number to which interested parties may direct their comments or concerns.

The Planning Committee will also identify opportunities to raise community awareness about the HMP and the County's and City's hazards. This could include attendance and provision of materials at sponsored events. Any public comments received regarding the HMP will be collected by the County and City Emergency Managers, included in the annual report to the County and City Manager, and considered during future HMP updates. A press release and

public notice by the County and City will be issued each year before the annual maintenance meeting inviting the public to participate.

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Appendix A
Adoption Resolution

Churchill County Adoption Resolution

DOC # 426871
05/17/2012 08:50 AM
Official Record
Recording requested By
CHURCHILL COUNTY
Churchill County - NV
Joan Sims - Recorder
Page 1 of 172 Fee:
Recorded By: TH RPTT:
426871

RESOLUTION NO. 13-12

A RESOLUTION OF THE BOARD OF COMMISSIONERS OF CHURCIDLL COUNTY, NEVADA, ADOPTING THE HAZARD MITIGATION PLAN CONDITIONALLY APPROVED BY FEMA.

WHEREAS, Churchill County has historically experienced severe damage from natural and human-caused hazards such as flooding, wildfire, drought, thunderstorms/high winds, severe weather, and hazardous materials incidents on many occasions in the past century; resulting in loss of property and life, economic hardship, and threats to public health and safety; and

WHEREAS, the Churchill County Hazard Mitigation Plan (the Plan) has been developed after more than one year of research and work by the County's Office of Emergency Management in association and cooperation with the County Planning Team for the reduction of hazard risk to the community; and

WHEREAS, the Plan specifically addresses hazard mitigation strategies and plan maintenance procedures for Churchill County; and

WHEREAS, the Plan recommends several hazard mitigation actions/projects that will provide mitigation for specific natural and human caused hazards that impact Churchill County with the effect of protecting people and property from loss associated with those hazards; and

WHEREAS; a public meeting was held to present the Plan for comment and review as required by law.

NOW THEREFORE BE IT RESOLVED
By the Board of County Commissioners of Churchill County, that;

1. The Plan is hereby adopted as an official plan of Churchill County.
2. The respective officials identified in the mitigation strategy of the Plan are hereby directed to Pursue implementation of the recommended actions assigned to them.

426871 05/17/2012 002 of 172

3. Future revisions and Plan maintenance required by the Disaster Mitigation Act of 2000 and FEMA, are hereby adopted as a part of this resolution for a period of five (5) years from the Date of this resolution.

4. An annual report on the progress of the implementation elements of the Plan shall be Presented to the Board of County Commissioners by October 31st of each calendar year..

PASSED, APPROVED AND ADOPTED this 16th day of May, 2012, by the Board of Commissioners of Churchill County, Nevada.

Chairman

ATTEST:

County Clerk

City of Fallon Adoption Resolution

Resolution 12-27

WHEREAS the City of Fallon has historically experienced severe damage from natural and human-caused hazards such as flooding, drought, thunderstorms/high winds, and hazardous materials incidents on many occasions in the past century, resulting in loss of property, economic hardship, and threats to public health and safety;

WHEREAS the City of Fallon Hazard Mitigation Plan (the Plan) has been developed after more than one year of research and work by the City's Office of Emergency Management in association and cooperation with the Local Emergency Planning Committee for the reduction of hazard risk to the community;

WHEREAS the Plan specifically addresses hazard mitigation strategies and plan maintenance procedures for the City;

WHEREAS the Plan recommends several hazard mitigation actions/projects that will provide mitigation for specific natural and human caused hazards that impact the City with the effect of protecting people and property from loss associated with those hazards;

WHEREAS a public meeting was held to present the Plan for comment and review as required by law;

NOW THEREFORE BE IT RESOLVED

by the City Council of Fallon, Nevada, that:

1. The Plan is hereby Adopted as an official plan of the City of Fallon.
2. The respective officials identified in the mitigation strategy of the Plan are hereby directed to pursue implementation of the recommended actions assigned to them.
3. Future revisions and Plan maintenance required by the Disaster Mitigation Act of 2000 and FEMA, are hereby adopted as a part of this resolution for a period of five (5) years from the date of this resolution.
4. An annual report on the progress of the implementation elements of the Plan shall be presented to the, City Council by October 31st of each calendar year.

ADOPTED by *the Fallon City Council, this 3rd day of July, 2012.*

Ayes:	Councilman Richardson
	Councilman Erickson
Nays:	None
Absent:	Councilwoman Dahl

By: Ken Tedford

Ken Tedford, Mayor

Attest:

Gary C. Cordes, City Clerk

Appendix B
Figures

Figure B-1: Churchill Surface Management Map

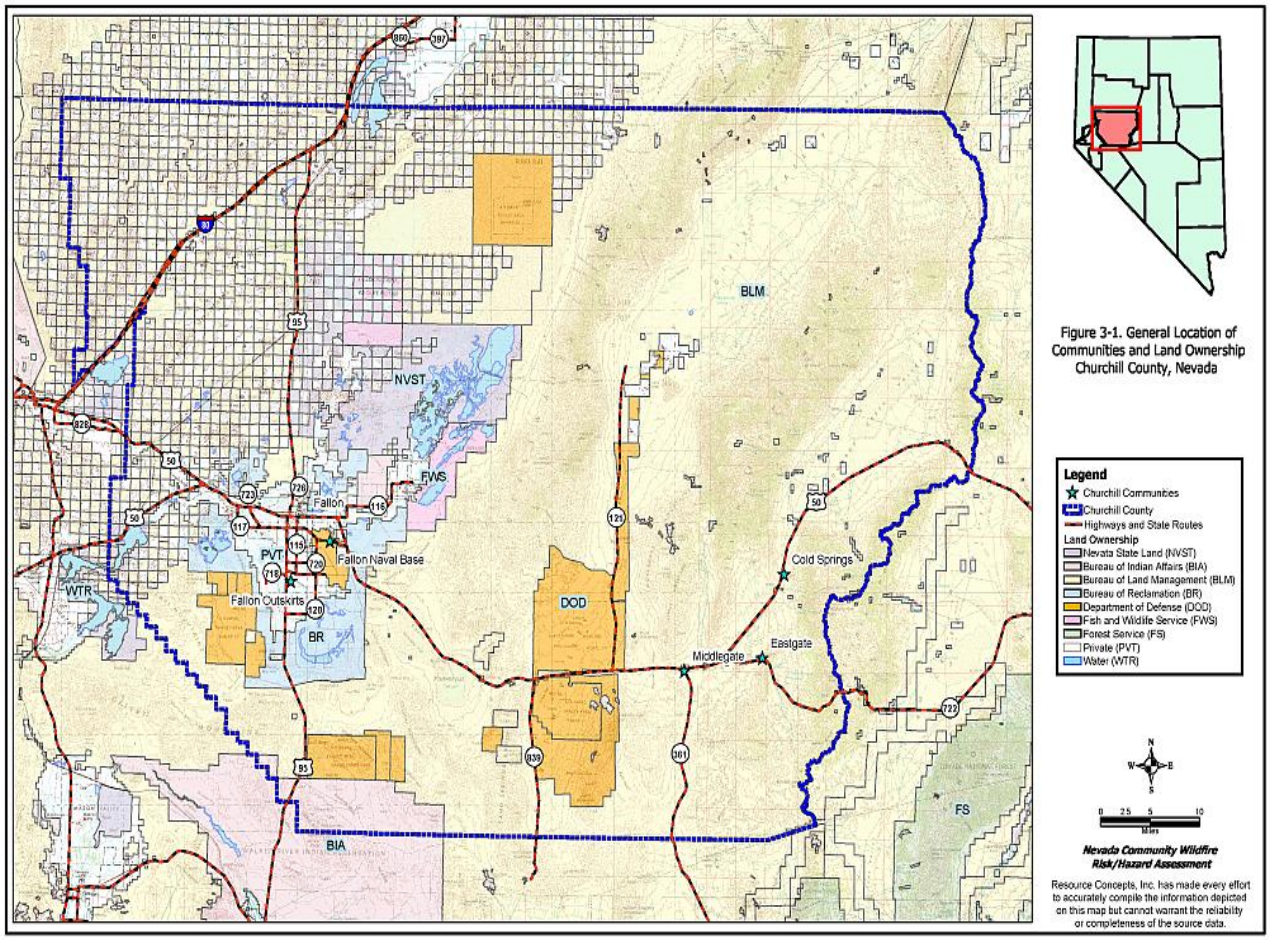
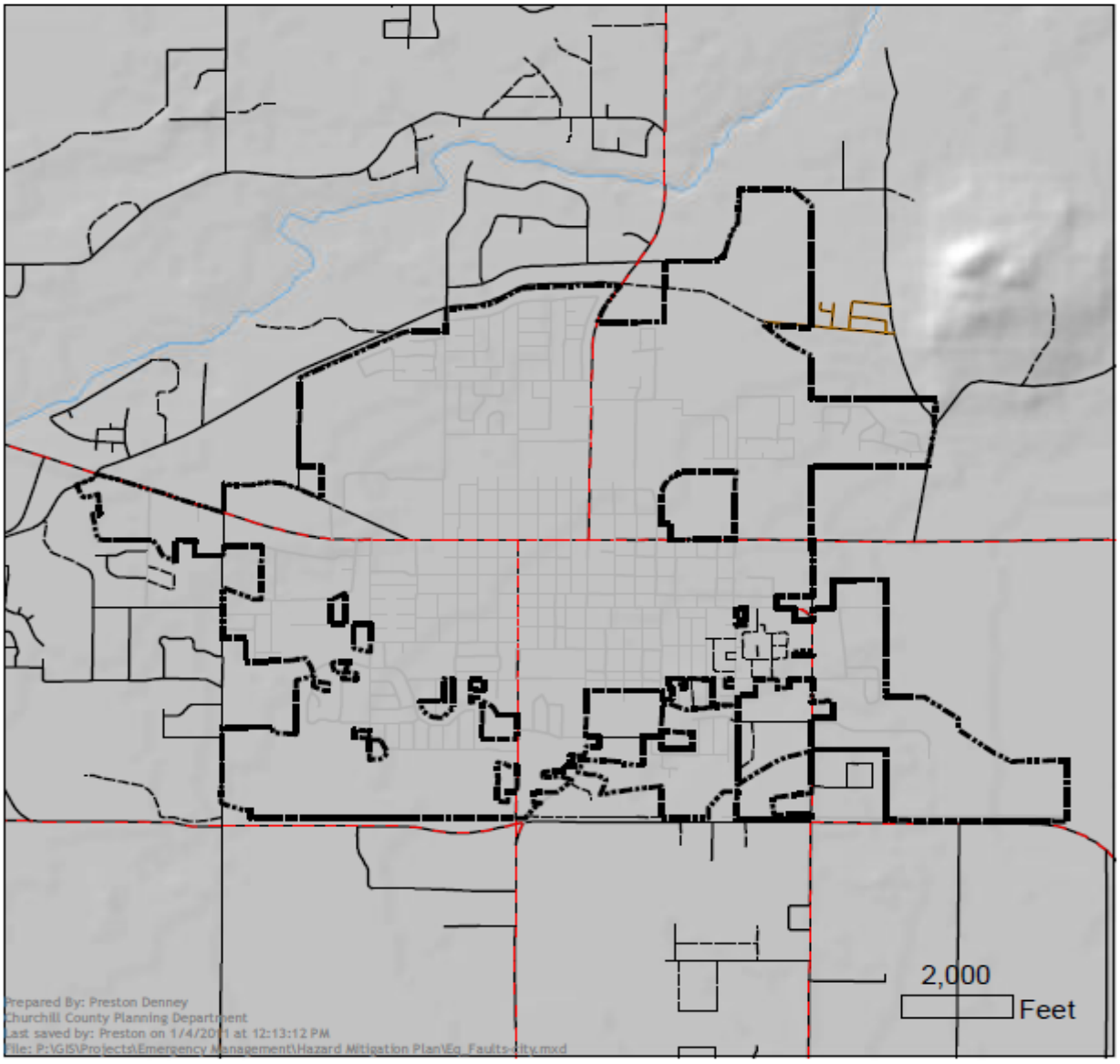
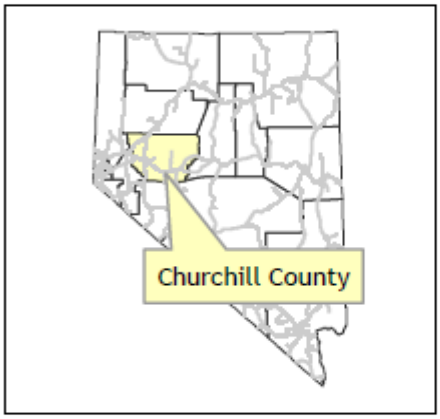


