

Prepared for:  
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# **Elko County**

## **Multi- Jurisdictional**

# **Hazard Mitigation Plan**

**2014**

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## List of Acronyms

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BLM	United States Bureau of Land Management
CDC	Center for Disease Control
cfs	cubic feet per second
CFR	Code of Federal Regulations
Cities	City of Carlin, Elko, Wells and West Wendover
County	Elko 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 <b>HAZ</b> ards <b>U</b> nited <b>S</b> 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
LEPC	Local Emergency Planning Committee
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

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## List of Acronyms

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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
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

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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. Elko 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 County and the Cities of Carlin, Elko, West Wendover and Wells and the Elko County School District 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 Elko County Hazard Mitigation Planning Committee prepared the *Elko County Hazard Mitigation Plan*. With the support of various County and City officials, the State of Nevada, and the United States 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 Cities toward greater disaster resistance in full harmony with the character and needs of the community and region.

People and property in Elko 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 *Elko County 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 Cities.

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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 *Elko County, Nevada, Hazard Mitigation Plan* (HMP) by the local governing bodies, 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.*

Elko County, the cities of Carlin, Elko, Wells, and West Wendover, and the Elko County School District, are the jurisdictions represented in this MJHMP and meet the requirements of Section 409 of the Stafford Act and Section 322 of the DMA 2000.

The local governing body of Elko County and each incorporated community has adopted the MJHMP by resolution. A scanned copy of each resolution is included 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, the County, Cities and School District 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 to engage the County, City, School District 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, 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 and the immediately surrounding area. Information collected includes historical data on natural hazard events that have occurred in and around the County and how these events impacted residents and their property.

The descriptions of natural hazards that could affect the County 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 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 Elko County, and the cities of Carlin, Elko, Wells, and West Wendover, as well as their government structure, demographic information, and current land use and development trends. Also within this section is a description of the two special districts to include history, location, government structure, and mitigation project interest. Within this document, the incorporated and unincorporated county area is also referred to as the Planning Area. Additionally, this section provides community profiles for the region's tribal communities to provide a more complete picture of the composition of the entire county even though the tribal communities are developing their own hazard mitigation plans separately from this effort.

This section's demographics and land use sections were updated.

### **3.1 ELKO COUNTY**

#### **3.1.1 History, Location, and Geography**

As shown in Figure C-1 Location in Appendix C, Elko County is located in the northeast corner of the State of Nevada. It is the second largest of the State's 17 counties and the fourth largest county (by area) in the continental U.S. totaling 17,135 miles. It is bordered on the north by three counties of the state of Idaho, Owyhee County, Twin Falls County, and Cassia County. To the west the county is bordered by Humboldt County, Lander County, and Eureka County of Nevada. On the southern border of Elko County is White Pine County, Nevada. The eastern border is comprised of two counties in the State of Utah, Toole County and Box Elder County. Interstate 80, which runs from San Francisco to New York, traverses the county and connects all four of the incorporated cities of West Wendover, Wells, Elko, and Carlin. U.S. 93 is the major north-south corridor through the county.

Approximately 73 percent of the land in the Planning Area is federally controlled, as seen in Figure C-1 in Appendix C. Federal ownership includes 62 percent by the Bureau of Land Management, 10 percent by the United States Forest Service, 1 percent by the Bureau of Indian Affairs, and less the 1 percent by the United States Fish and Wildlife Services, Department of Defense and other federal agencies. Jackpot, a major unincorporated town, has experienced rapid growth in recent years. The City of Elko is the major urban area, with the remainder of the county primarily rural.

On October 31, 1864, Nevada became the 36th state in the union and that same year the first settlers took up ranching in the Lamoille Valley. In 1867, Tuscarora was founded and the first permanent settlers established ranches in Starr Valley and South Fork Valley. With the arrival of the Central Pacific Railroad in 1868, Elko, Carlin and Wells were established. That same year the Idaho Central Wagon Road connected Carlin to the mines in Silver City, Idaho. The Nevada Legislature established Elko County on March 5, 1869.

Most of the county lies within the Great Basin with areas along the northern boundary draining into the Snake River Basin. The Elko County terrain consists of mountains interspersed with low, flat valleys. The Humboldt River flows through Elko County, with the Ruby Mountains stretching across the county in a north-south direction. The county's elevation varies between 5,000 and 11,000 feet with the Ruby Dome (elevation 11,300 feet) being the highest point in the county.

The area has a high-desert, arid climate with over 300 days of sunshine a year. The majority of the county's 10 inches of precipitation is from snowfall. In winter, the average high temperature ranges from 20 to 30 degrees Fahrenheit. In summer, high temperatures can be expected to range from 60 to 70 degrees Fahrenheit.

The first known inhabitants of the Elko region were the Shoshonean Native American tribes. In 1841 the first wagon trains blazed across the high desert, creating the famous California Trail. Soon Elko County became known as a resting stop for weary travelers heading west to strike their fortunes. Facing the overwhelming task of crossing the Forty Mile Desert and the Sierra Nevada Mountains, the pioneers camped near the Humboldt River before continuing on with their arduous trek.

Founded as a railroad-promoted town site and railhead for the White Pine mines in 1869, Elko has served for generations as the provincial capital of an enormous cattle ranching empire, embracing parts of four states. Sixty years ago Elko was described as "the last real cow-town in the American West," and until about 15 years ago that was still a good thumbnail description. But sophisticated new mining technologies have facilitated continued growth. Half a dozen large mining operations produce millions of ounces of gold a year in the region. A Land Use Map of the County is Figure C-2 in Appendix C.

### **3.1.2 Government**

The County Board of Commissioners is the executive branch of Elko County government. The Commissioners serve as the policymakers for the county and administer the various county programs. Their powers include reviewing budget requests, appropriating funds, establishing county tax levies, enacting ordinances, filling employee vacancies, and hearing reports from county officers. The board is also responsible for overseeing economic development in the County. The Boards of Commissioner's responsibilities are defined by the Nevada Revised Statutes. The Board consists of five elected members. Additional elected officials include: District Attorney, Sheriff, Treasurer, Assessor, Clerk, and Recorder.

### **3.1.3 Demographics**

The Nevada State Demographer, Nevada Department of Taxation listed the unincorporated county's population at 22,451 as of the 2010 Census. This indicates that nearly 46 percent of the total county population of 48,818 resides in the unincorporated area of the county. The U.S. Census Bureau 2010 Census states the population of the unincorporated area of the county was 22,451. There are 7,153 individuals at and below 19 years of age, or approximately 31 percent of the total population, 15,723 individuals are between 20 and 64 years of age or approximately 60 percent of the total population, and 2,063 individuals are 65 years and over or approximately 9 percent of the total population. During the period from July 2005 to July 2010, the Elko County unincorporated area experienced an average growth of 5.8 percent.

### **3.1.4 Land Use and Development Trends**

The Land Use Plan is the basic element of the Elko County General Plan. This plan provides for guidance in the following areas: Residential Land Use, Commercial Areas, Industrial Lands, Agricultural Uses, Vacant Lands, and Open Space.

Residential land uses have been designated by varying densities and permissive uses through zoning. Commercial land uses focus to meet the shopping and service needs of the area effectively, conveniently, and pleasantly in facilities related to demand. Industrial land needs in Elko County are minimal except in connection with mining activities in relation to population needs. Agricultural lands are limited by the availability of water and since this is in limited supply, large amounts of new agricultural lands are not likely. Agricultural lands are recommended to be reserved without the possibility of industrial or high-density residential intrusion. Most of the lands of Elko County are “vacant” and under the management of the Bureau of Land Management. Open Space is perhaps one of the most important “proposed” land use zoning categories as it permits all agricultural uses, wildlife and forest preserves, mining activities, and certain other uses subject to a Special Use Permit on a minimum of 20 acres of land.

In planning for future development, specific attention has been focused on the urban core areas due to their anticipated continued growth. The areas identified as urban core are the Cities of Elko, Wells, Carlin and West Wendover along with the unincorporated communities of Jackpot and Lamoille. The Lamoille area offers a particular case since it is now evidencing signs of major development on an area-wide basis and promises to be the future major development center of the county.

## **3.2 CITY OF CARLIN**

### **3.2.1 History, Location, and Geography**

The City of Carlin is a quaint community located in northeast Nevada, 23 miles west of Elko and is situated along Interstate 80. Carlin’s city limits encompass 9 square miles with a residential population of 2,261. The City of Carlin had its beginnings as a campsite favored by immigrants traveling the California Trail during the Gold Rush period of the late 1840’s, and grew quickly after it became the eastern terminus of the Central Pacific Railroad’s Humboldt Division in late 1868. During 1907 the Western Pacific Railroad (now Union Pacific) was built through the town, south of the Southern Pacific (formerly Central Pacific).

For many years, until the 1950s, Carlin was principally a railroad town. The main business district was located on the south side of the Southern Pacific Railroad while much of the railroad shop facilities and the roundhouse were situated north of the main line tracks. Residential areas were located on both sides of the Southern Pacific Railroad with most of the dwellings established north of the railroad shops.

As the significance of the railroad decreased, with the replacement of steam engines by diesel power, the business district south of the railroad declined and business began relocating nearer Highway 40, (now Interstate 80) on the north side of the city. In the 1960s, gold mining came into prominence in the general vicinity of Carlin.

Mining became a major employment base in the early 1960s with the development of the area commonly known as the Carlin Trend. The Carlin Trend boasts two of the largest open pit gold mines in the world, processing approximately 3 million ounces of ore annually. The Newmont Gold Quarry site is visible from the Interstate and the northern slopes of the city. The 1980s saw a time of substantial expansion of the gold mining industry in the area around Carlin making the



region one of the premier gold mining areas of the world. This boom brought dramatic growth and change to Elko County and Carlin.

The developed portion of the City of Carlin covers roughly one-half square mile and is located near the center of the nine square miles, which make up the jurisdictional area of the city. The City's responsibilities and structure are outlined in the City Charter adopted in 1971. Approximately 75 percent of the land within the city limits lies north of the Humboldt River with the remaining 25 percent south of the River. Important tributaries to the Humboldt River, which flow through the city, are Maggie Creek and Mary's Creek. The two creeks generally serve as the east and west boundaries of the city.

### **3.2.2 Government**

Carlin has a Mayor/Council form of government. The legislative body of Carlin consists of a directly elected Mayor and four At Large Council representatives. Council chooses the Vice-Mayor from among its membership. City Council appoints a City Manager, City Clerk, Police Chief, City Attorney, City Engineer and members of various citizen's boards and commissions. The city consists of five departments under the direction of the City Manager: Administration, Public Works, Senior Center, Police Department, and Fire Department.

### **3.2.3 Demographics**

As shown in the Nevada State Demographer, Nevada Department of Taxation listed the city's population at 2,376 as of June 1, 2012. This indicates that nearly 5 percent of the total county population of 47,586 residents resides in the City of Carlin. The U.S. Census Bureau 2010 Census states the population of the City of Carlin was 2,376. There are 542 individuals under 15 years of age, or approximately 25.1 percent of the total population, 1,461 individuals are between 16 and 64 years or 68 percent of the total population, and 158 individuals are 65 years and over or 7.3 percent of the total population. During the period from 2000 to July 2005 the City of Carlin experienced an average growth of 1 percent; however, in looking at the growth year-by-year, this growth level fluctuates moderately back and forth from negative to positive increases.

### **3.2.4 Land Use and Development Trends**

The land use plan separates the City of Carlin into various land-use designations. These designations provide areas where certain types of land use activities should be established or continued. Within each land use designation a limited range of land use activities are proposed. To ensure implementation of each land use designation, a range of zoning districts are specified which are compatible to, and promote, the uses intended within each designated area.

Four major categories of land use activities are indicated on the land use plan: residential, commercial, industrial, and agricultural-open space. Two of these categories, residential and commercial, are further divided into sub areas based on density and level of activity. A fifth category, public use, is also included on the land use plan to indicate areas for public use and facilities.

### **3.3 CITY OF ELKO**

#### **3.3.1 History, Location, and Geography**

The first known inhabitants of the Elko region were the Shoshonean Native American tribes. The first known non-native men to enter the region consisted of Peter Skene Ogden and a group of American fur trappers. In 1841 the first wagon trains blazed across the high desert, creating the famous California Trail. During the Civil War, from 1861 to 1865, an Army post was established in the area and the beginning of a permanent settlement occurred. A construction crew built the first railway, a division of Southern Pacific Railroad, in 1867. With the onset of the rail system, Elko became a viable and recognized city and growth accelerated. With the completion of the Central Pacific Railway in 1868, the Chinese laborers from the Central Pacific's track crew were abandoned. Many stayed in Elko. One of their chief occupations during the summer months was the raising of vegetables for the town. Their gardens were mostly on the northern banks of the Humboldt River and were watered by hand. Eventually the Chinese built the first water system in Elko. They built a reservoir and dug a ditch to carry the water from Osino to the reservoir, a distance of 8 to 10 miles.

The City of Elko is located on the Humboldt River in the west central part of Elko County. The city serves as the county seat for Elko County. The City of Elko is the largest urban area and center of commerce and government in northeastern and north central Nevada. It is located along Interstate 80 approximately midway between Reno (295 miles to the west) and Salt Lake City (237 miles eastward). Boise, Idaho is 246 miles north on State Route 223. The city is one of four incorporated cities in Elko County and encompasses a 17.64-square-mile area. Founded on January 11, 1869, the city incorporated on March 4, 1917. The Elko Township includes the City of Elko, the Spring Creek suburb and the community of Lamoille.

Sitting at an elevation of 5,060 feet in the high desert, Elko experiences four annual seasons. Winter months average high temperatures from 34 to 47 degrees. Lows average from 25 to 36 degrees. Snowfall comprises the major part of the annual precipitation of approximately 10 inches. In the spring, temperatures rise during the days but remain quite cool in the evenings. Summer months bring dry, warm temperatures between 80 and 90 degrees. Fall is spectacular with the change of colors, the nip in the air, and the warm days and cool nights.

Nevada's first public university opened in Elko. The University of Nevada opened October 12, 1874 and was open for 11 years before moving to Reno. In 1885, Elko continued its commitment to education by opening the first high school in the state. Elko is now home to Great Basin College, which is a full-time, 4-year college.

Elko became a shipping and receiving hub for ranchers settling in nearby areas and today is still one of the largest cattle producing regions in the State of Nevada.

#### **3.3.2 Government**

Elko, which incorporated on March 19, 1917, is a second-class, chartered city and operates under a City Council/Manager form of government. The Mayor and City Council are the legislative body that in turn establish and enact the city laws. The legislative power of the city is vested in a city council consisting of four members and the mayor. All members of the City Council must be voted upon by the registered voters of the city at large and shall serve for terms of 4 years. The Mayor presides over the City Council meetings and serves as the chief executive officer of the

city. The Mayor designates from among the members of the City Council members to act as liaisons for the different departments and functions of the city. The duties of each department must be designated by the City Council.

The City Council appoints the following officers: City Clerk, City Attorney, Chief of Police, Municipal Judge, Fire Chief, City Manager, and City Engineer. The City Council may establish such other offices and appoint such other officers, as it may deem necessary.

### **3.3.3 Demographics**

The Nevada State Demographer, Nevada Department of Taxation listed the city's population at 20,406 as of July 1, 2012. This indicates that nearly 39 percent of the total county's population of 51,771 resides in the City of Elko. The U.S. Census Bureau 2010 Census states the population of the City of Elko was 18,297. There are 5,093 individuals under 18 years of age, or approximately 27.8 percent of the total population, there are 11,680 individuals between 18 and 64 years of age or approximately 63.9 percent of the total population, there are 1,524 individuals 65 years and over or 8.3 percent of the total population. During the period from April 2000 to April 2010 the City of Elko experienced an average growth of 1 percent. In looking at the growth year-by-year, this growth level started in a negative growth rate, however since then the growth has maintained steady, continuous increases.

### **3.3.4 Land Use and Development Trends**

The City of Elko can be divided into three basic geographical areas, which help to define current prevailing patterns of land use throughout the community. These include the Northern Sector Area, generally north of Interstate 80, the Central Sector Area, generally between Interstate 80 on the north and the Humboldt River on the south, and the Southern Sector Area, generally south of the Humboldt River.

Residential patterns of land use exist throughout the various sectors of Elko. An older, mixed housing stock characterizes the core area of the city between Interstate 80 and the Humboldt River. Areas to the north of the freeway reflect newer housing and more contemporary patterns of development. Areas to the south of the river feature mixed housing that includes units of moderate age as well as units of a more recent vintage.

Projected high growth areas for residential development include both the northern and southern sectors of the city. The central sector is expected to experience a more moderate residential growth rate involving in-fill type development and housing rehabilitation and reconstruction.

Commercial patterns of land use exist within the downtown core area, adjacent to points of ingress and egress with Interstate 80 along major arterial roadways such as Mountain City Highway and Idaho Street.

Institutional patterns of land use are clustered primarily within the older, core area of the city (Central Sector) between Interstate 80 on the north and the Humboldt River on the south.

Industrial patterns of land use are situated at the east end of the city generally between East Idaho Street and railroad corridor and also at the west end of the city generally between the airport and the railroad corridor. Quality land available for future industrial development is limited. A significant percentage of industrial zoned property is either inappropriately zoned or comprised of marginal land within or adjacent to the Humboldt River floodplain.

The industrial sector of the local economy is strongly influenced by the mining industry and a number of major mines located beyond the corporate limits of the city but within the Elko vicinity.

Portions of the older, core area of the community (Central Sector) are characterized by blighted conditions and vacant land. A relatively high percentage of the vacant, undeveloped land within the city is constrained in some fashion by topography or floodplain locations. Another important characteristic is that a significant portion of land within the urban fringe area adjacent to the corporate limits of the city is under ownership of the U.S. Department of the Interior, Bureau of Land Management. This area represents an additional 6,000 acres of land available for long-term public use, urban growth, and development.

### **3.4 CITY OF WELLS**

#### **3.4.1 History, Location, and Geography**

Wells is located on the East Fork of the Humboldt River in northeastern Nevada at the crossroads of interstate 80 east and west and U.S. Highway 93 north and south. Wells is approximately 160 miles west of Salt Lake City, Utah and 340 miles northeast of Reno, Nevada. Within Elko County, this places it about 50 miles east of the county seat of Elko; 63 miles west of West Wendover; 65 miles south of Jackpot and about 116 miles south of Twin Falls, Idaho. It is 6.9 square miles at an elevation of 5,630 feet. It was originally called 'Humboldt-Wells' and known in 1845 for its lush meadows and natural spring wells. Founded in 1869 by the Central Pacific Railroad it became an important shipping and receiving center for the mines and ranches of the nearby valleys (Clover Valley & Starr Valley). The City of Wells incorporated in 1927. Today, it has once again become a major rest and recuperation stop for many travelers along with serving as the gateway to the magnificent Angel Lake in the East Humboldt Range - Humboldt National Forest.

After the disastrous fire of 1900, which destroyed many of the community's wood framed commercial buildings, the Wells Market was built in 1902. It was at this time that Humboldt-Wells became known as 'Wells' because the railroad telegrapher shortened the name to relay the urgency of the message, "Wells is burning!"

Wells, in the early 20th Century, was a growing railroad community and for the Southern Pacific Railroad the first houses that were built by them for their employees were constructed from the most available materials: railroad ties. Proving to be both durable and accessible, railroad ties dominated residential construction until the 1920s.

Wells has a "high desert topography" geographically located at the base of the "East Humboldt Range" (Humboldt National Forest), this pine-forested range, with its fair share of sagebrush and natural wild herbs, has several natural lakes, including the famous "Angel Lake."

The City of Wells maintains all water and sewer systems while the locally owned Wells Rural Electric Cooperative supplies very affordable electricity. Wells Rural Electric Company is a cooperative owned by its members. Wells Rural provides electricity to West Wendover, Carlin and several other communities in Elko County. Due to the ideal location, Wells is already home base for a beverage distribution warehouse, and trucking services including fueling, repairs, washing and the like.

The weather averages in the 20s during the winter months and in the 60s during the summer. High winds, January colds and hot August days are common to experience in any given year. Average total snow, sleet, and hail annually: 25 inches (based on a 44 year average).

Although the town of Wells was founded in 1869 by the Central Pacific Railroad, use of the Humboldt Wells dates back to the settlers and Western Shoshone who still live in a colony overlooking the city today.

### **3.4.2 Government**

The City Council is comprised of five elected members to include the Mayor, Vice Mayor, and three council members. They are responsible for making policy, passing ordinances, voting appropriations, and having overall supervisory authority in the city government. The City Manager serves the Council in the capacity of supervising government operations and implementing the policies adopted by the council. Additional city officials are the City Clerk, and the Public Works/Parks and Recreation Director. The Planning and Zoning Commission is a separate administrative unit overseeing all planning and zoning issues. Law Enforcement is provided by the Elko County Sheriff's Office with a substation in Wells. The Wells Volunteer Fire Department and the Elko County Ambulance Service provide fire and ambulance services locally.

### **3.4.3 Demographics**

The Nevada State Demographer, Nevada Department of Taxation listed the city's population at 1,280 as of July 1, 2012. This indicates that nearly 3 percent of the total county population of 51,771 residents resides in the City of Wells. The U.S. Census Bureau 2000 Census states the population of the City of Wells was 1,346. There are 334 individuals under 15 years of age, or approximately 25 percent of the total population; 874 individuals are between 16 and 64 years of age, or approximately 65 percent of the total population; and 138 individuals are 65 years and over, or approximately 10 percent of the total population. Wells has been quite susceptible to increases and declines over the years. El Paso Gas brought 300 employees to the community during the year of 2011 which impacts population numbers greatly.

### **3.4.4 Land Use and Development Trends**

The City of Wells zoning map has identified numerous sites completely surrounding city development to expand mostly residential structures onto areas currently occupied by agriculture lands. The City has been careful to clearly identify those areas with a high water table to deter from future residential, commercial, or industrial development.

To the east 23 miles, a large vein of gold is being explored by Newmont Mining. It is anticipated that permitting will be forthcoming in the next two years. Directly west in the area known as Metropolis, Noble Energy has started oil exploration. Therefore, natural resources in the area may be mined at a rate larger than the community has ever seen. El Paso Gas has also installed a large natural gas pipeline 19 miles north with a valve in place to eventually serve Wells, Nevada. These factors may change and develop land uses in the future.

### **3.4.4 Land Use and Development Trends**

The City of Wells zoning map has identified numerous sites completely surrounding city development to expand mostly residential structures onto areas currently occupied by agriculture lands. The City has been careful to clearly identify those areas with a high water table to deter from future residential, commercial, or industrial development.

## **3.5 CITY OF WEST WENDOVER**

### **3.5.1 History, Location, and Geography**

West Wendover is a city in Elko County, Nevada located 120 miles west of Salt Lake City, Utah, 404 miles east of Reno, Nevada and 400 miles north of Las Vegas, Nevada. West Wendover is on the eastern border of Nevada, and is contiguous with Wendover, Utah, with which it is sometimes confused. Interstate 80 runs through both cities connecting Salt Lake City, Utah to San Francisco, California. U.S. Highway 93A connects West Wendover to Las Vegas, Nevada. West Wendover is 7.5 square miles at an elevation of 4,450 feet.

The community of West Wendover came into existence in 1906 as a railroad town, serving the steam engines of the Western Pacific Railroad, which is now part of the Union Pacific Railroad average. The community boasted a population of around 150 people. West Wendover included a train depot, water towers, a round house and other ancillary buildings needed for the operation of an emerging and growing railroad. West Wendover became a main stop on this route, which provided service across the Great Basin deserts of Utah and Nevada connecting Salt Lake City to San Francisco. During the early 1900's West Wendover was a cross roads for many significant undertakings including arsenic mining 25 miles south of West Wendover mainly for the efforts of World War I and the connection of the first transcontinental telephone line connecting the U.S. from east coast to west coast.

The West Wendover area saw its first boom in the 1930s and 1940s with the introduction of legalized gambling in the State of Nevada. Mr. William "Bill" Smith founded a small cobblestone service station that provided a needed rest to weary travelers crossing the desert terrain of western Utah and eastern Nevada. Today this facility is known as the Wendover Nugget. Important to this new business spirit in the area was the role the U.S. Military played in building and operating Wendover Field.

Construction on Wendover Field began in November of 1940. By 1943, Wendover Field had become the largest military reserve in the world with over 23,000 military personnel and a total of 668 buildings encompassing over 3.5 million acres of property. This facility became the mainstay of the U.S. Military's training mission for bomber crews. All told Wendover Field was home to 21 heavy bomber groups including the most notable 509th Composite Group, commanded by Colonel Paul W. Tibbets, along with one of its divisions, the 1st Ordinance Detachment, which was responsible for the assembly and modification of the atomic aerial devices. The 1st Ordinance Detachment later became part of the Manhattan Engineers. These two groups' mission was recorded in history as the atomic missions over Japan (Hiroshima on August 6, 1945 and Nagasaki on August 9, 1945). And was the first and to date, only atomic bombardment exercised by one nation against another.

Through the 1970s and 1980s West Wendover began to emerge as a destination resort. Additional business arrived constructing more casinos, hotels and other service establishments as well as recreational venues such as the Toana Vista Golf Course. As growth continued to spiral up, the citizens of West Wendover, Nevada, then a township of Elko County, elected to incorporate under self-rule. On July 1, 1991, West Wendover, Nevada came into existence and since incorporation, West Wendover has been one of the most steady growing border towns in Nevada with an average growth rate of between 3 and 5 percent.

Because of its ties with Wendover, Utah, and its economic ties with central Utah, the U.S. Department of Transportation moved West Wendover to the Mountain Time Zone in October 1999, while most of the rest of Nevada (Jackpot, Nevada in northern Elko County being the other exception although unofficially) remains in the Pacific Time Zone. For years, West Wendover has thrived under a lucrative gambling industry in Nevada, which has generated tax revenue for city services and better schools.

The City of West Wendover lies on the western boundary of Ancient Lake Bonneville. The area is comprised of alluvial fans formed by erosion of the surrounding hills and mountains located west and north of the city. The general drainage is from the northwest (elevation of 4,940 feet) to the southeast (elevation 4,320 feet). West Wendover lies amidst a series of north south oriented mountain ranges. These mountains are generally 8,000 to 9,000 feet above sea level with some peaks extending to 12,000 feet. Other landforms in the surrounding area include the wave cut terraces, spits and off shore barrier bars formed as part of Ancient Lake Bonneville. Present day landforms include deposits of windblown sand and silt, sand dunes and deposits left from normal weathering and runoff. The basins consist of primarily salt flats and playa deposits. West Wendover is a geographic region enclosed by highlands.

### **3.5.2 Government**

West Wendover is organized as a Mayor-City Council government with a five-person elected city council and an elected mayor. The City Manager who is appointed is responsible for managing daily operations and implementing policy and procedures approved by the Mayor and City Council. Other city departments include: Administration/Community Development, Finance, City Clerk, Public Works, Fire Department, and Police Department.

### **3.5.3 Demographics**

The Nevada State Demographer, Nevada Department of Taxation listed the city's population at 4,848 as of July 1, 2005. This indicates that nearly 10 percent of the total county population of 47,586 residents resides in the City of West Wendover. The U.S. Census Bureau 2000 Census states the population of the City of West Wendover was 4,721. There are 1,559 individuals under 15 years of age, or approximately 33 percent of the total population, there are 3,065 individuals between 16 and 64 years of age or approximately 65 percent of the total population, and 97 people are 65 years and over or approximately 2 percent of the total population. During the period from 2000 to July 2005 the City of West Wendover experienced an average growth of 1 percent; however, in looking at the growth year-by-year, this growth level fluctuates moderately back and forth from negative to positive increases.

### **3.5.4 Land Use and Development Trends**

Prior to 1991 West Wendover was known as an unincorporated town in the County of Elko. In 1991 the City of West Wendover was established and incorporated separately from the County of Elko. During 1978, when West Wendover was an unincorporated town, FEMA conducted flood hazard mapping throughout Elko County. At the time this mapping occurred it was FEMA practice in rural areas to map portions of the area rather than the entire rural jurisdiction. As a result of the mapping, a one-year window was afforded Elko County to submit an application to participate in the NFIP. Elko County submitted an application during the allotted one-year time frame, and is documented to have begun NFIP participation during 1978. Additionally, as documented in the FEMA Community Status Book Report – Nevada – Communities Participating in the National Flood Program at: <http://www.fema.gov/cis/NV.pdf> the Town of West Wendover is listed separately under those communities not in the National Flood Program. This documentation indicates on July 11, 1979 the Town of West Wendover was issued a sanction dated exactly one year after the mapping of Elko County was completed. As of September 2007, during the development of this MJHMP, twenty-eight years after the sanction, there is no longer sufficient documentation to determine why a sanction was issued for the Town of West Wendover dated twelve years before the City of West Wendover was established and incorporated. It can only be surmised that the sanction is directly related to the one-year window automatically applied at the completion of the FEMA mapping process.

During the last ten years the City of West Wendover has worked to comply with NFIP standards and in 1999 the City adopted flood control ordinances as well as submitted an application to FEMA Region IX to participate in the NFIP. When the NFIP application was submitted the flood control ordinances had been adopted but were not forwarded with the application. The NFIP application was placed on hold pending receipt of the flood control ordinances. Since then, the City of West Wendover has held submitting the ordinances waiting for FEMA to complete their flood hazard mapping under a five-year program that was authorized in 2001. Unfortunately, the City of West Wendover was not aware their flood prone area was not scheduled to be mapped as part of the five-year project. Although flood control ordinances have been adopted, enforced, and considered when planning for future development, the NFIP application has remained on hold at FEMA Region IX. As a result of this MJHMP process, the City of West Wendover is in direct communication with the Natural Hazards Program Specialist for NFIP at FEMA Region IX to re-submit their application along with all other required documentation to participate in the NFIP.

As the City of West Wendover continues to prosper, the current land use plan, dated October 5, 2000, has identified future development to continue beyond current city limits. This future development is slated to build to the north, south and west of city development and will for the most part retain current designations.

### **3.6 SPECIAL DISTRICTS**

There are two Special Districts participating in this planning process with the Steering Committee and the Elko County Planning Team. The districts are Great Basin College and Elko County School District. Both special districts have participated in the planning process from the beginning. As separate political entities, they are eligible to apply for federal mitigation grants. Additionally, as active members and participants of this MJHMP they will then meet the DMA



2000 requirement for a FEMA approved HMP. Each district accepts the responsibility of meeting all local ordinances and established procedures associated with any mitigation project they undertake by virtue of their participation in this planning process.

### **3.6.1 Elko County School District**

Elko County School District

Steering Committee Member:

Steve Bowers

Building Operations & Construction Manager

Elko County School District

1092 Burns Road

Elko, NV 89801

775-738-5196

[sbowers@elko.k12.nv.us](mailto:sbowers@elko.k12.nv.us)

The Elko County School District, with boundaries conterminous with Elko County, was established by Act of the 1956 Nevada Legislature (NRS 386.010). The Board of Trustees exists by virtue of and derives its powers from the Constitution and the Acts of the Legislature of the State of Nevada and rules and regulations of the State Board of Education. The Board is given such reasonable and necessary powers, not conflicting with the Constitution and the Laws of the State of Nevada, as may be requisite to attain the ends for which they are established and to promote the welfare of school children (NRS 386.350). Mitigation projects, planning, and activities Elko County School District would participate in would focus on the safety and health of their students, staff, and visitors.

### **3.6.2 Great Basin College**

Great Basin College

Steering Committee Member:

Patricia Anderson

Director of Environmental Health, Safety, & Security

Great Basin College

1500 College Parkway

Elko, NV 89801

775-753-2115

[pata@gwmail.gbcnv.edu](mailto:pata@gwmail.gbcnv.edu)

Great Basin College originally opened in 1968 for classes as Elko Community College. In 1972 the college was accepted into the Nevada College System changing its name to Northern Nevada Community College in 1973. The college moved to the current location in 1973 and has since expanded from one campus to a service area of 62,000 square miles serving six counties covering most of rural Nevada. To better reflect the courses, degrees and coverage area the name was changed to Great Basin College in 1996. Great Basin College is a member institution of the Nevada System of Higher Education governed by an elected Board of Regents and reporting to a Chancellor. Mitigation projects, planning, and activities the College would

participate in would include geothermal and alternate energy planning, and mitigation activities to protect the health and safety of students, faculty and visitors.

### **3.7 TRIBAL COMMUNITIES**

Although the tribal communities are developing their own hazard mitigation plans separately from the Elko County MJHMP, the following section provides community profiles for the region's four tribal communities to provide a more complete picture of the composition of the entire county.

#### **3.7.1 Wells Band Colony of the Western Shoshone Nation**

##### ***3.7.1.1 History, Location and Geography***

The Wells Colony is located in the high desert of northeastern Nevada, just west of the city of Wells, in Elko County. Elko, the major population center in northeastern Nevada, lies approximately 45 miles southwest of the Wells Colony via Interstate 80. On October 15, 1977 an Act of Congress, Public Law #95-133, established the reservation. The Wells Band of Western Shoshone retains 80 acres of federal trust land. The mailing address for all tribal government offices and tribal enterprises is listed as Wells, Nevada.

The Wells Colony is one of four separate colonies that compose the Te-Moak Tribe of Western Shoshone Indians. Members of the Wells Band of Western Shoshone or "Newe" (The People) are descendants of several Newe bands which once hunted and gathered throughout the valleys, near the present-day town of Wells. They named themselves Ku iyudika, after a desert plant used for food; within this group were at least two other smaller groups, the Doyogadzu Newenée (end-of-the-mountain people) and the Waiha-Muta Newenée (fire-burning-on ridge people). Clover Valley served as a rendezvous spot among these small Newe bands.

The arrival of Euro-Americans in the middle 19th Century brought an end to the Newe's semi-nomadic life-style. Congress established the Nevada Territory in 1861. Although they were not members of the Te-Moak Band, the Ku iyudika were included in the Ruby Valley Treaty of 1863 between the U.S. and the Te-Moak Band of Western Shoshone.

Newe people lived and worked in Wells from its beginning as a railroad station in 1870. For many years, the Wells area Newe languished due to an insufficient land base, low wages, and poor living conditions. During the 1970s, the Wells Band organized the Wells Community Council to address these issues. In 1976, the Te-Moak Bands of Western Shoshone recognized the community council as a committee. Congress established the Wells Colony on 80 acres in 1977. Since then, the Te-Moak and Wells Bands have worked to improve conditions at the Wells Colony by supplementing the land base with acreage from Bureau of Land Management and improving on-reservation facilities.

##### ***3.7.1.2 Government***

A constitution and by-laws approved in 1982 established the Te-Moak Western Shoshone Council, of which the Wells Colony is a member. The Wells Colony participates in the Council, which has total jurisdiction over all tribal lands; the Wells Colony retains sovereignty over all

other affairs. The governing body within the Wells Colony is the Wells Band Council comprised of a chairperson, vice-chairperson and five members, all of whom serve three-year terms.

### **3.7.2 Elko Band of Te-Moak Tribe of Western Shoshone Indians of Nevada**

#### ***3.7.2.1 History, Location, and Geography***

The Te-Moak Tribe of Western Shoshone Indians and the Duck Valley Indian Reservation Shoshone-Paiute Tribes are located in Elko County, Nevada. Currently, the Indian communities in Elko County are developing hazard mitigation plans separately from the county and its local jurisdictions. Because these communities are located within the county, a community profile has been included. However, these communities, at this time of development, will be limited to participation as a member of the Steering Committee not as a participating jurisdiction. Their community profiles are below.