Figure B-2: Land Use Map

Figure B-3



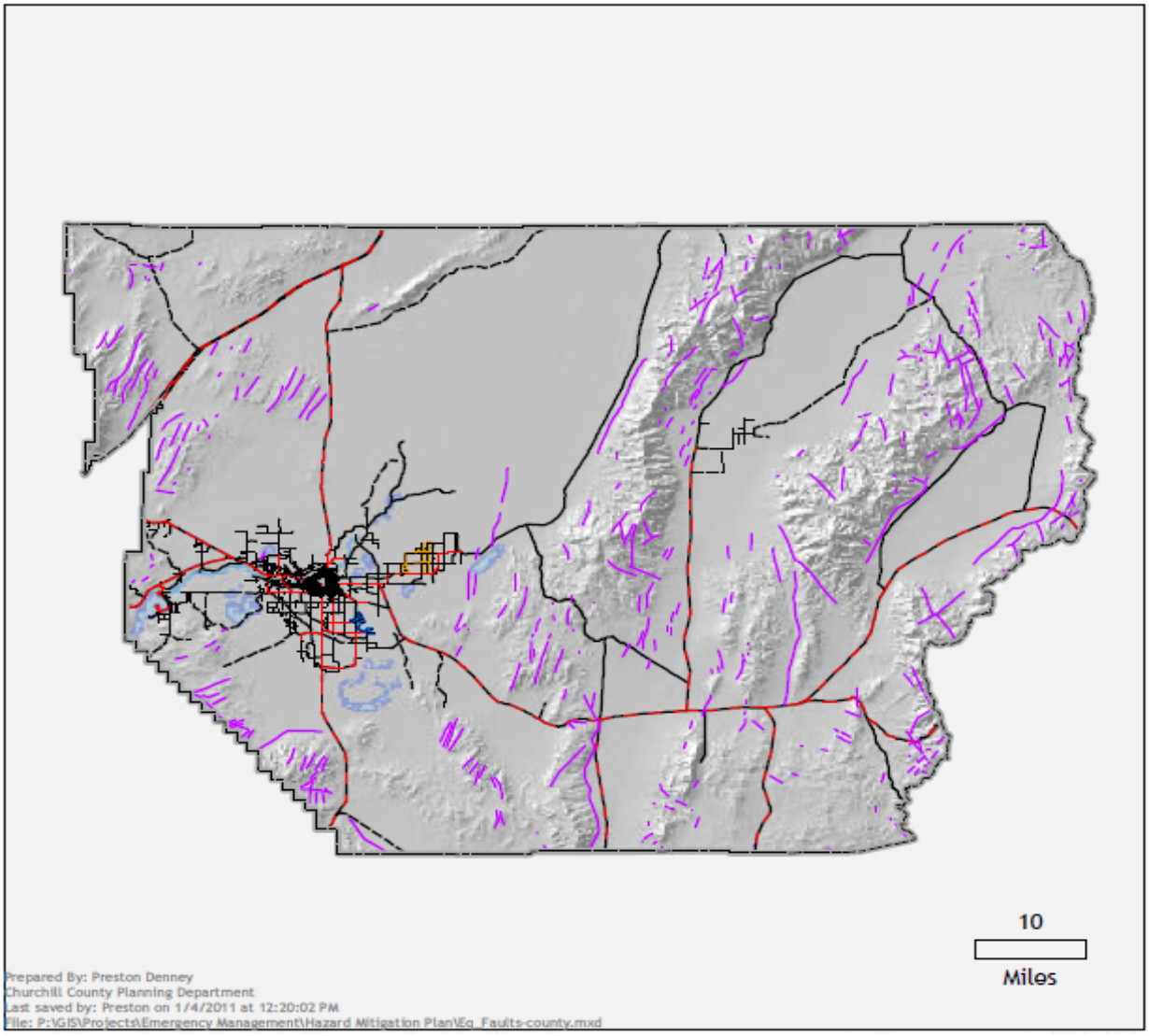


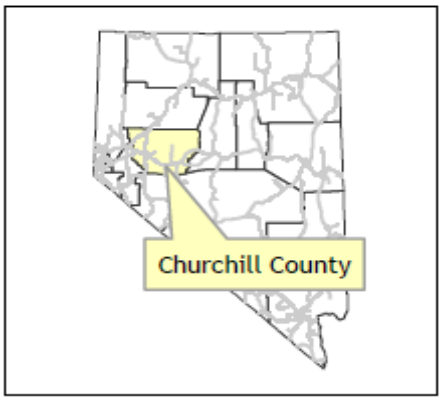
City Earthquake Faults

Churchill County Line
City of Fallon
Earthquake Faults
Carson River
Lakes and Reservoirs

Churchill Roads
Maintained By
State
County
City
Navy
Tribe
Private/Other

Figure B-4



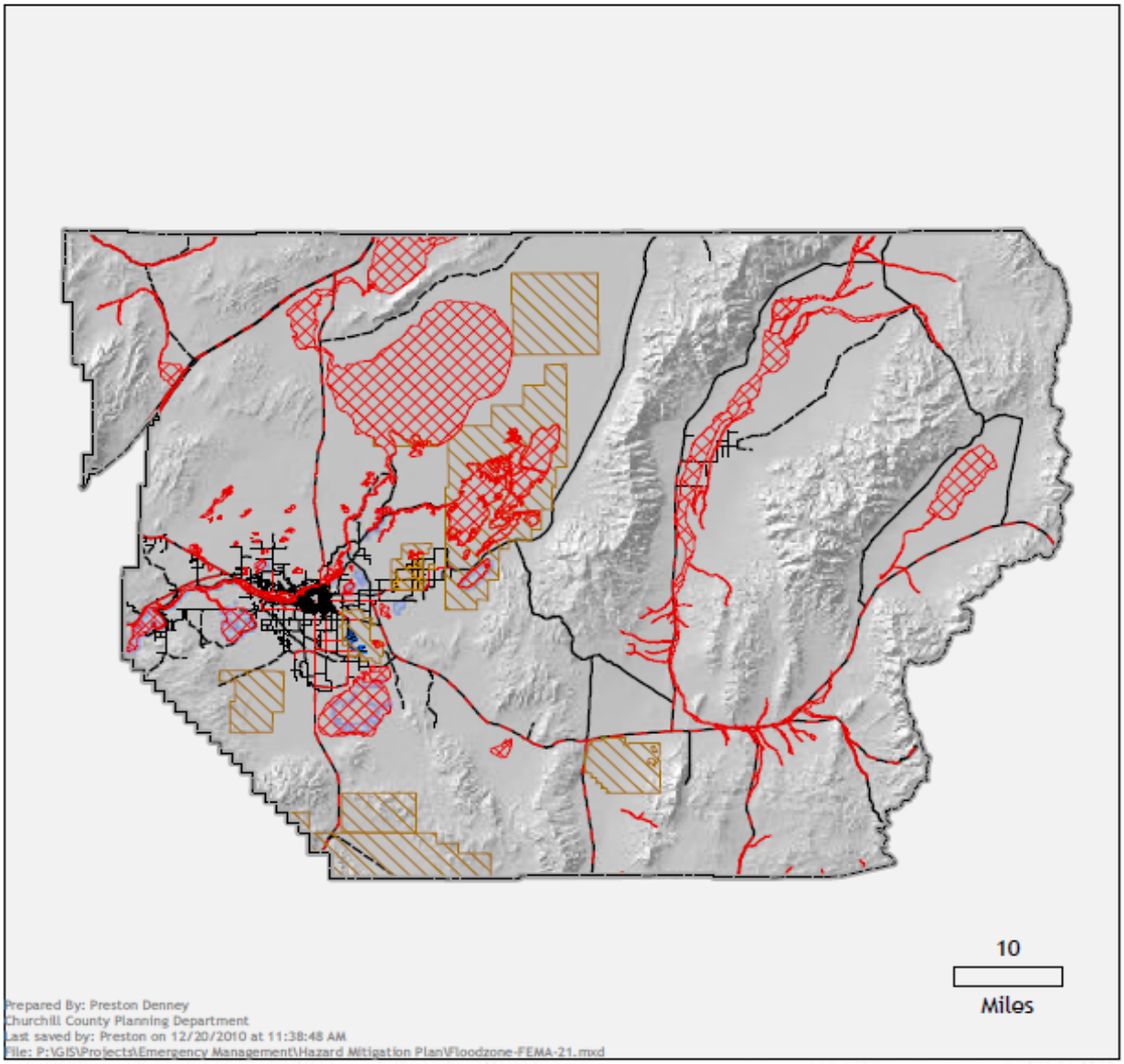


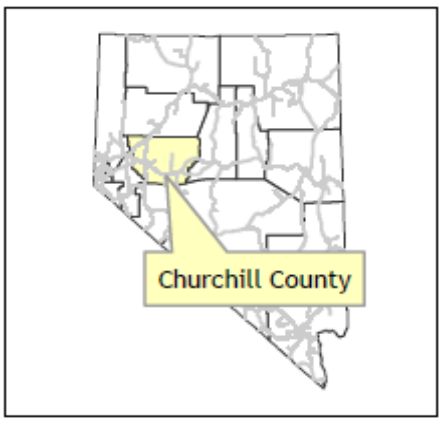
County Earthquake Faults

Churchill County Line
City of Fallon
Earthquake Faults
Carson River
Lakes and Reservoirs

Churchill Roads
Maintained By
State
County
City
Navy
Tribe
Private/Other

Figure B-5





FEMA - FIRM Flood Zones

- Churchill County Line
- City of Fallon

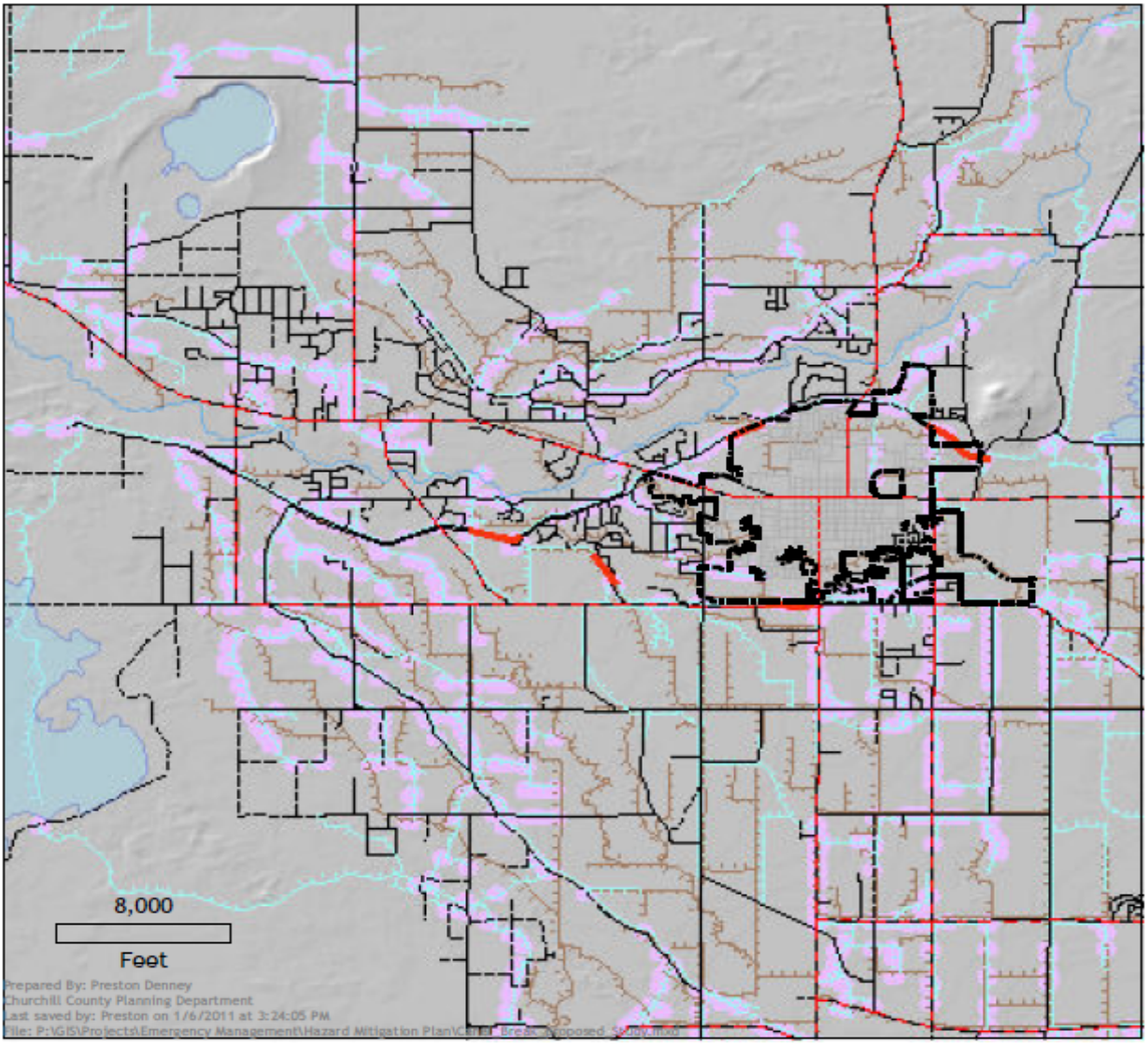
FEMA Flood Zones

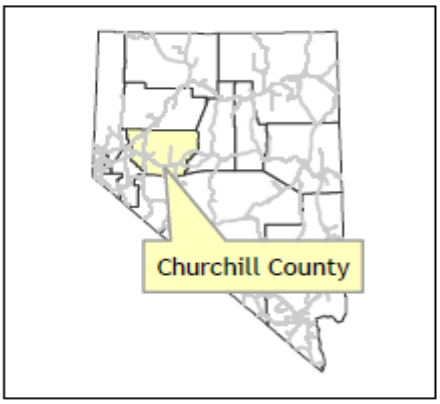
- 1% Annual Chance Flood
- 0.2% Annual Chance Flood
- Flood Hazard Undetermined
- Carson River
- Lakes and Reservoirs