The Te-Moak Tribe of Western Shoshone Indians is a federally recognized Tribe with its own constitution amended in 1982 and corporate charter approved in 1938. The Te-Moak Tribe is comprised of four Bands: Battle Mountain Band, Elko Band, South Fork Band, and the Wells Band. The Te-Moak Tribal Council exercises overall jurisdiction over its bands and all tribal lands; Bands exercise limited authority over local matters. The Battle Mountain Band is located in Landers County, Nevada; as such, will not be included in the profiles of Tribal Communities located in Elko County. The Wells Band is located in Wells, Nevada. Their community profile is located within the Wells, Nevada profile. The Elko and South Fork Bands are within the unincorporated area of Elko County. Their profiles are as follows:

The Elko Colony is located in the high desert of northeastern Nevada, near the Humboldt River. The reservation encompasses 192.80 noncontiguous acres adjacent to the City of Elko, the county seat of Elko County, Nevada. Elko is the only major city near the reservation. Reno, Nevada, lies 289 miles southeastward along U.S. Interstate 80. The Elko Colony was established by Executive Order on March 25, 1918, which reserved 160 acres for Shoshone and Paiute Indians living near the town of Elko. Today, 192.8 acres remain in federal trust.

The Elko Colony is one of the four separate colonies that comprise the Te-Moak Tribe of Western Shoshone Indians. Representatives of the Central Pacific Railroad founded the town of Elko, Nevada, in 1868. Many Shoshone families began camping nearby and working at mining and railroad jobs in the community. For almost half a century, they lived in a series of camps in the Elko area. Finally, in 1918 an Executive Order established a 160-acre reservation near the City of Elko. The 250 Shoshones of Elko were forcibly moved once more before receiving their present parcel of land in 1931. Since Elko remains the largest town in northeastern Nevada, many Shoshones have continued to migrate there for railroad and mining work. In recent years, the Western Shoshone people have filed numerous suits against the federal government in an attempt to regain traditional lands now classified as Federal Public Lands. Decisions in several of these cases are still pending. The tribe is also passing the Shoshone language on to younger generations.

#### ***3.7.2.2 Government***

The Indian Reorganization Act of 1934 allowed the Elko band of Shoshone to organize a government “on a reservation basis only.” The Elko Colony is a member of the Te-Moak Tribe of Western Shoshone Indians, with tribal headquarters in Elko. The Te-Moak Tribal Council has

total jurisdiction over all tribal lands, though the colonies retain sovereignty over all other affairs. Several bands joined together to form the Te-Moak Tribe and formed a tribal council in 1938. An Elko Colony constitution was ratified on August 26, 1982. The Elko Community Council, composed of seven popularly elected members, handles tribal business. The council is led by a chairman and members serve 3-year terms. Council candidates must belong to the Te-Moak Tribe, be at least 21, have at least one-fourth Shoshone blood, and have lived on the reservation for 1 year. The council governs the colony, contracting with county, municipal, and federal agencies to provide social services and economic development programs. The Elko Band also elects two representatives to serve on the Te-Moak Council and the Inter-Tribal Council of Nevada.

### **3.7.3 South Fork Band of Te-Moak Tribe of Western Shoshone Indians of Nevada**

#### ***3.7.3.1 History, Location, and Geography***

The South Fork Band Colony covers approximately 13,050 acres in northeastern Nevada, 28 miles south of the city of Elko. The reservation sits on rugged high desert terrain typical of northern Nevada and Utah. It is located just west of the Humboldt National Forest and in the foothills of the Ruby Mountains. The colony was established by Executive Order in 1941 under the provisions of the 1934 Indian Reorganization Act. Land purchases between 1937 and 1939, totaling 9,500 acres, were put toward the newly established band's land base. Subsequent land purchases brought the colony to its present size.

The South Fork Band Colony is one of four separate colonies that comprise the Te-Moak Tribe of Western Shoshone Indians. The South Fork Band was one of the groups of Western Shoshone that refused to move to Duck Valley and remained living in the headwaters of the Reese River, near the present Battle Mountain Colony, until lands in that area were purchased for them in 1937.

#### ***3.7.3.2 Government***

The South Fork Band Colony is under the overall governance of the Te-Moak Tribe of Western Shoshone Indians. The Te-Moak Tribal Council has total jurisdiction over all tribal lands, though the colonies retain sovereignty over all the other affairs. The South Fork Band has its own council as well, composed of seven members. Members include a chairperson, vice-chairperson, and five other members. All council members serve 3-year terms. The corporate charter was ratified on December 12, 1938, while the band's constitution and by-laws were ratified on August 26, 1982. South Fork also belongs to the Inter-Tribal Council of Nevada.

### **3.7.4 Duck Valley Indian Reservation Shoshone-Paiute Tribes**

#### ***3.7.4.1 History, Location, and Geography***

The Duck Valley Reservation was established in 1877 and enlarged in 1886. The reservation is located on the Idaho-Nevada border with approximately half of the land area in each state. The Shoshone-Paiute Tribes have retained all of the 289,820 acre-land area as Tribal Trust land governed by the Tribal Council. The Owyhee River enters the southeast corner of the reservation in Nevada and exits in Idaho to the northwest, flowing into Oregon where it meets the Snake River. The central portion of the reservation from the northern to the southern boundaries is a

lowland valley, with a sloping elevation of 5,200 feet. On either side of the valley are rim-rock plateaus and mountain ranges with elevations reaching nearly 9,000 feet.

#### ***3.7.4.2 Government***

The Shoshone-Paiute Tribal Council, elected by the residents, governs the Duck Valley Indian Reservation.

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. This entire section was updated.

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, Cities and School District assisted by 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 Cities agencies. Annette Kerr of the County's Emergency Services served as the primary Point of Contact (POC) for the County, Cities, School District and the public. Jeff Secord, Elko County GIS specialist and Jeremy Draper, City of Elko Engineer provided assistance with revisions to the Flood profile, additional mapping and vulnerability assessment. Additionally, Michael Fitzsimmons, Nevada Weather Service, Elko Office and Tim Woolever, Nevada Division of Forestry, Elko Office provided major revisions to the Drought, Severe Weather, Windstorm and Wildfire sections.

Due to the extraordinary participation of the County and Cities this is truly a plan which contains local information.

Once the Planning Committee was formed, the following five-step planning process took place during the 12-month period from February 2013 to October 2013.

- **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.

The following table provides details on each section of the plan and what changed during the update.

**Table 4-1. Plan Outline and Update Effort**

Plan Section	Update Effort	What Changed
Section 1 – Official Record of Adoption	Minor Revision	This was Section 2 in the previous plan. A discussion of the Stafford Act was added.
Section 2 - Background	Minor Revisions	This was Section 1 in the previous plan. Plan Sections had minor changes..
Section 3 – Community Description	Minor Revisions	This section was updated to include new land use map and expanded to include land use and development trends to address new requirements. Demographics were updated using 2010 census information.
Section 4 – Planning Process	Major Revisions	This section details the current plan's planning process. Committee tables were updated. Public and stakeholders outreach efforts are provided.
Section 5 – Hazard Analysis	Major Revisions	The individual hazard sections were reformatted to the new outline and then provided to the lead committee member with expertise to update history and revise as needed. Dam Inundation, Drought, Flood, Severe Weather, and Wildfire had major revisions from local planning team members. New FIRM maps were used for flood hazard. New Dam Inundation Maps were included. Avalanche and Landslide were not updated.
Section 6 – Vulnerability Analysis	Moderate Revisions	New analysis of residential, non residential and critical facilities based on mapping efforts tied to hazards was included. Identified URMs were included. Future development was included.
Section 7 – Capability Assessment	Minor Revisions	This section was reviewed and new information included. Financial resources was expanded to include effect on HM. A local mitigation capability assessment was included and a section on NFIP was included to address requirements.

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Section 8 – Mitigation Strategy	Major Revisions	The goals and actions were reviewed and progress was included in Appendix G, actions deleted, and actions added. The prioritization process was expanded to include the STAPLE+E process to better evaluate and prioritize actions.
Section 9 – Plan Maintenance	Minor Revisions	Planning forms were included in Appendix F to help with the maintenance process.
Section 10 – Reference	Minor	Updated to include materials referenced for this update.

### 4.2 HAZARD MITIGATION PLANNING COMMITTEE

#### 4.2.1 Formation of the Planning Committee

As previously noted, the planning process began in January 2013. Annette Kerr, Sheriff's Office, Elko 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 E.

**Table 4-1. Hazard Mitigation Planning Committee**

Name	Department	
Chair: Annette Kerr	Elko 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
Mike Hecht	City of Elko Fire Chief	Lead for City of Elko, provided evaluation and information on the following sections, hazard profile, vulnerability analysis, risk assessment, mitigation strategies, provided public outreach Attended meetings, reviewed drafts and provided input
Randy Brown	Elko County Planning & Flood Plain Management	Provided community information and future development information.. Information on vulnerability and mitigation strategy. Attended meetings, reviewed drafts and provided input
Tim Woolever	Nevada Division of Forestry	Lead for Wildfire Section. provided evaluation and information on the following sections, hazard profile, vulnerability analysis, risk assessment, mitigation strategies, provided public outreach Attended meetings, reviewed drafts and provided input
Jeff Secord	Elko County GIS	Provided GIS mapping. Information on vulnerability and mitigation strategy. Attended meetings, reviewed drafts and provided input
Michael Fitzsimmons	NV Weather Service	Lead for Drought, Severe Weather and Windstorm. Attended meetings, reviewed drafts and provided input



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Jeremy Draper	City of Elko Floodplain Management	Lead for Flood Profile. Provided information on local planning, flood, vulnerability and mitigation strategy Attended meetings, reviewed drafts and provided input
Jeff Knudtson	City of West Wendover	Lead for City of W. Wendover, provided evaluation and information on the following sections, hazard profile, vulnerability analysis, risk assessment, mitigation strategies, provided public outreach Attended meetings, reviewed drafts and provided input
Chris Melville	City of West Wendover	Lead for City of W. Wendover, provided evaluation and information on the following sections, hazard profile, vulnerability analysis, risk assessment, mitigation strategies, provided public outreach Attended meetings, reviewed drafts and provided input
Glenn Trust	City of Carlin, City Manager	Lead for Carlin, provided evaluation and information on the following sections, hazard profile, vulnerability analysis, risk assessment, mitigation strategies, provided public outreach Attended meetings, reviewed drafts and provided input
Jolene Supp	City of Wells City Manager	Lead for Wells, provided evaluation and information on the following sections, hazard profile, vulnerability analysis, risk assessment, mitigation strategies, 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, Attended meetings, reviewed drafts and provided input
Karen Johnson	State Mitigation Specialist	Complied information and revised the plan. Attended meetings, reviewed drafts and provided input

### 4.2.2 City Planning Teams

In addition to the Planning Committee, the planning process also included several jurisdictional level planning teams to assist the leads in identifying the specific hazards/risks that are of concern and mitigation measures priorities. These teams are identified below.

**Table 4-2. City of Carlin Planning Team**

Name	Department	
Glen Trust	City Manager	Lead – Provided information on community description, hazard analysis, vulnerability assessment, mitigation strategy. Attended meetings, reviewed drafts and provided input
Carlos Esparza	Public Works	Provided information on flood, severe weather, future development, critical facilities, mitigation strategy Reviewed drafts and provided input
Karla Jones	Fire/Ambulance/Planning Zoning	Reviewed drafts and provided input Attended meetings, reviewed drafts and provided input
William (Will) Johnson	Fire	Provided information on wildfire & mitigation strategy Reviewed drafts and provided input

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William (Bill) Bauer	Police	Provided information on flood, severe weather, future development. Reviewed drafts and provided input
Tom Ballew	Planning/Zoning	Community information including future development Reviewed drafts and provided input
Bob Bratcher	Building Dept.	Provided information on flood, severe weather, future development. Reviewed drafts and provided input

**Table 4-3. City of Elko Planning Team**

Name	Department	
Mike Hecht	Fire Chief	Lead – Provided information on community description, hazard analysis, vulnerability assessment, mitigation strategy. Attended meetings, reviewed drafts and provided input
Jeremy Draper	Building/Flood Plain Manager	Provided flood hazard analysis, mitigation strategy Attended meetings, reviewed drafts and provided input
Rebecca Hansen	Planner	City information, demographics, land use Reviewed drafts and provided input
Delmo Andreozzi	Asst. City Manager	City information, demographics, land use Reviewed drafts and provided input
Linda buffinton	Asst. City Manager's Office	
Jay Paxson	Environmental Coordinator	Provided Hazardous Materials Info, vulnerability assessment, mitigation strategy Reviewed drafts and provided input
Don Zumwalt	City of Elko Police Dept.	Attended meetings, reviewed drafts and provided input
Richard Genseal	City of Elko Police Dept.	Attended meetings, reviewed drafts and provided input
Scott Wilkenson	Development Manager	Provided information on future development Reviewed drafts and provided input
Matt Griego	Fire Department	Attended meetings, reviewed drafts and provided input
Dennis Strickland	Public Works	Provided input on Vulnerability Assessment & Mitigation Strategy Reviewed drafts and provided input

**Table 4-4. City of Wells Planning Team**

Name	Department	
Jolene Supp	City Manager, Planning/Zoning, flood Control	Lead – Provided information on community description, hazard analysis, vulnerability assessment, mitigation strategy. Attended meetings, reviewed drafts and provided input
Jason Pengelly	Public Works Director, Transportation	Attended meetings, reviewed drafts and provided input
Alan Case	Fire	Attended meetings, reviewed drafts and provided input

**Table 4-5. City of West Wendover Planning Team**

Name	Department	
Jeff Knudtson	Fire Department	Lead – Provided information on community description, hazard analysis, vulnerability assessment, mitigation strategy Attended meetings, reviewed drafts and provided input
Chris Melville	City Manager, Director of Community Development	Provided information on community description, hazard analysis, vulnerability assessment, mitigation strategy Attended meetings, reviewed drafts and provided input

## 4.2.3 Planning Committee Meetings

### • *February 2013*

During the kick-off meeting, at the Great Basin College the Committee discussed the objectives of the DMA 2000, the hazard mitigation planning process, the public outreach process, and the steps involved in updating the HMP and achieving the County's and Cities' goals. The planning process was discussed including the purpose of the plan. The leads for Drought, Earthquake, Epidemic, Flood, Severe Weather and Wildfire were identified. The exercise identified the specific hazards that the Planning Committee wanted to address in the HMP. The Committee completed the Incorporation of Existing Plans/Study Table to identify all the plans/studies available (as shown in section 4.4).

### • *March 2013*

Updates to the community description were provided by each jurisdiction. Updates to the hazard profiles were begun. GIS mapping process started.

### • *April 2013*

The Planning Committee reviewed the hazard ranking provided by the THIRA and agreed to rankings as set forth in this plan. Presentations to the Committee included the changes to the Drought (by NOAA), Earthquake (by Planner), Severe Weather (by NOAA) and Wildland Fire (by NDF) as well as an update on the mapping completed by County GIS Coordinator. A press release and notification letter to neighboring communities and relevant agencies of the HMP preparation was completed. Coordinated with the Planning Department to gather data for the mapping to include copies of their Land Use Map and Flood Plain Map. A press release was sent out. The questionnaire was distributed.

### • *May 2013*

Planning Committees from each City met to review Section 7, Capability Assessment. Additionally, the Mitigation Actions from the 2008 HM Plan were reviewed and new mitigation actions discussed. Jeff Secord of Elko Co. GIS was included in these meetings and conducted phone meetings to collect data for mapping of critical facilities and hazard maps.

- *July 2013*

During the LEPC meeting the Flood hazard profile was presented by the Floodplain Manager of City of Elko. The Nevada Division of Water Resources presented the South Fork dam failure analysis model. 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.

- *September, 2013*

The Planning Committee reviewed the final draft of the HMP. During the LEPC meeting the adoption process, Plan Maintenance Section and funding opportunities were discussed. LEPC voted to approve submittal to FEMA and with FEMA changes recommended adoption to the County and City Boards.

### **4.3 PARTICIPATION AND PUBLIC INVOLVEMENT**

In June and July, 2013, the County distributed a questionnaire to the public through local CERT teams, local Boy Scouts, LEPC members and City offices. Additionally, the County requested public input using the County website (See Appendix B). The questionnaire can be found in Appendix D and the results were used by the Planning Committee during their development of the mitigation strategy. The County and Cities were unable to mail the questionnaire due to funding limitations and this limited the distribution as well as the response. However the LEPC meetings were utilized for planning process which were open to the public and had a broad range of members. Meeting sign in sheets can be found in Appendix E.

A press release was sent to the all media outlets in April 2013. The press release can be found in Appendix B.

The County mailed letters or sent emails regarding the update of the HMP to the following entities inviting them to join the planning process:

- FEMA
- State NDEM, NDOT, NDWR, NDF
- State Assembly & Senate Representatives
- Counties of Humboldt, Lander Eureka, White Pine
- City of Elko Municipal Airport
- Elko County School District
- Great Basin Surgical Center
- NV Energy & Sierra Electronics
- Great Basin College
- The cities of Carlin, Elko, Wells & West Wendover
- Elko Chamber of Commerce
- National Weather Service
- Elko Band of the Te-Moak Tribe of Western Shoshone

**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.

- ***Elko County Master Plans for Southfork 2001, Jackpot 1995, NE NV Regional Railport Industrial Land 2006, Open Space 2003, Spring Creek/Lamoille 2006, Public Lands 2008 Water Resources 2007:*** These plans were prepared separately and provide land use subject to hazards.
- ***Elko County & Cities Building Code IBC 2003***
- ***Community Wildfire Protection Plan 2005:*** This plan, prepared by Resource Concepts Inc., included community risk ratings, mitigation actions and WUI areas.
- ***City of Elko Master Plan 2011:*** This plan, prepared by CRSA, includes Objective 8 which limits development in hazardous areas.
- ***State of Nevada Multi-Hazard Mitigation Plan 2010 & 2013 draft:*** 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 Elko 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 threat 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. In the last quarter of 2012 and prior to the first HMP meeting, the Local Emergency Planning Committee (LEPC) (comprised of representatives from the County agencies, City agencies, and local businesses), reviewed the prior plans hazards, the State's identified hazards from the State of Nevada Hazard Mitigation Plan and identified 10 possible hazards (9 natural hazards and 1 human-caused hazards) for the THIRA and this information was used for this updating planning purpose.

**Table 5-1. Identification and Screening of Hazards**

Hazard Type	Should It Be Profiled?	If Yes is it a new Hazard	Explanation
Avalanche	Yes	No	The County is located in an area prone to frequent or significant snowfall.
Drought	Yes	No	Statewide drought declarations were issued in 2002 and 2004.
Earthquake	Yes	No	Several active fault zones pass through the County.
Epidemic	Yes	No	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 Failure)	Yes	No	History of flooding is associated with heavy rainfall. Several dams are listed as high hazard.
Hazardous Material Event	Yes	No	Elko has several facilities that handle or process hazardous materials. Hazmat travels through the County on the 2 intersecting highways.
Land Subsidence & Ground Failure	Yes	No	No historic events.
Severe Weather Hail, Thunderstorm, Snow/Ice	Yes	No	Hail, Snow, and Thunderstorms. Historic events have occurred in the Planning Area.
Seiche	No		No recent historic events have occurred.
Volcano	No		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.
Severe Windstorm	Yes	No	Severe Wind events have occurred in the Planning area.
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	No	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 previous LEPC meeting the members were tasked to identify hazards of concern through the THIRA planning process. 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. The steps of the exercise are listed below.

**Step 1.A.** List threats and hazards applicable to your jurisdiction. *Look at “Worst, Most Probable” threats and hazards.*

**Step 1.B.** Identify type of threat or hazard (i.e., natural, human caused, or technological)

**Step 1.C.** Develop scope of threat or hazard (i.e., scenario). The scope of the threat or hazard will help identify capability targets later in the process. This step should

consider the when and where for each threat or hazard:

- When might a threat or hazard occur? What time of day? What season?
- Where might the threat or hazard occur? Populated areas? Rural areas? Industrial or residential areas?

Multiple scenarios may be needed if varying conditions make a significant difference in how the threat and hazard affects the county.

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.

This exercise was done on a County wide basis. The Cities were asked to review the hazard based on magnitude and frequency and provide their hazard vulnerability.

The Planning Committee determined that ten hazards pose a threat to the County: avalanche, drought, earthquakes, epidemic, floods/dam failure, hazardous materials events, landslide, severe weather, severe windstorm and wildland fires. The Committee then discussed the results of the ranking and through Committee deliberation, wildfire and hazardous materials are considered very high hazards, earthquake is considered high hazards, drought, flood (including dam failure) and severe weather are considered moderate hazards, avalanche, epidemic, landslide, and windstorm are considered low hazards. All the cities except City of Elko and Carlin concurred with the rankings. City of Elko considered flood/dam failure as a high risk and Carlin considered it a low risk.

Table 5-2: Hazard Ranking for County, City of Wells and West Wendover

Very High Risk	High Risk	Moderate Risk	Low Risk
Wildfire Hazardous Materials	Earthquake	Drought Flood/Dam Failure Severe Weather	Avalanche Epidemic Landslide Wind Storm



Table 5-3: Hazard Ranking for City of Carlin

Very High Risk	High Risk	Moderate Risk	Low Risk
Wildfire Hazardous Materials	Earthquake	Drought Severe Weather	Avalanche Epidemic Flood/Dam Failure Landslide Wind Storm

Table 5-4: Hazard Ranking for City of Elko

Very High Risk	High Risk	Moderate Risk	Low Risk
Wildfire Hazardous Materials	Earthquake Flood/Dam Failure	Drought Severe Weather	Epidemic Wind Storm Landslide Avalanche

As such, Table 5-3 ranks the Planning Area's hazards as low, moderate, high or very high. Very High and High ranked hazards were updated in the risk assessment. Very high, high and moderate ranked hazards will be carried through to the Risk Assessment and will be addressed in the Mitigation Strategy. Those 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, measurable 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 Elko County Hazard Rating results generally correspond with the ratings determined in the State of Nevada Standard Hazard Mitigation Plan. Drought was rated low in the state plan but moderate in Elko due to the agricultural nature of the community.

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.

## 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      Avalanche**

Planning Significance - Low
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**5.2.1.1    *Nature***

An avalanche is a flow of snow down a mountainside. Avalanches are among the biggest dangers in the mountains for both life and property. Several factors contribute to avalanches, including weather, temperature, slope steepness, slope orientation (whether the slope is facing north or south), wind direction, terrain, vegetation, and general snow-pack conditions. Different combinations of these factors can create low, moderate or extreme avalanche conditions. The release of loose snow is usually at a point and the avalanche then gradually widens down the slope as more snow is entrained, usually forming a teardrop appearance. On the other hand, a slab avalanche occurs when there is a strong, stiff layer of snow known as a slab. This type of avalanche is usually formed when snow is deposited by the wind on a lee slope. When the slab fails, the fracture spreads very rapidly so that a large area, that can be hundreds of yards in extent and several feet thick, starts moving almost instantaneously. The third starting type is a slush avalanche which occurs when the snowpack becomes saturated by water. This tends to also start and spread out from a point.

Avalanches are most likely to run either during or immediately after a storm where there has been significant snowfall. The 24 hours following a heavy snowstorm are the most critical. Consequently, it becomes important to be aware of current weather conditions as well as the conditions from the previous couple of days. Temperature, wind, and snowfall amount during storms can create fatal avalanche conditions.

The highest numbers of fatalities occur in January, February, and March, when the snowfall amounts are highest in most mountain areas. A significant number of deaths occur in May and June, demonstrating the hidden danger behind spring snows and the melting season that catch many re-creationists off guard. During the summer months, it is often climbers who are caught in avalanches.

**5.2.1.2    *History***

There are several recognizable paths or “avalanche chutes” in the Lamoille Canyon of the Ruby Mountains. In recent years, large recorded avalanches occurred in the canyon on December 31, 1996 and February 1, 1998.

**5.2.1.3    *Location, Extent, and Probability of Future Events***

Within the Planning Area, the Lamoille Canyon is most vulnerable to avalanching. The extent of the previous avalanches in this area is unknown. However previous avalanches have been large enough that the main road into the canyon is closed from October to June annually due to avalanche risks.

The Steering Committee has ranked avalanche risks to people and the built environment in the Planning Area as “low.” As such, this hazard will not be carried through to the Risk Assessment or Mitigation Strategy

**5.2.2 Dam Failure**

Planning Significance - Low

**5.2.2.1 Nature**

Dam 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. Although they may involve the total collapse of a dam, that is not always the case as damaged spillways, overtopping from prolonged rainfall, or other problems, including the unintended consequences from normal operations, may result in a hazardous situation being created. Due to the lack of advance warning, failures from natural events, such as earthquakes, or landslides, may be particularly severe.

Dam failures may be caused by a variety of natural events, human-caused events, or a combination thereof. Dam failures usually occur when the spillway capacity is inadequate and water overtops the dam or when internal erosion through the dam foundation occurs (also known as piping). Factors contributing to dam failure events are structural deficiencies from poor initial design or construction, lack of maintenance or repair, or the gradual weakening of the dam through the normal aging process.

**5.2.2.2 History**

In 1984, the concrete liner of the Bishop Creek Dam in Elko County failed resulting in a 25 cubic feet per second seep. The primary area of the leak was at a height of about 42 feet. The dam eventually drained down without catastrophic failure.

**5.2.2.3 Location, Extent, and Probability of Future Events**

The Nevada Division of Water Resources lists 90 dams in Elko County. Of these dams, 11 are considered “high hazard,” 19 are considered “significant hazard,” and 60 are considered “low hazard.” A high hazard designation is assigned to a dam if there is reasonable potential for loss of life and/or excessive economic loss. A significant designation is given when there is no reasonable potential for loss of life, but there is potential for appreciable economic loss. Lastly, a low hazard designation is assigned when there is no reasonable potential for loss of life and the economic loss is minor. The ratings provided by the Nevada Division of Water Resources do not reflect the safety or condition of the dam they are determined at the time the dam design plans are reviewed. However, the hazard rating may be altered when downstream conditions change.

The County has several dams which impact the City of Elko and inundation maps are available. Fifth Street Dam (Figure C-21), Eight Mile Dam (Figure C-22), South Side Dam (Figure C-23), South Fork Dam (Figure C-24). Additionally the inundation map for the Elko Effluent Storage Ponds (Figure C-20) is also in appendix C. All these dams are considered low hazard and are maintained and inspected regularly.

Elko County has one high-hazard dam of greatest concern within the purview of Nevada Division of Water Resources: Bishop Creek Dam. Bishop Creek Dam, constructed in 1912, is located nine miles northwest of the City of Wells. In 1979, the Army Corps of Engineers (USACE) prepared a dam safety inspection for the structure and classified it as intermediate in

size (80 feet high) with a “high hazard” classification. The USACE also described it as an “unsafe structure.”

In its present condition, Bishop Creek Dam is non-functional. This dam is under State Engineer’s Order #844 to remain drained; nevertheless it still impounds water during flood flows and is a significant safety issue. The Metropolis Water Irrigation District owns Bishop Creek Dam; they are currently coordinating with the State of Nevada Division of Environmental Protection Board for Financing Water Projects to complete an irrigation system improvement project to include a new dam and irrigation conveyance system improvements. Until this project is completed, any significant and/or prolonged rain or snowmelt event causing ponding above 42 feet could pose a major safety risk. Although Bishop Creek Dam is considered non-functional, it continues to detain the peak run off during storm events. The leakage that occurred through the embankment in 1984 at a depth of 42 feet occurred because an outlet gate became bound and inoperable preventing the free-flow of water that reached an approximate depth of 57 feet. The dam eventually drained down without catastrophic failure. A similar event has not occurred in the last 23 years since 1984 and cannot be associated with a specific weather condition as during the period of April-June 1984 melting of an unprecedented snow pack throughout the entire basin created more than twice any volume of runoff water recorded in the years before 1983. The events in 1984 were a culmination of circumstances difficult to predict. However, the prevention of similar circumstances is the focus of the Metropolis Water Irrigation District irrigation system improvement project approved and funded on January 25, 2006. A complete listing and a brief project summary of all grants approved by the State Board for Financing Water Projects can be viewed at the following website: <http://ndep.nv.gov/bffwp/grants01.htm>.

### 5.2.3 Drought

Planning Significance - Moderate
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#### 5.2.3.1 *Nature*

Drought is a temporary recurrent feature of climate that occurs virtually everywhere, including in regions that receive relatively little “normal” rainfall. Characteristics of drought can vary significantly from one region to another and, partly due to differences in impact, there are scores of definitions. Drought is often described simply as a period of deficient precipitation, usually lasting a season or more, resulting in extensive damage to agricultural crops with consequential economic losses. This deficiency can result in a water shortage for some activity, group, or environmental sector. Operational definitions define the beginning, end, and degree of intensity of drought.

The onset and end of a drought are difficult to determine due to the slow accumulation and lingering of effects caused by an event after its apparent end. In contrast with other natural hazards, the impact of drought is less obvious and may be spread over a larger geographic area. The impact of a particular drought depends on numerous factors including duration, intensity, and geographic extent as well as regional water supply demands by humans and vegetation. Other climatic characteristics, such as high temperature, high wind, and low relative humidity amplify the impact of drought conditions.

There are many different types of drought and factors other than monthly or even annual precipitation, to be considered when determining drought classification. Four types of drought that are commonly referenced are: 1) meteorological, 2) hydrological, 3) agricultural and 4) socioeconomic.

*Meteorological Drought:* Meteorological drought is usually defined on the basis of the degree of dryness (in comparison to some “normal” or average amount) and the duration of the dry period. Thus meteorological drought can vary greatly from location to location.

*Agricultural Drought:* A good definition of agricultural drought should be able to account for the variable susceptibility of crops during different stages of crop development, from emergence to maturity. This type of drought focuses on such conditions as precipitation shortages, differences between actual and potential evapotranspiration, soil water deficits and reduced ground water or reservoir levels. When drought begins, the agricultural sector is usually the first to be affected because of its heavy dependence on stored soil water.

*Hydrological Drought:* Hydrological drought is associated with the effects of periods of precipitation shortage, including snowfall, on surface or subsurface water supply (i.e., stream flow, reservoir and lake levels, and ground water). All droughts originate with a deficiency of precipitation and the impacts are determined by how this deficiency plays out through the hydrologic system. Hydrological droughts may or may not be in phase with a meteorological or agricultural drought since it takes longer for precipitation deficiencies to show up in some components of the hydrological system.

*Socioeconomic Drought (also known as Water Management Drought):* This definition of drought associates the supply and demand of economic goods or services with elements of meteorological, hydrological, and agricultural drought. This type of drought is diagnosed when the demand for water exceeds the supply as a direct result of precipitation shortage.

The negative effects of drought increase with duration. Lower than normal reservoir or river levels can impact recreational opportunities, fire suppression activities and animal habitat. Patterns of human consumption can also be altered. Non-irrigated croplands are most susceptible to precipitation shortage. Rangeland and irrigated agricultural crops may not respond to moisture shortage as rapidly, however yield during periods of drought can be substantially lower. During periods of severe drought, lower moisture in plant and forest fuels create an increased potential for devastating wildfires. An increase in insect infestation can be a particularly damaging impact from severe drought conditions.

The U.S. Drought Monitor product (available at <http://www.droughtmonitor.unl.edu/monitor.html>) utilizes several indices along with data retrieved from various organizations and personnel directly involved in the field to create a graphical assessment of drought conditions. The four drought intensities or classifications offered by the authors of this product are: D0 Abnormally Dry, D1 Moderate Drought, D2 Severe Drought, D3 Extreme Drought and D4 Exceptional Drought.

### 5.2.3.2 History

Increased wildfire risk, water shortages and an anomalous insect infestation have all been attributed to recent droughts. An unusual bark beetle, called piñon ips, killed more than 3.1 million piñon pines in Nevada in 2002 and 2003. This infestation increased the fire hazard on over 300,000 acres and reduced pine nut production.

Elko County has experienced five (5) drought periods greater than classification D0 since 2001, including the current drought. Maximum intensity of these droughts ranged from severe to extreme and averaged 16 months in duration. The time interval between these droughts also averaged 16 months. Following is a list of recent drought periods extracted from data supplied by the U.S. Drought Monitor.

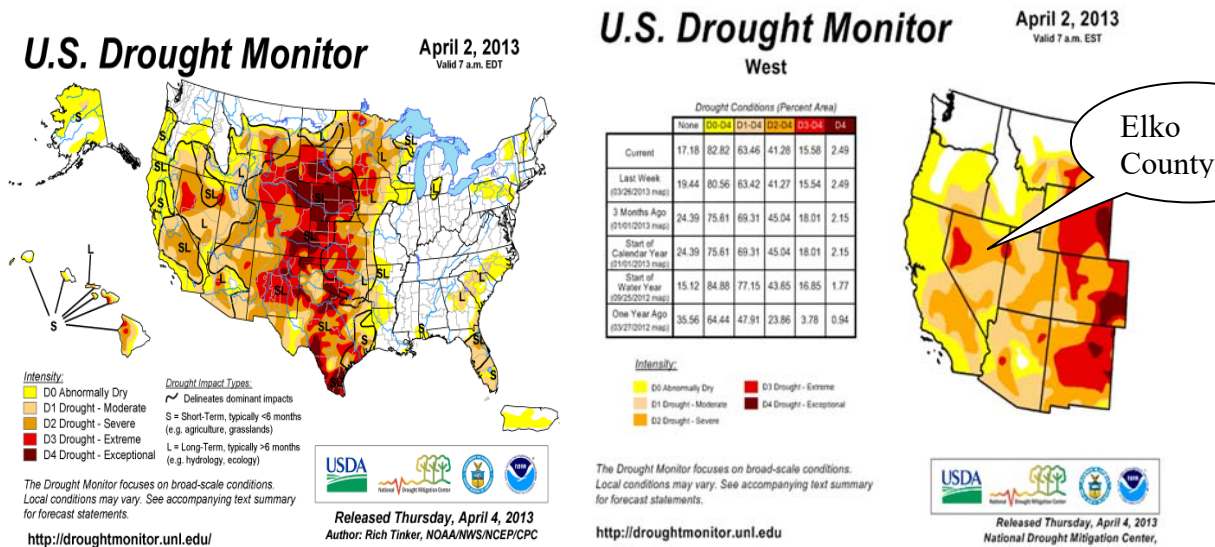
**Table 5-4 History of Drought**

Drought Period	Duration of Drought	Intensity
April 10, 2001 – March 19, 2002	11 months	Extreme
June 18, 2002 – May 3, 2005	35 months	Extreme
March 27, 2007 – April 8, 2008	13 months	Severe
October 7, 2008 – April 21, 2009	6 months	Severe
January 3, 2012 – present day	current	Extreme

### 5.2.3.3 Location, Extent, and Probability of Future Events

Droughts are a naturally-occurring cyclical part of climate and Elko County is highly susceptible to periods of dry conditions. While Exceptional Droughts are relatively rare, drought conditions across the county are often classified as Extreme by the authors of the U.S. Drought Monitor. Based on recent cycles, Elko County can expect varying degrees of drought to occur every 16 months on average with an average of 16 months between drought periods as well. However note that this is merely an average. The four droughts prior to the current one ranged in duration from 6 months to 35 months.

Figure 5-1 Drought Monitor





### 5.2.4 Earthquake

Planning Significance – Elko Co. – High Carlin – Elko – Wells – W. Wendover -
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#### 5.2.4.1 *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).