Churchill Roads Maintained By

- State
- County
- City
- Navy
- Tribe
- Private/Other

Figure B-6





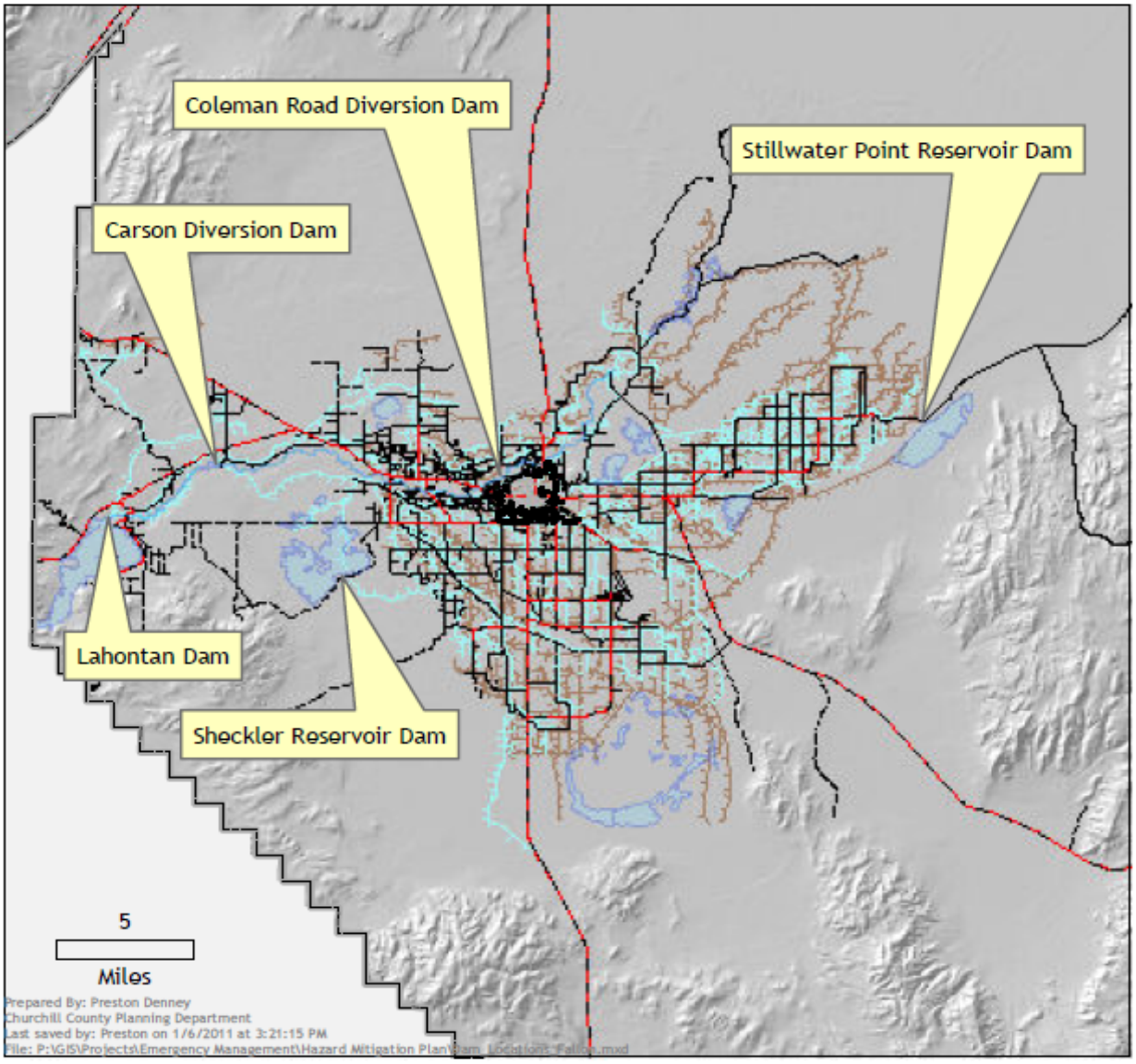
Potential Canal Levee Breaks - Study

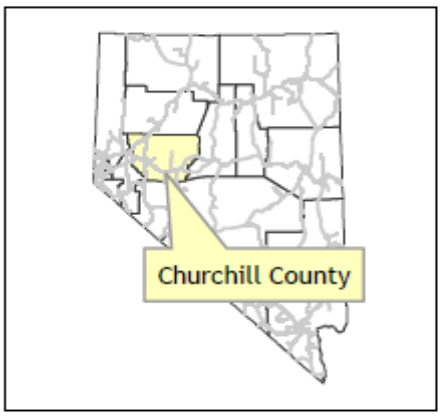
- Churchill County Line
- City of Fallon
- Carson River
- Lakes and Reservoirs
- Newlands Structure's
- Potential Levee Breaks
- Canals
- Drains

Churchill Roads Maintained By

- State
- County
- City
- Navy
- Tribe
- Private/Other

Figure B-7





Dams and Critical Control Structures

County

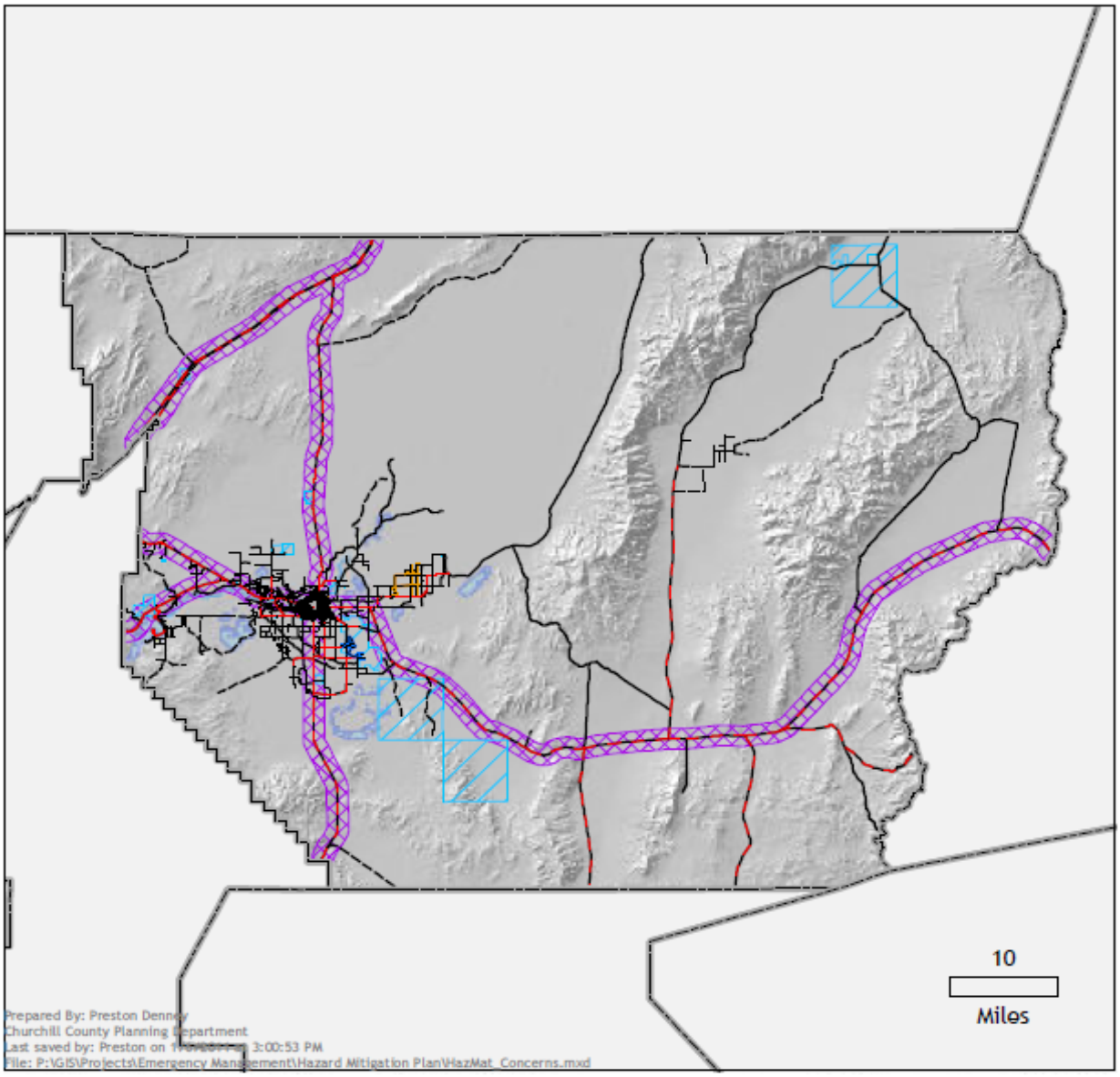
- Churchill County Line
- City of Fallon
- Carson River
- Lakes and Reservoirs
- Canals
- Drains

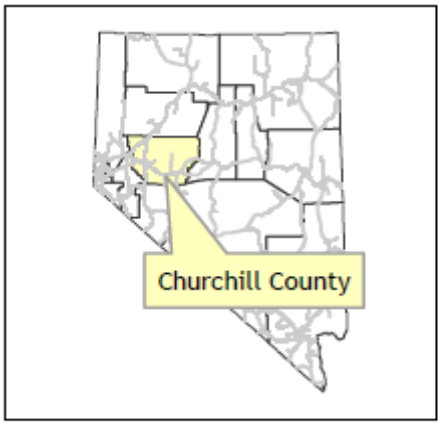
Churchill Roads

Maintained By

- State
- County
- City
- Navy
- Tribe
- Private/Other

Figure B-8





Potential Hazardous Materials

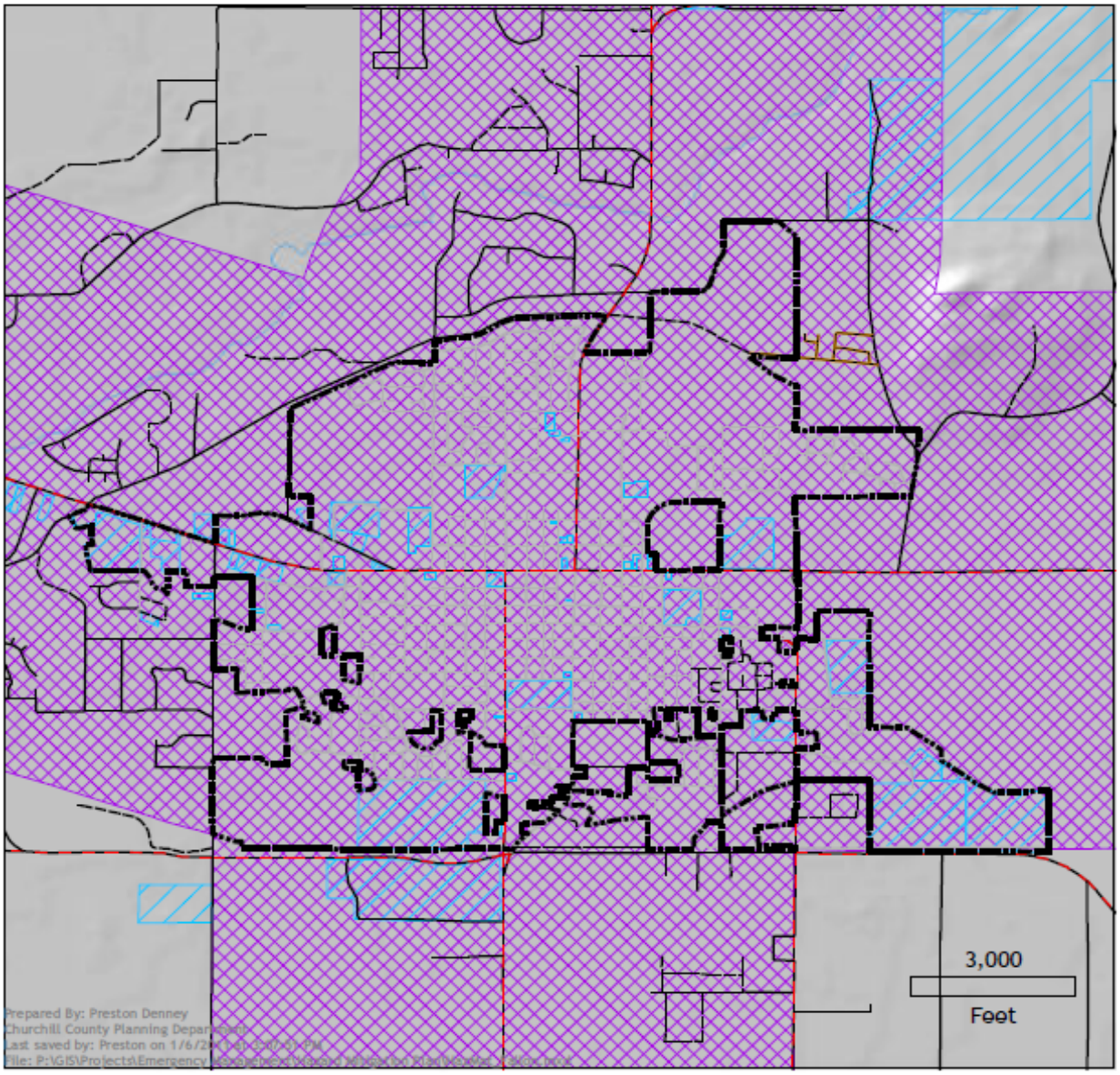
Churchill County

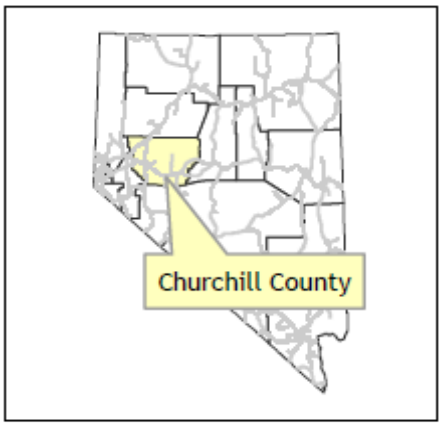
- Churchill County Line
- City of Fallon
- Parcels with Hazardous Material
- Road Buffer for Hazardous Material
- Carson River
- Lakes and Reservoirs

Churchill Roads
Maintained By

- State
- County
- City
- Navy
- Tribe
- Private/Other

Figure B-9





Potential Hazardous Materials

City of Fallon

Churchill County Line

City of Fallon

Parcels with Hazardous Material

Road Buffer for Hazardous Material

Carson River

Lakes and Reservoirs

Churchill Roads Maintained By

State

County

City

Navy

Tribe

Private/Other

Figure B-10: Cheat Grass Locations in Churchill County

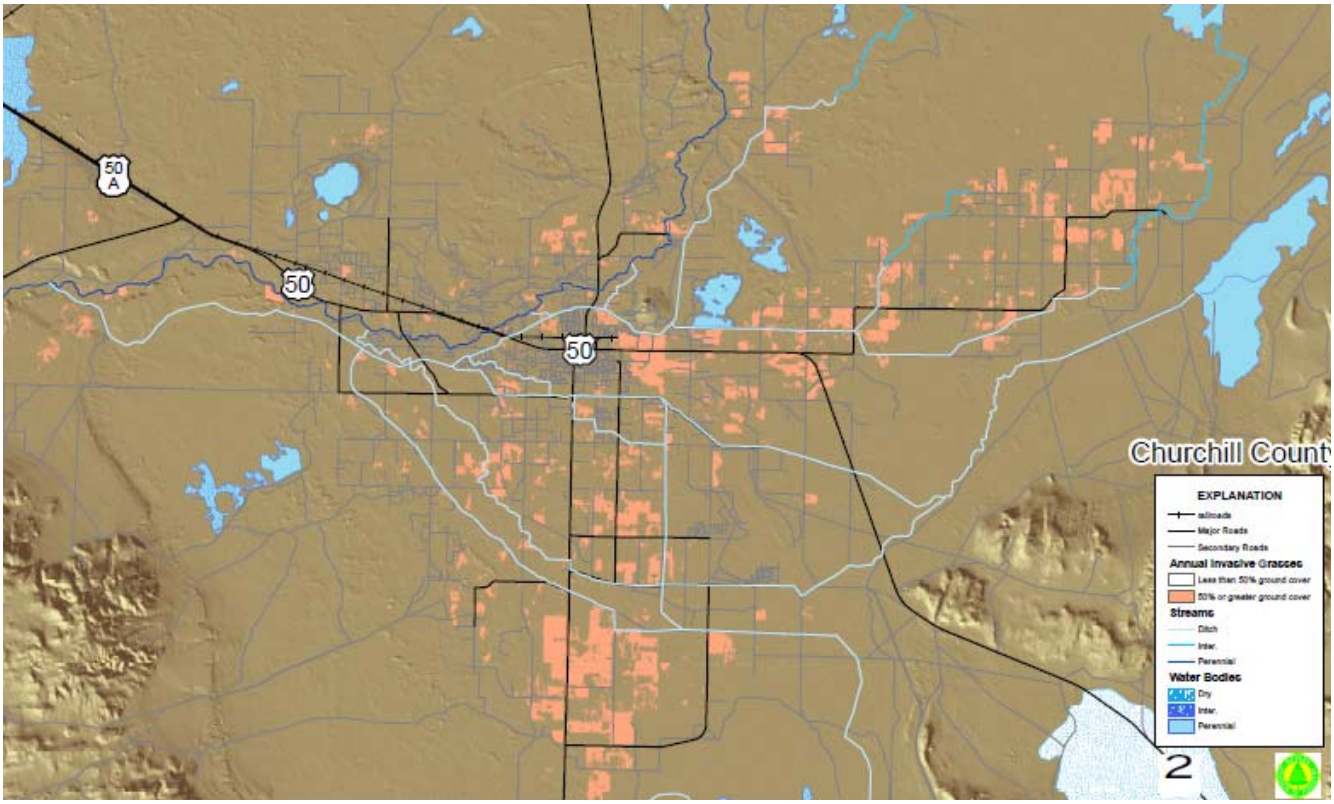
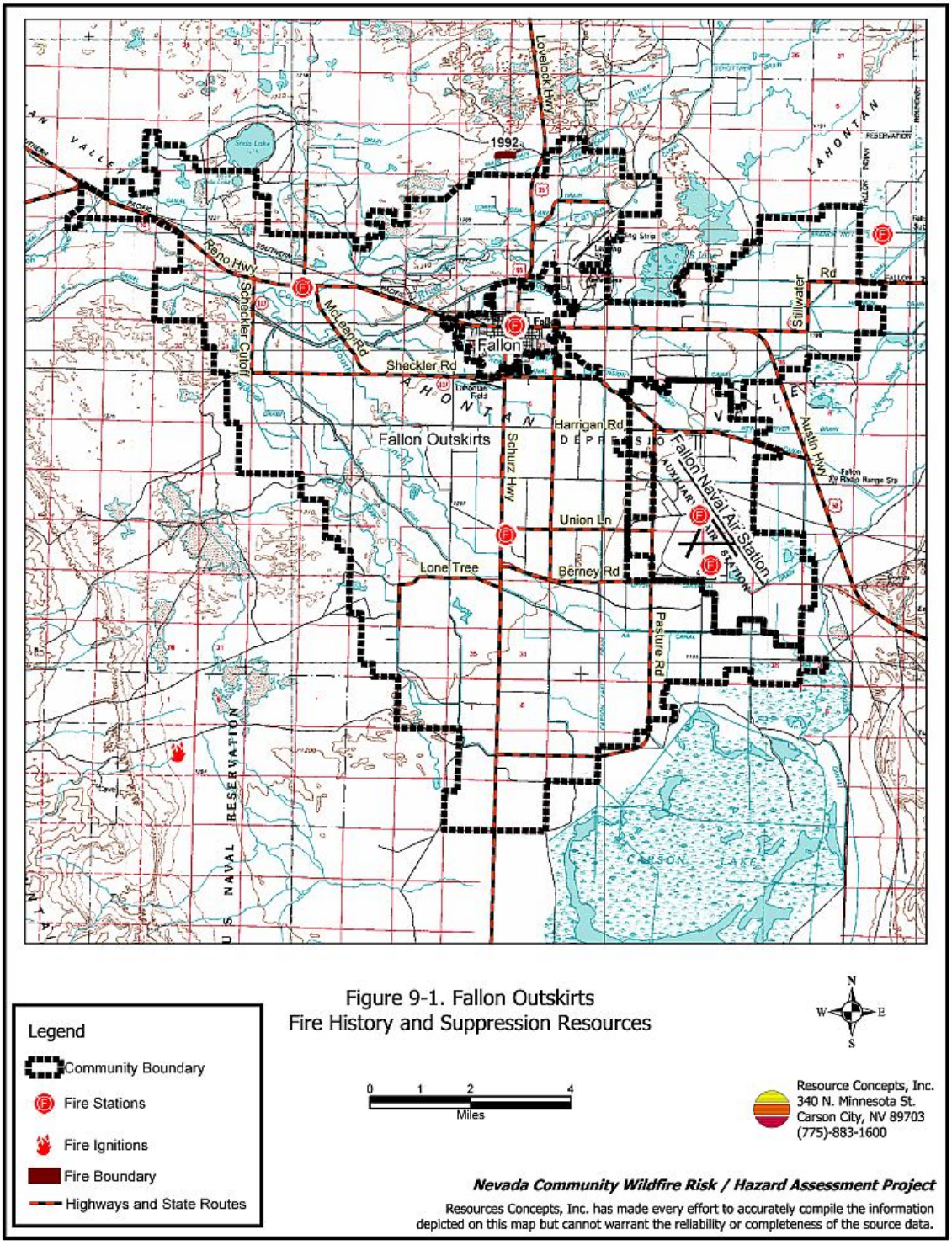


Figure 11: Fallon Wildfire Urban Interface Area and Historical Fires



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Appendix C
Public Information

Community/Regional Letter

CHURCHILL COUNTY EMERGENCY MANAGEMENT

Local Emergency Planning Committee (LEPC)
Emergency Operation Center (EOC)

February 22, 2011

Dear Community Member,

Over the next few months, Churchill County and the City of Fallon will conduct a planning effort to create a Hazard Mitigation Plan.

This plan will be developed to facilitate compliance with federal requirements and to provide a tool for local government, industry, and private individuals. The plan examines the potential disasters that residents of our community may face. It also addresses mitigation efforts that can take place in both public and private venues to help reduce the impact of these threats. Further, the plan will help our community develop infrastructure to lessen potential damage.

One of the major components of plan development is having a good cross-section of community input, and that is the reason for this invitation. I am hoping that you will agree to be included on the planning team. The level of commitment will involve a few meetings, plus a review of the components of the plan as they are written. I anticipate a meeting every other month for six to eight months. Generally the work can be done via e-mail after our introductory meeting.

I am hoping that you can participate as a representative of your profession. If you are willing to join our group, please RSVP to Ron Juliff at e-mail address of ccem@phonewave.net.

Cordially,

Ron Juliff
Emergency Manager
Churchill County

Press Release

News Release

Churchill County
Geof Stark
Voice (775) 428-1311
Fax (775) 428-0269
gstark@churchillcounty.org
7/19/10

www.churchillcounty.org

FOR IMMEDIATE RELEASE

Hazard Mitigation Plan

Fallon, NV – July 19, 2010

In recent years, nature has been restless in Nevada – there has been a swarm of earthquakes rattling the western portion of the state near Churchill County, there was the recent levee breech in Fernley, and every year there are major wildland fires near Reno and throughout the state. All of these emergency events demonstrate that Churchill County can experience similar disasters. The risks from such hazards will continue to increase as the county's population continues to grow.

Churchill County and the City of Fallon have launched a planning effort to prepare a *Multi Jurisdiction Hazard Mitigation Plan*. This plan will assess and prioritize the risks posed by natural and manmade hazards and identify ways to reduce those risks. This plan is required by the Federal Disaster Mitigation Act of 2000 and is a prerequisite to acquiring federal funding for mitigation or recovery from disasters.

Churchill County began this effort in June of 2010. Shortly, a questionnaire will be distributed to the public asking for input on local disaster mitigation and recovery needs. The county and city plan on submitting a draft plan to local governing boards in the spring of 2011 for their approval. The final plan will then be sent to FEMA for final approval.

Public comments and participation are welcomed and encouraged. For additional information, to volunteer, or to make comments, please contact Ron Juliff, Churchill County Emergency Manager at (775) 423-4188 or ccem@phonewave.net.

-End-

Questionnaire

CHURCHILL COUNTY HAZARD MITIGATION QUESTIONNAIRE

This questionnaire is designed to help the Churchill County Hazard Mitigation Planning Committee identify the community's concerns about natural and human-caused hazards. The questionnaire should be completed by an adult, preferably the homeowner or the head of the household and returned to the address at the bottom of the page. All individual responses are strictly confidential and for research purposes only. *Questions call (775) 423-4188.*

GENERAL HOUSEHOLD INFORMATION

1. RESIDENT (Y/N)? _____ # YEARS IN County or City? 0-1 ____ 2-5_____ 6-10_____ 11 or more_____

2. Have you experienced any of the natural hazards listed below?

Natural				Human Caused	
	Floods		Avalanche		Hazardous Materials Release
	Wild Fire		Health Alert/Mass Disease		Terrorism
	Earthquake		Landslide		
	Severe Weather		Infestation		
	Drought		Volcano		

3. What is the most effective way for you to receive information about how to make your home safer from natural disasters? ***(Check all that apply)***

□ Newspaper □ Internet □ Radio □ Public Meetings
□ Television □ Utility Bill □ Mail □ Billboard

4. In the following list, please check those activities that apply.

Have you or someone in your household:	Check all that apply
Attended meetings or received written information on natural disasters or emergency preparedness?	
Talked with family members about what to do in case of a disaster or emergency?	
Developed a "Household/Family Emergency Plan" in order to decide what everyone would do in the event of a disaster?	
Prepared a "Disaster Supply Kit" (extra food, water, medications, batteries, first aid items and other emergency supplies)?	
In the last year, has anyone in your household been trained in First Aid or Cardio-Pulmonary Resuscitation (CPR)?	

5. Is your property located in or near a FEMA designated floodplain? _____Do you carry flood insurance?_____

6. What modifications for earthquakes and/or floods have you made to your home? ***(Check all that apply)***

Nonstructural		Structural	
	Anchor bookcases, cabinets to wall		Secure home to foundation
	Secure water heater to wall		Brace inside of cripple wall with sheathing
	Install latches on drawers/cabinets		Brace unreinforced chimney
	Fit gas appliances with flexible connections		Brace unreinforced masonry & concrete walls and foundations
	Flood proof		Elevate home
	Other _____		

EMAIL ccem@phonewave.net OR MAIL @ CHURCHILL COUNTY EMERGENCY MGMT., 155 North Taylor St., Suite 177, Fallon, NV 89406
By June 1, 2011

CHURCHILL COUNTY HAZARD MITIGATION QUESTIONNAIRE (Cont'd)

7. Do you support policies to restrict or prohibit development in designated hazard zones?

Communitywide Strategies	Check one
Development should be prohibited in these zones	
Development should be restricted in these zones.	
Development should be restricted only where "severe risk" exists	
Development should NOT be restricted in hazard zones	
I don't know.	

8. Please rank how prepared you feel you and your household are for the probable impacts of natural hazard events. Rank on a scale of 1 to 5 with 5 being the most prepared. _____

9. Other Comments:

Questionnaire Responses

The responses are listed below. All questionnaire comments were provided to Planning Committee and taken into consideration when developing and prioritizing actions, however they are not listed in this plan.