#### 5.2.4.2 *History*

Nevada is ranked the third most seismically active 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 Eastern Nevada seismic belt, shown on the map below trends north-south in the east-central part of the state. The figure below provides the historical earthquakes in Elko County.

**Table 5-5 Large Earthquakes in or near Elko County**

Date	Magnitude	Near
2/28/2007	3.69	Wells
2/21/2008	6.0	Wells
2/21/2008	5.1 (after shock)	Wells
1/4/2009	4.3	Jackpot
3/17/2009	3.5	Carlin
9/2/2010	3.3	Deeth
1/1/2011	3.7	W. Wendover

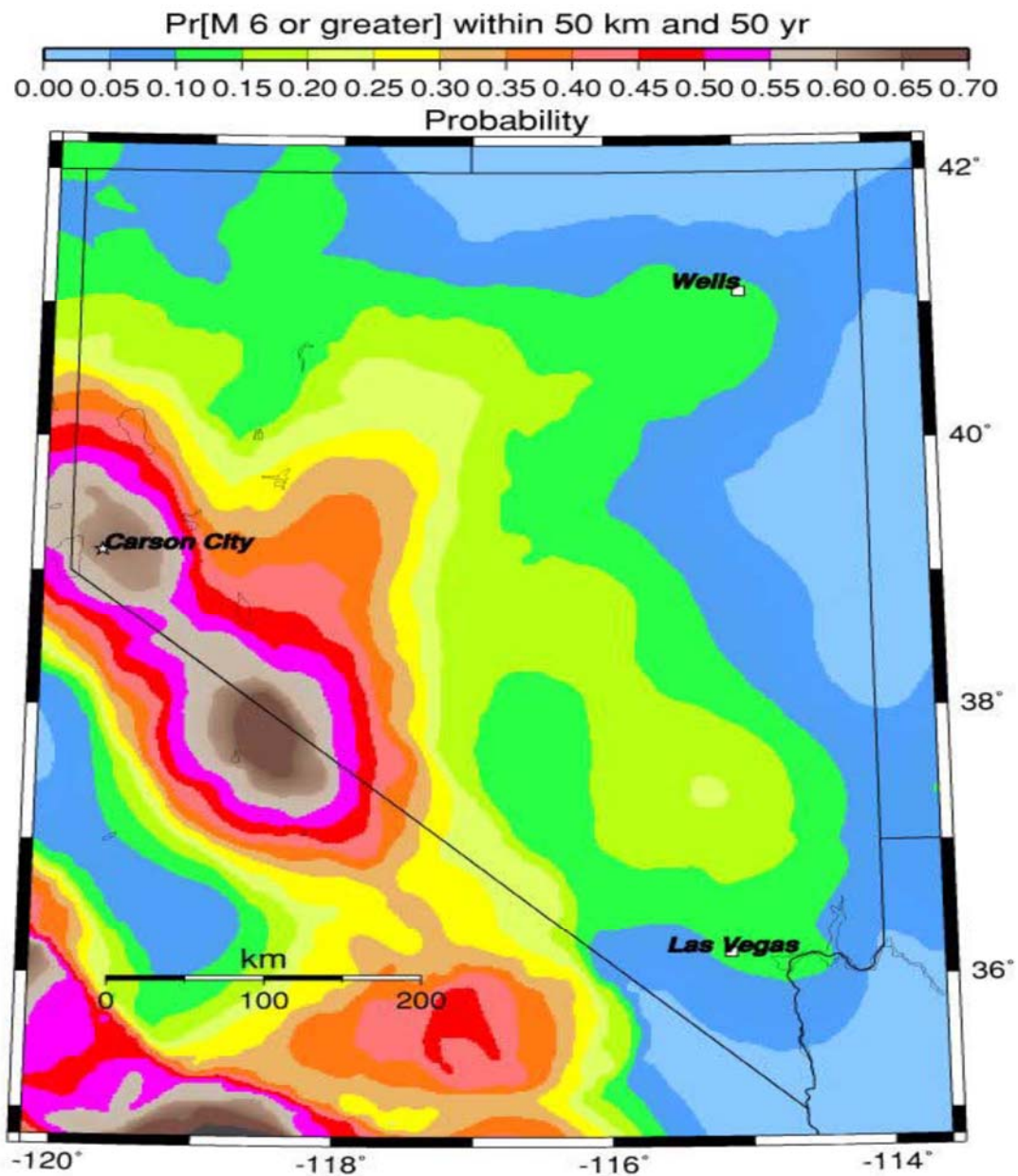


2008 Wells, NV  
Source: UNR, NBMG 2010

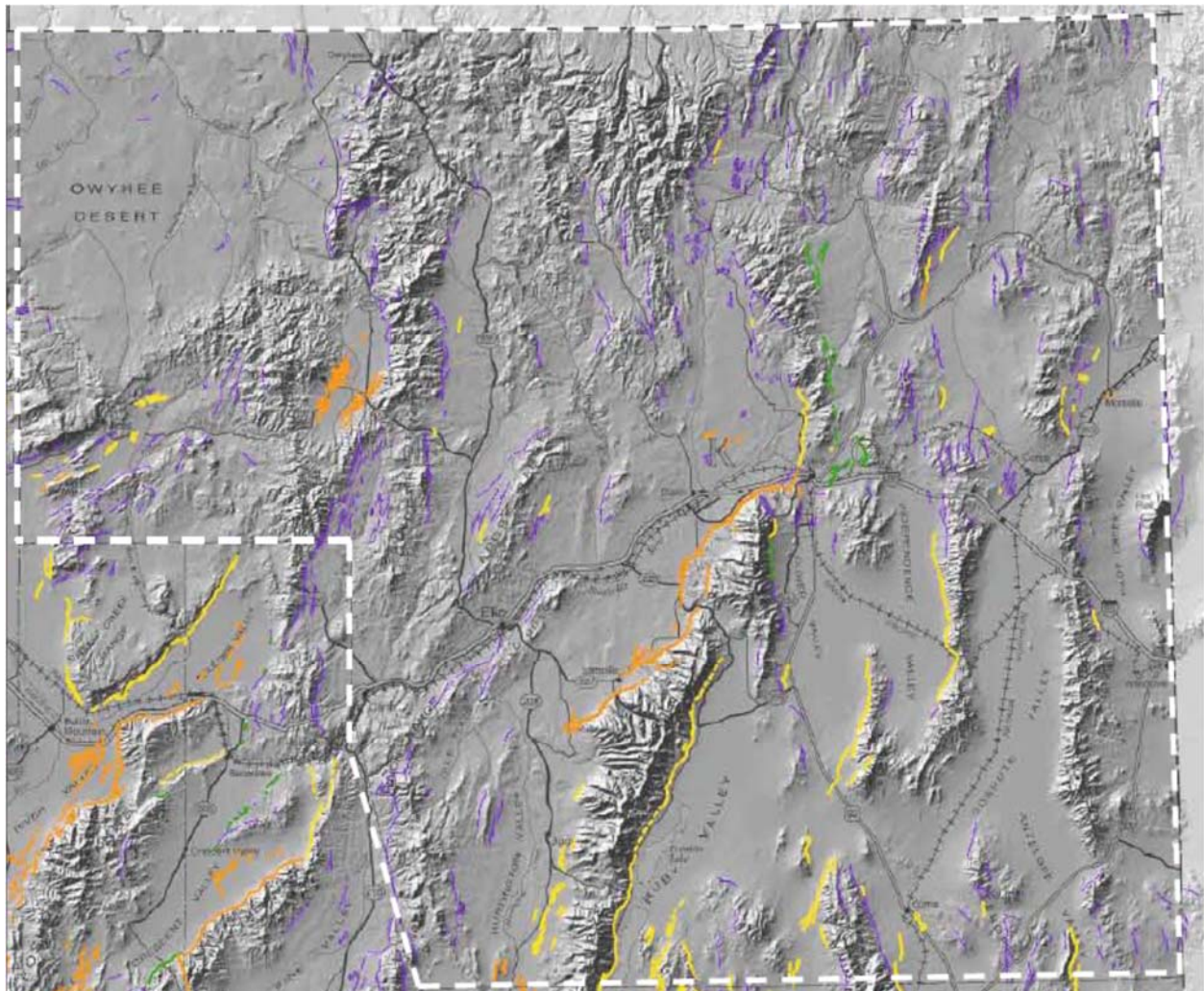
### 5.2.4.3 Location, Extent, and Probability of Future Events

The location of damage from an earthquake would have the greatest impact in Elko County would be near the cities with the highest population density. There are faults located within the City of Elko. The map in Appendix C, Figure C-4 shows greater detail of the fault lines in Elko County.

Figure 5-2 Earthquake Probability





**Figure 5-3: Major Faults Elko County**

Source: UNR, NBMG 2011

[http://www.nbm.unr.edu/Geohazards/Earthquakes/Presentations/Earthquake\\_Hazards\\_in\\_Elko\\_County\\_26April2011.pdf](http://www.nbm.unr.edu/Geohazards/Earthquakes/Presentations/Earthquake_Hazards_in_Elko_County_26April2011.pdf)

The Nevada Earthquake Safety Council, in part through the services of the Nevada Bureau of Mines and Geology (NBMG) 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 Cities of Elko and Wells are 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.

**Table 5-6: Probability of Earthquake and Magnitude**

Community	5.0	5.5	6.0	6.5	7.0
Carlin	40-50	~25	10-15	6-8	.5-1
Elko	30-40	~25	10-15	6-8	0.5-1
Wells	30-40	~20	9	6	0.5-1
W Wendover	20	~10	4	1-2	<0.5

Source: USGS <http://eqint.cr.usgs.gov/eqprob/2002/index.php>

The entire county including the cities have 231 residential (475 thousand sq. ft.) and 290 (3.2 million sq. ft.) commercial un-reinforced masonry buildings. These buildings were constructed prior to 1974 building code requirements and have a greater potential for major loss.

## 5.2.5 EPIDEMIC

Planning Significance – Low
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5.2.5.1 *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).

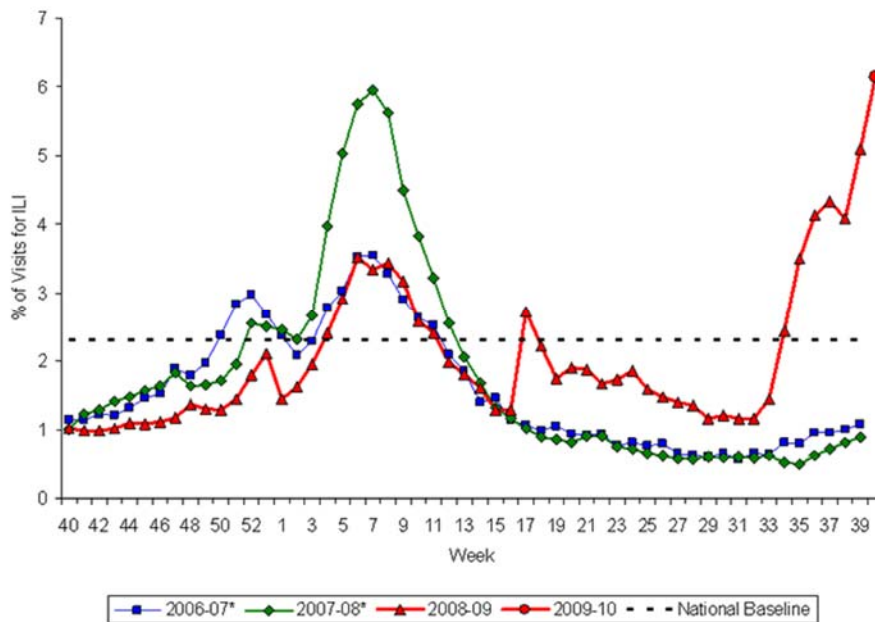
Many other hazards, such as floods, earthquakes or droughts, may create conditions that significantly increase the frequency and severity of diseases. These hazards can affect basic services (e.g., water supply and quality, wastewater disposal, electricity), the availability and quality of food, and 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.

#### 5.2.5.2 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 5-4: 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)

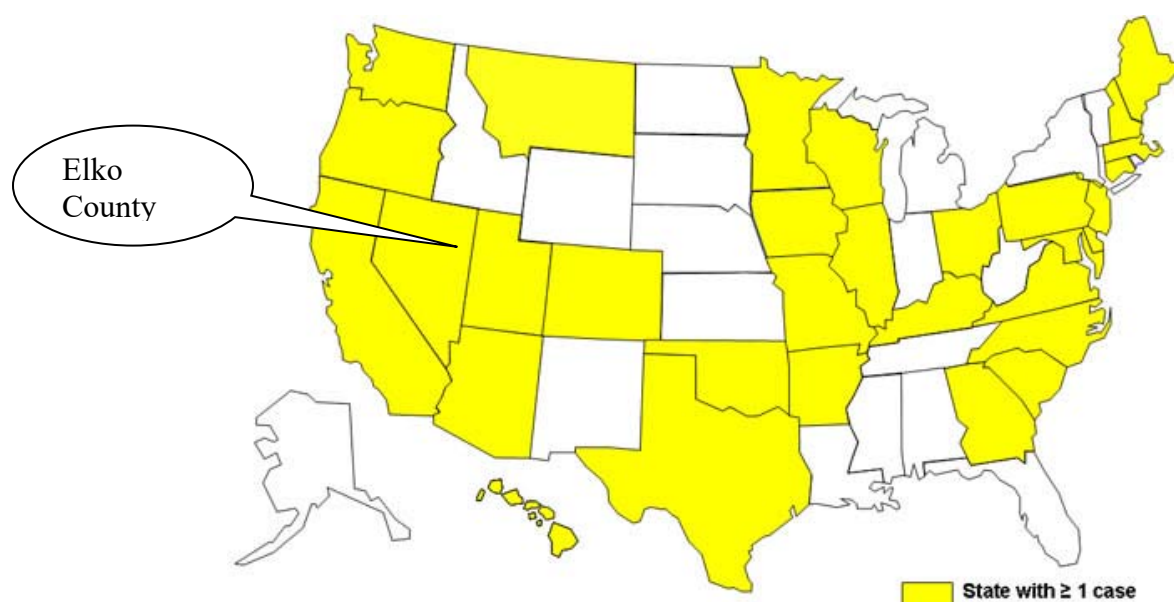
- **West Nile Virus (WNV)**, a seasonal infection transmitted by mosquitoes, caused an epidemic which grew from an initial U.S. outbreak of 62 disease cases in 1999 to 4,156 reported cases, including 284 deaths, in 2002. However due to communities' aggressive approach to mosquito control the number of 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 5-5: 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 5-7: 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.
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## 5.2.5.3 *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 Elko 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 and the Salt Lake City Airport. The transient nature of the County population, coupled with dense population gatherings increase the potential for an epidemic as well as for its spread into counties such as Elko. The Nevada State Health Department no longer provides a full-time nurse and has minimal coverage in the northeast part of the state.

## 5.2.5.4 *Location*

An epidemic in Elko would affect a regional response requiring coordination among Northeastern Nevada Regional Hospital, Elko neighboring counties, Utah, 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.

## 5.2.5.5 *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.

**5.2.6 Flood**

Planning Significance –  
Moderate - County, Wells & West Wendover  
Low – Carlin  
High – City of Elko

**5.2.6.1 Nature**

Floods occur when excess water from snowmelt, rainfall, or storm surges accumulates and overflows onto adjacent floodplains. Floodplains are lowlands adjacent to rivers, lakes, and oceans that are subject to recurring floods. As a natural event, floods are considered hazards only when people or property is affected. The State of Nevada Standard Multi-Hazard Mitigation Plan identified common flood types occurring in Nevada. These categories are described as follows:

- Channel flooding is characterized by lateral channel migration during major flows, which results in abrupt changes in the horizontal alignment or location of the channel. Other characteristics include localized channel bed and bank-scour in addition to the potential for over-bank flow inundation.
- Sheet flooding is characterized by channel having minimal capacity, water flowing across broad areas at relatively shallow depths, and gently sloping terrain. Damage from these events include localized scour and deposition of extensive amounts of sediments and debris typically associated with sheet flow. If the depth of the water is high enough, water may encroach into low-lying structures within the floodplain.
- Alluvial fan flooding refers to flooding occurring on the surface of an alluvial fan or similar landform characterized by high-velocity flows, active erosion processes, sediment transportation and deposition, and unpredictable flowpaths. Flow depths with alluvial fan flooding are generally shallow with damage resulting from inundation variable flow paths, localized scour and the deposition of debris. Alluvial flooding is potentially more dangerous than riverine flooding due to its unpredictable nature resulting in difficulties associated with threat identification.
- An additional type of flooding is caused by heavy rainfall in the mountain areas resulting in the massive melting of the snow pack leading to heavy run off, widespread damage to roads and other transportation facilities, and bank erosion.

**5.2.6.2 History**

Flooding in the Planning Area generally occurs along the Humboldt River. While it is not common for flooding to occur in this area of the state, when it does, it is often caused by rapid midwinter thawing combined with light to moderate rain. The following floods caused by such conditions occurred in 1910, 1962, 1983, 1984, and 2006. While not much is known about the 1910 flood, the February 1962 flood was mostly in the upper Humboldt River basin. In the city of Elko, rainfall of about 1.5 inches, combined with the snowmelt caused by warm weather, resulted in floods having recurrence intervals of 50-100 years. The floods of April-June 1984 on the Humboldt River were caused by melting of an unprecedented snowpack in the entire basin. In addition to the magnitude of the floods, the total volume of runoff for water year 1984 was more than twice any volume recorded in the years before 1983. Damage to bridges, highways, and agriculture was the most severe in history. The airport at Lovelock was not usable for several

months because of water on the runway. In April 2006, many basins, including the Upper and Lower Humboldt River Basins, had received more than double their average amounts of precipitation for the month, if not the water year. As such, high flows along the Humboldt River and its tributaries produced scattered flooding, closed roads and isolated homes in rural areas of the Planning Area. Additionally, annually the Lamoille area homes along the creek experience flooding annually in the spring or from thunderstorms. Residents handle this thru sandbagging and no substantial damage occurs.

There are no repetitive loss or severe repetitive loss properties in the County or Cities.

#### ***5.2.6.3 Location, Extent, and Probability of Future Events***

As shown in 100 year DFIRM maps, Figure C-5 and C-16 through C-19 which represent a 1% chance in any given year. The major source of flooding in the Planning Area is the Humboldt River and its tributaries, including the North Fork (approximately 15 miles upstream from the city of Elko) and the South Fork (approximately 7 miles downstream from the city of Elko). The Humboldt River starts in the northern tip of the East Humboldt Range, just outside of the city of Wells, and flows west-southwest through Elko County, passing through the middle of the city of Elko, and flowing by the city of Carlin and the towns of Battle Mountain, Winnemucca, Imlay, and Lovelocke. Approximately 300 miles from its source, it empties into an intermittent lake in the Humboldt Sink on the border between Pershing and Churchill counties, approximately 20 miles southwest of Lovelock.

Peak discharges of snowmelt floods from April to June. In general, during snowmelt floods, flood depths in the City of Elko can reach 9-12 feet before overtopping the river bank. However, the river is highly variable in flow, generally decreasing in volume downstream to the west, in part due to the removal of water from the river for irrigation. Based on previous occurrences, a major flood along the Humboldt River is likely to occur every 20 years. However, severe winter storms are likely to occur and, therefore contribute to an increase in flooding, every 7-8 years during a severe El Nino event.

In addition, occasionally, during the summer, flashflood warnings may be issued. On average two flashflood warnings are issued annually.

## 5.2.7 Hazardous Materials Events

Planning Significance – High
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## 5.2.7.1 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.

## 5.2.7.2 History

The Nevada Division of Environmental Protection reports that since 2009, oil and chemical spills have occurred within the County larger spills are as shown in the table below.

Table 5-8: Hazardous Material Release in Elko County				
Date	Location	Type	Amount	Description
10/15/2009	Carlin	Tailings solution	2400 gals	Crack in pipe flange at Mill #5 resulted in leak of fluid.
10/16/2009	Carlin	High pH Water	2000 gals	Auto-valve malfunctioned and led to overfill of tank.
10/31/2009	Elko	Seepage water	4000 gallons	ruptured collection line near tailings facility
11/8/2009	Elko	Process solution with CN and Arsenic	2500 gallons	Valve leaking on a re-circulating line, unknown reason. Second time valve has had a release.
12/12/2009	Carlin	Domestic potable water	2000 gals	1.5" line froze and broke resulting in release.
2/13/2010	Elko	Diesel	Approximately 1,500 gallons	High pressure fuel line failure in locomotive.
4/27/2010	Golconda	Rock with arsenic	6 tons	Caller stated that a trailer loaded with 7 tons of arsenic ore tipped over and 6 tons spilled out. This amount of rock contained 1.5 pounds of arsenic. Some material entered dry wash with no water at time of release.
5/16/2010	Elko	Mercury	3 TBLS	2-3 Tbls Mercury was discovered in an outdoor location (sidewalk) Spread over a 10X10 area.
5/24/2010	Carlin	Process solution	Estimated at 1000 gallons	Happened during pipeline maintenance.
5/30/2010	Elko	Seepage Reclaim Water	90000 gal	
6/22/2010	Elko	Diesel	3500 gallons	Tanker collided with the rear side of the locomotive.
7/2/2010		Gasoline	4500 gallons	Tanker rollover. 7-7-2010 update, The rear tank trailer of a two trailer tanker rolled over. Before the driver could get the rig stopped, the gasoline in the rear trailer ignited. The rear trailer exploded. Both the rear tank and the semi-tractor burned.
7/22/2010	Elko	Seepage water from mill	170,000 gals	Bolt in flange corroded and flange separated and began to leak.
10/27/2010	Carlin	Tailings solution	1173 gals	Joint failure on reclaim line in the Mill 56 tailings storage facility sprayed transformer resulting in shut down of pumps in tailings booster pump house, backflow in de-pressurized line overflowed sump capacity and tailings solution was discharged.
10/28/2010	Carlin	Process solution	3500 gals	Sand in process solution caused check valve to fail releasing process solution to the ground.
2/22/2011	Carlin	Sodium Cyanide	1300 gallons	Caller reported a line broke on a tank and sprung a leak on the engine manifold. 2-22-2011 @ 1445, Keith Mette called to report the CN calculations came back below the Federal RQ for CN.
5/13/2011	Carlin	Solution - Preg Solution	1500 gallons	power outage caused overflow, total of ~1,500 gallons released, ~500 gallons released to soil beyond leach pad
5/23/2011	Carlin	Process solution	1,140 gallons	Pump liner leaked
6/8/2011	Carlin	Pre-CN, neutralized slurry	2500 gals	Hose failure while pumping out slurry tank.
6/22/2011	Carlin	Milk of lime and process solution	1,895 gallons	Tank overflow.
9/21/2011	Carlin	Asphalt emulsion	5,000 gals	Vehicle accident rollover breached tanks (trailer and pup).

**Table 5-8: Hazardous Material Release in Elko County**

Date	Location	Type	Amount	Description
12/16/2011	Elko	Ammonium Nitrate	47.6 Tons	Rail car CEFX-72820 releasing approximately 200 lbs of ammonium nitrate from an open chute on the car to the track.
5/31/2012	Elko	Mercury	greater than 1 pound	65 feet of the rear parking lot has been identified by Clean Harbors as having some level of mercury contamination. Adjacent soil is also affected.
8/16/2012	Carlin	CIL Feed Slurry	2,805 Gallons	An operator error caused the wrong valve to open.
9/18/2012		process water	10,080 gallons	Liner leakage at the Foundation under drain.
10/23/2012	Spring Creek	Raw sewage	2000 gallons	Glass viewer used during routine septic maintenance broke.
11/27/2012	Jerrod Canyon	Process solution	100,000 gals	Process solution was released from a ruptured pump line. Flowed down gradient to haul road below the rupture point.
2/26/2013	Elko	Treated effluent	35,000 gals	Air Vacuum Relief Valve on transmission line main connecting reuse site to reservoir froze and cracked releasing appx 35,000 gals of treated effluent into unnamed wash.
3/20/2013	Elko	Diesel	4700 gals	Work was in progress on replacing underground storage system piping at 275 12th St property. Fuel being pumped off a delivery tanker to an AST flowed into the open trench created for the piping work. Cause of failure during off-load to AST is not known
6/30/2013	Carlin	Milk of Lime	191,000 gallons	Elbow came off of a line inside of a building. Completely separated.
7/2/2013		Process solution Cyanide .07mg/L	1,000 gallons	Manhole was removed for maintenance, causing a release from the CIL tank.
8/11/2013		Process solution	Approximately 90,000 gallons	Break in the weld of the supernate return line caused a release.

Source: Nevada Division of Environmental Protection

### 5.2.7.3 Location, Extent, and Probability of Future Events

The County has 109 locations that handle hazardous waste within the County and each of the Cities; and none are active and/or archived Superfund sites. The larger fixed facilities that pose a higher risk to the County and Cities include the Water Treatment Plants, the Oil Re-Refinery, and the Railroad Transportation Hub. 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 mining operators also store hazardous materials.

In addition to fixed facilities, hazardous material events have the potential to occur along Interstate 80 and State Route 93. 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

Interstate 80 and State Route 93 and EHS fixed facilities, which are within the County area, see Appendix D, Figure D-4 to D-7.



**5.2.8 Landslide**

Planning Significance –Moderate
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**5.2.8.1 Nature**

Landslides occur when masses of rock, earth, or debris move down a slope. Debris flows, also known as mudslides, are a common type of fast-moving landslide that tends to flow in channels. Landslides are caused by disturbances in the natural stability of a slope. They can accompany heavy rains or follow droughts, earthquakes, or volcanic eruptions. Mudslides develop when water rapidly accumulates in the ground and results in a surge of water-saturated rock, earth, and debris. Mudslides usually start on steep slopes and can be activated by natural disasters. Areas where wildfires or human modification of the land have destroyed vegetation on slopes are particularly vulnerable to landslides during and after heavy rains.

**5.2.8.2 History**

There have been no recent reportable damages, losses, or declarations due to landslide in the Planning Area. However, oral history recounts occurrences of landslides occurring in the Ruby Mountain area affecting local ranchers.

**5.2.8.3 Location, Extent, and Probability of Future Events**

There have been no declared landslide events recorded in the Planning Area. However, oral history has indicated past occurrences of landslide activity in the steep-sloped areas of the Ruby Mountains. Although there is no solid documentation of landslide activity, the only supporting documentation is the identification by USGS of current glaciers remaining high atop the Ruby Mountains. As such this profile has been created solely as a place holder for continued evaluation in future updates to this MJHMP.

The Steering Committee has ranked landslide risks to people and the built environment in the Planning Area as “low.” As such, this hazard will not be carried through to the Risk Assessment or Mitigation Strategy.

**5.2.9 Severe Weather**

Planning Significance –Moderate
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Severe storms, which include snow, hail, and thunderstorms, are profiled below. Elko County and Cities became Storm Ready communities in 2013.

**5.2.9.1 Hail****5.2.9.1.1 Nature**

Hail forms on condensation nuclei such as dust, insects, or ice crystals, when supercooled water freezes on contact. Hailstones are usually from the size of a pea to the size of a golfball. In clouds containing large numbers of supercooled water droplets, these ice nuclei grow quickly at the expense of the liquid droplets. The hail grows increasingly larger. Once a hailstone becomes

too heavy to be supported by the storm's updraft it falls out of the cloud. When a hailstone is cut in half, a series of concentric rings, like that of an onion, is revealed. These rings reveal the total number of times the hailstone had traveled to the top of the storm before falling to the ground. Hail is most common in mid-latitudes during early summer where surface temperatures are warm enough to promote the instability associated with strong thunderstorms, but the upper atmosphere is still cool enough to support ice. The latest and most significant hail event occurred in the town of Orovada (Humboldt County) in June 2009. The hailstones ranged from pea size to one inch in diameter and to a depth of two to three inches deep.

#### 5.2.9.1.2 History

The National Climatic Data Center has recorded 22 hail events in the Planning Area since 1950. These events have recorded hail from 0.75 inches to 1.75 inches, which occurred in the Ruby Mountains. There have not been any deaths or injuries associated with any of the twenty-two recorded hail events or any reportable damages. The hail events in the Planning Area are summarized by size as follows:

Table 5-9 Hail Events in the Planning Area, 1950 - 2009			
No. of Events	Appearance	Size in Inches (approx.)	Typical Damage Impacts
11	Penny	.75 inches	Significant damage to fruit, crops, and vegetation.
6	Quarter	1.00 inches	Severe damage to fruit and crops, damage to glass and plastic structures, paint and wood scored.
3	Nickel	0.88 inches	Severe damage to fruit and crops, damage to glass and plastic structures, paint and wood scored.
1	Half Dollar	1.25 inches	Widespread glass damage, vehicle bodywork damage.
1	Walnut	1.50 inches	Widespread glass damage, vehicle bodywork damage.
1	Golf Ball	1.75 inches	Complete destruction of glass, damage to tiled roofs, significant risk of injuries.

#### 5.2.9.1.3 Location, Extent, and Probability of Future Events

All of the Planning Area is susceptible to hail events. As noted above, the area is susceptible to hail the size of 1.75 inches. Based on previous occurrences, the Planning Area can expect a hail event to occur every 2 – 2.5 years.

#### 5.2.9.2 Snow

##### 5.2.9.2.1 Nature

In the Planning Area winter snow storms begin with cyclonic weather systems in the North Pacific Ocean or the Aleutian Islands that can cause massive low-pressure storm systems to sweep into the continental United States. As the moist air masses push across the Ruby Mountains, the air masses cool and the water condenses as snow. Wind in combination with the snow can cause reduced visibilities and deep snowdrifts. In addition, heavy snow can cause

avalanches in areas along steep terrain. In some instances, freezing rain occurs, when very cold inland arctic air becomes trapped under warm moist air. As mentioned freezing rain events are rare with two events occurring since January 2009. On January 22, 2009, two elderly individuals traveling west on I-80 had their vehicle flip into the median and were pronounced dead at the scene. The other freezing rain event occurred on January 24, 2013 was well advertised with no injuries or deaths occurring.

#### **5.2.9.2.2      *History***

Between February 1994 and March 2007 there have been 62 winter storm and heavy snow events recorded in the Planning Area. Of these 62 events, two federal declarations (December 29, 2004 – January 2, 2005 and January 6, 2005 – January 10, 2005) resulted to assist with snow removal from emergency routes and roads to critical facilities to permit the passage of emergency vehicles. There have been no reports of injuries, deaths, or property or crop damages due to winter storms or heavy snow.

#### **5.2.9.2.3      *Location, Extent, and Probability of Future Events***

It is not uncommon for the Planning Area's urbanized areas (elevations between 4,300 – 5,600 feet) to experience snow showers or accumulations of 1-3 inches of snow per winter storm. As shown in Figure C-7, higher elevations (6,000 feet and above), snowfall can be significant, totaling 5-8 inches per winter storm. In addition, severe winter storms (blizzards) can produce snow and blowing snow intermixed with wind gust in excess of 40 mph and recorded as high as 67 mph creating snow drifts of up to several feet in elevations of 6,000 feet and above. However, these storms generally occur only every 3-5 years.

#### **5.2.9.3      *Thunderstorm***

##### **5.2.9.3.1      *Nature***

Thunderstorms are formed from a combination of moisture, rapidly rising warm air, and a force capable of lifting air, such as warm and cold fronts or a mountain. A thunderstorm can produce lightning, thunder, and rainfall and may also lead to the formation of tornados, hail, downbursts, and microbursts of wind. 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.

Finally, downbursts and micro bursts are also associated with thunderstorms. Downbursts are strong, straight-line winds created by falling rain and sinking rain that may reach speeds of 125 miles per hour (mph). Micro bursts are more concentrated than downbursts, with speeds reaching up to 150 mph. Both downbursts and micro bursts typically last 5 to 7 minutes.

##### **5.2.9.3.2      *History***

Between September 1959 and March 2007 there have been 72 recorded thunderstorm, thunderstorm/wind, and high wind events in Elko County. Of these 72-recorded events, four events causing damages ranging between \$1,000 and \$5,000 were attributed directly to a thunderstorm event. One additional thunderstorm event caused significantly higher damages; it is described as follows:

August 1, 2004 in Elko County at Harris Field Airport a microburst wind destroyed an old air-mail hanger and the Civil Air Patrol building. A vehicle parked next to building was destroyed when the back wall collapsed on it. A Cessna 172 parked inside the air-mail hanger was damaged. A glider was also destroyed. The roof of the air-mail hanger build was thrown 150 feet and snapped a power pole. Recorded damages were \$100,000.00. There were no recorded injuries or deaths associated with this event.

#### ***5.2.9.3.3 Location, Extent, and Probability of Future Events***

Thunderstorms tend to favor the Ruby Mountains, similar mountain ranges, the valleys associated with these mountain ranges, and the town of Jarbidge.

Throughout Elko County, thunderstorm activity generally occurs during July and August. During this timeframe it is not unusual to experience thunder activity on a daily basis; however, approximately 80 percent of the time no damages result from this hazard. Severe thunderstorm warnings are issued if winds are expected to exceed 58 mph or if hail is expected to exceed 1.00 inch or greater in diameter. In an average year four to five thunderstorm warnings are issued.

### 5.2.10 Wildland Fire

Planning Significance – High

#### 5.2.10.1 Nature

A wildfire is an uncontrolled fire spreading through vegetative fuels, exposing and possibly consuming structures. They often begin unnoticed and spread quickly. Wildfires can be human-caused through acts such as arson, campfires, or the improper burning of debris, or can be caused by natural events such as lightning. Wildfires can be categorized into four types:

- Wildfires occur mainly in areas under federal control, such as national forests and parks, and are fueled primarily by natural vegetation. Generally, development in these areas is nonexistent, except for roads, railroads, power lines, and similar features.
- Interface or intermix fires occur in areas where both vegetation and structures provide fuel. These are also referred to as Wildland/Urban Interface (WUI) fires.
- Firestorms occur during extreme weather (e.g., high temperatures, low humidity, and high winds) with such intensity that fire suppression is virtually impossible. These events typically burn until the conditions change or the fuel is exhausted.
- Prescribed fires and prescribed natural fires are intentionally set or natural fires that are allowed to burn for beneficial purposes.

The following three factors contribute significantly to wildfire behavior and, as detailed more fully later, they can be used to identify wildfire hazard areas:

- Topography: Although it generally remains unchanged, unlike fuel or weather, topography can either aid or hinder wildfire progression. The most important topographical factor is slope.
- Fuel: Wildfires spread based on the type and quantity of available flammable material, referred to as the fuel load. The basic characteristics of fuel include size and shape, arrangement and moisture content.
- Weather: The most variable factor affecting wildfire behavior is weather. Important weather variables are temperature, humidity, wind, and lightning. Weather events ranging in scale from localized thunderstorms to large fronts can have major effects on wildfire occurrence and behavior. Extreme weather, such as high temperatures and low humidity, can lead to extreme wildfire activity. By contrast, cooling and higher humidity often signals reduced wildfire occurrence and easier containment. Wind has probably the largest impact on a wildfire's behavior, and is also the most unpredictable. Winds supply the fire with additional oxygen, further dry potential fuel, and push fire across the land at a quicker pace.

The frequency and severity of wildfires is also dependent upon other hazards, such as lightning, drought, and infestations (e.g., piñon ips bark beetle). In Nevada, these hazards combine with the three other wildfire contributors noted above (topography, fuel, weather) to present an ongoing and significant hazard across much of Nevada.

The indirect effects of wildfires can also 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 enhancing flood potential, harming aquatic life and degrading water quality. Lands stripped of vegetation are also subject to increased landslide hazards.

## 5.2.10.2 History

Elko County has a long history of wildfires. In the past 25 years alone, over 2,500 fire ignitions have burned more than 2.25 million acres. In fact, in July 2007, over 31 ignitions occurred during one single day. In recent years, heavy fuel load resulting from wet springs and excessive wind events have contributed to an increase in the number and size of wildfires in Elko County. The greatest number of acres burned occurred in the summer of 2006. From June through August of 2006, wildfires burned over 850,000 acres (1,320 square miles) in western Elko County. The second largest acres burned in recent history occurred in the summer of 1999. During the 1999 wildfire season, approximately 551,382 acres burned. During the last 6 years, approximately 1.4 million acres have burned in the County.

Table 5-10 - Last 6 Years of Large Wildfire Acreages

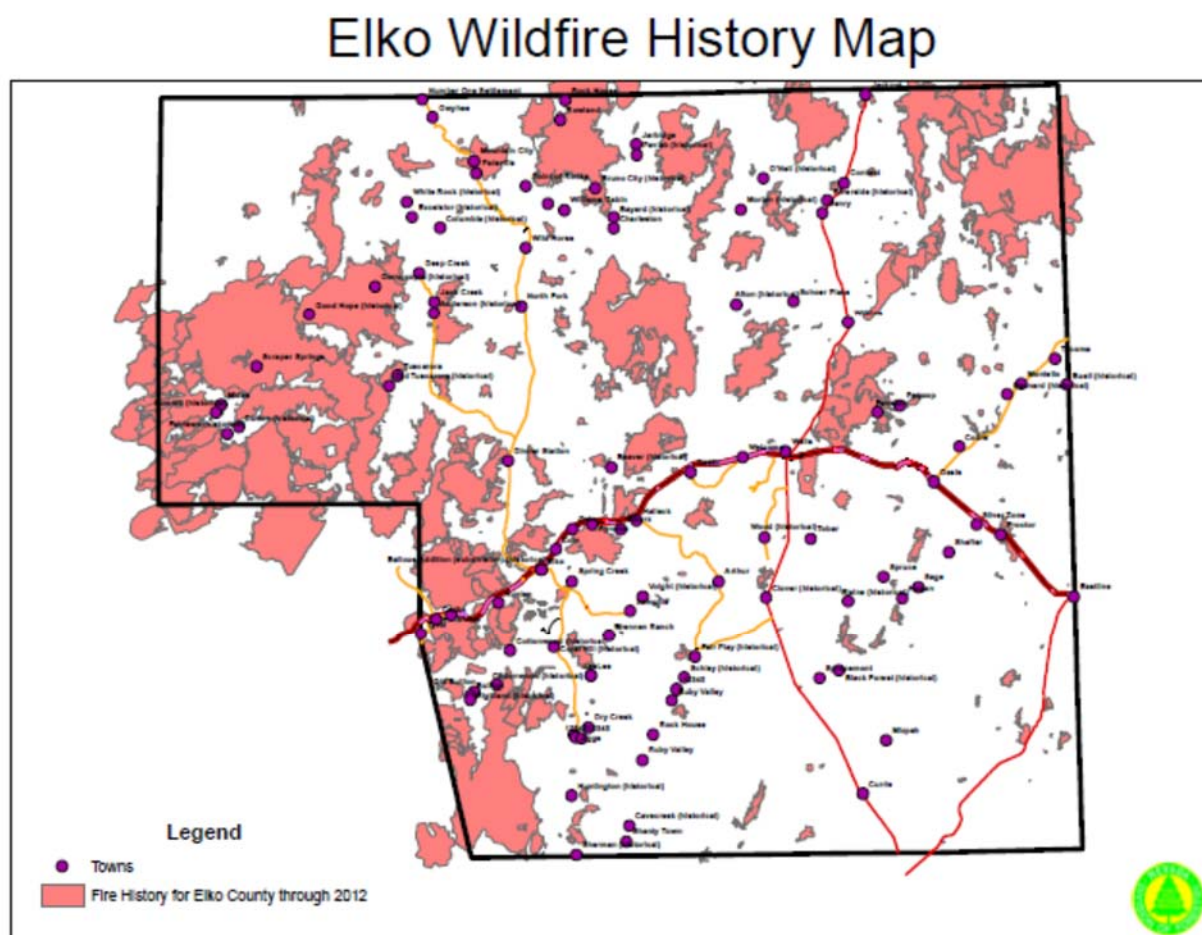
Year	Acres	Larger fires
2007	1,007,437	Murphy, Scott Creek, West Fork, Hepworth, Kelly Creek, Eccles Ranch
2008	58,456	East Slide Rock Ridge
2009	946	
2010	3,744	
2011	181,394	Indian Creek, Izzenhood
2012	125,453	Willow, Bull Run Complex, 20 mile

Table 5-11 - Last 5 Years of Wildfire Ignitions

Type	2008	2009	2010	2011	2012	TOTALS
Wildland Fire	173	143	130	215	287	948
F/A Wildland Fire	37	21	26	47	101	232
Smoke Check	12	39	17	52	52	172
TOTALS	222	203	173	314	440	1352

The figure below shows the wildfire history from 1980 to 2012.

**Figure 5-6: Fire History Map**



### 5.2.10.3 Location, Extent, Probability of Future Events

In general, areas of one-hour fuels, including cheat grass, perennial grass, and sagebrush, along with heavier fuels, including pinon and juniper trees, are most susceptible to burning. As shown in Figure C-8, these areas include the communities of Jarbidge, Jiggs/Smith Creek, Ruby Valley Indian Allotments, Adobe Heights, Adobe Ranchos, Contact, Deeth/Starr Valley, Lamoille, Lee/South Fork Indian Reservation, Lucky Nugget I & II, Midas, Mountain City, Osino, Ruby Lake Estates, Ten Mile, and Tuscarora.

In addition, “greenbelt areas”, which include green meadows, on drought years, and willows, are also susceptible to burning. In 2006, firefighters saw greenbelts that were normally used as holding lines burn. Communities in these areas include Carlin, Currie, Elburz, Elko, Gold Creek, Hidden Valley/Coal Mine, Humboldt Ranchettes, North Fork, Oasis, Owyhee, Pilot Valley, Ruby Lake National Wildlife Refuge and Hatchery, Ryndon, Spring Creek, Wild Horse Estates, Jackpot, Montello, Wells, and West Wendover.

In Elko County, the majority of fire ignitions (approximately 90 percent) are caused by lightning during the months of July and August. However, human-caused activities, including grinding, welding, target shooting and vehicle exhaust systems, cause fires. Based on previous occurrences, Elko County is likely to experience an average of 100 ignitions a year. While most of these fires will only reach the size of a few acres before they are contained, it is not uncommon for this area to experience fires that burn for several thousand acres. A wildfire risk map is located in Appendix C, Map C-5.

### 5.2.11 Windstorm

Planning Significance –Low
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### 5.2.1 Nature

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 steep pressure gradient results from a large pressure difference or 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 drylines. Generally, in the southwestern U.S., frontal winds can remain at 20 to 30 mph for several hours and reach peak speeds of more than 60 mph. Winds equal to or greater than 58 mph are referred to as severe winds.

In addition to strong and/or severe winds caused by large regional frontal systems, local thermal winds are caused by the differential heating and cooling of the regional topography. In a valley/mountain system, as the rising ground air warms it continues upslope as wind and is replaced by inflow from outside the valley. The intensity of the resulting wind depends on a number of factors, including the shape of the valley, amount of sunlight, and presence of a prevailing wind.

#### 5.2.1.1 History

Between September 1959 and March 2007 there have been 72 recorded thunderstorm, thunderstorm/wind, and high wind events in Elko County. Of these 72-recorded events, four events causing damages ranging between \$1,000 and \$2,000 were attributed directly to a high wind event. On November 14, 2006, down-slope winds off the Ruby Mountains associated with a strong cold front produced wind gusts to 83 mph completely destroying a home and moving a pickup truck 20 feet. Recorded damages were \$100,000. However, there were no recorded injuries or deaths associated with this event. See Figure C-9 for historical windstorm damage.

#### 5.2.1.2 Location, Extent, and Probability of Future Events

As shown in Figure C-9, the entire Planning Area is susceptible to strong winds between 50 and 60 mph. The strongest windstorms are generally associated with rapidly moving weather systems that occur between September and March. Generally these south and southwesterly winds can remain at 20–30 mph for several hours and reach peak speeds of more than 50 mph. In the summertime, windstorms are often associated with thunderstorm activity. Based on previous



occurrences, the likelihood of a significant windstorm within the Planning area can occur on an annual basis.

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.

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.

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)
Elko County				
21341	8743	630.5	106	165.4
City of Carlin				
2368	1043	23.5	87	19
City of Elko				
19407	7635	422.8	999	416.1
City of Wells				
1292	641	18.2	142	23.5
City of West Wendover				
4410	1504	62.2	106	190

Source: State of Nevada Demographer Elko County Assessor's Office

### 6.1.1 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 Cities 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: Critical Facilities and Infrastructure

Category	Type	Number	Estimated Value Per Structure/Mile (millions of \$)
Elko County			
Critical Facilities	Oil & Gas Storage Facility		
	Sherriff Stations	5	1.5
	School/college Facility	4	30.6
	Fire Stations	22	1.8
	Communications	22	5.6
Critical Infrastructure	Government Facility	1	7.2
	Water & Waste Water Treatment Facility	9	7.2
	Wells	4	.08

# SECTION SIX

## Vulnerability Assessment

City of Carlin			
Critical Facilities	Oil & Gas Storage Facility		
	Police Stations	1	.127
	School/college Facility	2	2.591
	Fire Station	1	.194
	Government Facility	4	1.239
Critical Infrastructure	Mass Transit Facility		
	Water & Waste Water Treatment Facility	4	3.6
	Wells		
	Communication	1	.298
City of Elko			
Critical Facilities	Airport	1	15
	EOC	1	7
	Fire Station	3	6
	Government Facility	7	5
	Hospital/Care Facility	1	15
	Mass Transit Facility	0	
	Oil Gas Storage Facility	11	2
	Police Station	2	6
	School/College Facility	9	30.6
Critical Infrastructure	Communications	1	2
	Water and Wastewater Facility	1	25
	Wells	20	2
City of Wells			
Critical Facilities	Airport	1	.250
	EOC		
	Fire Station	1	.333
	Government Facility	3	1.187
	Hospital/Care Facility	1	.208
	Mass Transit Facility		
	Oil Gas Storage Facility		
	Police Station	1	.60
	School/College Facility	2	1.60
Critical Infrastructure	Communications		
	Water and Wastewater Facility	2	3.60
	Wells		
City of West Wendover			
Critical Facilities	Airport		
	EOC	1	1.558

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	Fire Station	1	.475
	Government Facility	3	20.033
	Hospital/Care Facility	1	.350
	Mass Transit Facility		
	Oil Gas Storage Facility		
	Police Station	1	1.558
	School/College Facility	1	10
Critical Infrastructure	Communications		
	Bridge		
	Water and Wastewater Facility	2	13.5

**Source:** FEMA HAZUS-MH, Elko County, City of Elko Building Dept. and Cities Emergency Management, Elko County School District

### 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, USFS, Western Forestry Leadership Coalition, 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 lots 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. In the next update building footprints should be used. 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). UNR is currently working on a new HAZUS run in 2013

however it was not yet available during this planning effort and therefore due to the limited funding the previous data was used.

For flood and wildfire vulnerabilities were determined by FIRM maps and wildfire urban interface maps. The method uses only proximity to the hazard to determine the assets at risk in conjunction with assessor's information for parcel data. The risk value shown may be greater than actual value as the structure location is not considered in the analysis. If a hazard touched a parcel, that parcel and the associated improvements are considered within the hazard. This method was used due to new FIRM maps and County mapping capabilities.

This was done by Jeff Secord, GIS Specialist from Elko County Assessor's office. 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.

### **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**

Elko County and the Cities have historically low growth with an average of 1% per year for population. The State Demographer estimated a 2% per year increase from 2011 to 2016 and a increase from 1.5% to 0.5% from 2017-2030. Although there currently is an increase in population the development of the County land is limited to water availability. Since water rights are strictly enforced in Nevada future development depends on the availability of water. An increase in populations is expected for the City of Elko (apartment buildings and hotel) and City of Carlin due to the mining industry. Current development in the County is mostly remodeled existing homes with more commercial and industrial development due to the mining industries economic influence. 89% of the land in the County is controlled by the Bureau of Land Management.

The population decline and economic issues for the State of Nevada are not impacting Elko due to the mining industry and the high price of gold however the rate of growth is still considered low. For the purposes of this plan a 10% population growth over the next five years and 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. The dam inundation, flood, and wildfire hazards on each table were updated. Although the flood residential unit value is low most of the units represented are mobile homes and the value is the assessed value. The previous analysis for hazardous materials was reviewed by Elko County GIS and City of Elko and determined to be accurate.



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## Vulnerability Assessment

Table 6-3 – Elko County Potential Hazard Vulnerability Assessment – Population and Buildings												
Hazard Type	Methodology	Population	Buildings									
			Residential		Non-Residential		Commercial		Industrial		Agricultural	
			Number	Value (in \$1000)	Number	Value (in \$1000)	Number	Value (in \$1000)	Number	Value (in \$1000)	Number	Value (in \$1000)
Dam Failure	Inundation Area	82	33	\$451	0	\$0	0	\$0	0	\$0	0	\$0
Earthquake	Moderate	4441	1851	\$303,944.0	9	\$14,990	20	\$30,301	<1	\$3,857	1	\$2,129
	Strong	16523	5887	\$655,170	1	\$2,147	69	\$67,109	2	\$49,020	1	\$2,701
Windstorm	Descriptive	*	*	*	*	*	*	*	*	*	*	*
Hazardous Materials	1 Mile Radius	8370	3257	\$232,328	67	\$1,275	75	\$88,394	61	\$36,056	33	\$12,178
	1/2 Mile Radius	8096	3492	\$237,378	437	\$3,115	127	\$87,402	68	\$36,771	183	\$26,644
	1/4 Mile Radius	8096	3492	\$129,800	251	\$1,875	122	\$80,126	50	\$32,407	153	\$22,553
Floods	100-Year Floodplain	2581	1253	\$21,758	76	\$5,530	35	\$7,212	10	\$13,814	183	\$32,287
Severe Winter Storms: Snow	Moderate	1079	810	\$90,609	<1	\$270	1	\$4,485	<1	\$2,280	1	\$2,166
	High	0	0	0	0	0	0	0	0	0	0	0
Severe Winter Storms: Hail	Descriptive	*	*	*	*	*	*	*	*	*	*	*
Severe Winter Storms:	Descriptive	*	*	*	*	*	*	*	*	*	*	*
Epidemic	Descriptive	*	*	*	*	*	*	*	*	*	*	*
Drought	Descriptive	*	*	*	*	*	*	*	*	*	*	*
Wildland Fires	Moderate	8822	3484	\$483,934	9	\$14,990	31	\$44,824	<1	\$5,365	1	\$2,714
	High	3	2	\$188	0	\$0	<1	\$75	0	\$0	0	\$0
	Extreme	0	65	\$0	0	\$0	0	\$0	0	\$0	0	\$0

Table 6-4 – Elko County Potential Vulnerability Assessment - Critical Facilities and Infrastructure									
Hazard Type	Methodology	Airport	Communications	Emergency Operations Center	Fire Station	Government Facility	Hospital/Care Facility	Sub Totals	

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## Vulnerability Assessment

		No.	Value (in \$1000)	No.	Value (in \$1000)	No.	Value (in \$1000)	No.	Value (in \$1000)	No.	Value (in \$1000)	No.	Value (in \$1000)	No.	Value (in \$1000)
Dam Failure	Inundation Area	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Earthquake	Moderate	2	\$11,881	3	\$540	0	\$0	13	\$2,679	1	\$255	0	\$0	19	\$15,355
	Strong	2	\$11,881	3	\$540	2	\$5,350.0	13	\$2,679	5	\$21,029	0	\$0	25	\$41,479
Windstorm	Descriptive	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Hazardous Materials	1 Mile Radius	1	\$5,940.5	1	\$180	2	\$5,350	4	\$2,300	4	\$30,580	0	\$0	12	\$44,350.5
	1/2 Mile Radius	1	\$5,940.5	1	\$180	2	\$5,350	4	\$2,300	4	\$18,029	0	\$0	12	\$44,350.5
	1/4 Mile Radius	1	\$5,940.5	1	\$180	2	\$5,350	10	\$2,300	4	\$18,029	0	\$0	18	\$31,799.5
Floods	100-Year Floodplain	1	\$5,940.4	0	\$0	0	\$0	4	\$150	1	\$12	0	\$0	6	\$6,102.4
Severe Winter Storms: Snow	Moderate	1	\$5,940.5	2	\$360	0	0	5	\$1,054	0	\$0	0	\$0	8	\$7,354.5
	High	0	0	0	0	0	0	0	0	0	0	0	0	0	\$0
Severe Winter Storms: Hail	Descriptive	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Severe Winter Storms:	Descriptive	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Epidemic	Descriptive	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Drought	Descriptive	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Wildland Fires	Moderate	2	\$11,881	3	\$540	0	\$0	13	\$3,454	0	\$0	0	\$0	18	\$15,875
	High	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Extreme	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0

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## Vulnerability Assessment

Table 6-4 – Elko County Potential Vulnerability Assessment - Critical Facilities and Infrastructure cont'd

Hazard Type	Methodology	Mass Transit Facility		Oil/Gas Storage Facility		Sherriff Station		School/College Facility		Water and Wastewater Treatment		Wells		Sub Totals		Grand Totals	
		No.	Value (in \$1000)	No.	Value (in \$1000)	No.	Value (in \$1000)	No.	Value (in \$1000)	No.	Value (in \$1000)	No.	Value (in \$1000)	No.	Value (in \$1000)	No.	Value (in \$1000)
Dam Failure	Inundation Area	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Earthquake	Moderate	0	\$0	0	\$0	3	\$4,578	9	\$37,704.7	5	\$1,084	17	\$4,950	34	\$48,316.7	53	\$63,671.7
	Strong	0	\$0	0	\$0	3	\$4,578	9	\$87,362.3	5	\$1,084	17	\$4,950	34	\$97,974.3	29	\$139,453
Windstorm	Descriptive	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Hazardous Materials	1 Mile Radius	0	\$0	0	\$0	5	\$7,630	9	\$106,899.5	1	\$56	5	\$1,200	21	\$115,785.5	39	\$160,136
	1/2 Mile Radius	0	\$0	0	\$0	5	\$7,630	4	\$28,433.8	1	\$28	5	\$1,200	15	\$38,141.8	27	\$82,492.3
	1/4 Mile Radius	0	\$0	0	\$0	5	\$7,630	4	\$28,433.8	1	\$28	5	\$2,050	15	\$38,141.8	27	\$69,941.3
Floods	100-Year Floodplain	0	\$0	0	\$0	2	\$3,052	0	\$0	0	\$0	0	\$0	2	\$3,052	8	\$10,406.5
Severe Winter Storms: Snow	Moderate	0	0	*	*	0	0	3	\$2,680.3	2	\$1,000	10	\$2,250	15	\$5,930.3	23	\$13,284.8
	High	0	0	*	*	0	0	0	0	0	0	0	0	0	0	0	0
Severe Winter Storms: Hail	Descriptive	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Severe Winter Storms: Thunderstorm	Descriptive	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Epidemic	Descriptive	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Drought	Descriptive	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Wildland Fires	Moderate	0	\$0	0	\$0	1	\$1,526	9	\$31,280	3	\$1,028	14	\$3,300	27	\$37,134	45	\$53,009
	High	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Extreme	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0

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## Vulnerability Assessment

Table 6-5 – City of Carlin Potential Hazard Vulnerability Assessment – Population and Buildings												
Hazard Type	Methodology	Population	Buildings									
			Residential		Non-Residential		Commercial		Industrial		Agricultural	
			Number	Value (in \$1000)	Number	Value (in \$1000)	Number	Value (in \$1000)	Number	Value (in \$1000)	Number	Value (in \$1000)
Dam Failure <sup>1</sup>	Inundation Area	*	*	*	*	*	*	*	*	*	*	*
Earthquake	Moderate	0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Strong	2160	939	\$85,288	<1	\$1,256.0	1	\$2,118	0	\$0	0	\$0
Windstorm	Descriptive	*	*	*	*	*	*	*	*	*	*	*
Hazardous Materials	1 Mile Radius	2346	1033	\$32,488	29	\$241	55	\$9,342	7	\$2,799	3	\$397
	1/2 Mile Radius	2368	1043	\$31,272	30	\$263	55	\$9,447	7	\$2,799	3	\$397
	1/4 Mile Radius	2368	1043	\$30,743	29	\$248	55	\$9,447	7	\$2,799	3	\$397
Floods	100-Year Floodplain	511	167	\$2,590	6	\$103	11	\$785	1	\$98	8	\$265
Severe Winter Storms: Snow	Moderate	0	0	0	0	0	0	0	0	0	0	0
	Hugh	0	0	0	0	0	0	0	0	0	0	0
Severe Winter Storms: Hail	Descriptive	*	*	*	*	*	*	*	*	*	*	*
Severe Winter Storms: Thunderstorm	Descriptive	*	*	*	*	*	*	*	*	*	*	*
Epidemic	Descriptive	*	*	*	*	*	*	*	*	*	*	*
Drought	Descriptive	*	*	*	*	*	*	*	*	*	*	*
Wildland Fires <sup>2</sup>	Moderate	156	19	\$551	1	\$22	0		0	\$0	1	\$10
	High	0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Extreme	0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0

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## Vulnerability Assessment

• Table 6-12 – City of Carlin Potential Exposure Analysis - Critical Facilities and Infrastructure

Hazard Type	Methodology	Airport		Communications		Emergency Operations Center		Fire Station		Government Facility		Hospital/Care Facility		Sub Totals	
		No.	Value (in \$1000)	No.	Value (in \$1000)	No.	Value (in \$1000)	No.	Value (in \$1000)	No.	Value (in \$1000)	No.	Value (in \$1000)	No.	Value (in \$1000)
Dam Failure	Inundation Area	0	0	0	0	0	0	0	0	0	0	0	0	0	\$0
Earthquake	Moderate	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Strong	0	\$0	1	\$180.0	0	\$0	1	\$654.0	6	\$944.5	2	\$1,205.7	10	\$2,984.2
Windstorm	Descriptive	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Hazardous Materials	1 Mile Radius	0	\$0	0	\$0	0	\$0	1	\$654.0	6	\$944.5	2	\$1,205.7	9	\$2,804.2
	1/2 Mile Radius	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	1/4 Mile Radius	0	\$0	0	\$0	0	\$0	1	\$654.0	6	\$944.5	2	\$1,205.7	9	\$2,804.2
Floods	100-Year Floodplain	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
Severe Winter Storms: Snow	Moderate	0	0	1	\$180	0	0	0	0	0	0	0	0	1	\$180
	High	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Severe Winter Storms: Hail	Descriptive	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Severe Winter Storms: Thunderstorm	Descriptive	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Epidemic	Descriptive	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Drought	Descriptive	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Wildland Fires	Moderate	0	\$0	1	\$180.0	0	\$0	0	\$0	0	\$0	0	\$0	1	\$180.0
	High	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Extreme	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0

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## Vulnerability Assessment

Table 6-6 – City of Carlin Potential Hazard Vulnerability Assessment - Critical Facilities and Infrastructure (Continued)

Hazard Type	Methodology	Mass Transit Facility		Oil/Gas Storage Facility		Police Station		School/College Facility		Water and Wastewater Treatment Facility		Wells		Sub Totals		Grand Totals	
		No.	Value (in \$1000)	No.	Value (in \$1000)	No.	Value (in \$1000)	No.	Value (in \$1000)	No.	Value (in \$1000)	No.	Value (in \$1000)	No.	Value (in \$1000)	No.	Value (in \$1000)
Dam Failure	Inundation Area	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Earthquake	Moderate	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Strong	0	\$0	0	\$0	1	\$1,526	1	\$17,580.0	4	\$546.8	2	\$168.3	8	\$19,821.1	18	\$19,821.1
Windstorm	Descriptive	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Hazardous Materials	1 Mile Radius	0	\$0	0	\$0	1	\$1,526	2	\$17,580	4	\$546.8	2	\$168.3	8	\$19,821.1	17	\$22,625.3
	1/2 Mile Radius	0	\$0	0	\$0	1	\$1,526	2	\$17,580.0	4	\$546.8	2	\$168.3	8	\$19,821.1	17	\$22,625.3
	1/4 Mile Radius	0	\$0	0	\$0	1	\$1,526	2	\$17,580.0	4	\$546.8	2	\$168.3	8	\$19,821.1	17	\$22,625.3
Floods	100-Year Floodplain	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	2	\$168.3	2	\$168.3	2	\$168.3
Severe Winter Storms: Snow	Moderate	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	\$180
	High	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Severe Winter Storms: Hail	Descriptive	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Severe Winter Storms: Thunderstorm	Descriptive	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Epidemic	Descriptive	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Drought	Descriptive	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Wildland Fires	Moderate	0	\$0	0	\$0	0	\$0	0	\$0	1	\$438	0	\$0	1	\$438	2	\$618
	High	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Extreme	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0

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## Vulnerability Assessment

Table 6-7 - City of Elko Potential Hazard Vulnerability Assessment -Population and Building Inventory

Hazard Type	Methodology	Population	Buildings									
			Residential		Non-Residential		Commercial		Industrial		Agricultural	
			Number	Value <sup>1</sup> (in \$1000)	Number	Value <sup>1</sup> (in \$1000)	Number	Value <sup>1</sup> (in \$1000)	No.	Value <sup>1</sup> (in \$1000)	No.	Value (in \$1000)
Dam Failure	Inundation Area	7523	3041	58,446	66	1,402	361	122,624	72	25,198	9	6,771
Earthquake	Moderate	0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Strong	16797	5325	\$710,487	16	\$29,208.0	64	\$139,371	2	\$10,220	<1	\$1,526
Windstorm	Descriptive	*	*	*	*	*	*	*	*	*	*	*
Hazardous Materials	1 Mile Radius	19328	7608	\$442,977	98	\$1,592	591	\$341,956	142	\$84,324	11	\$8,436
	½ Mile Radius	18112	7194	\$381,946	97	\$1,271	585	\$336,690	142	\$84,323	11	\$8,436
	1/4 Mile Radius	14349	5742	\$239,604	81	\$868	556	\$319,337	137	\$83,499	10	\$7,941
Floods	100-Year Floodplain	2581	1253	\$24,067	22	\$528	76	\$86,611	37	\$25,845	7	\$7,899
	500-Year Floodplain	4382	1493	\$160,767	7	\$13,583	42	\$86,946	1	\$4,906	<1	\$840
Severe Winter Storms: Snow	Moderate	0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	High	0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
Severe Winter Storms: Hail	Descriptive	*	*	*	*	*	*	*	*	*	*	*
Severe Winter Storms: Thunderstorm	Descriptive	*	*	*	*	*	*	*	*	*	*	*
Epidemic	Descriptive	*	*	*	*	*	*	*	*	*	*	*
Drought	Descriptive	*	*	*	*	*	*	*	*	*	*	*
Wildland Fires	Moderate	4174	1544	\$42,819	6	\$85,217	9	\$7,445	19	\$26,821	2	\$904
	High	0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Extreme	0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0

# SECTION SIX

## Vulnerability Assessment

Table 6-8 – City of Elko Potential Hazard Vulnerability Assessment - Critical Facilities and Infrastructure															
Hazard Type	Methodology	Airport		Communications		Emergency Operations Center		Fire Station		Government Facility		Hospital/Care Facility		Sub Totals	
		No.	Value (in \$1000)	No.	Value (in \$1000)	No.	Value (in \$1000)	No.	Value (in \$1000)	No.	Value (in \$1000)	No.	Value (in \$1000)	No.	Value (in \$1000)
Dam Failure	Inundation Area	1	\$4,022.1	*	*	*	*	1	3	*	*	*	*	*1	\$4,022.1
Earthquake	Moderate	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Strong	2	\$4022.1	4	\$720	1	\$1,000.	4	\$3,653.3	5	\$3,073.1	1	\$809.8	17	\$12,468.5
Windstorm	Descriptive	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Hazardous Materials	1 Mile Radius	1	\$4,022.1	0	\$0	1	\$1,000	4	\$3,653.3	5	\$3,073.1	1	\$809.8	12	\$12,738.3
	1/2 Mile Radius	1	\$4,022.1	0	\$0	1	\$1,000	0	\$3,653.3	0	\$3,073.1	1	\$809.8	12	\$12,738.3
	1/4 Mile Radius	1	\$4,022.1	1	\$180	1	\$1,000	4	\$3,653.3	5	\$3,073.1	1	\$809.8	13	\$12,918.3
Floods	100-Year Floodplain	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
Severe Winter Storms: Snow	Moderate	0	0	2	\$360	0	0	0	0	0	0	0	0	2	\$360
	High	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Severe Winter Storms: Hail	Descriptive	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Severe Winter Storms: Thunderstorm	Descriptive	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Epidemic	Descriptive	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Drought	Descriptive	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Wildland Fires	Moderate	0	\$0	0	\$0		\$0	0	\$0	0	\$0	0	\$0	0	\$0
	High	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Extreme	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0



# SECTION SIX

## Vulnerability Assessment

Table 6-8– City of Elko Potential Hazard Vulnerability Assessment - Critical Facilities and Infrastructure (Continued)

Hazard Type	Methodology	Mass Transit Facility		Oil/Gas Storage Facility		Police Station		School/College Facility		Water and Wastewater Treatment		Wells		Sub Totals		Grand Totals	
		No.	Value (in \$1000)	No.	Value (in \$1000)	No.	Value (in \$1000)	No.	Value (in \$1000)	No.	Value (in \$1000)	No.	Value (in \$1000)	No.	Value (in \$1000)	No.	Value (in \$1000)
Dam Failure	Inundation Area	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Earthquake	Moderate	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Strong	1	\$2,376.2	1	\$86.7	1	\$1,747.7	14	\$174,416.2	12	\$20,128	20	\$556.8	49	\$199,311.7	66	\$212,590.0
Windstorm	Descriptive	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Hazardous Materials	1 Mile Radius	1	\$2,376.2	1	\$86.7	1	\$1,747.7	13	\$159,765	8	\$17,177.4	19	\$542	43	\$181,695.1	57	\$194,433.4
	1/2 Mile Radius	1	\$2,376.2	1	\$86.7	0	\$1,747.7	11	\$149,591.5	7	\$16,203.9	16	\$481.8	37	\$170,487.8	51	\$183,226.2
	1/4 Mile Radius	1	\$2,376.2	1	\$86.7	1	\$1,747.7	11	\$149,591.5	7	\$16,203.9	16	\$481.8	37	\$170,487.9	51	\$183,226.2
Floods	100-Year Floodplain	0	\$0	0	\$0	0	\$0	1	\$17,929.4	1	\$12,185.0	1	\$14.8	4	\$30,219.2	3	\$30,129.2
Severe Winter Storms: Snow	Moderate	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	\$360
	High	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	\$0
Severe Winter Storms: Hail	Descriptive	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Severe Winter Storms: Thunderstorm	Descriptive	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Epidemic	Descriptive	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Drought	Descriptive	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Wildland Fires	Moderate	0	\$0	0	\$0	0	\$0	0	\$0	6	\$3,837.7	6	\$151.8	12	\$3,989.5	12	\$3,989.5
	High	0	\$0	0	\$0	0	\$0	0	\$0	2	\$1,947	0	\$0	2	\$1,947	2	\$1,947
	Extreme	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0

# SECTION SIX

## Vulnerability Assessment

Table 6-9 - City of Wells Potential Hazard Vulnerability Assessment - Population and Building Inventory

Hazard Type	Methodology	Population	Buildings									
			Residential		Non-Residential		Commercial		Industrial		Agricultural	
			Number	Value (in \$1000)	Number	Value (in \$1000)	Number	Value (in \$1000)	No.	Value (in \$1000)	No.	Value (in \$1000)
Dam Failure	Inundation Area	*	*	*	*	*	*	*	*	*	*	*
Earthquake	Moderate	1346	546	\$57,044	<1	\$638.0	5	\$10,084	0	\$0	<1	\$55
Windstorm	Descriptive	*	*	*	*	*	*	*	*	*	*	*
Hazardous Materials	1 Mile Radius	1292	641	\$21,248	37	\$323	80	\$17,860	19	\$8,948	3	\$128
	1/2 Mile Radius	1292	641	\$21,248	37	\$323	80	\$18,110	19	\$8,948	3	\$128
	1/4 Mile Radius	1236	617	\$20,303	36	\$320	78	\$18,058	19	\$8,948	3	\$128
Floods	100-Year Floodplain	58	28	\$574.5	3	\$9	11	\$4,340	5	\$4,843	1	\$6
Severe Winter Storms: Snow	Moderate	0	0	0	0	0	0	0	0	0	0	0
	High	0	0	0	0	0	0	0	0	0	0	0
Severe Winter Storms: Hail	Descriptive	*	*	*	*	*	*	*	*	*	*	*
Severe Winter Storms: Thunderstorm	Descriptive	*	*	*	*	*	*	*	*	*	*	*
Epidemic	Descriptive	*	*	*	*	*	*	*	*	*	*	*
Drought	Descriptive	*	*	*	*	*	*	*	*	*	*	*
Wildland Fires	Moderate	134	59	\$193	4	\$45	2	\$618	2	\$2,969	4	\$6
	High	0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Extreme	0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0

# SECTION SIX

## Vulnerability Assessment

Table 6-10 – City of Wells Potential Hazard Vulnerability Assessment - Critical Facilities and Infrastructure

Hazard Type	Methodology	Airport		Com-munications		Emergency Operations Center		Fire Station		Government Facility		Hospital/Care Facility		Mass Transit Facility		Sub Totals	
		No.	Value (in \$1,000)	No.	Value (in \$1,000)	No.	Value (in \$1,000)	No.	Value (in \$1,000)	No.	Value (in \$1,000)	No.	Value (in \$1,000)	No.	Value (in \$1,000)	No.	Value (in \$1,000)
Dam Failure	Inundation Area	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Earthquake	Moderate	1	\$10,000	2	\$360	1	\$2,500	2	\$1,308	2	\$2,528	1	\$7,630	0	\$0	9	\$24,326
Windstorm	Descriptive	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Hazardous Materials	1 Mile Radius	1	\$250	0	0	1	\$1,200	2	\$1,308	4	\$388	1	\$209	0	\$0	9	\$3,355
	1/2 Mile Radius	1	\$250	0	0	1	\$1,200	2	\$1,308	4	\$388	1	\$209	0	\$0	9	\$3,355
	1/4 Mile Radius	1	\$250	0	0	1	\$1,200	2	\$1,308	4	\$388	1	\$209	0	\$0	9	\$3,355
Floods	100-Year Floodplain	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
Severe Winter Storms	Moderate	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	High	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
Epidemic	Descriptive	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Drought	Descriptive	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Wildland Fires	Moderate	1	\$10,000	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	1	\$10,000
	High	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Extreme	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0

# SECTION SIX

## Vulnerability Assessment

Table 6-10 - City of Wells Potential Hazard Vulnerability Assessment - Critical Facilities and Infrastructure (Continued)