Churchill County Questionnaire

1. Responses from Residents	32					
Years in County		**<2**	**2-5 Years**	**6-10 Years**	**11 +**	**Non Resident**
			4	6	22	
2. Natural Hazard Experienced	**Flood**	**WF**	**EQ**	**SW**	**Drought**	**Infestation**
	14	4	15	13	13	1
	Epidemic		**Hazmat**	**Volcano**		
	8		7	2		
3. Information Dispersal	**News Paper**	**TV**	**Internet**	**Utility Bill**	**Mail**	**Radio**
	13	20	18	10	17	16
4. Have you or someone in Household …..	**Yes**					
A. Attended meetings on disasters?	21					
B. Talked with family... what to do?	25					
C. Developed household E Plan?	19					
D. Prepared Disaster Supply Kit?	23					
E. Trained in First Aid/CPR?	19					
5. Is Property…						
A. In or near floodplain?	**yes**	**no**				
	6	26				
B. Have flood insurance?	**yes**	**no**				
	4	28				
6. Modifications for Earthquake or Flood						
Non-Structural						
A. Anchor bookcases, cabinets?	14					

B. Secure water heater to wall?	16
C. Install latches on drawers/cabinets?	4
D. Fit gas appliances w/flexible hose?	12
E. Flood proof?	
Structural	
A. Secure home to foundation?	10
B. Brace inside of cripple wall w/sheathing?	4
C. Brace unreinforced chimney?	
D. Brace unreinforced masonry, concrete & foundations?	
E. Elevate home?	3

7. Support policies to restrict development in hazard zones?						
A. Should be prohibited in zones?						
B. Should be restricted in zones?	15					
C. Should be restricted where 'severe risk' exists?	12					
D. Should NOT be restricted in zones?	1					
E. I don't know.	4					
8. Rank how prepared you and your household are for impact.	**1**	**2**	**3**	**4**	**5**	
		8	16	5	1	

Comments
Would like more information on preparedness & EAP
Suggest work with LVN on hazard articles, preparedness, evacuation shelters, routes.

City of Fallon Questionnaire						
1. Responses from Residents	9					
		<2	2-5 Years	6-10 Years	11 +	Non Resident
Years in County				9	17	
2. Natural Hazard Experienced	Flood	WF	EQ	SW	Drought	Infestation
	4	1	6	3	4	1
	Epidemic		Hazmat	Volcano		
	4		3	1		
3. Information Dispersal	News Paper	TV	Internet	Utility Bill	Mail	Radio
	3	4	5	4	2	3
4. Have you or someone in Household …..	Yes					
A. Attended meetings on disasters?	6					
B. Talked with family... what to do?	8					
C. Developed household E Plan?	6					
D. Prepared Disaster Supply Kit?	7					
E. Trained in First Aid/CPR?	6					
5. Is Property…						
A. In or near floodplain?	yes	no				
	2	7				
B. Have flood insurance?	yes	no				
	1	8				
6. Modifications for Earthquake or Flood						
Non-Structural						
A. Anchor bookcases, cabinets?	6					
B. Secure water heater to wall?	6					
C. Install latches on drawers/cabinets?	1					
D. Fit gas appliances w/flexible hose?	6					

E. Flood proof?						
Structural						
A. Secure home to foundation?	6					
B. Brace inside of cripple wall w/sheathing?	3					
C. Brace unreinforced chimney?						
D. Brace unreinforced masonry, concrete & foundations?						
E. Elevate home?						
7. Support policies to restrict development in hazard zones?						
A. Should be prohibited in zones?						
B. Should be restricted in zones?	3					
C. Should be restricted where 'severe risk' exists?	4					
D. Should NOT be restricted in zones?						
E. I don't know.						
8. Rank how prepared you and your household are for impact.	**1**	**2**	**3**	**4**	**5**	
		1	4	4		
Comments						
None						

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Appendix D

Meeting Agendas & Handouts

Meeting #1 -AGENDA
Churchill Hazard Mitigation Planning Committee

10:00 to 12:00 pm, Tuesday, October 12, 2010
Churchill County Administrative Building
155 North Taylor St., Suite 102
Fallon, NV 89406

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1. **WELCOME & INTRODUCTIONS** – *Ron Juliff, Emergency Manager – Churchill Co.*

2. **PLANNING PROCESS OVERVIEW** – *Karen Johnson, KJ Consultants*
   a. General Information
   b. Churchill Co. & City of Fallon Emergency Management/Churchill County Planning/LEPC's Role
   c. Purpose of the Plan
   d. Public Participation

3. **INCORPORATION OF EXISTING PLANS** – *Karen Johnson*

4. **HAZARD IDENTIFICATION TABLE & HAZARD RANKING**– *Karen Johnson*

7. **ANNOUNCEMENT OF FUTURE MEETINGS** – *Ron Juliff*
   Future meetings are scheduled immediately following the LEPC meeting.
   1. December
   2. January

8. **ADJOURNMENT**

The Planning Committee may take action on items marked by an asterisk (*). Items may be taken out of order presented on the agenda at the discretion of the chairperson.

For further information, please contact Ron Juliff, Churchill County, by email at ccem@phonwave.net or telephone at (775) 423-4188. We are pleased to make reasonable accommodations for members of the public who are disabled. If special arrangements are necessary, please notify the Planning Committee at (775) 423-4188. Twenty-four hours advance notice is requested.

Meeting No. 1 Sign In Sheet

LEPC Meeting
10/12/10

Please Initial	Lastname	Firstname	Email address	Phone #	Department ~~Correction~~
RB	Bridges	Bob	bob@cccomm.net		C.I.S.M. 427-5526
	Bursill	Gail	gbursill@charter.net		
[illegible]	Cole	Steven	Steven.Cole@navy.mil		EM NAS FALLON
	Conway	Jackie	jackie@enviro-fpst.org		
PD	Denney	Preston	planning-gis@churchillcounty.org		
	Emmons	Susan	susan.emmons@yahoo.com		
SE	Endacott	Steven	sendacott@sci-nevada.com		City of Fallon, Em.
[illegible]	Fine	Jim	jim.fine@swgas.com		Construction/Management - 455-5050
[illegible]	Goetsch	Brad	countymanager@churchillcounty.org		423-5136 MANAGER
[illegible]	Haugen	Jon	jhaugen@cccomm.net		CHURCHILL CO SHERIFF'S OFFICE 423-3116
[illegible]	Johnson	John	johnsonj@churchill.k12.nv.us		Churchill County School District (775) 427-7231
[illegible]	Juliff	Ron	ccem@phonewave.net		
	Lawry	Bill	blawry@fallonfire.org		
EL	Lockwood	Eleanor	planning-director@churchillcounty.org		Planning Dept Flood Plain Mgr
	Lorentzen	Rose	rlorentzen@health.nv.gov		
	Powell	Pam	powellp@unce.unr.edu		
	Rogne	Fred	frogne@fallonfire.org		
BS	Scharman	Bus	scharman@wnc.edu		Western Nv College 775-423-7565
[illegible]	Shyne	Frank	fshyne@ci.fallon.nv.us		Fallon Police Dept. 775-423-1178
[illegible]	Stark	Geof	gdstark@churchillcounty.org	PIO	CHURCHILL COUNTY 428-1311
[illegible]	Towne	Steven	steve.towne@bannerhealth.com		Banner Churchill Comm Hosp 867-75
[illegible]	Turner	Mark	mark.turner@bannerhealth.com	867.7388	PlantOps & SAFETY
[illegible]	Whimple	Rick	planning-codeenforcement@churchillcounty.org		
[illegible]	Willcoxon	Paul	iceman47@charter.net		AMATEUR RADIO SERVICES
	Wood	Jim	jwood@cccomm.net		
[illegible]	Young	Mitch	mitch@cccomm.net		Fire Marshals Office

KO Johnson Karen karenj@pacificozone.com
Ashby Elizabeth eashby@dps.state.nv.us DEM
WOOD BARRY barry.wood@navy.mil — EOC MANG. NAS FALLON
J. Sims ARES/RACES PIO, Meta Brewster ARES)

Carmen Gonzales - Fallon Paiute - Shoshone Tribe - Environmental
Carmen@enviro-fpst.org 7/423-0590

Sonia Cortedo - Fallon Paiute - Shoshone tribe - Environmental
Sonia@enviro.fpst.org environmental Protection Dept. 775.423-0590

Jackie Conway Fallon Paiute - Shoshone Tribe Environmental jackie@enviro-fpst.org (775) 423-0590 x1

Christopher Pierce christopher.pierce1.ctr.@navy.mil NASF TRAINING OFFICER (775) 426-2764)

Alan Kalt comptroller@churchillcounty.org Co. Comptroller 428-1414

Meeting No. 1 Handouts

General Information

Karen Johnson 707-696-4196, or karenj@pacificozone.com

DEFINITIONS

Hazard Mitigation is any sustained action taken to eliminate or reduce long term risk to human life, property and the environment posed by a hazard.

Hazard Mitigation Planning is the process of making any sustained plan or course of action taken to reduce or eliminate long-term risk to people and property from both natural and technological hazards and their effects. The planning process includes establishing goals and recommendations for mitigation strategies.

Hazard Mitigation may occur during any phase of a threat, emergency or disaster. Mitigation can and should take place during the preparedness (before), response (during), and recovery (after) phases.

The process of hazard mitigation involves evaluating the hazard's impact and identification and implementation of actions to minimize the impact.

***Unreinforced Masonry (URM)*:** Buildings constructed prior to 1973. These structures may be of stone, brick or concrete block bearing wall materials that contain no reinforcing rods.

PLANNING EFFORT

Churchill County & City of Fallon, Emergency Management

The Churchill Co. Emergency Management is the lead agency and chair in coordinating the efforts of the Hazard Mitigation Planning Committee. City of Fallon will also support by providing information.

Purpose of the Plan

1. The purpose of this plan is to integrate Hazard Mitigation strategies into the activities and programs of the County and City, and to the extent practical, into the activities of private sector organizations.
2. The plan identifies and evaluates specific Churchill County Hazard Mitigation strategies to be considered by the county and city and their agencies and offers a support document, as well as planning support, for those strategies developed by its political subdivisions, agencies, special districts and organizations.

It is understood that the mitigation strategies adopted in this plan will be recommendations only, and they must be approved and funded in order to be implemented as official Hazard Mitigation Strategies.

Reviewing Hazard Mitigation Planning Committee By-Laws

1. Members from the Planning Committee agree to meet on a bi-monthly basis to identify hazard priorities, develop a risk assessment and review, identify and implement Churchill Co. and City of Fallon hazard mitigation strategy recommendations.

2. The Planning Committee agrees to make and pass policy recommendations by a vote of a simple majority of those members present at the meeting.

3. Any single Planning Committee member may petition the Planning Committee as a whole to request an adoption of/or amendment to the plan or process. No action will be taken until the next subsequent meeting of the Planning Committee.

4. The Planning Committee may form sub-committees to review and to develop those hazard mitigation strategy recommendations identified and to be reviewed by the Planning Committee as a whole.

5. The Planning Committee will identify hazard mitigation strategies from existing recommendations contained in plans and documents, the local political subdivisions, and from the input of regional jurisdictions and the input of private citizens and private organization sector.

6. The Planning Committee will facilitate county wide and community input through the following methods:

    - Questionnaire given to the citizens of Churchill County with their monthly telephone bills.
    - Press Release
    - Announcement at Chamber of Commerce Meeting
    - Meetings open to the public. Meeting agendas posted in public.

Reviewing Hazard Mitigation Planning Tasks

1. Coordinate multi-hazard mitigation planning tasks and activities with Churchill Co. and City of Fallon Emergency Management to develop an all-hazards multi-jurisdictional mitigation plan and support the Churchill Co.'s EM oversight of the planning process.

2. Assist in carrying out the goals of the Churchill Co. Hazard Mitigation Plan in compliance with FEMA DMA 2000 Hazard Mitigation Act.

3. Prioritize Risks for implementing mitigation strategies.
4. Select designated Critical Facilities and ascertain risk exposure analysis for those facilities.
5. Select highest and best mitigation recommendations and develop those recommendations for further action by the Churchill Co.
6. Review mitigation planning drafts, recommendations and updates.
7. Develop and implement long and short term goals.
8. Integrate the plan with all phases of Comprehensive Emergency Management Planning.
9. Provide for the implementation of committee decisions.
10. Encourage, coordinate and provide a methodology for the implementation of public input.
11. _____
    _____
12. _____
    _____
13. _____
    _____

Local Mitigation Plan Review Crosswalk

New plan format. See Crosswalk attached.

Incorporation of Existing Plans/Study Table	
Plan / Study	**Findings / Incorporation**
Churchill County Master Plan (2005)	Guiding principle includes a flood section and seismic section which addresses mitigation.
Churchill Co.2010 and Fallon Building Code	These regulations concern zoning districts, variances, and general development standards within the Churchill County and includes the 2006 IBC.
FEMA Flood Insurance Study for Churchill, Nevada (FEMA 2009):	This study addresses all flood plain issues even though it has not been updated since 1998.
State of Nevada Multi-Hazard Mitigation Plan	The state MHMP is updated every three years by the SHMO and includes all hazards to be addressed in this.HMP.
Carson River Regional Floodplain Management Plan	To develop strategies for floodplain management that can be applied regionally as well as locally.
Hazardous Materials Emergency Response Plan 2009	
Design, Estimating and Construction Review Truckee Canal Risk Assessment (March 2008)	This document evaluates the Truckee Canal system and provides a risk assessment.
Lahonton Dam Table Top Flood Exercise (October 2009)	This exercise document provides a review of reduction in loss of life and minimize property damage.
Carson River Geographic Response Plan	This is a regional plan covering five counties in two states. The plan was developed to protect the health, safety, environment, and property (both public and private) from the effects of hazardous materials incidents in or near the Carson River.
Emergency Operations Plan (2010)	This document is the main reference source for managing disasters and large scale emergencies in Churchill County.
*Churchill County Fire Plan (*Resource Concepts Incorporated*)*:	Community Guidelines.
Community Wildfire Protection Plan, RCI (November 2004)	This document includes findings and recommendations for mitigating the threat to property from wildland fires.
Carson River Watershed Regional Floodplain Management Plan (Carson Water Sub conservancy District, 2008)	This plan provides strategies for floodplain management that can be applied regionally as well as locally.