Hazard Type	Methodology	Oil/Gas Storage Facility		Police Station		School/College Facility		Water and Wastewater Treatment Facility		Wells		Sub Totals		Grand Totals	
		No .	Value (in \$1,000)	No .	Value (in \$1,000)	No .	Value (in \$1,000)	No .	Value (in \$1,000)	No.	Value (in \$1,000)	No .	Value (in \$1,000)	No .	Value (in \$1,000)
Dam Failure	Inundation Area	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Earthquake	Moderate	5	\$14,300	1	\$1,526	3	\$28,291.3	1	\$28	3	\$206.6	13	\$44,351.9	22	\$68,677.9
Windstorm	Descriptive	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Hazardous Materials	1 Mile Radius	5	\$14,300	1	\$1,200	2	\$3,187	2	\$28	2	\$17.1	12	\$18,732.1	18	\$22,087.1
	1/2 Mile Radius	5	\$14,300	1	\$1,200	2	\$3,187	0	\$0	0	\$0	8	\$18,687	7	\$44,129.1
	1/4 Mile Radius	5	\$14,300	1	\$1,200	2	\$3,187	0	\$0	0	\$0	8	\$18,687	12	\$44,129.1
Floods	100-Year Floodplain	1	\$1,500	0	\$0	0	\$0	0	\$0	0	\$0	1	\$1,500	1	\$1,500
Severe Winter Storm	Moderate	0	\$0	0	\$0	1	\$784	0	\$0	0	\$0	0	\$0	1	\$784
	High	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
Epidemic	Descriptive	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Drought	Descriptive	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Wildland Fires	Moderate	0	\$0	0	\$0	0	\$0	0	\$0	3	\$3	3	\$3	4	\$13,000
	High	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Extreme	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0

# SECTION SIX

## Vulnerability Assessment

Table 6-11 - City of West Wendover Potential Hazard Vulnerability Assessment - Population and Building Inventory

Hazard Type	Methodology	Population	Buildings									
			Residential		Non-Residential		Commercial		Industrial		Agricultural	
			No.	Value (in \$1000)	No.	Value (in \$1000)	No.	Value (in \$1000)	No.	Value (in \$1000)	No.	Value (in \$1000)
Dam Failure	Inundation Area	*	*	*	*	*	*	*	*	*	*	*
Earthquake	Moderate	4306	979	\$78,321	0	\$0	0	\$0	0	\$0	0	\$0
Windstorm	Descriptive	*	*	*	*	*	*	*	*	*	*	*
Hazardous Materials	1 Mile Radius	4139	1412	\$61,394	23	\$111	55	\$201,407	11	\$4,837	0	\$0
	1/2 Mile Radius	3194	1088	\$69,501	22	\$108	55	\$201,407	11	\$4,837	0	\$0
	1/4 Mile Radius	3194	1088	\$30,104	3	\$7	36	\$191,356	9	\$4,420	0	\$0
Floods	100-Year Floodplain	361	154	\$888	0	\$0	6	\$144,387	1	\$2,103	0	\$0
Severe Winter Storms: Snow	Moderate	0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	High	0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
Severe Winter Storms: Hail	Descriptive	*	*	*	*	*	*	*	*	*	*	*
Severe Winter Storms: Thunderstorm	Descriptive	*	*	*	*	*	*	*	*	*	*	*
Epidemic	Descriptive	*	*	*	*	*	*	*	*	*	*	*
Drought	Descriptive	*	*	*	*	*	*	*	*	*	*	*
Wildland Fires	Moderate	996	395	\$3,833	0	\$0	3	\$97,678	0	\$0	0	\$0
	High	0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Extreme	0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0

# SECTION SIX

## Vulnerability Assessment

Table 6-12 - City of West Wendover Potential Hazard Vulnerability Assessment - Critical Facilities and Infrastructure

Hazard Type	Methodology	Airport		Bridge		Communications		Emergency Operations Center		Fire Station		Sub Totals	
		No.	Value (in \$1000)	No.	Value (in \$1000)	No.	Value (in \$1000)	No.	Value (in \$1000)	No.	Value (in \$1000)	No.	Value (in \$1000)
Dam Failure	Inundation Area	0	0	0	0	0	0	0	0	0	0	0	\$0
Earthquake	Moderate	0	\$0	2	\$18,000	3	\$495	0	\$0	1	\$654	7	\$19,149
Windstorm	Descriptive	*	*	*	*	*	*	*	*	*	*	*	*
Hazardous Materials	1 Mile Radius	0	\$0	0	\$0	0	\$0	1	\$1,559	1	\$475	2	\$2,034
	1/2 Mile Radius	0	\$0	0	\$0	0	\$0	1	\$1,559	1	\$475	2	\$2,034
	1/4 Mile Radius	0	\$0	0	\$0	0	\$0	1	\$1,559	1	\$475	2	\$2,034
Floods	100-Year Floodplain	0	\$0	0	\$0	0	\$0	0	\$0	0			\$0
Severe Winter Storms: Snow	Moderate	0	\$0	0	\$0	1	\$165	0	\$0	0	\$0	1	\$165
	High	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
Severe Winter Storms: Hail	Descriptive	*	*	*	*	*	*	*	*	*	*	*	*
Severe Winter Storms:	Descriptive	*	*	*	*	*	*	*	*	*	*	*	*
Epidemic	Descriptive	*	*	*	*	*	*	*	*	*	*	*	*
Drought	Descriptive	*	*	*	*	*	*	*	*	*	*	*	*
Wildland Fires	Moderate	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	High	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Extreme	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0

# SECTION SIX

## Vulnerability Assessment

Table 6-12 - City of West Wendover Potential Hazard Vulnerability - Critical Facilities and Infrastructure (Continued)													
Hazard Type	Methodology	Government Facility		Hospital/Care Facility		Mass Transit Facility		Oil/Gas Storage Facility		Police Station		Sub Totals	
		No.	Value (in \$1000)	No.	Value (in \$1000)	No.	Value (in \$1000)	No.	Value (in \$1000)	No.	Value (in \$1000)	No.	Value (in \$1000)
Dam Failure	Inundation Area	0	0	0	0	0	0	0	0	0	0	0	\$0
Earthquake	Moderate	1	\$6,500.0	1	\$2,000.0	0	\$0	1	\$2,000.0	1	\$1,526.0	4	\$12,026.0
Windstorm	Descriptive	*	*	*	*	*	*	*	*	*	*	*	*
Hazardous Materials	1 Mile Radius	5	\$33,534	1	\$350	0	\$0	0	\$0	1	\$1,559	7	\$56,625
	1/2 Mile Radius	5	\$33,534	1	\$350	0	\$0	0	\$0	1	\$1,559	7	\$56,625
	1/4 Mile Radius	5	\$33,534	0	\$350	0	\$0	0	\$0	1	\$1,559	6	\$56,625
Floods	100-Year Floodplain	0	\$0	0	\$0	0	\$0	0	\$0	1	\$1,526.0	1	\$1,526.0
Severe Winter Storms: Snow	Moderate	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	High	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
Severe Winter Storms: Hail	Descriptive	*	*	*	*	*	*	*	*	*	*	*	*
Severe Winter Storms:	Descriptive	*	*	*	*	*	*	*	*	*	*	*	*
Epidemic	Descriptive	*	*	*	*	*	*	*	*	*	*	*	*
Drought	Descriptive	*	*	*	*	*	*	*	*	*	*	*	*
Wildland Fires	Moderate	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	High	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Extreme	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0

# SECTION SIX

## Vulnerability Assessment

Table 6-12 - City of West Wendover Potential Hazard Vulnerability Assessment - Critical Facilities and Infrastructure (Continued)

Hazard Type	Methodology	Power Generating Station		School/College Facility		Water and Wastewater Treatment		Wells		Sub Totals		Grand Totals	
		No.	Value (in \$1000)	No.	Value (in \$1000)	No.	Value (in \$1000)	No.	Value (in \$1000)	No.	Value (in \$1000)	No.	Value (in \$1000)
Dam Failure	Inundation Area	*	*	*	*	*	*	*	*	*	*	*	*
Earthquake	Moderate	2	\$4,200.0	2	\$32,636.8	4	\$16,000.0	5	\$262.6	13	\$53,099.3	24	\$84,274
Windstorm	Descriptive	*	*	*	*	*	*	*	*	*	*	*	*
Hazardous Materials	1 Mile Radius	1	\$3,000	2	\$32,636.8	1	\$2,000.0	0	\$0	4	\$37,636.8	13	\$96,295.8
	1/2 Mile Radius	0	\$1,200	2	\$32,636.8	1	\$2,000.0	0	\$0	5	\$34,636.8	14	\$94,495.8
	1/4 Mile Radius	1	\$1,200	2	\$32,636.8	1	\$2,000.0	0	\$0	4	\$35,836.8	10	\$94,495.8
Floods	100-Year Floodplain	0	\$0	0	\$0	1	\$13,500*	0	\$0	1	\$13,500	1	\$15,026
Severe Winter Storms: Snow	Moderate	0	\$0	0	\$0	0	\$0	1	\$37.5	1	\$37.5	3	\$240
	High	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
Severe Winter Storms: Hail	Descriptive	*	*	*	*	*	*	*	*	*	*	*	*
Severe Winter Storms:	Descriptive	*	*	*	*	*	*	*	*	*	*	*	*
Epidemic	Descriptive	*	*	*	*	*	*	*	*	*	*	*	*
Drought	Descriptive	*	*	*	*	*	*	*	*	*	*	*	*
Wildland Fires	Moderate	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	High	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Extreme	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0

\*The area of the Waste Water Treatment Facility is not mapped but is in a low area vulnerable to flooding.



## SECTION SIX

## Vulnerability Assessment

A separate table for the Wildland Fire of the Spring Creek area within Elko County was included due to the potential for wildfire. Other hazards except for fire included in the Elko County Analysis. The wildfire calculations used a 600 foot buffer around populated areas in Spring Creek.

• Table 6-13 – Spring Creek Potential Hazard Vulnerability Assessment - Population and Building Inventory

Hazard Type	Methodology	Population	Buildings									
			Residential		Non-Residential		Commercial		Industrial		Agricultural	
			Number	Value (in \$1000)	Number	Value (in \$1000)	Number	Value (in \$1000)	Number	Value (in \$1000)	Number	Value (in \$1000)
Wildland Fires	Moderate	4607	1704	\$79,973	26	\$524	18	\$40,451	14	\$571	15	\$2,047
	High	0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Extreme	0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0

Table 6-14– Spring Creek Potential Hazard Vulnerability Assessment - Critical Facilities and Infrastructure (Continued)

Hazard Type	Methodology	Government Facility		Hospital/Care Facility		Mass Transit Facility		Oil/Gas Storage Facility		Police Station		Sub Totals	
		No.	Value (in \$1000)	No.	Value (in \$1000)	No.	Value (in \$1000)	No.	Value (in \$1000)	No.	Value (in \$1000)	No.	Value (in \$1000)
Wildland Fires	Moderate	1	\$2,000		\$	0	\$0	0	\$0	1	\$2,000	1	\$2,000
	High	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Extreme	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0

Table 6-14– Spring Creek Potential Hazard Vulnerability Assessment - Critical Facilities and Infrastructure (Continued)

Hazard Type	Methodology	Power Generating Station		School/College Facility		Water and Wastewater Treatment Facility		Wells		Sub Totals		Grand Totals	
		No.	Value (in \$1000)	No.	Value (in \$1000)	No.	Value (in \$1000)	No.	Value (in \$1000)	No.	Value (in \$1000)	No.	Value (in \$1000)
Wildland Fires	Moderate		\$0		\$0		\$0	5	\$1,597	5	\$1,597	6	\$3,597
	High	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Extreme	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0

### **6.4.1 Dam Failure**

The City of Elko is at risk to dam failure. Exposed within the inundation zone are 7,523 people and 3041 residential buildings (worth \$58 million) and 508 non residential buildings (worth \$155 million). This would be a catastrophic event for the City.

The Bishop Creek Dam inundation shows failure as minimal, with less than 1 percent of the total county population residing in this inundation zone. Exposed within the inundation zone are 82 people and 33 residential buildings (worth \$1 million) no other critical facilities or infrastructure are located within the Bishop Creek inundation area. The dam is not longer operational however there is some water in the basin which may cause damage.

### **6.4.2 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 Count and Cities may be affected by the drought however building and critical facilities would just be limited in their use but would not be damaged. Drought also affects future development. The County already has limited development due to the lack of water.

### **6.4.3 Earthquakes**

Moderate to strong shaking in the Planning Area was determined using a USGS probabilistic seismic hazard model. A summary of this analysis is given below.

**Elko County** – Nearly 80 percent of the total unincorporated county population (16,523) have potential for strong ground shaking intensity along with 5,887 residential buildings (worth \$655.2 million), one nonresidential building (worth \$2.1 million), 69 commercial buildings (worth \$67.1 million) two industrial buildings (worth \$49.0 million), one agricultural building (worth \$2.7 million), and 29 critical facilities (worth \$126.9 million). Additionally, just over 20 percent of the total unincorporated county population (4,441) have potential for moderate ground shaking intensity along with 1,851 residential buildings (worth \$303.9 million), nine non-residential buildings (worth \$14.9 million), 20 commercial buildings (worth \$30.3 million), <1 industrial building (worth \$3.9 million), one agricultural building (worth \$ 2.1 million), and 53 critical facilities (worth \$63.7 million).

The northwest, northeast, and southeast portions of the county have potential for moderate ground shaking intensity ranging between 5 to 9 percent peak ground acceleration. This includes the City of Wells, the City of West Wendover, and portions of the unincorporated county area. These communities are distant from known, active faults and should experience lower levels of shaking less frequently. However, very infrequent earthquakes could still cause strong shaking in these jurisdictions.

The entire county including the cities have 231 residential (475 thousand sq. ft.) and 290 (3.2 million sq. ft.) commercial un-reinforced masonry buildings. These buildings were constructed prior to 1974 building code requirements and have a greater potential for major loss.

**City of Carlin** – The entire city’s total population (2,160 people), 939 residential buildings (worth \$85.3 million), less than one nonresidential building (worth \$1.3 million), one

commercial building (worth \$2.1 million), and 18 critical facilities (worth \$22.8 million) have potential for strong ground shaking intensity.

**City of Elko** – The entire city’s total population (16,797), 5,325 residential buildings (worth \$710.5 million), 16 nonresidential buildings (worth \$29.2 million), 64 commercial buildings (worth \$139.4 million) two industrial buildings (worth \$10.2 million), less than one agricultural building (worth \$1.5 million), and 66 critical facilities (worth \$212.6 million) have potential for strong ground shaking intensity.

**City of Wells** – The entire city’s total population (1,346), 546 residential buildings (worth \$57.0 million), less than one nonresidential building (worth \$638 thousand), five commercial buildings (worth \$10.1 million), less than one agricultural building (worth \$55 thousand), and 22 critical facilities (worth \$68.7 million) have potential for moderate ground shaking intensity.

**City of West Wendover** – The entire city’s total population (4,306) and 979 residential buildings (worth \$78.3 million) are at risk due moderate ground shaking. In addition, there are 24 critical facilities (worth \$106.3 million) that are located in an area susceptible to moderate ground shaking.

#### **6.4.4 Epidemics**

Epidemic was included as a possible hazard to the citizens of the county. Due to the location of Elko County and its long established transportation routes linking the west coast to the east coast as well as being able to traverse the continental U.S. from north to south directly through Elko County an epidemic reaching this Planning Area greatly increases the risk of the spread of a communicable disease, not only countywide but nationwide. The entire population of the County and Cities would likely be affected by the illness however building and critical facilities would just be limited in their use but would not be damaged.

#### **6.4.5 Floods**

Food hazard areas for the Planning Area were determined using a FEMA FIRM.

\*NOTE: Currently, the FEMA Digital Flood Insurance Rate Maps are not “effective” (regulatory) and are preliminary information, but may be used as best available information. The proposed schedule is for FEMA to issue a Letter of Final Determination in the first weeks of March, 2013. The LFD date would start the 6 month adoption period, and when this period is over the maps would become effective.

[In a visual comparison of the paper maps (FIRMs) and the Preliminary (DFIRMS) maps, slight changes were found in only a few map panels, and included the appealed West Wendover study area [ 32007C6402E, 32007C6403E, 32007C6404E, and 32007C6406E] and a change [32007C5606E] in the City of Elko]

**Elko County** – Nearly 13 percent of the total county population reside within the 100-year flood zone with 2,581 people, 1,253 residential buildings (worth \$22 million), 76 nonresidential buildings (worth \$.5 million), 35 commercial buildings (worth \$7.2 million), 10 industrial buildings (worth \$13.8 million), and 183 agricultural building (worth \$32.0 million), and 8 critical facilities, (worth \$10 million) within the 100-year flood zone.

**City of Carlin** – One-quarter of the total city’s population reside within the 100-year flood zone with 511 people, 167 residential buildings (worth \$2.5 million), and 11 commercial buildings (worth \$7.8 million) and 1 industrial building (worth \$1 million) no other city-owned structures are within the 100-year flood zone except for two wells (worth \$168,300.00).

**City of Elko** – Almost 30 percent of the total city population reside within the 100-year flood zone with 2,581 people, 1,253 residential buildings (worth \$24 million), 22 nonresidential buildings (worth \$.5 million), 76 commercial buildings (worth \$86.6 million), 37 industrial buildings (worth \$25.8 million), 7 agricultural buildings (worth \$7.9 thousand), and three critical facilities (worth \$30.2 million).

An additional 26 percent of the total population reside within the 500-year flood zone with 4,382 people, 1,493 residential buildings (worth \$160.8 million), seven non-residential (worth \$13.6 million), 42 commercial buildings (worth \$87.0 million), one industrial building (worth \$4.9 million), less than one agricultural building (worth \$840 thousand), and eight critical facilities (worth \$22.3 million).

**City of Wells** – Just under six percent of the total city population reside within the 100-year flood zone with 58 people, 28 residential buildings (worth \$.5 million), 3 nonresidential buildings, 11 commercial buildings (worth \$4.3 million), 5 industrial buildings (worth \$4.8 million), and only one critical facility, an oil/gas storage facility, (worth \$1.5 million).

**City of West Wendover** – Approximately 9 percent of the total city population reside within the 100-year flood zone with 361 people, 154 residential buildings (worth \$8.9 million) 6 commercial buildings (worth \$144 million), 1 industrial buildings (worth \$2.1 million),. There is currently only one city-owned structure within the 100-year flood zone, one police station (worth \$1.5 million) A new city complex was completed in 2009 outside 100-year flood zone which includes administration, police and court functions. The Waste Water Treatment Center (\$13.5 million) location has not been mapped and is located in the lowest area of town and therefore vulnerable to flood.

Preliminary FEMA DFIRMS released in September 2009 were appealed, and efforts to provide technical and scientific data were supported by the community. An acceptable resolution was approved that resulted in revisions to the Preliminary Flood Insurance Rate Maps, which now more accurately reflect flood risk in West Wendover.

#### **6.4.6 Hazardous Materials Events**

Using GIS mapping of a one mile, .5 miles and .25 miles radius of hazardous facilities see Figure C-3, the Elko County GIS, estimated that 8,370 (County) people are within the 1-mile buffer. Building exposure includes 3,257 or \$232 million (County) residential buildings and 236 or \$13 million (County) non-residential for a hazardous materials event. Although this number is very high it is unlikely that all hazardous facilities would have an event at the same time. Therefore any single event would likely affect a much smaller number.

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 which may be exposed to a hazardous materials spill include the following:

**County:**

Airport (\$6 million)

Communications (\$.1 million)

EOC 2 (\$5 million)

Fire Stations (\$2.3 million)

Sherriff Station 5 (\$7.3 million)

Schools 9 (\$107 million)

City information can be found on the tables above.

**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 Cities. 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.

**6.4.8 Wildland Fires**

Wildfire exposure was determined using a USFS fuel rank model, which takes into consideration vegetation, slope, and aspect. The results of this model are as follows.

**Elko County** – Almost 43 percent of the total unincorporated county population is exposed to a moderate wildfire hazard with 8,822 people, 3,484 residential buildings (worth \$484 million), nine non-residential buildings (worth \$15 million), 31 commercial buildings (worth \$44 million), <1 industrial building (worth \$5.4 million), 1 agricultural buildings (worth \$2.7 million), and 45 critical facilities (worth \$53 million). Just over one percent of the total unincorporated county population is exposed to a high wildfire hazard with 3 people, 2 residential buildings (worth \$188 thousand), less than one commercial building (worth \$75 thousand), and no critical facilities. There is no exposure to extreme wildfire hazard in the unincorporated county area.

**City of Carlin** – Just over 9 percent of the total city population is exposed to a moderate wildfire hazard. This includes 197 people, 19 residential buildings (worth \$.5 million), no commercial buildings, and two critical facilities (worth \$618 thousand). There is no exposure to high or extreme wildland fire throughout the City of Carlin.

**City of Elko** – Just over 20 percent of the total city population is exposed to a moderate wildfire hazard with 4,174 people, 1,544 residential buildings (worth \$42 million), one non-residential buildings (worth \$85 thousand), 9 commercial buildings (worth \$ 7.5 million), 19 industrial buildings (worth \$26 million), two agricultural building (worth \$904 thousand), and 12 critical facilities (worth \$4 million). Additionally, there are no people or residential structures exposed to a high wildfire hazard. However, there are two critical facilities (worth \$1.9 million) at risk to high wildfire exposure. There is no exposure to extreme wildland fire throughout the City of Elko

**City of Wells** – There is nearly 12 percent of the total city population exposed to a moderate wildfire hazard with 134 people, 59 residential buildings (worth \$ 1 million), four-residential building (worth \$45 thousand), two commercial building (worth \$618 thousand), 2 industrial buildings (worth \$2.9 million), and four critical facilities (worth \$13 million). There is no

exposure to high or extreme wildfire hazard throughout the City of Wells. Currently acquiring accurate numbers of residences, commercial, and new infrastructure within City jurisdiction.

**City of West Wendover** – The City of West Wendover has fewer than 25 percent of their total city population exposed to a moderate wildfire hazard with 996 people, 395 residential buildings (worth \$3.8 million), three commercial building (worth \$97 thousand) and no critical and infrastructure facilities. There is no exposure to high or extreme wildland fire throughout the City of West Wendover.

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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 CAPABILITY ASSESSMENT OVERVIEW**

While not required by the Disaster Mitigation Act of 2000, an important component of the Mitigation Strategy is a review of each jurisdiction's resources in order to identify, evaluate, and enhance the capacity of local resources to mitigate the effects of hazards. Elko County and the incorporated communities within the county have prepared a capability assessment as seen in Tables 7-1 through 7-15. As noted below, there three parts to a capability assessment include a review of legal and regulatory capabilities, administrative and technical capabilities, and financial capabilities.

### **7.1.1 Legal and Regulatory Capabilities**

Legal and regulatory capabilities include applicable Building Codes, Zoning Ordinance, Subdivision Regulations, Capital Improvement Plan, and other regulatory development guides provide specified support to hazard mitigation activities. Other less prescriptive documents that describe each jurisdiction's hazard mitigation capabilities include various Master Plan elements, Economic Development Strategy, Emergency Response Plan, and Post-Disaster Recovery Plans, among others. This section lists these various tools, recognizes the local authority of the specific activity, and identifies the interaction of the specific tools with State and higher-level authorities.

In addition to policies and regulations, each jurisdiction participates in several hazard mitigation programs including the National Flood Insurance Program (NFIP), Leaf Collection Program, and the Snow Removal Program.

### **7.1.2 Administrative and Technical Capabilities**

The administrative and technical capability of each jurisdiction provides an identification of the staff, personnel, and department resources available to expedite the actions identified in the Mitigation Strategy. Specific resources reviewed include those involving technical personnel that apply planning and engineering, floodplain management, Geographic Information Systems (GIS), environmental scientists, management authority, and various other services needed to facilitate hazard mitigation throughout Elko County.

### **7.1.3 Financial Capabilities**

Specific financial and budgetary tools available to each jurisdiction for hazard mitigation include federal entitlements, general fund monies, secondary sales and property taxes, user fees for infrastructure, impact fees applied to new development, and various unique debt service techniques including bonding indebtedness.



## 7.2 CAPABILITY ASSESSMENT

<b>Table 7-1 Elko County Legal and Regulatory Capability</b>				
Regulatory Tools (ordinances, codes, plans)	Local Authority	Does State Prohibit	Higher Level Jurisdiction Authority	Comments
Building code	Y	N		
Zoning ordinance	Y	N		
Subdivision ordinance or regulations	Y	N		
Special purpose ordinances (floodplain management, storm-water management, hillside or steep slope ordinances, wildfire ordinances, hazard setback requirements)	Y	Y	Y	Depends on situation as to whether County or State Water Resources has authority.
Growth management ordinances (also called “smart growth” or anti-sprawl programs)	Y	N		
Site plan review requirements	Y	N		
General or comprehensive plan	Y	N		
A capital improvements plan	Y	N		
An economic development plan	Y	N		
An emergency response plan	Y	N		Hazardous Materials Plan CERT Response Plan (HazMat) All Hazard Plan (In development)
A post-disaster recovery plan	Y	N		A Recovery Plan has not yet been developed
A post-disaster recovery ordinance	Y	N		Do not have one in place.
Real estate disclosure requirements	Y	Y	Y	Required for properties within the 100-year floodplain.

<b>Table 7-2 Elko County Administrative and Technical Capability</b>		
Staff/Personnel Resources	Y/N	Department/Agency and Position
Planner(s) or engineer(s) with knowledge of land development and land management practices	Y	Planning Dept., Public Works
Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	Y	Services are sub-contacted; an engineer is not on staff full-time.
Planners or Engineer(s) with an understanding of natural and/or human-caused hazards	Y	Planning Dept., Public Works
Floodplain manager	N	Planning occurs at the State level. Local jurisdiction responds only.
Surveyors	Y	Planning Dept., Public Works, Assessor's Office
Staff with education or expertise to assess the community's vulnerability to hazards	Y	Planning Dept., Public Works
Personnel skilled in GIS and/or HAZUS	Y	Assessor's Office, Public Works
Scientists familiar with the hazards of the community	N	National Weather Service (NWS) part of LEPC & State geologist and hydrologist are assigned to the Elko County but are not part of regular, local planning efforts.
Emergency manager	Y	Ambulance Department
Grant writers	Y/N	Grant writers pursue grants for specific departments only.

<b>Table 7-3 Elko County Financial Capability</b>	
Financial Resources	Accessible or Eligible to Use
Community Development Block Grants (CDBG)	Yes
Capital improvements project funding	Yes
Authority to levy taxes for specific purposes	Yes
Fees for water, sewer, gas, or electric service	Yes, (water and sewer), gas & electric private
Impact fees for homebuyers or developers for new developments/homes	No
Incur debt through general obligation bonds	Yes, must be approved by voters
Incur debt through special tax and revenue bonds	Yes, must be approved by voters
Incur debt through private activity bonds	Yes
Withhold spending in hazard-prone areas	Yes

<b>Table 7-4 City of Carlin Legal and Regulatory Capability</b>				
Regulatory Tools (ordinances, codes, plans)	Local Authority	Does State Prohibit	Higher Level Jurisdiction Authority	Comments
Building code	Y	N	Y	IBC 2003
Zoning ordinance	Y	N	Y	Floodplain Ordinance
Subdivision ordinance or regulations	Y	N	Y	
Special purpose ordinances (floodplain management, storm-water management, hillside or steep slope ordinances, wildfire ordinances, hazard setback requirements)	Y	N	Y	
Growth management ordinances (also called “smart growth” or anti-sprawl programs)	N	N	N	
Site plan review requirements	Y	N	Y	
Master plan	N	N	N	Working on for 2014
A capital improvements plan	Y	N	Y	2013
An economic development plan	Y	N	Y	NNERDA
An emergency response plan	Y	N	Y	2011 & Hazmat County LEPC 2013
A post-disaster recovery plan	N	N	N	
Real estate disclosure requirements	Y	N	Y	Required for properties within the 100-year floodplain.

<b>Table 7-5 City of Carlin Administrative and Technical Capability</b>		
Staff/Personnel Resources	Y/N	Department/Agency and Position
Planner(s) or engineer(s) with knowledge of land development and land management practices	Y	City Engineer & Staff at Carlin City Hall
Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	Y	City Engineer & Building Official
Planners or Engineer(s) with an understanding of natural and/or human-caused hazards	Y	Fire/ Police/ Public Works Departments
Floodplain manager	Y	Public Works Director
Surveyors	Y	City Engineer
Staff with education or expertise to assess the community's vulnerability to hazards	Y/N	Fire/ Police/ Public Works Departments
Personnel skilled in GIS and/or HAZUS	N	County GIS
Scientists familiar with the hazards of the community	N	
Emergency manager	N	Elko County
Grant writers	Y	City of Carlin Staff

<b>Table 7-6 City of Carlin Financial Capability</b>	
Financial Resources	Accessible or Eligible to Use
Community Development Block Grants (CDBG)	Yes
Capital improvements project funding	Yes
Authority to levy taxes for specific purposes	No
Fees for water, sewer, gas, or electric service	Yes, but for water and sewer service only
Impact fees for homebuyers or developers for new developments/homes	No
Incur debt through general obligation bonds	Yes
Incur debt through special tax and revenue bonds	Yes
Incur debt through private activity bonds	Yes
Withhold spending in hazard-prone areas	Yes – Flood Only

<b>Table 7-7 City of Elko Legal and Regulatory Capability</b>				
Regulatory Tools (ordinances, codes, plans)	Local Authority	Does State Prohibit?	Higher Level Jurisdiction Authority	Comments
Building code	Y	N	N	
Zoning ordinance	Y	N	N	
Subdivision ordinance or regulations	Y	N	N	
Special purpose ordinances (floodplain management, storm-water management, hillside or steep slope ordinances, wildfire ordinances, hazard setback requirements)	Y	N	Y	Clean Water Act, FEMA NFIP
Growth management ordinances (also called “smart growth” or anti-sprawl programs)	Y	N	N	Master Plan
Site plan review requirements	Y	N	N	
General or comprehensive plan	Y	N	N	Master Plan
A capital improvements plan	Y	N		Primarily with enterprise funds
An economic development plan	Y	N		ECEDA
An emergency response plan	Y	N		
A post-disaster recovery plan	N	N		
A post-disaster recovery ordinance	N	N		
Real estate disclosure requirements	Y	N	Y	Required for properties within the 100-year floodplain.

<b>Table 7-8 City of Elko Administrative and Technical Capability</b>		
Staff/Personnel Resources	Y/N	Department/Agency and Position
Planner(s) or engineer(s) with knowledge of land development and land management practices	Y	City of Elko/ City Planner
Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	Y	City of Elko/Building Official
Planners or Engineer(s) with an understanding of natural and/or human-caused hazards	Y	City of Elko/Planner
Floodplain manager	Y	City Engineer
Surveyors	Y	Engineering
Staff with education or expertise to assess the community's vulnerability to hazards	Y	Fire Department
Personnel skilled in GIS and/or HAZUS	Y	Engineering/IS
Scientists familiar with the hazards of the community	N	
Emergency manager	Y	Utilize the Incident Command System/ Fire & Police Dept.
Grant writers	Y	Limited

<b>Table 7-9 City of Elko Legal Capability</b>	
Financial Resources	Accessible or Eligible to Use
Community Development Block Grants (CDBG)	Yes
Capital improvements project funding	Yes
Authority to levy taxes for specific purposes	Yes
Fees for water, sewer, gas, or electric service	Yes, water/sewer/streetlights
Impact fees for homebuyers or developers for new developments/homes	Yes – not currently
Incur debt through general obligation bonds	Yes
Incur debt through special tax and revenue bonds	Yes
Incur debt through private activity bonds	No
Withhold spending in hazard-prone areas	No

<b>Table 7-10 City of Wells Legal and Regulatory Capability</b>				
Regulatory Tools (ordinances, codes, plans)	Local Authority	Does State Prohibit	Higher Level Jurisdiction Authority	Comments
Building code	Y	N	N	Implementing International Fire Code & 2012 IBC
Zoning ordinance	Y	N	N	Housing more stringent than State standards, commercial at State standards
Subdivision ordinance or regulations	Y	N	N	Same as State standards
Special purpose ordinances (floodplain management, storm-water management, hillside or steep slope ordinances, wildfire ordinances, hazard setback requirements)	Y	N	N	Water management: City sits at headwaters of Humboldt River
Growth management ordinances (also called “smart growth” or anti-sprawl programs)	Y	N	N	2013 Master Plan, Hazards Incorporated
Site plan review requirements	Y	N	N	
Master Plan plan	Y	N	N	2013 Master Plan
A capital improvements plan	Y	N	N	
An economic development plan	Y	N	N	NNRDA 2013
An emergency response plan	Y	N	N	2004, Continually Updated
A post-disaster recovery plan	Y	N	N	Community Assessment Plan 2008 Phase II 2014
A post-disaster recovery ordinance	N	N	N	
Real estate disclosure requirements	Y	N	Y	Required for properties located within the 100-year floodplain
Other: Nuisance Ordinance	Y	N	N	Must clean up after a disaster event.
Other: Floodplain Ordinance	Y	N	N	2013 Approved by FEMA
Other: Amber Alert	Y	N	N	Elko County Central, dispatch authority

<b>Table 7-11 City of Wells Administrative and Technical Capability</b>		
Staff/Personnel Resources	Y/N	Department/Agency and Position
Planner(s) or engineer(s) with knowledge of land development and land management practices	Y	City Manager and Public Works Director
Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	Y	Part-time Building Inspector
Planners or Engineer(s) with an understanding of natural and/or human-caused hazards	Y	City Manager and Public Works Director
Floodplain manager	Y	City Manager and Building Inspector; new construction specifically under Building Inspector
Surveyors	N	Contract as needed
Staff with education or expertise to assess the community's vulnerability to hazards	Y	City Manager, Fire Chief, Public Works Director, Elko Co. Sheriff
Personnel skilled in GIS and/or HAZUS	N	County GIS
Scientists familiar with the hazards of the community	Y	City utilizes UNR & NWS
Emergency manager	Y	Fire Chief
Grant writers	Y	City Manager
Other: Finance Director, Grant Administrator	Y	City Clerk & City Manager
Other: Elko County	Y	Elko County supports services in emergency construction



Table 7-12 City of Wells Financial Capability	
Financial Resources	Accessible or Eligible to Use
Community Development Block Grants (CDBG)	Yes
Capital improvements project funding	Yes
Authority to levy taxes for specific purposes	No sales tax; can levy property and special improvement districts
Fees for water, sewer, gas, or electric service	Yes for water, sewer, sanitation service
Impact fees for homebuyers or developers for new developments/homes	Yes
Incur debt through general obligation bonds	Yes
Incur debt through special tax and revenue bonds	Yes
Incur debt through private activity bonds	Yes
Withhold spending in hazard-prone areas	Yes

The Cities other than Elko, being small in population, has individuals wearing multiple hats and it has similar legal, administrative and financial capability in relation to smaller rural cities within Nevada. All the Cities are 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 area members of the NFIP, in addition to programs for public works. Other programs are constrained by budget and personnel including health and human services and public safety. Future implementation may be constrained by budget reduction in the next few years due to the recession.

## 7.2.1 National Flood Insurance Program

DMA 2000 Requirements: Mitigation Strategy – National Flood Insurance Program
<p><b>National Flood Insurance Program (NFIP) Compliance</b></p> <p>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.</p> <p><b>Element</b></p> <ul style="list-style-type: none"> <li>■ 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?</li> <li>■ Does the new or updated plan describe the jurisdiction(s) participation in the NFIP?</li> <li>■ Does the mitigation strategy identify, analyze and prioritize actions related to continued compliance with the NFIP?</li> </ul> <p><i>Source: FEMA, March 2008.</i></p>

The County and Cities have identified special flood-hazard areas. The County, City of Elko and City of Carlin entered the NFIP in 1984, City of Wells in 1982 and City of W Wendover in 2008.

Currently, the FEMA Digital Flood Insurance Rate Maps are not “effective” (regulatory) and are preliminary information, but may be used as best available information. FEMA issued a Letter of Final Determination in the first weeks of February 2013. The LFD date would start the 6 month adoption period, and when this period is over the maps would become effective September 4, 2013.

In a visual comparison of the paper maps (FIRMs) and the Preliminary (DFIRMS) maps, slight changes were found in only a few map panels, and included the appealed West Wendover study area [ 32007C6402E, 32007C6403E, 32007C6404E, and 32007C6406E] and a change [32007C5606E] in the City of Elko

The County and Cities 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 Cities are a CRS Class 10 community. The County and Cities outlined mitigation actions listed under goals for flood detailed below in Table 8-3, Mitigation Goals and Potential Actions. The County and Cities have included an action to join the CRS in this plan update.

There are no repetitive loss property and no severe repetitive loss properties (as defined by the NFIP) within the County or Cities. Current building code within the County and Cities restricts future building within a floodway.

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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 Cities have a specific goal except for Avalanche and Landslide. These hazards are rated as low hazards for the County and Cities and Goals One and Two will address these 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 asked to review the 2008 HMP and provide a status as shown in Appendix G. Then the members were tasked to provide new 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 Avalanche and Landslide specifically 1.A, 1.C, 1. D, 1.E, 2.A, and 2.C.

Table 8-2 Mitigation Goals and Potential Actions

Jurisdiction	Goal Number & Description	Action Number	New or Existing	Action Description
Planning Area	Goal 1: Promote disaster-resistant development	1.A	Both	Integrate elements from the MJHMP into other local planning documents, including general plans, hazard-specific zoning ordinances, and emergency operation plans.
Planning Area		1.B	New	Update land acquisition/future development criteria to include a hazard analysis component for dam inundation, earthquake faults and wildfire hazard areas(similar to flood zones).
Planning Area		1.C	New	Review the existing County/City's general/master plans and zoning ordinances to determine how these documents help limit development in hazard areas. Recommend modifications with additional guidelines, regulations, and land use techniques as necessary within the limits of local and state statutes.
Cities of Carlin, Elko, Wells, and West Wendover	Goal 2: Build and support local capacity to enable community members to prepare for, respond to, and recover from disasters.	2.A	Both	Enhance the Planning Area's GIS capabilities to include updated hazard and asset figures and developing jurisdictional GIS data sharing agreements that allows all communities within the Planning Area to share/utilize existing and new GIS hazard and asset information. Include public in future.
Elko County		2.B	Both	Work with the school district to develop a program that teaches children and hazards in the community and what they can do to mitigate, prevent, and prepare for these hazard events (i.e., in order to reduce urban flooding, don't put garbage and/or green waste into stormwater drains).
Planning Area		2.C	Both	Develop a sustained public outreach program that encourages consistent hazard mitigation content. For example, wildland fire defensible space tips with summer water bills or along highway billboards, and the safe handling and disposal of hazardous waste and chemicals with garbage bills.
Elko County	Goal 3: Reduce the possibility of damage and losses due to a dam failure.	3.A	Both	Coordinate with Bishop Dam to retrofit dam for safety.
Elko County		3.B	Exist	Rezone the Bishop Dam inundation area as low intensity, nonresidential land uses to avoid placing new high density and/or residential construction in this hazard area.
City of Elko		3.C	Both	Update Emergency Action Plan w/inundation maps.
City of Elko		3.D	Both	Build park on designated land for 8 mile dam detention basin.
Planning Area and Elko County School District	Goal 4: Reduce the possibility of damage and losses due a drought.	4.A	Both	Implement drought response measures as defined in the Department of Conservation and Natural Resources State of Nevada Drought Plan.
		4.B	Both	Mandate the use of xeriscaping or desert landscaping for appropriate existing and new County/City facilities and projects.
Carlin		4.C	Both	Water storage facilities project for drought and wildfire.

Table 8-2 Mitigation Goals and Potential Actions

Jurisdiction	Goal Number & Description	Action Number	New or Existing	Action Description
Planning Area	Goal 5: Reduce the possibility of damage and losses due to an earthquake.	5.A	New	Adopt and enforce the International Building Code (IBC) provisions pertaining to grading and construction relative to seismic hazards.
Planning Area and Elko County School District		5.B	Exist	Develop a voluntary building inspection program in which homes, businesses, and schools are inspected by a building official for weak or poorly anchored parapets, signs, glass, machinery, shelving, fixtures, and other nonstructural elements or architectural detailing that might cause injury if they were to fall or break during an earthquake. In conjunction with this action, develop a nonstructural retrofitting program to correct identified problems.
Planning Area and Elko County School District		5.C	Exist	Retrofit any critical assets within strong shaking areas that do not meet the IBC requirements for seismic safety. Priority for retrofitting should be given to emergency response facilities, schools, and shelters. (City of Elko new police station.)
Planning Area		5.D	Exist	Verify the Un-reinforced Masonry (URM) Buildings through inspection.
Planning Area and Elko County School District	Goal 6: Reduce the possibility of damage and losses due to an epidemic.	6.A	N/A	Support the Nevada State Health Department and the Nevada Department of Agriculture to increase surveillance and to develop more stringent requirements at high-risk facilities, (i.e., day-care centers, hospitals, nursing homes, schools, restaurants, hotels, resorts, and casinos) to an epidemic outbreak.
Cities of Elko and Wells	Goal 7: Reduce the possibility of damage and losses due a flood.	7.A	Both	Complete hydrology and hydraulic analysis of storm drain hydraulic system to address minimal flooding in city due to storm drains repeatedly backing up with river water.
Cities of Elko & Wells and Elko County School District		7.B	Both	Carry out minor flood and stormwater management projects that would reduce damage to existing infrastructure and residential buildings due to flooding. These projects include the modifying or replacing existing culverts and bridges, upgrading capacity of storm drains, stabilizing streambanks, clearing streambanks of debris and vegetation, and creating of debris or flood/stormwater retention basins in small watersheds.  City of Elko – Metzler Rd. Project, Elko Sports Complex on the corner of Bullion Rd. & Errecart Blvd.
Planning Area		7.C	Both	Join the Community Rating System (CRS) to reduce flood insurance costs.
W. Wendover		7.D	Both	Rebuild Florence St. to enhance storm drain system.
Wells		7.E	Both	Complete Boteris storm drain improvements.
Planning Area and Elko County School District	Goal 8: Reduce the possibility of damage and losses due to	8.A	Exist	Require businesses that use, store, or transport hazardous materials to ensure that adequate measures are taken to protect public health and safety and that these measures are submitted to the Local Emergency Planning Committee (LEPC) for review.

Table 8-2 Mitigation Goals and Potential Actions

Jurisdiction	Goal Number & Description	Action Number	New or Existing	Action Description
	a hazardous materials event.	8.B	Exist	Work with the Union Pacific Railroad and Burlington Northern Santa Fe Railroad to ensure adequate precaution and preparedness regarding rail transport of hazardous materials.
Planning Area		8.C	Both	Create a Planning Area webpage that includes information regarding the safe handling and disposal of household chemicals and e-waste and radon testing and venting .
Planning Area	Goal 9: Reduce the possibility of damage and losses due to a severe storm.	9.A	Exist	Develop a public outreach campaign that informs the public on how to protect their homes from severe (hail and snow) storms and thunderstorms. Example protection measures include: cutting tree branches away from roofs, windows, and power/phone lines, strengthening/securing carports and rooftops to withstand high winds and/or extreme snow load.
Planning Area and Elko County School District		9.B	Exist	Determine the structural stability of critical facility roofs, carports, and garages to withstand ice and snow loads.
Planning Area		9.C	Both	Become Storm Ready Communities.
Elko County & School District, Cities of Elko & Wells	Goal 10: Reduce the possibility of damage and losses due to a wildfire.	10.A	Both	Install rock zero scaping or “green belts” utilizing grass seed mixture recommended by fire specialist in order to help maintain defensible space around the built environment.
Elko County		10.B	Both	Implement a roadside vegetation management program that reduces vegetation and maintain roads by keeping all vegetation to a height of no more than four inches for a distance of twenty feet from the edge of the road on both sides of the road.
Planning Area		10.C	Both	Create a public education program that explains fire safe measures in clear and emphatic terms, which will have an impact on residents of the wildland-urban interface. Informed community members will be more inclined to make efforts to effectively reduce wildfire hazards around their homes and neighborhoods.
Planning Area		10.D	Both	Support and participate in a statewide effort to include federal, state, county, and city agencies to provide awareness to key government members, public entities, and private citizens regarding their community’s risk to the Wildland-Urban Interface hazard.
Planning Area		10.E	Exist	Develop a countywide chipper program in which local residents and business owners do their own vegetation management and the community offers free or reduced-cost roadside chipping.



Table 8-2 Mitigation Goals and Potential Actions				
Jurisdiction	Goal Number & Description	Action Number	New or Existing	Action Description
Planning Area		10.F	Both	Implement both applied and emerging vegetation management activities along the destructive wildland interface and intermix hazard areas. Examples of activities include creating fuel breaks to separate housing encroachment from brush fields and mechanically constructing fire breaks within brush fields and forests.
Planning Area and Elko County School District	Goal 11: Reduce the possibility of damage and losses due to a windstorm event.	11.A	Exist	Develop and implement tree-pruning public awareness program to minimize threat to life and damage to property and public infrastructure during windstorm events.
Planning Area		11.B	Both	Adopt more prescriptive rules relative to the construction of overhead lines. (For example new construction requiring underground lines).

### 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	
<b>Implementation of Mitigation Actions</b>	
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.	
<b>Element</b>	
<ul style="list-style-type: none"> <li>■ Does the mitigation strategy include how the actions are prioritized? (For example, is there a discussion of the process and criteria used?)</li> <li>■ 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?)</li> <li>■ Does the prioritization process include an emphasis on the use of a cost-benefit review (see page 3-36 of <i>Multi-Hazard Mitigation Planning Guidance</i>) to maximize benefits?</li> </ul>	
Source: FEMA, March 2008.	

The mitigation actions were finalized during the Planning Committee meeting in July of 2013. 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 8-3: 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	Benefit/cost of action; Contributes to other economic goals; Outside funding required; FEMA Benefit Cost Analysis

	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 Cities 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 Cities 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 Cities 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 8-4: Action Plan Matrix**

Jurisdiction	Action Number	Action Description	Department / Division	Potential Funding Source	Implementation Timeline	Economic Justification	Priority Level
Planning Area	1.A	Integrate elements from the MJHMP into other local planning documents, including general plans, hazard-specific zoning ordinances, and emergency operation plans.	Planning Dept.	Local General Fund, HUD	24-48 Months	Life Safety, Protection of Property due to pre-planning	High
Planning Area	1.B	Update land acquisition/future development criteria to include a hazard analysis component for dam inundation, earthquake faults and wildfire hazard areas(similar to flood zones).	Planning Dept.	Local General Fund, HUD	24-48 Months	Life Safety, Protection of Property due to pre-planning	Moderate
Planning Area	1.C	Review the existing County/City's general/master plans and zoning ordinances to determine how these documents help limit development in hazard areas. Recommend modifications with additional guidelines, regulations, and land use techniques as necessary within the limits of local and state statutes.	Planning Dept.	Local General Fund, HUD, SERC, EMPG, USEPA, NDEP	24-48 Months	Life Safety, Protection of Property due to pre-planning	Moderate
Cities of Carlin, Elko, Wells, and West Wendover	2.A	Enhance the Planning Area's GIS capabilities to include updated hazard and asset figures and developing jurisdictional GIS data sharing agreements that allows all communities within the Planning Area to share/utilize existing and new GIS hazard and asset information. Include public in future.	Building Dept. Planning Dept.	Local General Fund	Ongoing	Life Safety, Protection of Property due to pre-planning	High
Elko County	2.B	Work with the school district to develop a program that teaches children and hazards in the community and what they can do to mitigate, prevent, and prepare for these hazard events (i.e., in order to reduce urban flooding, don't put garbage and/or green waste into stormwater drains).	School District Emergency Management	Local Gen. Fund, EMPG, SERC	Ongoing	Life Safety, Protection of Property	Moderate

Table 8-4: Action Plan Matrix

Jurisdiction	Action Number	Action Description	Department / Division	Potential Funding Source	Implementation Timeline	Economic Justification	Priority Level
Planning Area	2.C	Develop a sustained public outreach program that encourages consistent hazard mitigation content. For example, wildland fire defensible space tips with summer water bills or along highway billboards, and the safe handling and disposal of hazardous waste and chemicals with garbage bills.	Emergency Management Fire Department City Administration	Local Gen. Fund, UNR LIVING W/FIRE, BLM, USFS, NDF	24-36 Months	Life Safety, Protection of Property	High
Elko County	3.A	Coordinate with Bishop Dam to retrofit dam for safety.	County Planning	Local Gen. Fund	12-48 Months	Life Safety, Protection of Property	Low
Elko County	3.B	Rezone the Bishop Dam inundation area as low intensity, nonresidential land uses to avoid placing new high density and/or residential construction in this hazard area.	County Planning	Local Gen. Fund	12-48 Months	Life Safety, Protection of Property	Low
City of Elko	3.C	Update Emergency Action Plan w/inundation maps.	Building Dept. & Emergency Mgmt.	Local Gen. Fund, EMPG	24-36 Months	Life Safety, Protection of Property due to pre-planning	High
City of Elko	3.D	Build park on designated land for 8 mile dam detention basin.	Building Dept. Public Works	Local Gen. Fund, PDM, HMGP, FMA, RFC, USDA, NDEP, NRCS, FEMA 319 (h) grants, USEPA, NDRCS	24-36 Months	Protection of homes, businesses, infrastructure, and critical facilities	Low
Planning Area and Elko County School District	4.A	Implement drought response measures as defined in the Department of Conservation and Natural Resources State of Nevada Drought Plan.	Water Utilities	Local Utility Charge, Local Gen. Fund, , NDEP	Ongoing	Protection of lives, homes, businesses, infrastructure, and critical facilities	Low

**Table 8-4: Action Plan Matrix**

Jurisdiction	Action Number	Action Description	Department / Division	Potential Funding Source	Implementation Timeline	Economic Justification	Priority Level
	4.B	Mandate the use of xeroscaping or desert landscaping for appropriate existing and new County/City facilities and projects.	Building Dept. Planning	Local Utility Charge, Local Gen. Fund, , NDEP	Ongoing	Protection of lives, homes, businesses, infrastructure, and critical facilities	Low
Carlin	4.C	Water storage facilities project for drought and wildfire.	Public Works	Local Utility Charge, Local Gen. Fund, , NDEP, PDM, HMGP, HUD, NDF, USFS, BLM	Ongoing	Protection of lives, homes, businesses, infrastructure, and critical facilities	Moderate
Planning Area	5.A	Adopt and enforce the current International Building Code (IBC) provisions pertaining to grading and construction relative to seismic hazards.	County & City Planning	USACE, PDM, HMGP, Local Gen. Fund	Ongoing	Protection of lives and property due to pre-planning	High
Planning Area and Elko County School District	5.B	Develop a voluntary building inspection program in which homes, businesses, and schools are inspected by a building official for weak or poorly anchored parapets, signs, glass, machinery, shelving, fixtures, and other nonstructural elements or architectural detailing that might cause injury if they were to fall or break during an earthquake. In conjunction with this action, develop a nonstructural retrofitting program to correct identified problems.	Fire Dept., Building Dept.	Local Gen. Fund	Ongoing	Protection of lives, homes, businesses, infrastructure, and critical facilities	Moderate
Planning Area and Elko County School District	5.C	Retrofit any critical assets within strong shaking areas that do not meet the IBC requirements for seismic safety. Priority for retrofitting should be given to emergency response facilities, schools, and shelters. (City of Elko new police station.)	Sherriff, Police, Public Works, School District	PDM, HMGP, Local Gen. Fund, HUD	24-48 Months	Protection of lives, homes, businesses, infrastructure, and critical facilities	Low

**Table 8-4: Action Plan Matrix**

Jurisdiction	Action Number	Action Description	Department / Division	Potential Funding Source	Implementation Timeline	Economic Justification	Priority Level
Planning Area	5.D	Verify the Un-reinforced Masonry (URM) Buildings through inspection.	Fire Dept., Emergency Mgmt. Building Dept, GIS	Local Gen. Fund	24-48 Months	Protection of lives, homes, businesses, infrastructure, and critical facilities	Low
Planning Area and Elko County School District	6.A	Support the Nevada State Health Department and the Nevada Department of Agriculture to increase surveillance and to develop more stringent requirements at high-risk facilities, (i.e., day-care centers, hospitals, nursing homes, schools, restaurants, hotels, resorts, and casinos) to an epidemic outbreak.	Health Dept.	NV Health & Human Services, CDC	6-12 Months	Protection of lives due to pre-planning.	Moderate
Cities of Elko and Wells	7.A	Complete hydrology and hydraulic analysis of storm drain hydraulic system to address minimal flooding in city due to storm drains repeatedly backing up with river water.	Public Works	USGS, USACE, Local General Fund, USEPA, NDEP, USDA	18-24 Months	Protection of lives, homes, businesses, infrastructure, and critical facilities	High
Planning Area	7.B	Carry out minor flood and stormwater management projects that would reduce damage to existing infrastructure and residential buildings due to flooding. These projects include the modifying or replacing existing culverts and bridges, upgrading capacity of storm drains, stabilizing streambanks, clearing streambanks of debris and vegetation, and creating of debris or flood/stormwater retention basins in small watersheds.  City of Elko – Metzler Rd. Project, Elko Sports Complex on the corner of Bullion Rd. & Errecart Blvd.	Public Works	PDM, HMGP, FMA, RFC, USDA, NDEP, USEPA, NRCS, FEMA, 319(h) grants (Clean Water Act), USGS, Local Gen. Fund, USACE	24-48 Months	Protection of lives, homes, businesses, infrastructure, and critical facilities	Moderate

**Table 8-4: Action Plan Matrix**

Jurisdiction	Action Number	Action Description	Department / Division	Potential Funding Source	Implementation Timeline	Economic Justification	Priority Level
Planning Area	7.C	Join the Community Rating System (CRS) to reduce flood insurance costs.	Building Dept. Flood Plain Manager	Local Gen. Funds	12 Months	Protection of lives, homes, businesses, infrastructure, and critical facilities Reduce insurance	High
W. Wendover	7.D	Rebuild Florence St. to enhance storm drain system	Public Works	Local Gen Funds	12 Months	Protection of lives, homes, businesses, infrastructure, and critical facilities	High
Wells	7.E	Complete Boteris storm drain improvements.	Public Works School District	PDM, HMGP, FMA, RFC, USDA, NDEP, USEPA, NRCS, FEMA, 319(h) grants (Clean Water Act), USGS, Local Gen. Fund, USACE	24-48 Months	Protection of lives, homes, businesses, infrastructure, and critical facilities	Moderate
Planning Area and Elko County School District	8.A	Require businesses that use, store, or transport hazardous materials to ensure that adequate measures are taken to protect public health and safety and that these measures are submitted to the Local Emergency Planning Committee (LEPC) for review.	County & City Bldg. Dept., Fire Dept.	Local General Fund, NDEP, USEPA	12-24 Months	Protection of lives, homes, businesses, infrastructure, and critical facilities	Low



**Table 8-4: Action Plan Matrix**

Jurisdiction	Action Number	Action Description	Department / Division	Potential Funding Source	Implementation Timeline	Economic Justification	Priority Level
	8.B	Work with the Union Pacific Railroad and Burlington Northern Santa Fe Railroad to ensure adequate precaution and preparedness regarding rail transport of hazardous materials.	County & City Emergency Management Bldg. Dept., Fire Dept.	Local General Fund, NDEP, USEPA	12-24 Months	Protection of lives, homes, businesses, infrastructure, and critical facilities	Low
Planning Area	8.C	Create a Planning Area webpage that includes information regarding the safe handling and disposal of household chemicals and e-waste and radon testing and venting .	County & City Emergency Management Bldg. Dept., Fire Dept.	Local General Fund, NDEP, USEPA	12-24 Months	Protection of lives, homes, businesses, infrastructure, and critical facilities	High
Planning Area	9.A	Develop a public outreach campaign that informs the public on how to protect their homes from severe (hail and snow) storms and thunderstorms. Example protection measures include: cutting tree branches away from roofs, windows, and power/phone lines, strengthening/securing carports and rooftops to withstand high winds and/or extreme snow load.	Emergency Management	Local General Fund, EMPG	12-24 Months	Protection of lives, homes, businesses, infrastructure, and critical facilities	Low
Planning Area and Elko County School District	9.B	Determine the structural stability of critical facility roofs, carports, and garages to withstand ice and snow loads.	Emergency Management Public Works	Local General Fund, EMPG	12-24 Months	Protection of lives, homes, businesses, infrastructure, and critical facilities	Low
Planning Area	9.C	Become Storm Ready Communities.	Emergency Management	Local General Fund, EMPG	12-24 Months	Protection of lives, homes, businesses, infrastructure, and critical facilities	Moderate

**Table 8-4: Action Plan Matrix**

Jurisdiction	Action Number	Action Description	Department / Division	Potential Funding Source	Implementation Timeline	Economic Justification	Priority Level
Elko County & School District, Cities of Elko & Wells	10.A	Install rock zero scaping or "green belts" utilizing grass seed mixture recommended by fire specialist in order to help maintain defensible space around the built environment.	Public Works	Local General Fund, NDEP, USEPA, NDF, USFS, PDM, HMGP	24-48 Months	Protection of lives, homes, businesses, infrastructure, and critical facilities	High
Elko County	10.B	Implement a roadside vegetation management program that reduces vegetation and maintain roads by keeping all vegetation to a height of no more than four inches for a distance of twenty feet from the edge of the road on both sides of the road.	Public Works	Local General Fund, NDEP, USEPA, NDF, USFS, PDM, HMGP	24-48 Months	Protection of lives, homes, businesses, infrastructure, and critical facilities	Moderate
Planning Area	10.C	Create a public education program that explains fire safe measures in clear and emphatic terms, which will have an impact on residents of the wildland-urban interface. Informed community members will be more inclined to make efforts to effectively reduce wildfire hazards around their homes and neighborhoods.	Fire Dept., Emergency Management	Local General Fund, NDEP, USEPA, NDF, USFS, PDM, HMGP	12-24 Months	Protection of lives, homes, businesses, infrastructure, and critical facilities	High
Planning Area	10.D	Support and participate in a statewide effort to include federal, state, county, and city agencies to provide awareness to key government members, public entities, and private citizens regarding their community's risk to the Wildland-Urban Interface hazard.	Fire Dept., School District, Emergency Management	Local Gen. Fund, UNR LIVING W/FIRE, BLM, USFS, NDF	24-48 Months	Protection of lives, homes, businesses, infrastructure, and critical facilities	High
Planning Area	10.E	Develop a countywide chipper program in which local residents and business owners do their own vegetation management and the community offers free or reduced-cost roadside chipping.	Fire Dept.	Local General Fund, NDEP, USEPA, NDF, USFS, PDM, HMGP	24-48 Months	Protection of lives, homes, businesses, infrastructure, and critical facilities	Moderate

**Table 8-4: Action Plan Matrix**

Jurisdiction	Action Number	Action Description	Department / Division	Potential Funding Source	Implementation Timeline	Economic Justification	Priority Level
Planning Area	10.F	Implement both applied and emerging vegetation management activities along the destructive wildland interface and intermix hazard areas. Examples of activities include creating fuel breaks to separate housing encroachment from brush fields and mechanically constructing fire breaks within brush fields and forests.	Fire Dept.	Local General Fund, NDEP, USEPA, NDF, USFS, PDM, HMGP	24-48 Months	Protection of lives, homes, businesses, infrastructure, and critical facilities	Moderate
Planning Area and Elko County School District	11.A	Develop and implement tree-pruning public awareness program to minimize threat to life and damage to property and public infrastructure during windstorm events.	Public Works	Local General Fund	12-24 Months	Protection of lives, homes, businesses, infrastructure, and critical facilities	Moderate
Planning Area	11.B	Adopt more prescriptive rules relative to the construction of overhead lines. (For example new construction requiring underground lines).	Planning	Local General Fund	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 Grant

FMA=Flood Management Assistance

HMGP = Hazard Mitigation Grant Program

HUD=Housing & Urban Development

NDEP = Nevada Division of Environmental Protection

NDF = Nevada Department of Forestry

NDRCS=Nevada Dept. Resource Conservation Services

PDM = Pre-Disaster Mitigation

RFC=Resource Finance Corporation

SERC = State Emergency Response

Commission USDA = U.S. Department of Agriculture

USEPA = U.S. Environmental Protection Agency

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 Managers 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 Cities' 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 F, 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 Cities' 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 Boards 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.

Element

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

- 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 Cities are 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 Cities' hazards. This could include attendance and provision of materials at sponsored events. Any public comments received regarding the HMP will be collected by the Emergency Managers, included in the annual report to the County and City Managers, and considered during future HMP updates. A press release and public notice by the

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

The following websites or documents were accessed between November 2010 and October 2011.

Elko County 2013. *Master Plans*.

[http://www.elkocountynv.net/departments/planning\\_and\\_zoning/planning/master\\_plans.html](http://www.elkocountynv.net/departments/planning_and_zoning/planning/master_plans.html)

City of Elko 2011. *2011 City of Elko Master Plan*.

[http://www.ci.elko.nv.us/commdev/master\\_plans.htm](http://www.ci.elko.nv.us/commdev/master_plans.htm).

Elko County Emergency Management. 2012 *Elko County Comprehensive Emergency Operations Plan*.

dePolo, C., G. Johnson, J. Price and J Mauldin 2009. *Quaternary Faults in Nevada*.

<http://www.nbmng.unr.edu/dox/of099.pdf>.

Hess R. and C. dePolo 2006. *Loss-Esimation Modeling of Earthquake Scenarios for Each Co. in Nevada Using HAZUS-MH*. <http://www.nbmng.unr.edu/dox/of061/of061.pdf>.

Price J, G. Johnson, C. Ballard, H. Armeno, I. Seeley, L. Goar, C. dePolo, J. Hastings. *Estimated Losses from Earthquakes near Nevada Communities*.

<http://www.nbmng.unr.edu/dox/of098/Scenarios/OpenFileReport09-8.pdf>.

FEMA. 2012. *Preliminary Flood Insurance Study City of Elko & City of West Wendover, Nevada*.

FEMA. 2009. *Flood Insurance Study Elko County, Nevada*.

FEMA. 2002a. 44 CFR Parts 201 and 206, RIN 3067-AD22, Hazard Mitigation Planning and Hazard Mitigation Grant Program, Interim Final Rule. In *Federal Register* 67, No. 38. U.S. Department of Homeland Security, Federal Emergency Management Agency. [http://www.fema.gov/pdf/fima/fr02\\_4321.pdf](http://www.fema.gov/pdf/fima/fr02_4321.pdf).

FEMA. 2002b. *State and Local Plan Interim Criteria Under the Disaster Mitigation Act of 2000 – Final Draft*. U.S. Department of Homeland Security, Federal Emergency Management Agency. [http://www.fema.gov/fima/planning\\_toc4.shtm](http://www.fema.gov/fima/planning_toc4.shtm).

FEMA. 2002c. *How-To Guide #1: Getting Started: Building Support For Mitigation Planning*. U.S. Department of Homeland Security, Federal Emergency Management Agency. FEMA 386-1. [http://www.fema.gov/fima/planning\\_toc5.shtm](http://www.fema.gov/fima/planning_toc5.shtm). September.

FEMA. 2002d. *How-To Guide #7: Integrating Human-Caused Hazards Into Mitigation Planning*. U.S. Department of Homeland Security, Federal Emergency Management Agency. FEMA 386-7.

FEMA. 2002e. 44 CFR Parts 201 and 206, RIN 3067-AD22, Hazard Mitigation Planning and Hazard Mitigation Grant Program, Interim Final Rule. In *Federal Register* 67, no. 190. U.S. Department of Homeland Security, Federal Emergency Management Agency. [http://www.fema.gov/pdf/fima/fr02\\_24998.pdf](http://www.fema.gov/pdf/fima/fr02_24998.pdf).

FEMA. 2003a. *How-To Guide #3: Developing The Mitigation Plan; Identifying Mitigation Actions And Implementing Strategies*. U.S. Department of Homeland Security, Federal Emergency Management Agency. FEMA 386-3.



- FEMA. 2003b. *How-To Guide #4: Bringing the Plan to Life: Implementing the Hazard Mitigation Plan*. U.S. Department of Homeland Security, Federal Emergency Management Agency. FEMA 386-4.
- Nevada Bureau of Mines and Geology. 2000. *Living With Earthquakes: A Nevadan's Guide to Preparing for, Surviving, and Recovering from an Earthquake*. Special Publication.
- Nevada Bureau of Mines and Geology. 2009. *Estimated Losses from Earthquakes near Nevada Communities*. <http://www.nbmng.unr.edu/dox/of098/Scenarios/OF09-8.pdf>
- Nevada Bureau of Mines and Geology. Map. Earthquakes in Nevada 1852-2008  
[www.nbmng.unr.edu/dox/m119.pdf](http://www.nbmng.unr.edu/dox/m119.pdf)
- Nevada Bureau of Mines and Geology, Jon Price. 2011. *Earthquake Hazards in Elko County*.  
[http://www.nbmng.unr.edu/Geohazards/Earthquakes/Presentations/Earthquake\\_Hazards\\_in\\_Elko\\_County\\_26April2011.pdf](http://www.nbmng.unr.edu/Geohazards/Earthquakes/Presentations/Earthquake_Hazards_in_Elko_County_26April2011.pdf)
- Nevada Division of Emergency Management. *State of Nevada Multi-Hazard Mitigation Plan 2010*.
- Resource Concepts, Inc. 2005. *Nevada Community Wildfire Risk/Hazard Assessment Project: Elko County*. <http://www.rci-nv.com/home/rci-reports/>
- State Maintained Highways of Nevada 2011, Nevada Department of Transportation.  
[http://www.nevadadot.com/uploadedFiles/NDOT/About\\_NDOT/NDOT\\_Divisions/Planning/Roadway\\_Systems/2011\\_SMH\\_PUB.pdf](http://www.nevadadot.com/uploadedFiles/NDOT/About_NDOT/NDOT_Divisions/Planning/Roadway_Systems/2011_SMH_PUB.pdf)
- United States Census Bureau. 2010. American Fact Finder Fact Sheet.  
<http://factfinder.census.gov> .
- United State Bureau of Labor Statistics. 2010. Databases, Tables & Calculators by Subject.  
<http://data.bls.gov/cgi-bin/dsrv>
- United States Drought Monitor. 2013. <http://www.drought.unl.edu/dm/monitor.html>
- Western Regional Climate Center. 2005. Historical Climate Information.  
<http://www.wrcc.dri.edu/CLIMATEDATA.html> .

**Appendix A**  
**Adoption Resolution**

Elko County & Cities Adoption Resolutions



**Elko County Board of Commissioners**

540 Court Street, Suite 101 • Elko, Nevada 89801  
775-738-5398 Phone • 775-753-8535 Fax

Commissioners

Demar Dahl  
A. Grant Gerber  
Glen G. Guttry  
Charlie L. Myers  
R. Jeff Williams

Elko County Manager

Robert K. Stokes

Executive Assistant

Michele Petty

Receptionist/Clerical

Sara Benoit

**Resolution # 12-2014**

**Elko County Multi-Jurisdictional Hazard Mitigation Plan 2013**

**WHEREAS**, Elko County has historically experienced severe damage from natural and human-caused hazards such as flooding, wildfire, drought, thunderstorms/high winds, 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 update of the Elko County Hazard Mitigation Plan (the Plan) has been developed after more than one year of research and work by the Elko 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 updated Plan specifically addresses hazard mitigation strategies and plan maintenance procedures for Elko County; and

**WHEREAS**, the Plan recommends several hazard mitigation actions/projects that will provide mitigation for specific natural and human caused hazards that impact Elko 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 Elko County Board of Commissioners that:

1. The updated Plan is hereby adopted as an official plan of Elko 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.
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 Elko County Board of Commissioners by October 31<sup>st</sup> of each calendar year.

**PROPOSED** by Commissioner Demar Dahl. **SECONDED** by Commissioner Grant Gerber.

**PASSED and ADOPTED this 18<sup>th</sup> day of June, 2014.**

**VOTE:** AYES - Myers, Dahl and Gerber

NAYS - 0

ABSENT - Guttry and Williams

ATTEST:

CAROL FOSMO, ELKO COUNTY CLERK

CHARLIE MYERS, CHAIR  
BOARD OF COUNTY COMMISSIONERS  
ELKO COUNTY NEVADA

www.elkocountynv.net

**RESOLUTION NO. 2015-01**

**A RESOLUTION TO ADOPT THE ELKO COUNTY MULTI-JURISDICTIONAL  
HAZARD MITIGATION PLAN 2013**

Page 1 of 2

**WHEREAS**, the City of Carlin has historically experienced severe damage from natural and human-caused hazards such as flooding, wildfire, drought, thunderstorms/high winds, 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;

**WHEREAS**, the City of Carlin's 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 LEPC the (Local Emergency Planning Commission) and in association and cooperation with the City of Carlin for the reduction of hazard risk to the community;

**WHEREAS**, the Plan specifically addresses hazard mitigation strategies and plan maintenance procedures for the City of Carlin;

**WHEREAS**, the Plan recommends several hazard mitigation actions/projects that will provide mitigation for specific natural and human caused hazards that impact the City of Carlin 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, THE CITY COUNCIL OF THE CITY OF CARLIN DOES RESOLVE:**


1. The Plan is hereby Adopted as an official plan of City of Carlin
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 June 30<sup>th</sup> of each calendar year.

**Appendix A**  
**Adoption Resolution**

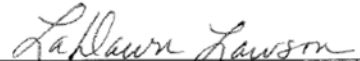
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ADOPTED, SIGNED AND APPROVED THIS 9th DAY OF July, 2014.

CITY OF CARLIN

By:   
CLIFF EKLUND, Mayor  
Carlin, Nevada

ATTEST:

  
LADAWN LAWSON, CITY CLERK  
Carlin, Nevada

Page 2 of 2

CITY OF CARLIN  
Resolution No. 2015-01

The foregoing resolution was introduced in written form and the title was read aloud on July 9, 2014, at which time the Motion to Approve was made by Councilperson Lincoln Litchfield, seconded by Vice Mayor Donnetta Skinner, and approved by the following vote:

AYES:	<u>Mayor Cliff Eklund</u>
	<u>Vice Mayor Donnetta Skinner</u>
	<u>Councilperson Lincoln Litchfield</u>
	<u> </u>
NAYS:	<u>None</u>
	<u> </u>
ABSTAIN:	<u>None</u>
ABSENT:	<u>Councilperson Bob DeMars</u>
	<u>Councilperson Jay Duke</u>

Upon introduction and motion by Councilman Reece Keener and seconded by Councilman Robert Schmidlein, the following Resolution and Order was passed and adopted:

**CITY OF ELKO**  
**Resolution #24-14**

**WHEREAS**, the City of Elko has historically experienced severe damage from natural and human-caused hazards such as flooding, wildfire, drought, thunderstorms/high winds, 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;

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

**WHEREAS**, the Plan specifically addresses hazard mitigation strategies and plan maintenance procedures for the City of Elko;

**WHEREAS**, the Plan recommends several hazard mitigation actions/projects that will provide mitigation for specific natural and human caused hazards that impact City of Elko 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 of Elko, that:

1. The Plan is hereby Adopted as an official plan of the City of Elko.
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, Elko City Council by October 31<sup>st</sup> of each calendar year.