Name:_____ Date: _____

Agency:_____

Hazard Profiling Worksheet

Legend: 1 = lowest; 5 = highest

Hazard Type	Magnitude	Duration	Economic	Area Affected	Frequency	Degree of Vulnerability	State & Community Priorities	Total
Natural								
Avalanche								
Drought								
Earthquakes								
Epidemic								
Expansive Soils								
Extreme heat								
Flood (Includes dam failure, canal failure, and mudslides)								
Hail & thunderstorm								
Infestations								
Land subisdence & ground failure								
Severe Winter Storm								
Severe Windstorm								

Tornado								
Tsunami/seiche								
Volcano								
Wildfire								
Human-caused								
Hazmat								
Terrorism/WMD								

- State of NV Categorization of Hazards

• Very High Risk	• High Risk	• Medium Risk	• Low Risk	• Very Low Risk
• Earthquake	• Flood	• Epidemic	• Drought	• Avalanche
• Terrorism/WMD	• Wildfire	• Severe winter storm	• Hazardous materials event	• Expansive soils
•	•	•	• Severe windstorm	• Extreme heat
•	•	•	• Tsunami/seiche	• Land subsidence and ground failure
•	•	•	•	• Hail and thunderstorm
•	•	•	•	• Infestation
•	•	•	•	• Tornado
•	•	•	•	• Volcano

Mitigation Profiling Criteria

These criteria will be used to categorize the identified hazards into high, medium and low risk hazards.
Criterion One: Magnitude

Magnitude refers to the physical and economic impact of the event. Magnitude factors are represented by:

1. Size of event
2. Life threatening nature of the event
3. Economic impact of the event
4. Threat to property
    a. Public Sector
    b. Private Sector
    c. Business and Manufacturing
    d. Tourism
    e. Agriculture

Value:

1. Very Low Handled by community
2. Low Handled at city/town level
3. Medium Handled at county level
4. High State must be involved
5. Very High Federal declaration needed
6.

Criterion Two: Duration

Duration refers to the length of time the disaster affects the State and its citizens. Some disaster incidents have far-reaching impact beyond the actual event occurrence such as the September 11, 2001 event. Duration factors include the following:

1. Length of physical duration during emergency phase
2. Length of threat to life and property
3. Length of physical duration during recovery phase

4. Length of time affecting individual citizens and community recovery
5. Length of time affecting economic recovery, tax base, business and manufacturing recovery, tourism, threat to tax base and threat to employment

Value:

1	Very Low	Critical facilities and/or services lost for 1 to 3 days
2	Low	Critical facilities and/or services lost for 4 to 7 days
3	Medium	Critical facilities and/or services lost for 8 to 14 days
4	High	Critical facilities and/or services lost for 15 to 20 days
5	Very High	Critical facilities and/or services lost for more than 20 days

10.1.1 Criterion Three: Economic Impact

Distribution of the event refers to the depth of the effects among all sectors of the community and State, including both the geographic area affected as well as distribution of damage and recovery of the economy, health and welfare, and the State/community infrastructure. Distribution factors include the following:

1. How widespread across the state are the effects of the disaster?
2. Are all sectors of the community affected equally or disproportionately?
3. How will the distribution of the effects prolong recovery from the disaster event?

Value:

1	Very Low	Community –Only the immediate community or part of a town/city is affected
2	Low	City/Town – entire town/city is affected
3	Medium	County – effects are felt at the county level
4	High	State – the entire state will be affected by the event
5	Very High	Federal effects are felt nationwide (e.g. Hurricane Katrina-sized)

10.1.2 Criterion Four: Area Affected

Area affected refers to how much area is physically threatened and potentially impaired by a disaster risk. Area affected factors include of the following:

1. Geographic area affected by primary event
2. Geographic, physical, and economic areas affected by primary risk and potential secondary effects.

Value:

1	Very Low	Community
2	Low	City/Town
3	Medium	County
4	High	State
5	Very High	Federal

10.1.3 Criterion Five: Frequency

The frequency of the risk refers to the historic and predicted rate of recurrence of a hazardous event (generally expressed in years, such as the 100 year flood).

Value:

1	Very Low	Occurs less than once in 1,000 years
2	Low	Occurs less than once in 100 to once in 1,000 years
3	Medium	Occurs less than once in 10 to once in 100 years
4	High	Occurs less than once in 5 to once in 10 years
5	Very High	Occurs more frequently than once in 5 years

10.1.4 ***Criterion Six: Degree of Vulnerability***

The degree of vulnerability refers to how susceptible the population, community infrastructure and state resources are to the effects of the risk. Vulnerability factors include the following:

1. History of the impact of similar events
2. Mitigation steps taken to lessen impact
3. Community and State preparedness to respond to and recover from the event

Value:

1	Very Low	1 to 5% of property in affected area severely damaged
2	Low	6 to 10% of property in affected area severely damaged
3	Medium	11 to 25% of property in affected area severely damaged
4	High	26 to 35% of property in affected area severely damaged
5	Very High	36 to 50% of property in affected area severely damaged

10.1.5 Criterion Seven: State and Community Priorities

State and community priorities refer to the importance placed on a particular risk by the citizens and their elected officials. Priorities factors consist of the following:

1. Long term economic impact on portions of the State or community
2. Willingness of the State or community to prepare for and respond to a particular risk
3. More widespread concerns over one particular risk than other risks
4. Cultural significance of the threat associated with a risk.
5. Potential for long term community or cultural disruption presented by the hazard
6. Matrix Prioritization of Hazards Results

Value:

1	Very Low	Advisory
2	Low	Considered for further planning in the future
3	Medium	Prompt action necessary
4	High	Immediate action necessary
5	Very High	Utmost immediacy

Vulnerability Ratings

- **High Risk Hazard:** Event has most likely occurred in the past and/or is likely to occur in the future. Of substantial magnitude, with loss and financial impact to the State considered beyond the State's available resources and ability to respond.
- **Moderate Risk Hazard:** Event has most likely occurred in the past and/or is likely to occur in the future. Of moderate magnitude, may be considered beyond the State's available resources and ability to respond.
- **Low Risk Hazard:** Event has a very low occurrence rating and not likely to cause major damage to property or loss of lives in the future. Not likely to exceed the State's available resources or ability to respond.
- **No Substantial Risk Category:** Event would be considered a State/local emergency incident within the jurisdiction's response capability and needing no additional resources to respond.
- **Special Risk Category:** A hazard with an identified mitigation plan or lead agency that provides the expertise to provide mitigation strategies.

Mitigation Project	PDM	FMA	RFC	SRL
PROPERTY ACQUISITION AND DEMOLITION OR RELOCATION ACTIVITIES				
Property Acquisition and Demolition or Relocation	✔	✔	✔	✔
CONSTRUCTION ACTIVITIES				
Property Elevation	✔	✔	✔	✔
Mitigation Reconstruction[1]				✔
Localized Minor Flood Reduction Projects	✔*	✔	✔	✔
Dry Floodproofing of Residential Properties[2]		✔		✔
Dry Floodproofing of Non-Residential Structures		✔	✔	
Stormwater Management	✔	✔		
Infrastructure Protection Measures	✔			
Vegetative Management/Soil Stabilization	✔			
Retrofitting Existing Buildings and Facilities	✔			
Safe Room Construction	✔			
NON-CONSTRUCTION ACTIVITIES				
All Hazard/Flood Mitigation Planning	✔	✔		

1. The SRL program allows mitigation reconstruction projects located OUTSIDE the regulatory floodway as identified on the effective Flood Insurance Rate Map (FIRM). Mitigation reconstruction is only permitted if traditional elevation cannot be implemented.

2. The residential structure must meet the definition of "Historic Structure" in 44 CFR § 59.1.

* Critical facilities only.

State Contacts

HMGP & PDM
Elizabeth Ashby
(775) 687-0314
eashby@state.dps.nv.us

FMA, RFC, & SRL
Kim Groenewold
(775) 684-2884
groenewd@water.nv.gov

Deadlines

June 24, 2009	Notice of Interest due to Division of Emergency Management/Division of Water Resources
August 12, 2009	Scope of Work due to Division of Emergency Management/Division of Water Resources
August 26, 2009	NHMPC's Quarterly Meeting
October 7, 2009	Benefit Cost Analysis and backup documentation due to Division of Emergency Management/Division of Water Resources
October 21, 2009	Full Application Package due to Division of Emergency Management/Division of Water Resources

November 4/5, 2009
NHMPC Prioritization meeting
(4 Southern Nevada; 5 Northern Nevada)

Unified Hazard Mitigation Assistance Program in Nevada

FEMA

Hazard Mitigation Assistance (HMA)

HMA under FEMA's Mitigation Directorate unifies the pre-disaster grant programs to better support the overall goal of reducing the loss of life and property due to natural hazards.

The HMA programs: Pre-Disaster Mitigation (PDM), Flood Mitigation Assistance (FMA), Repetitive Flood Claims (RFC), and Severe Repetitive Loss (SRL) provide mitigation grants ***annually*** on an allocation and competitive basis to State, Territory, Tribal, and local entities. The new unified process achieves economies of scale and portfolio management for Federal, State, and local officials by aligning program requirements in a unified HMA guidance document. The intent of this alignment is to enhance the quality and efficiency of grant awards.

In addition, under the unified process, eligible subapplications submitted but not funded under a specific grant program may also be considered for another mitigation grant program(s).

Post-Disaster Hazard Mitigation Grant Program (HMGP)

The Hazard Mitigation Grant Program (HMGP) provides grants to States and local governments to implement long-term hazard mitigation measures after a major disaster declaration. Authorized under Section 404 of the Stafford Act and administered by FEMA, HMGP was created to reduce the loss of life and property due to natural disasters. The program enables mitigation measures to be implemented during the immediate recovery from a disaster.

http://www.fema.gov/government/grant/hmgp/

Pre-Disaster Mitigation (PDM) Program

The PDM program provides funds to States, Territories, Federally recognized Indian Tribal governments, and communities for hazard mitigation planning and the implementation of mitigation projects prior to a disaster event. The goal of the PDM Program is to reduce overall risks to the population and structures, while also reducing reliance on funding from actual disaster declarations.

www.fema.gov/government/grant/pdm/index.shtm

Flood Mitigation Assistance (FMA) Program

The FMA grant program provides funding to States, federally recognized Indian Tribal governments, and communities so that cost-effective measures can be taken to reduce or eliminate the long-term risk of flood damage to buildings, manufactured homes, and other structures insured under the National Flood Insurance Program (NFIP). The long-term goal of FMA is to reduce or eliminate claims under the NFIP through mitigation activities.

www.fema.gov/government/grant/fma/index.shtm

Repetitive Flood Claims (RFC) Program

The RFC grant program was created with the goal of reducing flood damages to individual properties for which one or more claim payments for losses have been made under flood insurance coverage and that will result in the greatest savings to the NFIF (National Flood Insurance Fund) in the shortest period of time.

The RFC program is subject to the availability of appropriation funding. RFC grants will be awarded on a national basis without reference to State allocations, quotas, or other formula-based allocations of funds. The funding source for the RFC grant program is the NFIF.

www.fema.gov/government/grant/rfc/index.shtm

Severe Repetitive Loss (SRL) Program

The SRL program provides funding to reduce or eliminate the long-term risk of flood damage to severe repetitive residential structures insured under the NFIP. The definition of severe repetitive loss as applied to this program is a *residential property* that is covered under an NFIP flood insurance policy, and:

(a) That has at least four NFIP claim payments (including building and contents) over $5,000 each, and the cumulative amount of such claims payments exceeds $20,000; or
(b) For which at least two separate claims payments (building payments only) have been made with the cumulative amount of the building portion of such claims exceeding the market value of the building.

For both (a) and (b) above, at least two of the referenced claims must have occurred within any 1-year period, and must be greater than 10 days apart. The long-term goal of the SRL program is to reduce or eliminate claims under the NFIP through project activities that will result in the greatest savings to the NFIF in the shortest period of time.

www.fema.gov/government/grant/srl/index.shtm

the hazard mitigation planning process

Hazard mitigation planning is the process of determining how to reduce or eliminate the loss of life and property damage resulting from natural and human-caused hazards. Four basic phases are described for the hazard mitigation planning process as shown in this diagram.

For illustration purposes, this diagram portrays a process that appears to proceed sequentially. However, the mitigation planning process is rarely a linear process. It is not unusual that ideas developed while assessing risks should need revision and additional information while developing the mitigation plan, or that implementing the plan may result in new goals or additional risk assessment.

organize resources

From the start, communities should focus on the resources needed for a successful mitigation planning process. Essential steps include identifying and organizing interested members of the community as well as the technical expertise required during the planning process.

assess risks

Next, communities need to identify the characteristics and potential consequences of hazards. It is important to understand how much of the community can be affected by specific hazards and what the impacts would be on important community assets.

develop a mitigation plan

Armed with an understanding of the risks posed by hazards, communities need to determine what their priorities should be and then look at possible ways to avoid or minimize the undesired effects. The result is a hazard mitigation plan and strategy for implementation.

implement the plan and monitor progress

Communities can bring the plan to life in a variety of ways ranging from implementing specific mitigation projects to changes in the day-to-day operation of the local government. To ensure the success of an on-going program, it is critical that the plan remains relevant. Thus, it is important to conduct periodic evaluations and make revisions as needed.