**IT IS FURTHER RESOLVED** that this Resolution shall be effective and shall be in force immediately upon adoption, and that upon adoption of this Resolution by the Elko City Council it shall be signed by the Mayor, attested to by the City Clerk.

**Appendix A**  
**Adoption Resolution**

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**VOTE:**

**AYES:** Councilwoman Mandy Simons, Councilmen: Reece Keener, Robert Schmidlein

**NAYS:** None

**ABSENT:** Mayor Chris Johnson, Councilman John Rice

**ABSTAIN:** None

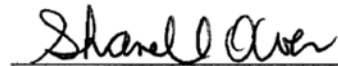
**PASSED AND ADOPTED** this 24<sup>th</sup> day of June, 2014.

**CITY OF ELKO**

By: 

**CHRIS JOHNSON**, Mayor

**ATTEST:**



**SHANELL OWEN**, City Clerk



Upon introduction and motion by Councilman \_\_\_\_\_ Terry Madison \_\_\_\_\_,  
a second by Councilman \_\_\_\_\_ Layla Walz \_\_\_\_\_, the following resolution was duly  
passed and adopted:

**CITY OF WELLS**  
**RESOLUTION 14 – 10**

**RESOLUTION ADOPTING HAZARD MITIGATION PLAN AND MATTER  
PROPERLY RELATING THERETO**

**WHEREAS,** the City of Wells has historically experienced severe damage from natural and human-caused hazards such as earthquakes, flooding, wildfire, drought, thunderstorms/high winds, 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;

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

**WHEREAS,** the Plan specifically addresses hazard mitigation strategies and plan maintenance procedures for the City of Wells;

**WHEREAS,** the Plan recommends several hazard mitigation actions/projects that will provide mitigation for specific natural and human caused hazards that impact the City of Wells 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 BOARD OF COUNCILMEN  
OF THE CITY OF WELLS THAT:**

1. The Plan is hereby adopted as an official plan of the City of Wells.
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.



**Appendix A**  
**Adoption Resolution**

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4. An annual report on the progress of the implementation elements of the Plan shall be presented to the Elko County Commission by October 31<sup>st</sup> of each calendar year.

**PASSED, APPROVED AND SIGNED** this   8th   day of   July  , 2014.

**CITY OF WELLS**

By: Gretchen Hubert  
**GRETCHEN HUBERT**, Vice Mayor

ATTEST:

Jolene M. Supp  
**JOLENE M. SUPP**, Acting City Clerk

**VOTE: AYES:**

Rayla Wazy  
Burns  
Stark

**NAYS:**   none  

**ABSENT:**   Kenny W. Huff

**CITY OF WEST WENDOVER RESOLUTION NO. 2014-09**

**A RESOLUTION ADOPTING THE ELKO COUNTY MULTI-  
JURISDICTIONAL HAZARD MITIGATION PLAN**

WHEREAS Elko County has historically experienced severe damage from natural and human-caused hazards such as flooding, wildfire, drought, thunderstorms/high winds, 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;

WHEREAS the Elko County Multi-Jurisdictional 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;

WHEREAS the Plan specifically addresses hazard mitigation strategies and plan maintenance procedures for Elko County governmental entities, including the City of West Wendover;

WHEREAS the Plan recommends several hazard mitigation actions/projects that will provide mitigation for specific natural and human caused hazards that impact governmental entities within Elko County, 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 the City of West Wendover that:

1. The Plan is hereby Adopted as an official plan of City of West Wendover
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.

**Appendix A**  
**Adoption Resolution**

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4. An annual report on the progress of the implementation elements of the Plan shall be presented to the, Council by October 31<sup>st</sup> of each calendar year.

PASSED by *the* City Council, *this* 17 day of June, 2014.

**CITY OF WEST WENDOVER**

By: Emily Carter  
EMILY CARTER, Mayor

**ATTEST:**

  
ANNA E. BARTLOME, City Clerk

<b>City of</b>	<b>Adoption Resolution</b>
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**Appendix B**  
**Public Information**

## Public Request for Information

Welcome to Elko County, NV

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### Quick Links

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fictitious business,  
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#### Visitors Info...

about the county, maps,  
events and attractions,  
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### News & Project Updates:

Looking for Citizen Input  
on the Elko County Hazard Mitigation Plan - [Click Here](#)

## Press Release

Welcome to Elko County, NV

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Roundabout  
Veterans Day Parade

### Elko County Hazard Mitigation Plan

The Elko County Hazard Mitigation Planning Committee is in the process of updating the Elko County Hazard Mitigation Plan. The committee is looking for concerns and issues the citizens of Elko County may have in order to possibly address those issues in this update of our current plan. Along with the Citizen's Survey below, is a copy of the press release explaining the plan and its update.

Thanks for your participation!

[Elko County Citizen's Survey](#)

[Hazard Mitigation Plan Update Press Release](#)



## ELKO COUNTY EMERGENCY MANAGEMENT PRESS RELEASE

ELKO COUNTY - April 29, 2013

In recent years nature has been restless in Nevada; there has been a swarm of earthquakes rattling the State including in Elko County and the ravishing wildland fires surrounding the Elko as well as throughout the State. All of these emergency events have demonstrated to us all that Elko County can be vulnerable to disasters, including earthquakes, floods, and wildland



fires. The risks posed by these hazards will continue to increase as the County's population continues to grow.

Elko County and Nevada have launched a planning effort, known as the *Update of the Hazard Mitigation Plan*, to assess risks posed by natural disasters and identify ways to reduce those risks. This plan is required under the Federal Disaster Mitigation Act of 2000 as a pre-requisite for receiving certain forms of Federal disaster assistance.

Elko County began this planning process in January of 2013 and is requesting input through a questionnaire available at **[www.elkocountynv.net](http://www.elkocountynv.net)** for public input. The County anticipates submittal of the draft plan to the Board of County Commissioners for adoption at the end of 2013.

Public comments and participation is welcomed. For additional information, request to participate, or to submit comments, please contact Annette Kerr, Elko County Sheriff at (775) 777-2517 or [akerr@elkocountynv.net](mailto:akerr@elkocountynv.net).

-End-

## Questionnaire

ELKO COUNTY HAZARD MITIGATION QUESTIONNAIRE																																									
<p>This questionnaire is designed to help the 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. <b>Questions call (775) 340-3704.</b></p>																																									
GENERAL HOUSEHOLD INFORMATION																																									
<p>1. RESIDENT (Y/N)? _____ # YEARS IN County or City? 0-1 _____ 2-5 _____ 6-10 _____ 11 or more _____</p> <p>City Elko _____ Carlin _____ Wells _____ W Wendover _____ or County _____</p>																																									
<p>2. Have you experienced any of the natural hazards listed below?</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr style="background-color: #d3d3d3;"> <th colspan="3" style="text-align: center; padding: 5px;">Natural</th> <th colspan="3" style="text-align: center; padding: 5px;">Human Caused</th> </tr> </thead> <tbody> <tr> <td style="width: 15%;"></td> <td style="width: 35%;">Floods</td> <td style="width: 15%;"></td> <td style="width: 35%;">Avalanche</td> <td style="width: 15%;"></td> <td style="width: 35%;">Hazardous Materials Release</td> </tr> <tr> <td></td> <td>Wild Fire</td> <td></td> <td>Health Alert/Mass Disease</td> <td></td> <td></td> </tr> <tr> <td></td> <td>Earthquake</td> <td></td> <td>Severe Windstorm</td> <td></td> <td></td> </tr> <tr> <td></td> <td>Severe Weather</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td>Drought</td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>						Natural			Human Caused				Floods		Avalanche		Hazardous Materials Release		Wild Fire		Health Alert/Mass Disease				Earthquake		Severe Windstorm				Severe Weather						Drought				
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	Severe Weather																																								
	Drought																																								
<p>3. What is the most effective way for you to receive information about how to make your home safer from natural disasters? <b>(Check all that apply)</b></p> <p> <input type="checkbox"/> Newspaper      <input type="checkbox"/> Internet      <input type="checkbox"/> Radio      <input type="checkbox"/> Public Meetings  <input type="checkbox"/> Television      <input type="checkbox"/> Utility Bill      <input type="checkbox"/> Mail      <input type="checkbox"/> Billboard         </p>																																									
<p>4. In the following list, please check those activities that apply.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr style="background-color: #d3d3d3;"> <th style="width: 85%; text-align: center; padding: 5px;">Have you or someone in your household:</th> <th style="width: 15%; text-align: center; padding: 5px;">Check all that apply</th> </tr> </thead> <tbody> <tr> <td style="padding: 5px;">Attended meetings or received written information on natural disasters or emergency preparedness?</td> <td style="width: 15%;"></td> </tr> <tr> <td style="padding: 5px;">Talked with family members about what to do in case of a disaster or emergency?</td> <td></td> </tr> <tr> <td style="padding: 5px;">Developed a "Household/Family Emergency Plan" in order to decide what everyone would do in the event of a disaster?</td> <td></td> </tr> </tbody> </table>						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?																													
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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?																																									

## Appendix B Public Information

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 foundations
Flood proof	Elevate home
Other _____	

ELKO 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 <b>1 to 5</b> with 5 being the most prepared. _____	

9. Other Comments:

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## **Appendix C**

### **Figures**

Figure C-1 Location Map

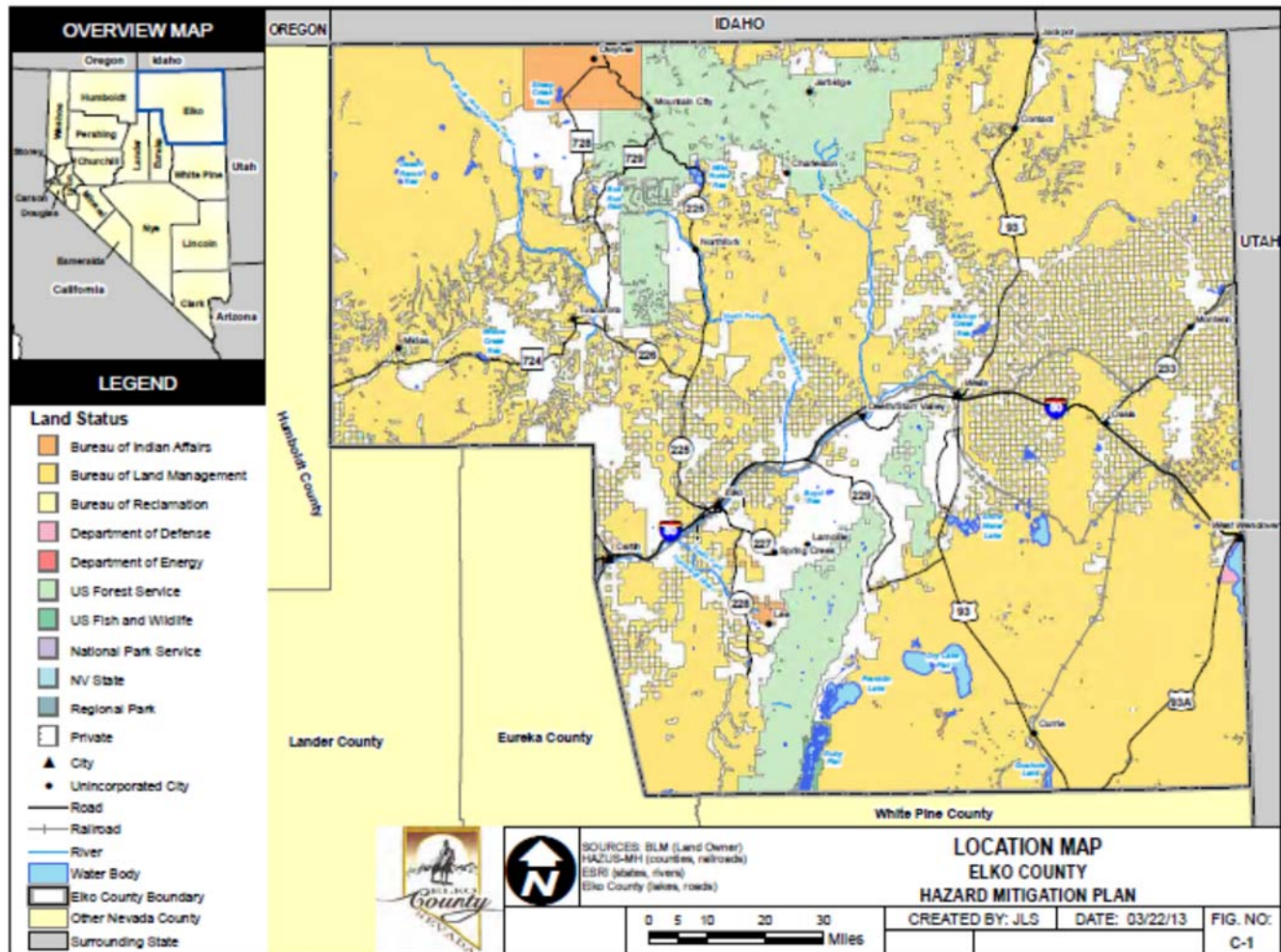


Figure C-2 Land Use

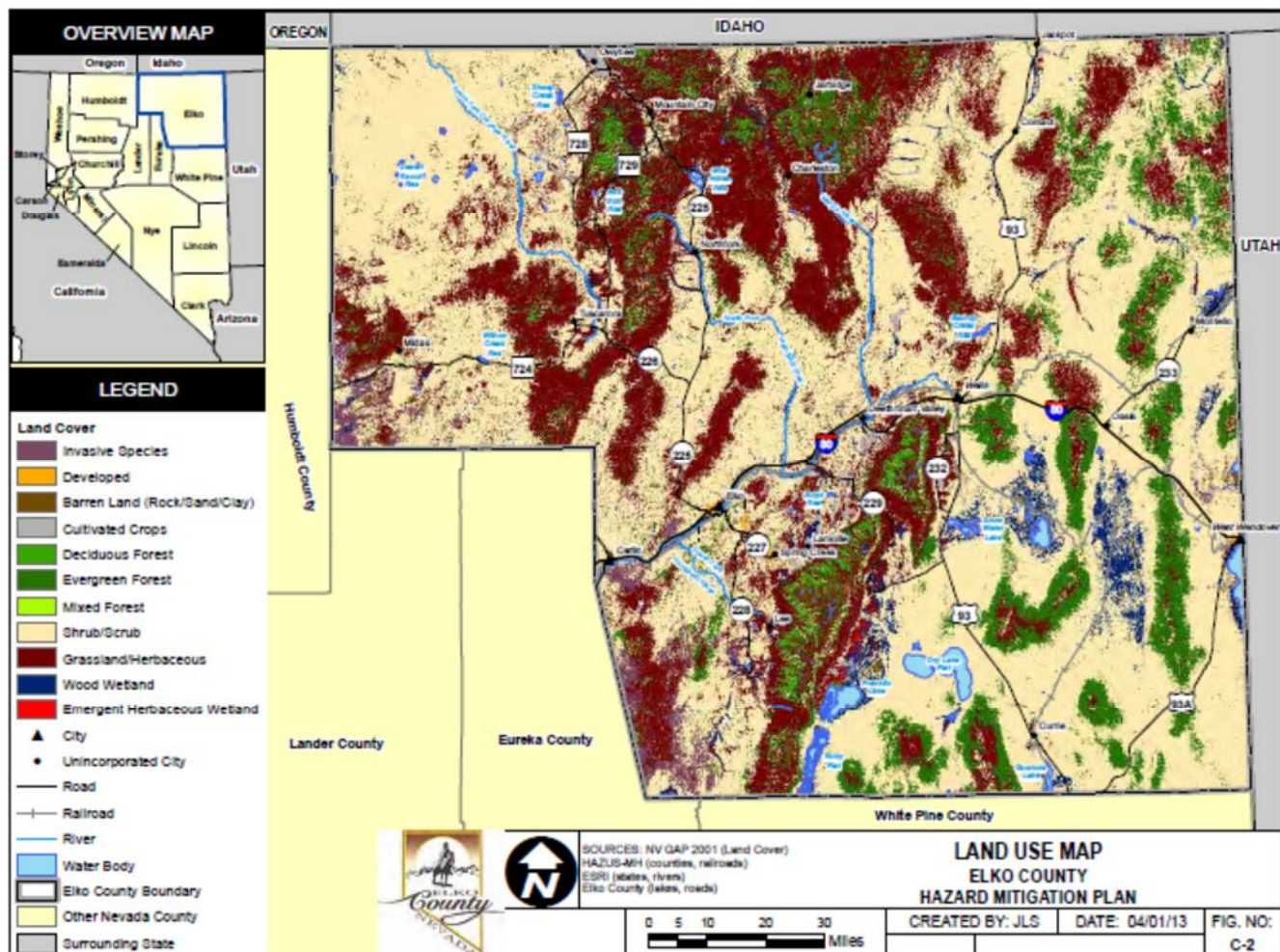
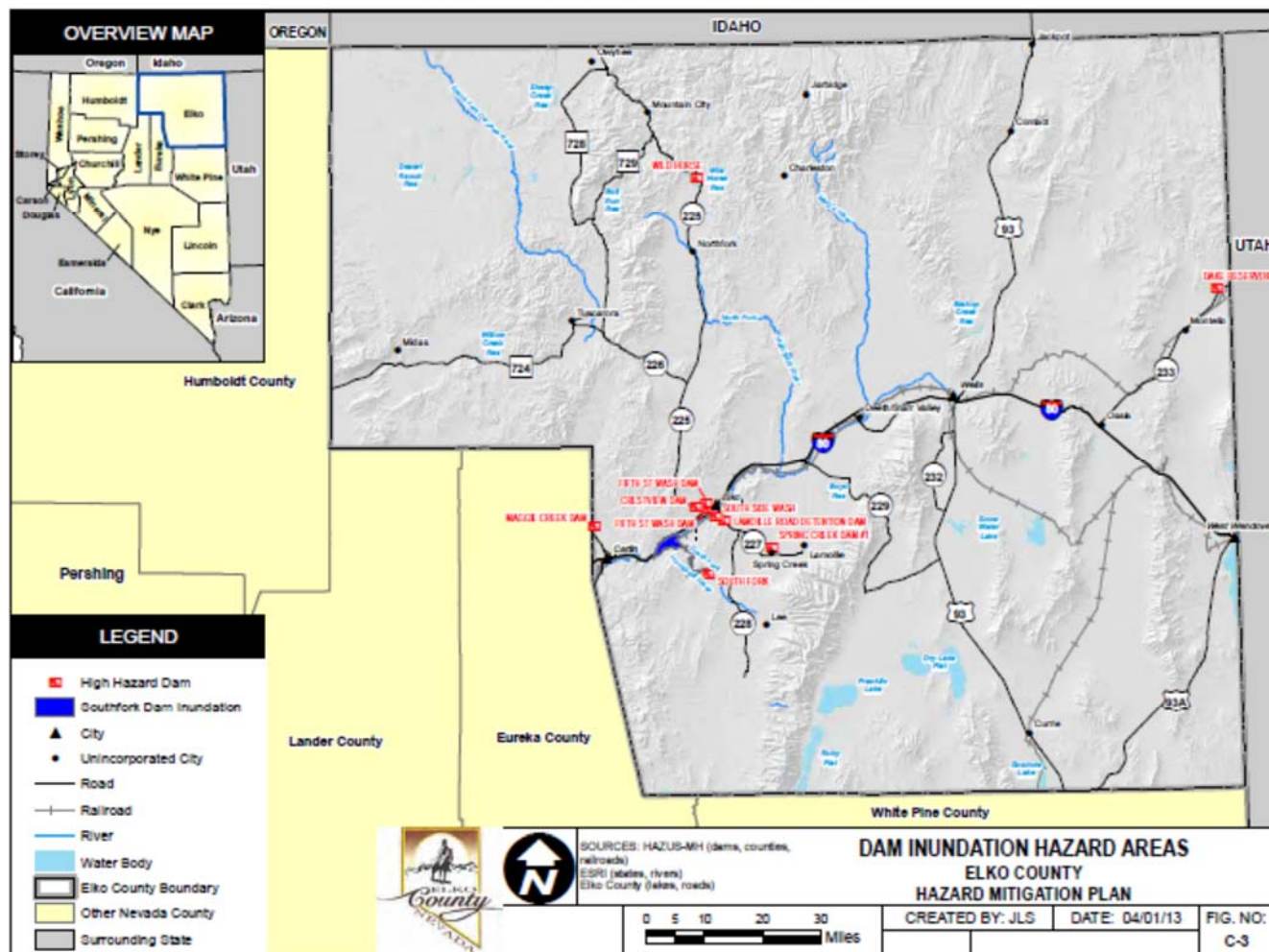




Figure C-3 Dam Inundation Hazard Area



**Figure C-4 Earthquake Hazard Area**

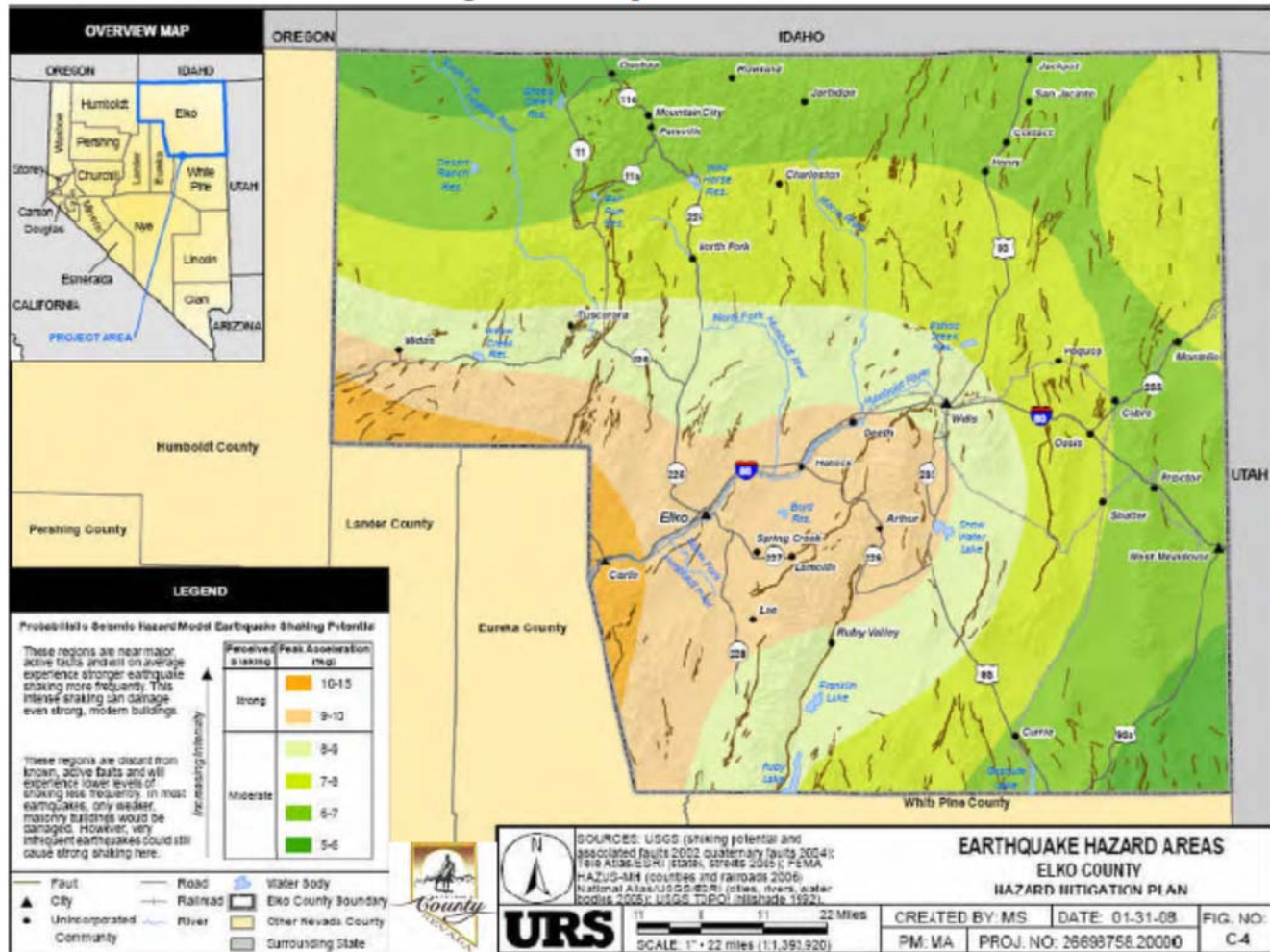


Figure C-5 Flood Hazard Area

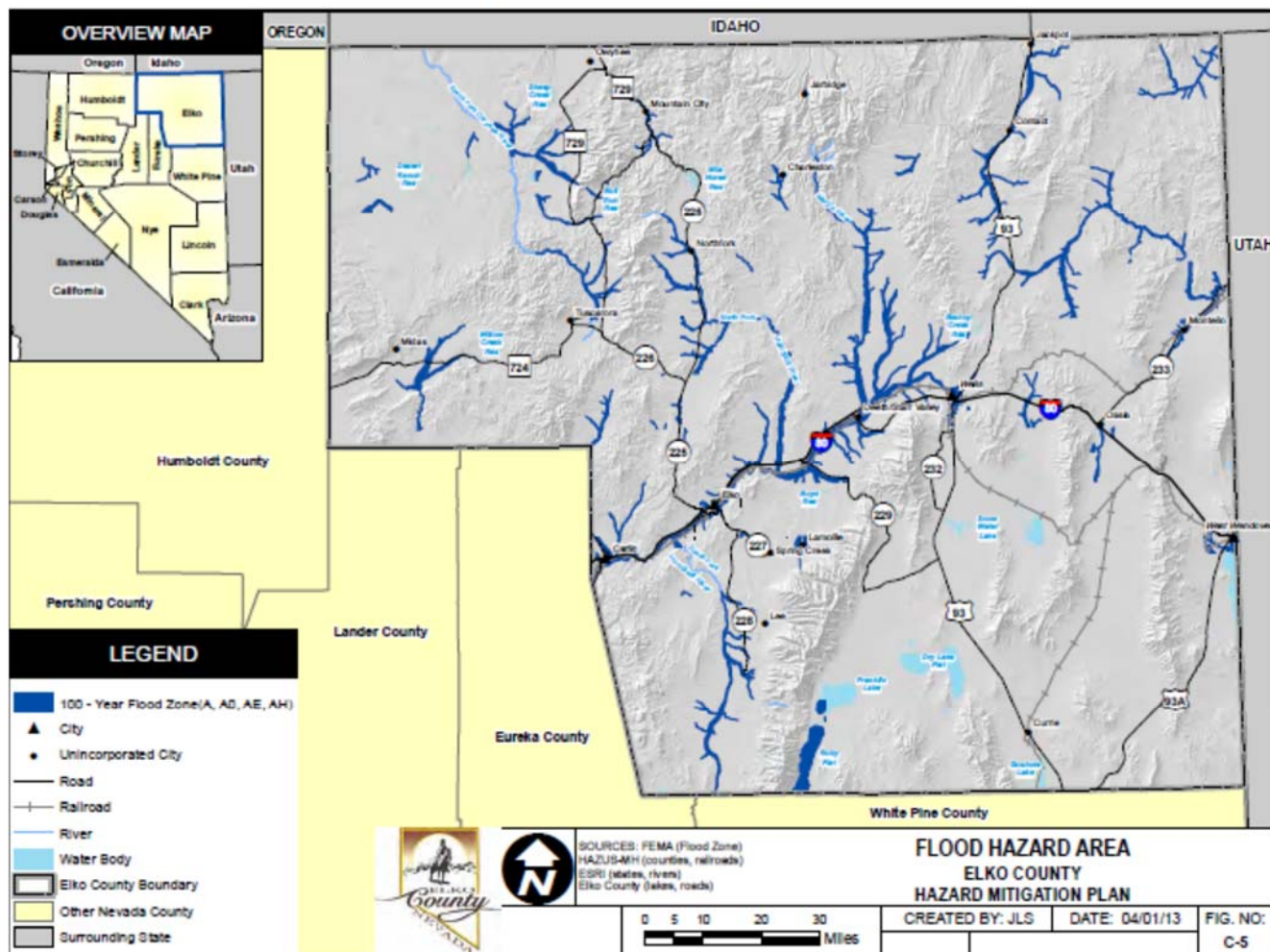




Figure C-6 Hazardous Material Hazard Area

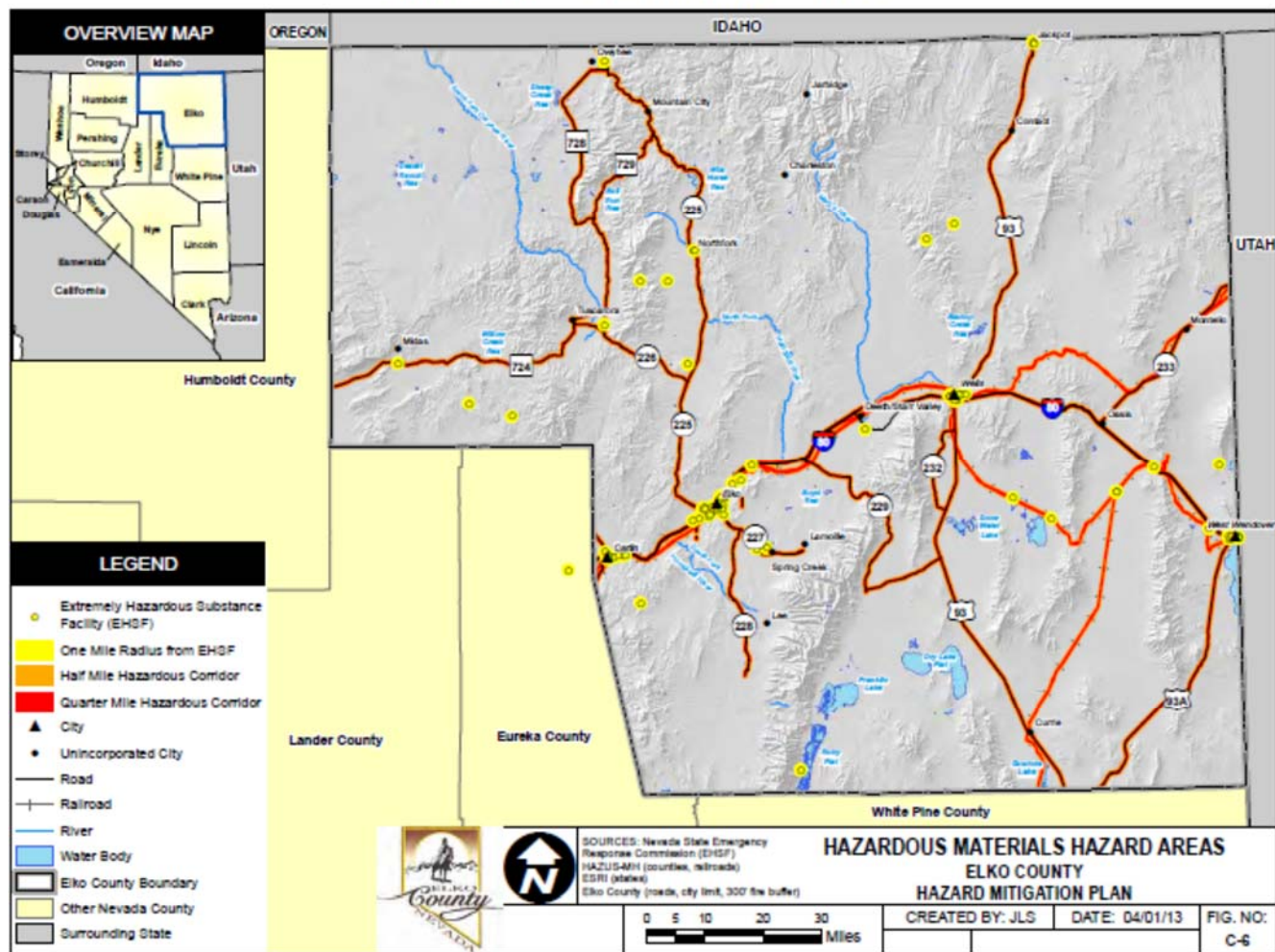


Figure C-7 Snow/Freezing Rain Hazard Area

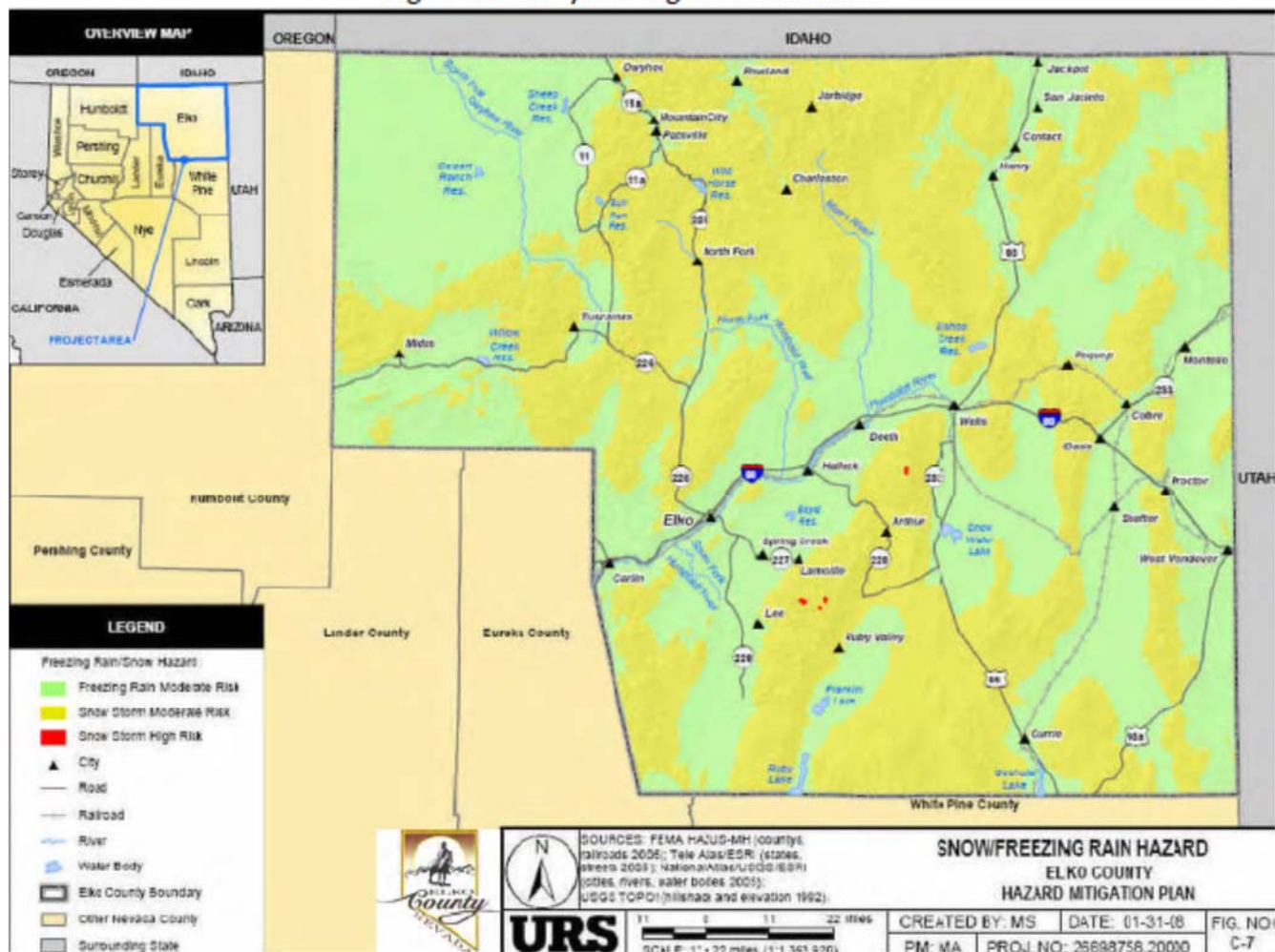


Figure C-8 Wildfire Hazard Area

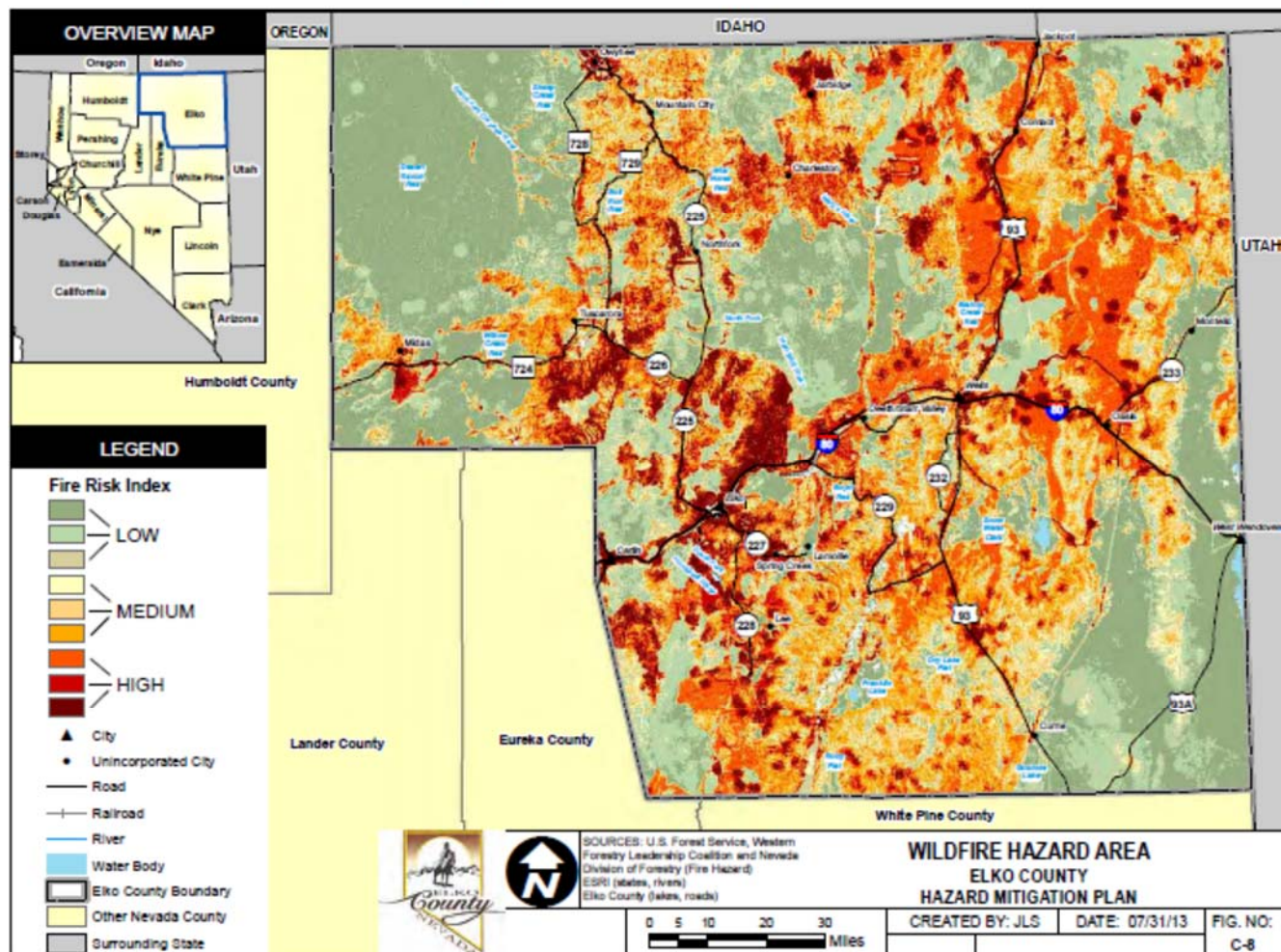




Figure C-9 Reported Damaging Wind Gust (1950-2005)

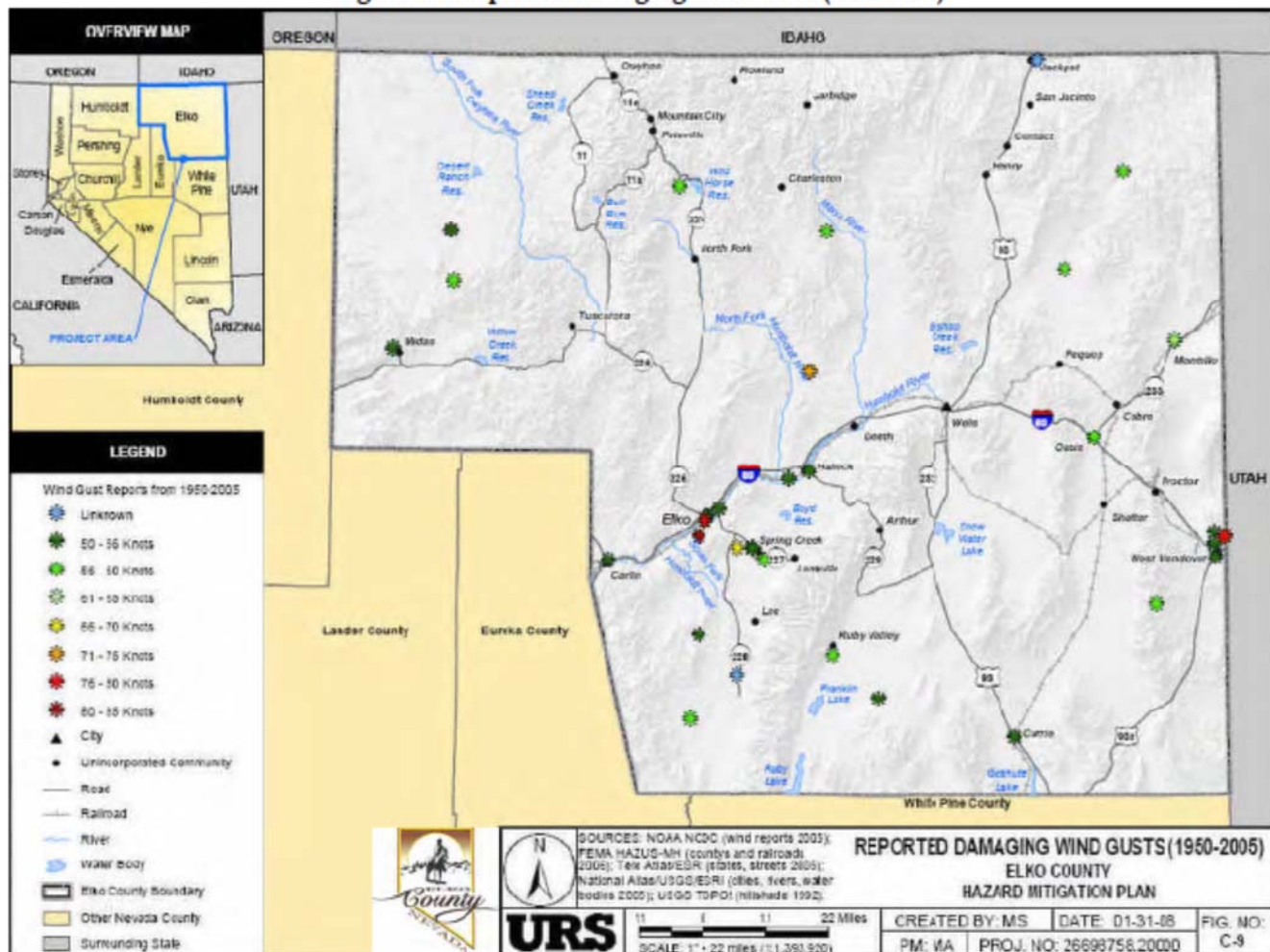


Figure C-10 Elko County Critical Facilities

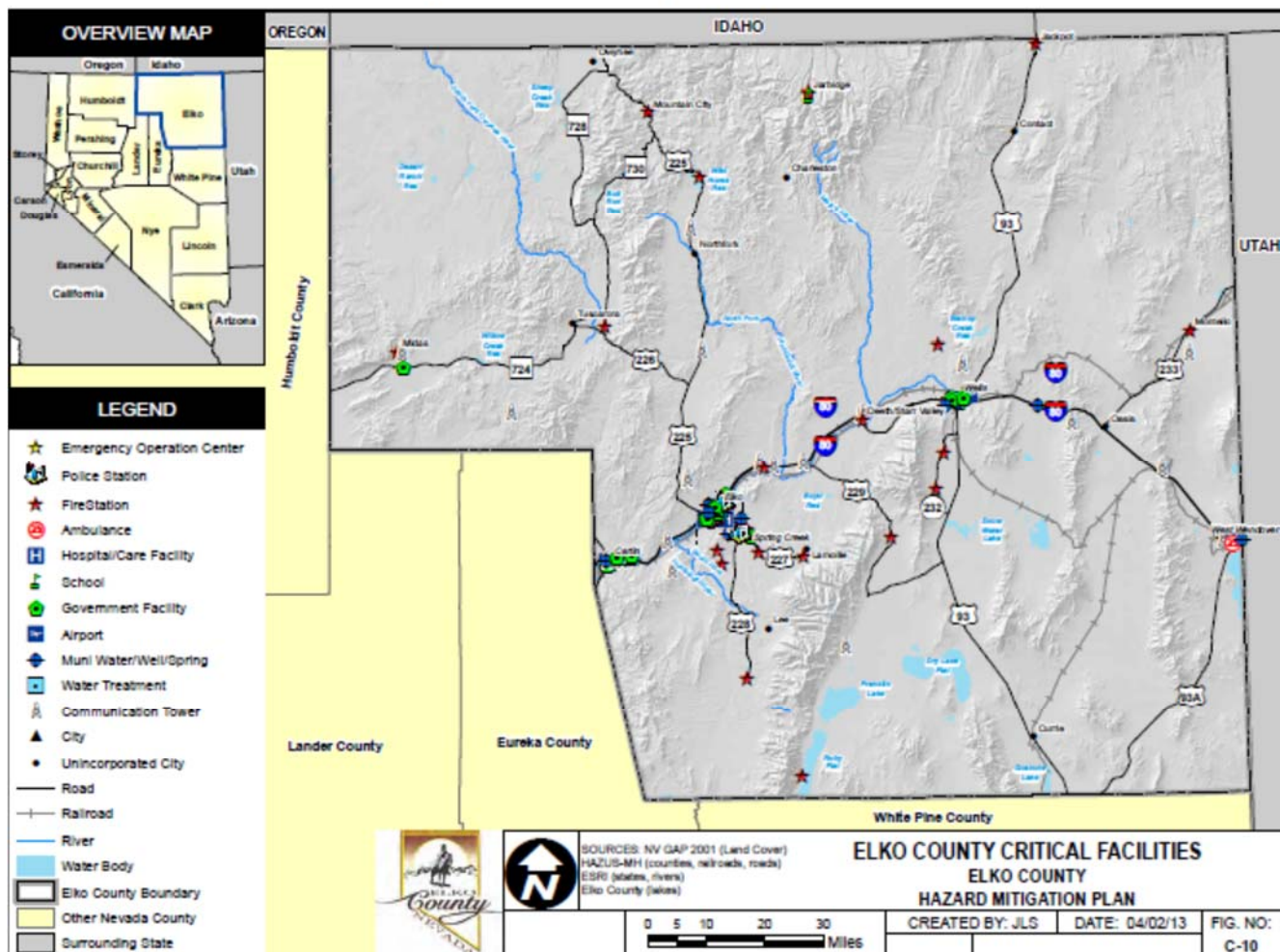




Figure C-11 City of Carlin Fire Hazard

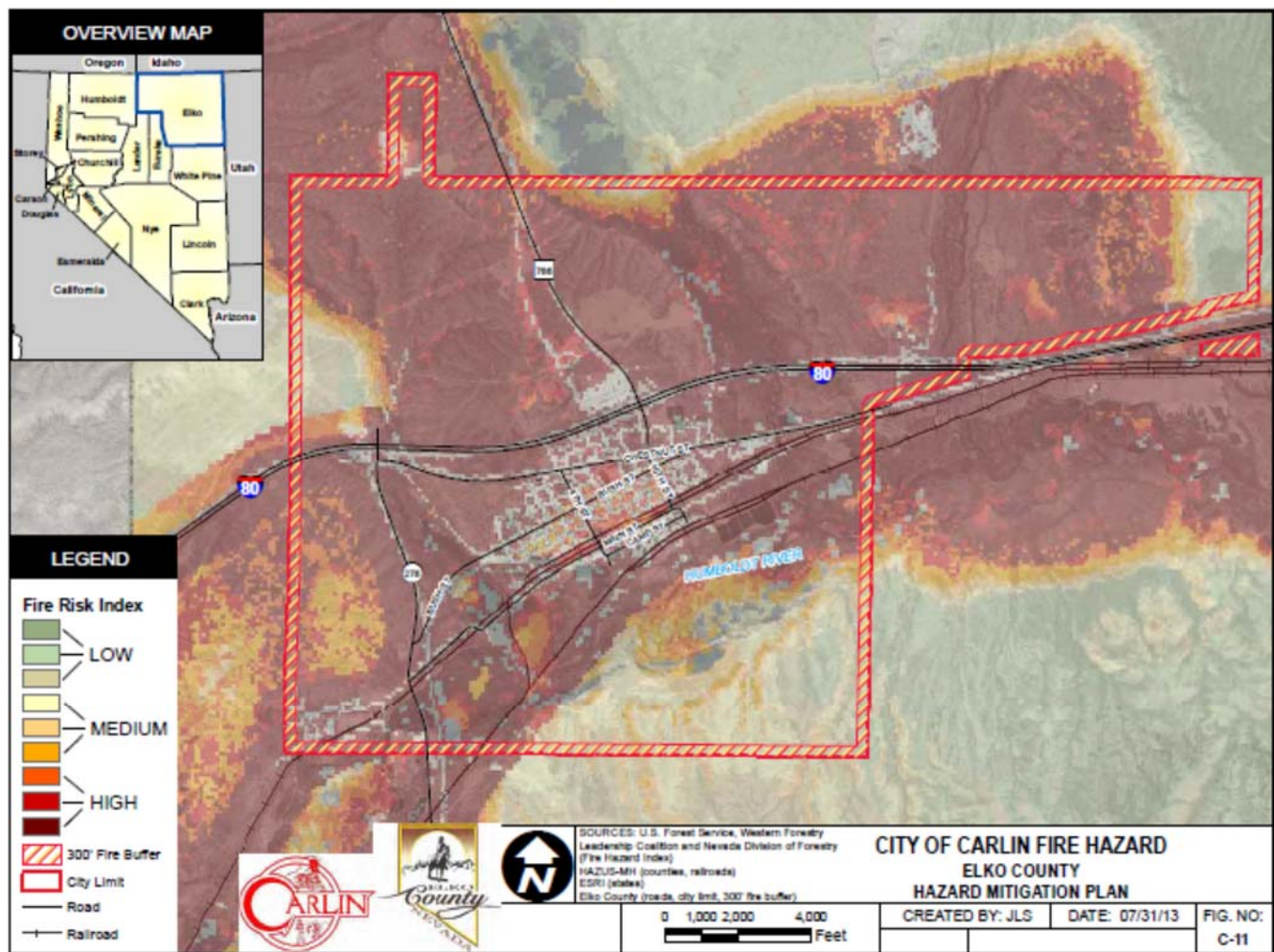


Figure C-12 City of Elko Fire Hazard

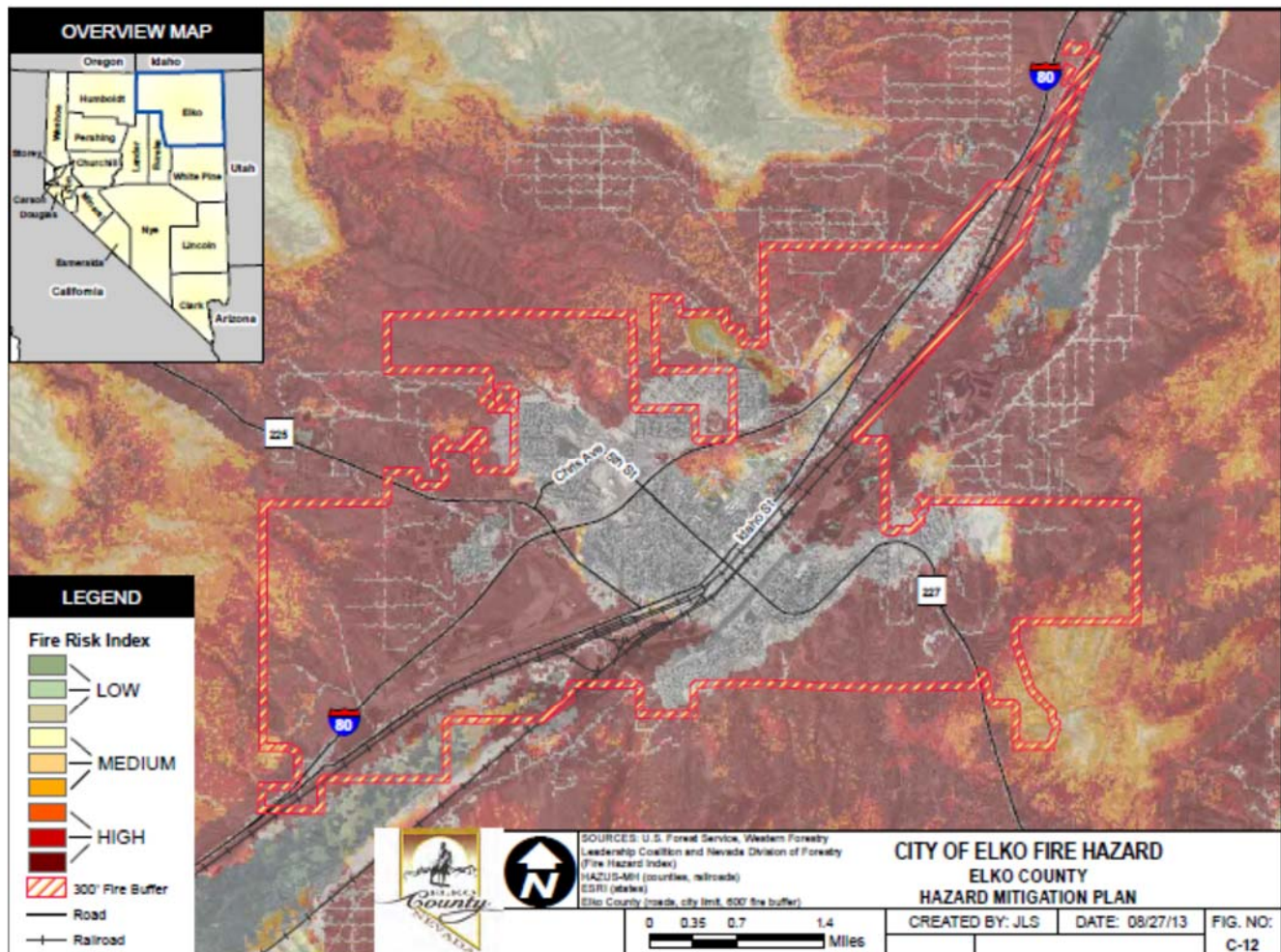




Figure C-13 Spring Creek Fire Hazard

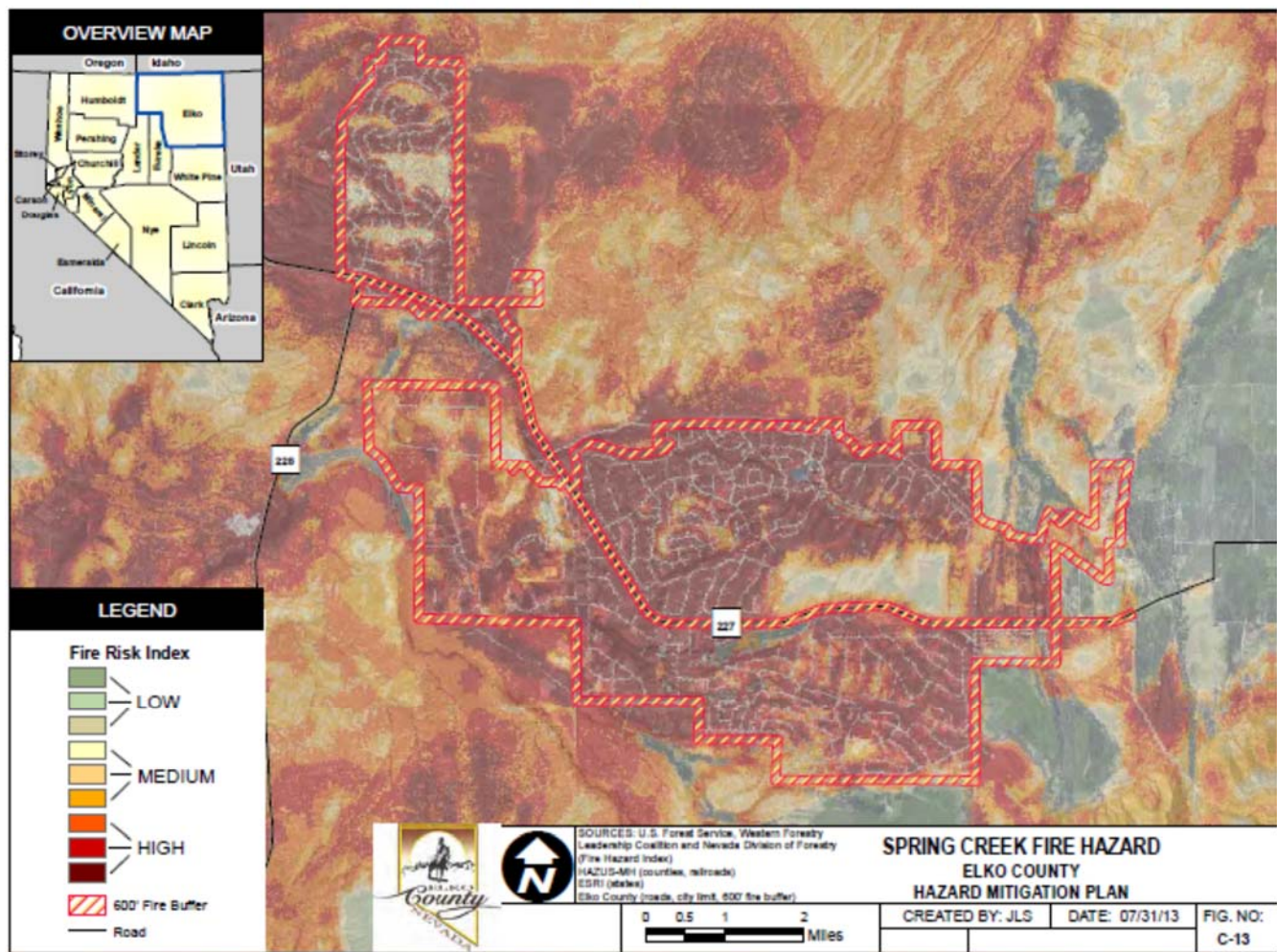


Figure C-14 City of Wells Fire Hazard

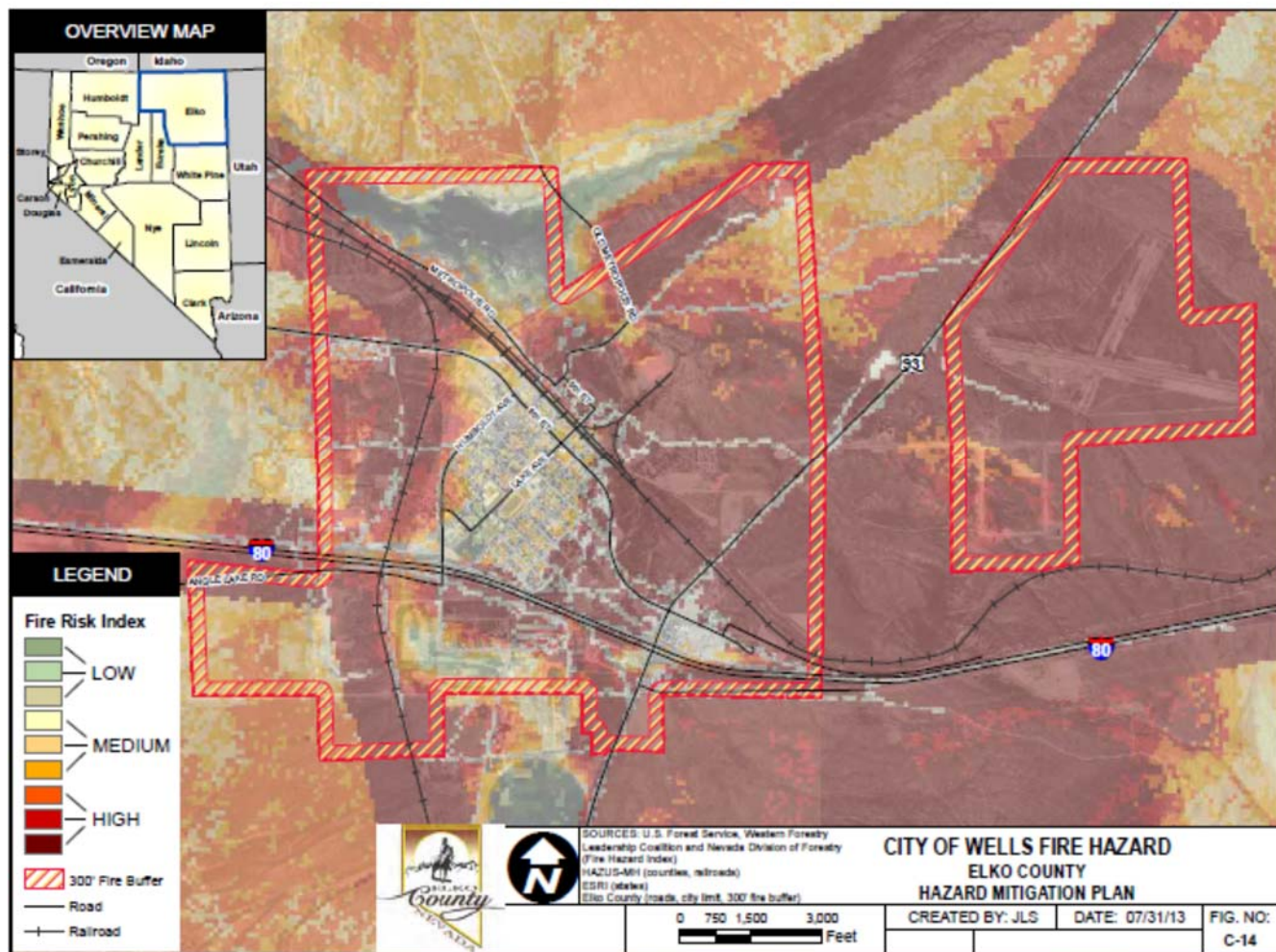




Figure C-15 City of West Wendover Fire Hazard

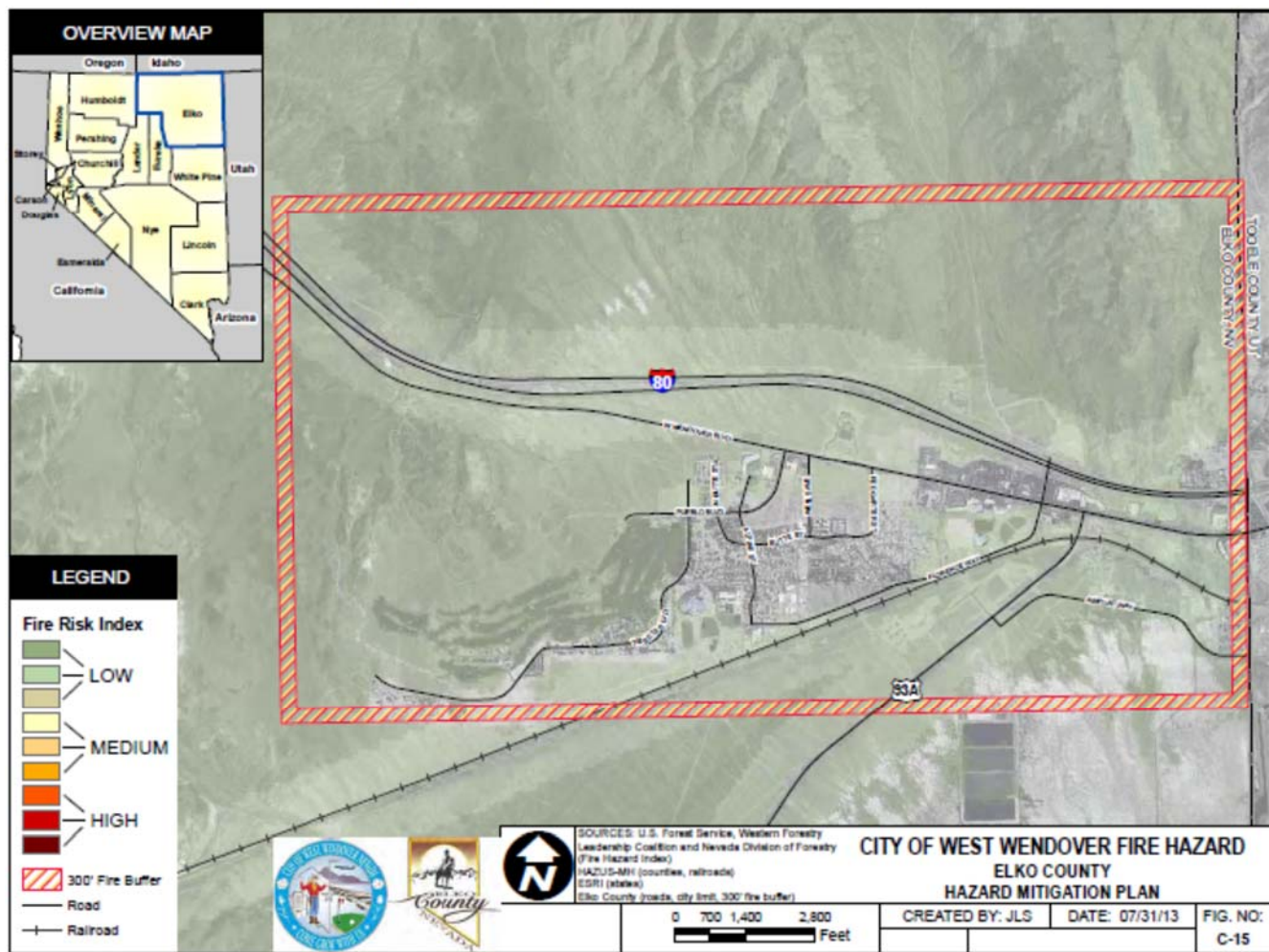


Figure C-16 City of Carlin Flood Hazard

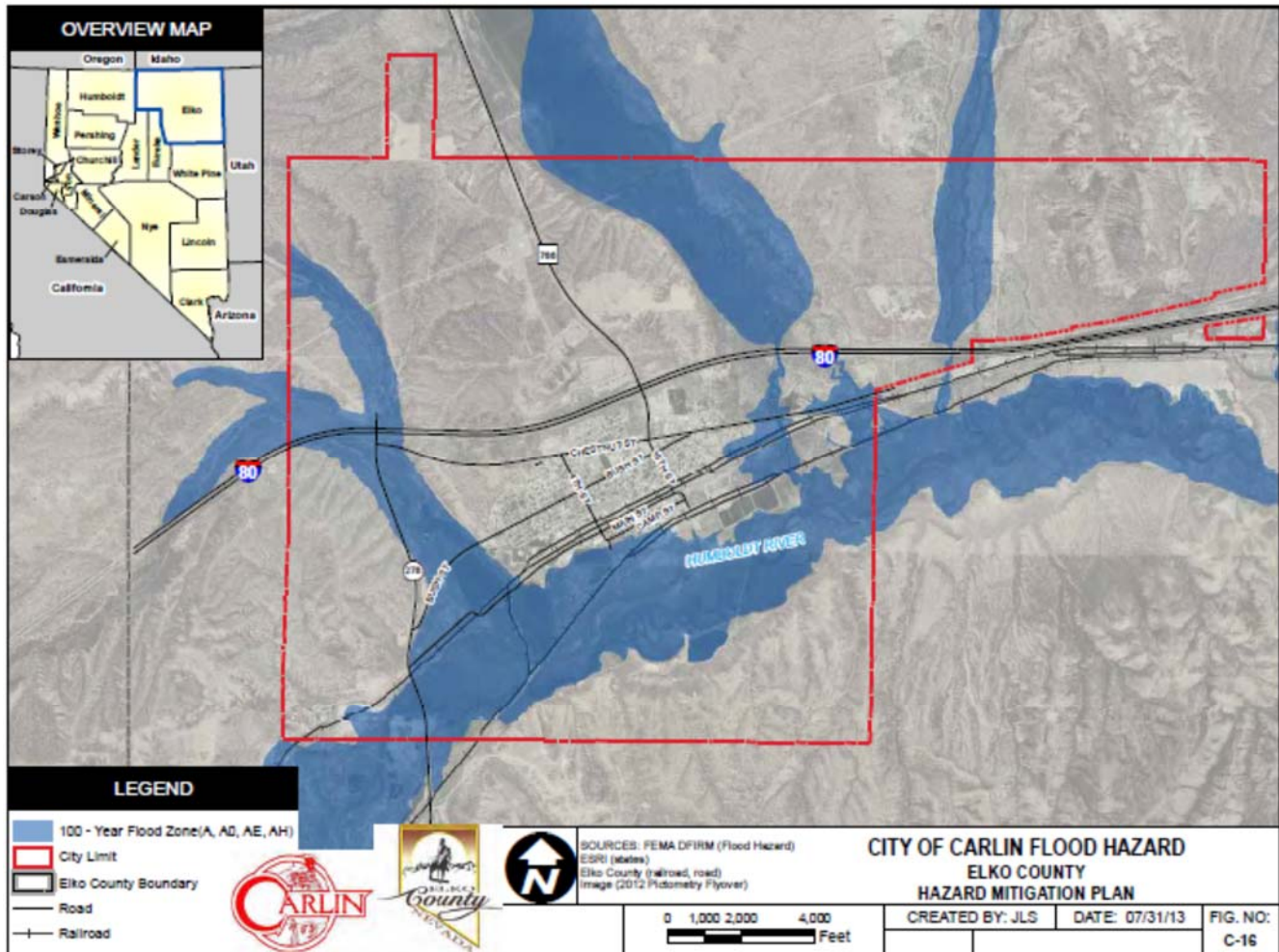




Figure C-17 City of Elko Flood Hazard