AGENDA – Meeting No. 2

Meeting #2 -AGENDA

Churchill Hazard Mitigation Planning Committee

10:00 to 12:00 pm, Tuesday, January 11, 2011
Churchill County Administrative Building
155 North Taylor St., Suite 102
Fallon, NV 89406

---

1. **WELCOME & INTRODUCTIONS** – *Ron Juliff, Emergency Manager – Churchill Co.*

2. **HAZARD RANKING RESULTS** – *Karen Johnson, KJ Consultants*

3. **HAZARD PROFILE REVIEW** – *Karen Johnson*

   Drought, Earthquake, Flood.

7. **ANNOUNCEMENT OF FUTURE MEETINGS** – *Ron Juliff*
   Future meetings are scheduled immediately following the LEPC meeting.

   1. March

8. **ADJOURNMENT**

The Planning Committee may take action on items marked by an asterisk (*). Items may be taken out of order presented on the agenda at the discretion of the chairperson.

For further information, please contact Ron Juliff, Churchill County, by email at ccem@phonwave.net or telephone at (775) 423-4188. We are pleased to make reasonable accommodations for members of the public who are disabled. If special arrangements are necessary, please notify the Planning Committee at (775) 423-4188. Twenty-four hours advance notice is requested.

Sign In Sheet - Meeting No. 2

Please Initial	Lastname	Firstname	Email address	Correction
	Bridges	Bob	bob@cccomm.net	
	Bursill	Gail	gbursill@charter.net	
	Cole	Steven	Steven.Cole@navy.mil	
	Conway	Jackie	jackie@enviro-fpst.org	
PD	Denney	Preston	planning-gis@churchillcounty.org	
	Emmons	Susan	susan.emmons@yahoo.com	
	Endacott	Steven	sendacott@sci-nevada.com	
	Fine	Jim	jim.fine@swgas.com	
	Goetsch	Brad	countymanager@churchillcounty.org	
	Haugen	Jon	jhaugen@cccomm.net	
	Johnson	John	johnsonj@churchill.k12.nv.us	
	Juliff	Ron	ccem@phonewave.net	
	Lawry	Bill	blawry@fallonfire.org	
	Lockwood	Eleanor	planning-director@churchillcounty.org	
	Lorentzen	Rose	rlorentzen@health.nv.gov	
	Powell	Pam	powellp@unce.unr.edu	
	Rogne	Fred	frogne@fallonfire.org	
	Scharman	Bus	scharman@wnc.edu	
	Shyne	Frank	fshyne@ci.fallon.nv.us	
	Stark	Geof	gdstark@churchillcounty.org	
	Towne	Steven	steve.towne@bannerhealth.com	
MT	Turner	Mark	mark.turner@bannerhealth.com	
	Whimple	Rick	planning-codeenforcement@churchillcounty.org	
	Willcoxon	Paul	iceman47@charter.net	
	Wood	Jim	jwood@cccomm.net	
	Young	Mitch	mitch@cccomm.net	
BW	WOOD	BOBBY	BOBBY.WOOD@NAVY.MIL	
	Withers	BOB	bWithers@chartercom.com	
	Mingay	Craig	Cmingay@churchillco.org	
	JOHN	POWELL	John.Powell@Corp.cccomm.NET	
	Towne	Ben	sheriff@cccomm.net	

Handouts – Meeting No. 2

Hazard Ranking Table 5-3

Hazard Profiles – Earthquake, Flood, Drought, Epidemic

Agenda Meeting No. 3

Churchill County
Local Emergency Planning Committee (LEPC)
155 N. Taylor Street
Fallon, Nevada 89406
Phone: (775) 423-4188
Fax: (775) 423-5677
Email: coem@phonewave.net

******NOTICE OF PUBLIC MEETING******

******AMENDED AGENDA******

PLEASE POST

PLACE OF MEETING: Churchill County Administration Building
155 N. Taylor Street, Suite 102, Fallon, NV 89406
DATE & TIME: March 1, 2011 at 10:00 A.M.
TYPE OF MEETING: Special Meeting

Notes:

a. ***This meeting is subject to the provisions of Nevada Open Meeting Law (NRS Chapter 241). This meeting is open and public.***
b. ***Action will be taken on all agenda items, unless otherwise noted.***
c. ***The agenda is a tentative schedule. The Local Emergency Planning Committee may act upon agenda items in a different order than is stated in this notice, so as to effect the people's business in the most efficient manner possible.***
d. ***In the interest of time, the Local Emergency Planning Committee reserves the right to impose uniform time limits upon matters devoted to public comment.***
e. ***Any statement made by a member of the Local Emergency Planning Committee during the public meeting is absolutely privileged.***

Agenda:

1. Call to Order.
2. Introduce Attendees.
3. Public Comments.
4. Approve minutes from the last LEPC meeting on January 11, 2011.
5. Discuss, review, and approve for submission the 2012 SERC grant application and 2012 UWS Grant Application – *Ron Juliff*
6. Review the tabletop exercise utilizing Churchill County Emergency Response Manuals conducted on February 8, 2011 – *Ron Juliff*
7. Operation ARCO, combined exercise scheduled for May 6, 2011 – *Steve Endacott*
8. General Discussion – other items pertinent to LEPC (no action items).
9. Adjournment of the LEPC
10. Reconvene as the Hazard Mitigation Plan Steering Committee to review and approve the following items:

    a. "Severe Weather", "Hazardous Materials Release" and "Wildfire" profiles
    b. Questionnaire to solicit public input for HMP development

Affidavit of Posting

State of Nevada)
:ss
County of Churchill)

I, Geof Stark, Secretary to the Local Emergency Planning Committee, do hereby affirm that I posted, or caused to be posted, a copy of this notice of public meeting, on or before the **23rd day of February 2011**, at the following locations in Churchill County, Nevada:

1. City Hall;
2. County Administration Building;
3. Road Department;
4. Churchill County Law Enforcement Center;
5. The Churchill County Website @ www.churchillcounty.org

G Stark
Geof Stark

Subscribed and Sworn to before me this 23rd day of February, 2011.

PAMELA D. MOORE
Notary Public - State of Nevada
Appointment Recorded in Churchill County
No: 94-0953-4 - Expires December 15, 2018

Pamela D Moore
Notary Public

Endnotes:
Disclosures:
- Churchill County is an equal opportunity provider and employer.

Accommodations:
- Churchill County will make all reasonable efforts to assist and accommodate physically handicapped person desiring to attend. Persons who are disabled and require special assistance may contact Ron Juliff, Emergency Management Coordinator, in writing at 155 N. Taylor Street, Suite 177, Fallon, Nevada, 89406, or by calling (775)423-4188.

Procedures:
- The schedule of regular meetings of the Local Emergency Planning Committee is provided for by Title 2, Chapter 2.52, of the Churchill County Code.
- The public meetings may be conducted according to rules of parliamentary procedure.
- Person providing public comment will be asked to state their name for the record
- The Local Emergency Planning Committee reserves the right to restrict participation by persons in the public meeting where the conduct of such persons is willfully disruptive to the people's business.
- In accordance with Federal law and U.S. Department of Agriculture policy, Churchill County is prohibited from discriminating on the basis of race, color, national origin, sex, age, or disability (not all prohibited bases apply to all programs). To file a complaint of discrimination, write USDA, Director, Office of Equal Rights, 1400 Independence Avenue, S.W., Washington, D.C., 20250-9410, or call (800) 795-3972 (voice) or (202) 720-6382 (TTD)

Sign In Sheet - Meeting No. 3

LEPC Meeting
Tuesday, August 10, 2010

Please Initial	Lastname	Firstname	Email address	Correction
	Bebe	Irv	k6dhn@arrl.net	
	Bridges	Bob	bob@cccomm.net	
	Bursill	Gail	gbursill@charter.net	
	Cole	Steven	Steven.Cole@navy.mil	
	Conway	Jackie	jackie@enviro-fpst.org	
	Denney	Preston	planning-gis@churchillcounty.org	
	Emmons	Susan	susan.emmons@yahoo.com	
	Endacott	Steven	sendacott@aci-nevada.com	
	Fine	Jim	jim.fine@swgas.com	
	Goetsch	Brad	countymanager@churchillcounty.org	
	Haugen	Jon	jhaugen@cccomm.net	
	Johnson	John	johnsonj@churchill.k12.nv.us	
	Julff	Ron	rcem@phonewave.net	
	Lawry	Bill	blawry@fallonfire.org	
	Lockwood	Eleanor	planning-director@churchillcounty.org	
	Lorentzen	Rose	rlorentzen@health.nv.gov	
	Powell	Pam	powellp@unce.unr.edu	
	Rogne	Fred	frogne@fallonfire.org	
	Scharman	Bus	scharman@scsr.nevada.edu	
	Shyne	Frank	fshyne@ci.fallon.nv.us	
	Stark	Geof	gdstark@churchillcounty.org	
	Towne	Steven	steve.towne@bannerhealth.com	
	Turner	Mark	mark.turner@bannerhealth.com	
	Whimple	Rick	planning-codeenforcement@churchillcounty.org	
	Willcoxon	Paul	iceman47@charter.net	ICEMAN47_2@ATT.NET
	Wood	Jim	jwood@cccomm.net	
	Young	Mitch	mitch@cccomm.net	
	Mingay	Craig	cmingay@churchillda.org	
	Trotter	Ben	sheriff@cccomm.net	
	Black,	Richard	richard@enviro-fpst.org	
	Ashby	Elizabeth	eashby@dps.state.nv.us	

Handouts – Meeting No. 3

Risk assessment profiles of Drought, Epidemic, and Hazardous Materials.

Agenda Meeting No. 4

Churchill County
Local Emergency Planning Committee (LEPC)
155 N. Taylor Street
Fallon, Nevada 89406
Phone: (775) 423-4188
Fax: (775) 423-5677
Email: ccem@phonewave.net

******NOTICE OF PUBLIC MEETING******

PLEASE POST

PLACE OF MEETING: Churchill County Administration Building
155 N. Taylor Street, Suite 102, Fallon, NV 89406
DATE & TIME: May 10, 2011 at 10:00 A.M.
TYPE OF MEETING: Regular Quarterly Meeting

Notes:

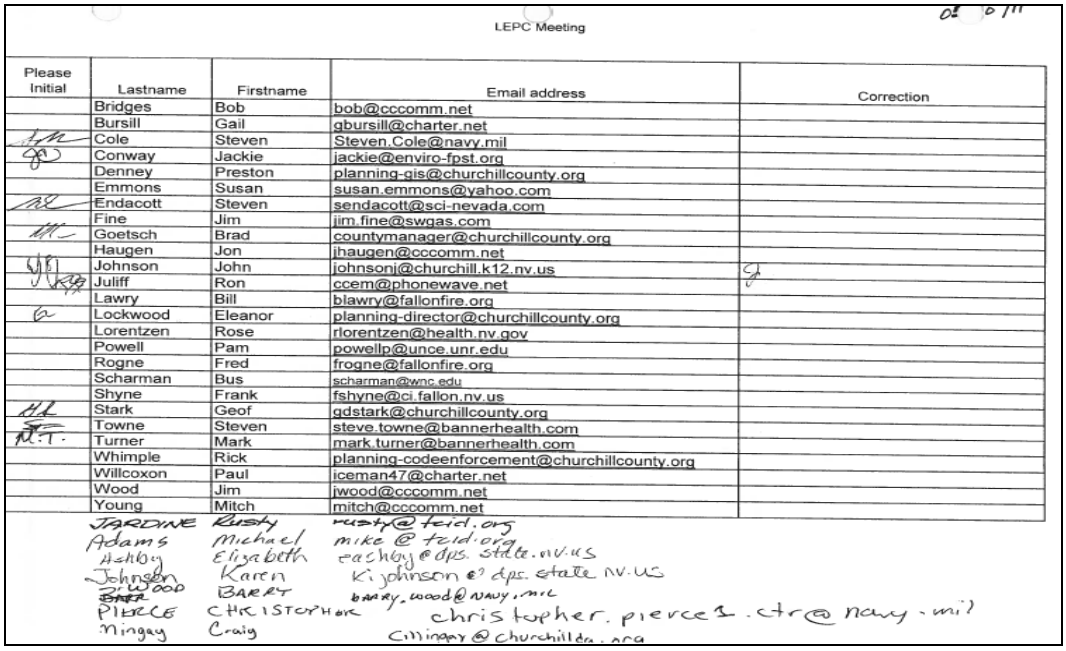
a. ***This meeting is subject to the provisions of Nevada Open Meeting Law (NRS Chapter 241). This meeting is open and public.***
b. ***Action will be taken on all agenda items, unless otherwise noted.***
c. ***The agenda is a tentative schedule. The Local Emergency Planning Committee may act upon agenda items in a different order than is stated in this notice, so as to effect the people's business in the most efficient manner possible.***
d. ***In the interest of time, the Local Emergency Planning Committee reserves the right to impose uniform time limits upon matters devoted to public comment.***
e. ***Any statement made by a member of the Local Emergency Planning Committee during the public meeting is absolutely privileged.***

Agenda:

1. Call to Order.
2. Introduce Attendees.
3. Public Comments.
4. Approve minutes from the last LEPC meeting on March 1, 2011.
5. Hazardous Materials Resource List update – *Ron Juliff*
6. Report on water conditions – *TCID*
7. Report on Operation ARCO, May 6, 2011, exercise – *Steve Endacott*
8. HMEP mid-cycle training/grant – *Ron Juliff*
9. General Discussion – other items pertinent to LEPC (no action items).
10. Adjournment as LEPC
11. Reconvene as the Hazard Mitigation Plan Steering Committee to review and develop plan materials

Affidavit of Posting

Sign In Sheet - Meeting No. 4



LEPC Meeting

Please Initial	Lastname	Firstname	Email address	Correction
	Bridges	Bob	bob@cccomm.net	
	Bursill	Gail	gbursill@charter.net	
	Cole	Steven	Steven.Cole@navy.mil	
	Conway	Jackie	jackie@enviro-fpst.org	
	Denney	Preston	planning-gis@churchillcounty.org	
	Emmons	Susan	susan.emmons@yahoo.com	
	Endacott	Steven	sendacott@sci-nevada.com	
	Fine	Jim	jim.fine@swgas.com	
	Goetsch	Brad	countymanager@churchillcounty.org	
	Haugen	Jon	jhaugen@cccomm.net	
	Johnson	John	johnsonj@churchill.k12.nv.us	
	Juliff	Ron	ccem@phonewave.net	
	Lawry	Bill	blawry@fallonfire.org	
	Lockwood	Eleanor	planning-director@churchillcounty.org	
	Lorentzen	Rose	rlorentzen@health.nv.gov	
	Powell	Pam	powellp@unce.unr.edu	
	Rogne	Fred	frogne@fallonfire.org	
	Scharman	Bus	scharman@wnc.edu	
	Shyne	Frank	fshyne@ci.fallon.nv.us	
	Stark	Geof	gdstark@churchillcounty.org	
	Towne	Steven	steve.towne@bannerhealth.com	
	Turner	Mark	mark.turner@bannerhealth.com	
	Whimple	Rick	planning-codeenforcement@churchillcounty.org	
	Willcoxon	Paul	iceman47@charter.net	
	Wood	Jim	jwood@cccomm.net	
	Young	Mitch	mitch@cccomm.net	
	JARDINE	Rusty	rusty@feid.org	
	Adams	Michael	mike@feid.org	
	Ashby	Elizabeth	eashby@dps.state.nv.us	
	Johnson	Karen	kjohnson@dps.state.nv.us	
	WOOD	BARRY	barry.wood@navy.mil	
	PIERCE	CHRISTOPHER	christopher.pierce1.ctr@navy.mil	
	Ningay	Craig	cningay@churchilldra.org	

Handouts – Meeting No. 4

Risk assessment sections on Severe Weather, Hazardous Materials and Wildfire profiles.

Agenda Meeting No. 5

Churchill County
Local Emergency Planning Committee (LEPC)

155 N. Taylor Street
Fallon, Nevada 89406
Phone: (775) 423-4188
Fax: (775) 423-5677
Email: ccem@phonewave.net

******NOTICE OF PUBLIC MEETING******

PLEASE POST

PLACE OF MEETING: Churchill County Administration Building
155 N. Taylor Street, Suite 102, Fallon, NV 89406
DATE & TIME: September 28, 2011 at 10:00 A.M.
TYPE OF MEETING: Regular Quarterly Meeting

Notes:

a. ***This meeting is subject to the provisions of Nevada Open Meeting Law (NRS Chapter 241). This meeting is open and public.***
b. ***Action will be taken on all agenda items, unless otherwise noted.***
c. ***The agenda is a tentative schedule. The Local Emergency Planning Committee may act upon agenda items in a different order than is stated in this notice, so as to effect the people's business in the most efficient manner possible.***
d. ***In the interest of time, the Local Emergency Planning Committee reserves the right to impose uniform time limits upon matters devoted to public comment.***
e. ***Any statement made by a member of the Local Emergency Planning Committee during the public meeting is absolutely privileged.***

Agenda:

1. Call to Order.
2. Introduce Attendees.
3. Public Comments.
4. Approve minutes from the last LEPC meeting on May 20, 2011.
5. Report on DEM annual conference – *Ron Juliff*
6. Report on water conditions – *TCID*
7. Report on Trinity train wreck – *Steve Endacott*
8. ICS training available – DEM/Navy – *Ron Juliff*
9. General Discussion – other items pertinent to LEPC (no action items).
10. Public Comments.
11. Adjournment as LEPC
12. Reconvene as the Hazard Mitigation Plan Steering Committee to review and develop plan materials.

Affidavit of Posting

Sign In Sheet - Meeting No. 5

LEPC Meeting

Please Initial	Lastname	Firstname	Email address	Correction
RB	Bridges	Bob	bob@cccomm.net	
	Bursill	Gail	gbursill@charter.net	
	Cole	Steven	Steven.Cole@navy.mil	
	Conway	Jackie	jackie@enviro-fpst.org	
	Denney	Preston	planning-gis@churchillcounty.org	
	Emmons	Susan	susan.emmons@yahoo.com	
	Endacott	Steven	sendacott@sci-nevada.com	
	Fine	Jim	jim.fine@swgas.com	
	Goetsch	Brad	countymanager@churchillcounty.org	
	Haugen	Jon	jhaugen@cccomm.net	
	Johnson	John	johnsonj@churchill.k12.nv.us	
	Juliff	Ron	ccem@phonewave.net	
	Lawry	Bill	blawry@fallonfire.org	
	Lockwood	Eleanor	planning-director@churchillcounty.org	
	Lorentzen	Rose	rlorentzen@health.nv.gov	
	Powell	Pam	powellp@unce.unr.edu	
	Rogne	Fred	frogne@fallonfire.org	
	Scharman	Bus	scharman@wnc.edu	
	Shyne	Frank	fshyne@ci.fallon.nv.us	
	Stark	Geof	gdstark@churchillcounty.org	
	Towne	Steven	steve.towne@bannerhealth.com	
	Turner	Mark	mark.turner@bannerhealth.com	
	Whimple	Rick	planning-codeenforcement@churchillcounty.org	
	Willcoxon	Paul	iceman47@charter.net	
	Wood	Jim	jwood@cccomm.net	
	Young	Mitch	mitch@cccomm.net	
	Murphy	Craig	conirgay@churchilda.org.	
	Lingenfelter	Patti	supervisor-roads@churchillcounty.org	
	~~Rudden~~	Ron	RRudden@churchillcounty.org	
	Trotter	Ben	sher.ff@cccomm.net	
	Adams	Mike	mike@teid.org	
	JARDINE	RUSTY	rusty@teid.org.	

Joe DeFranzo / DeFranzoJ@churchill.k12.
Rose Lorentzen RN rlorentzen@health.nv.gov

PIERCE, CHRISTOPHER
christopher.pierce10@navy.mil

Handouts – Meeting No. 5 cont'd

Reviewed Vulnerability Assessment section and results of public questionnaire.

STAPLE + E Evaluation Table

	S	T		A			P			L			E				E					PT
	(Social)	(Technical)			(Administrative)			(Political)			(Legal)			(Economic)				(Environmental)					
Considerations → Mitigation Actions ↓	Community Acceptance	Effect on Segment of Population	Technical Feasibility	Long-term Solution	Secondary Impacts	Staffing	Funding Allocated	Maintenance/ Operations	Political Support	Local Champion	Public Support	State Authority	Existing Local Authority	Potential Legal Challenge	Benefit of Action	Cost of Action	Contributes to Economic Goals	Outside Funding Required	Effect on Land/ Water	Effect on Endangered Species	Effect on HAZMAT/Waste Sites	Consistent with Native Habitat	Consistent with Local / Federal Laws	Priority Total
1.A.. Update Master Plan																								
1.B.Review EOP																								
1.C Increase GIS Capability																								
1.D Continue Plan & Coord																								
1.E New Information Integration																								
2.A.Utilize Social Media																								
2.B. Conduct Disaster Drill																								
2.C Dvlp. Public Info on HM																								
3.A Watershed																								

STAPLE + E Evaluation Table

	S		T			A			P			L			E				E					PT
	(Social)		(Technical)			(Administrative)			(Political)			(Legal)			(Economic)				(Environmental)					
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stabilization																								
3.B Public Participation Drought																								
4.A IBC Enforced																								
4.B URM Critical Facility Retrofit																								
4.C URM Existing Bldgs.																								
5.A. Improve communication Epidemic																								
5.B. Training & Exercise Epidemic																								
6.A. Update Flood Plan																								
6.B New Flood Facilities																								
6.C Enhance Water conveyance																								

STAPLE + E Evaluation Table

	S		T			A			P			L			E				E					PT
	(Social)		(Technical)			(Administrative)			(Political)			(Legal)			(Economic)				(Environmental)					
Considerations → / Mitigation Actions ↓	Community Acceptance	Effect on Segment of Population	Technical Feasibility	Long-term Solution	Secondary Impacts	Staffing	Funding Allocated	Maintenance/ Operations	Political Support	Local Champion	Public Support	State Authority	Existing Local Authority	Potential Legal Challenge	Benefit of Action	Cost of Action	Contributes to Economic Goals	Outside Funding Required	Effect on Land/ Water	Effect on Endangered Species	Effect on HAZMAT/Waste Sites	Consistent with Native Habitat	Consistent with Local / Federal Laws	Priority Total
Structures																								
6.D Federal Overflow																								
6.E Land Acquisition of RFL																								
6.F Imrove natural waterways																								
6.G Diversion & detention projects																								
7.A Retrofit Buildings Snow/Wind																								
7.B Enhance Shelter facilities																								
8.A.Vegetation Mgmt.																								
9.A Enforce Zoning Re: HazMat																								
9.C																								

STAPLE + E Evaluation Table																					
	S		**T**			**A**			**P**			**L**			**E**				**E**					**PT**
	(Social)		**(Technical)**			**(Administrative)**			**(Political)**			**(Legal)**			**(Economic)**				**(Environmental)**					
Considerations ⇨ Mitigation Actions ⇩	Community Acceptance	Effect on Segment of Population	Technical Feasibility	Long-term Solution	Secondary Impacts	Staffing	Funding Allocated	Maintenance/ Operations	Political Support	Local Champion	Public Support	State Authority	Existing Local Authority	Potential Legal Challenge	Benefit of Action	Cost of Action	Contributes to Economic Goals	Outside Funding Required	Effect on Land/ Water	Effect on Endangered Species	Effect on HAZMAT/Waste Sites	Consistent with Native Habitat	Consistent with Local / Federal Laws	Priority Total

Implementation Actions Strategy Table						
Action #	**Action Description**	**Administering Department**	**Benefits of Project vs. Costs of Project**	**Estimated Project Timeframe**	**Potential Funding Source**	**Estimated Cost**

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Appendix E
Plan Maintenance Documents

Sample Press Release for

Annual Maintenance Meeting

Churchill County, Nevada is meeting to review and maintain its Hazard Mitigation Plan to assess risks posed by natural and manmade disasters and identify ways to reduce those risks. This plan is required under the Federal Disaster Mitigation Act of 2000 as a prerequisite for receiving certain forms of Federal disaster assistance. The plan can be found on the County's website at www.churchillcounty.org .

Public comments and participation are welcomed. For additional information or to request to participate, or to submit comments, please contact _____, Churchill County Emergency Management, at (775) _____ or ccem@phonewave.net .

Annual Review Questionnaire

PLAN SECTION	QUESTIONS	YES	NO	COMMENTS
PLANNING PROCESS	Are there internal or external organizations and agencies that have been invaluable to the planning process or to mitigation action?			
	Are there procedures (e.g., meeting announcement, plan updates) that can be done more efficiently?			
	Has the Steering committee undertaken any public outreach activities regarding the HMP or implementation of mitigation actions?			
HAZARD PROFILES	Has a natural and/or human-caused disaster occurred in this reporting period?			
	Are there natural and/or human-caused hazards that have not bee addressed in this HMP and should be?			
	Are additional maps or new hazards studies available? If so, what have they revealed?			
VULNERABILITY ANALYSIS	Do any new critical facilities or infrastructure need to be added to the asset lists?			
	Have there been changes in development patterns that could influence the effects of hazards or create additional risks?			
MITIGATION STRATEGY	Are there different or additional resources (financial, technical, and human) that are now available for mitigation planning?			
	Are the goals still applicable?			
	Should new mitigation actions be added to a community's Mitigation Action Plan?			
	Do existing mitigation actions listed in a community's Mitigation Action Plan need to be reprioritized?			
	Are the mitigation actions listed in a community's Mitigation Action Plan appropriate for available resources?			

Mitigation Action Progress Report

Progress Report Period:_____ to _____
(date) (date)

Project Title:_____ Project ID#_____

Responsible Agency:

Address:_____

City:_____

Contact Person:_____

Phone # (s): _____ email address:_____

List Supporting Agencies and Contacts:

Total Project Cost: _____

Anticipated Cost Overrun/Underrun: _____

Date of Project Approval: _____ Start date of the project: _____

Anticipated completion date: _____

Description of the Project (include a description of each phase, if applicable, and the time frame for completing each phase): _____

Milestones	Complete	Projected Date of Completion

Plan Goal(s) Address

Goal: _____

Indicator of Success: _____

Project Status

☐ Project on schedule

☐ Project completed

☐ Project delayed*

*explain _____

_____

☐ Project Cancelled

Project Cost Status

☐ Cost unchanged

☐ Cost overrun*

*explain_____

_____

☐ Cost underrun*

*explain_____

_____

Summary of progress on project for this report:

A. what was accomplished during this reporting period?

B. What obstacles, problems, or delays did you encounter, if any?

C. How was each problem resolved?

Next Steps: What are the next step(s) to be accomplished over the next reporting period?

Other Comments: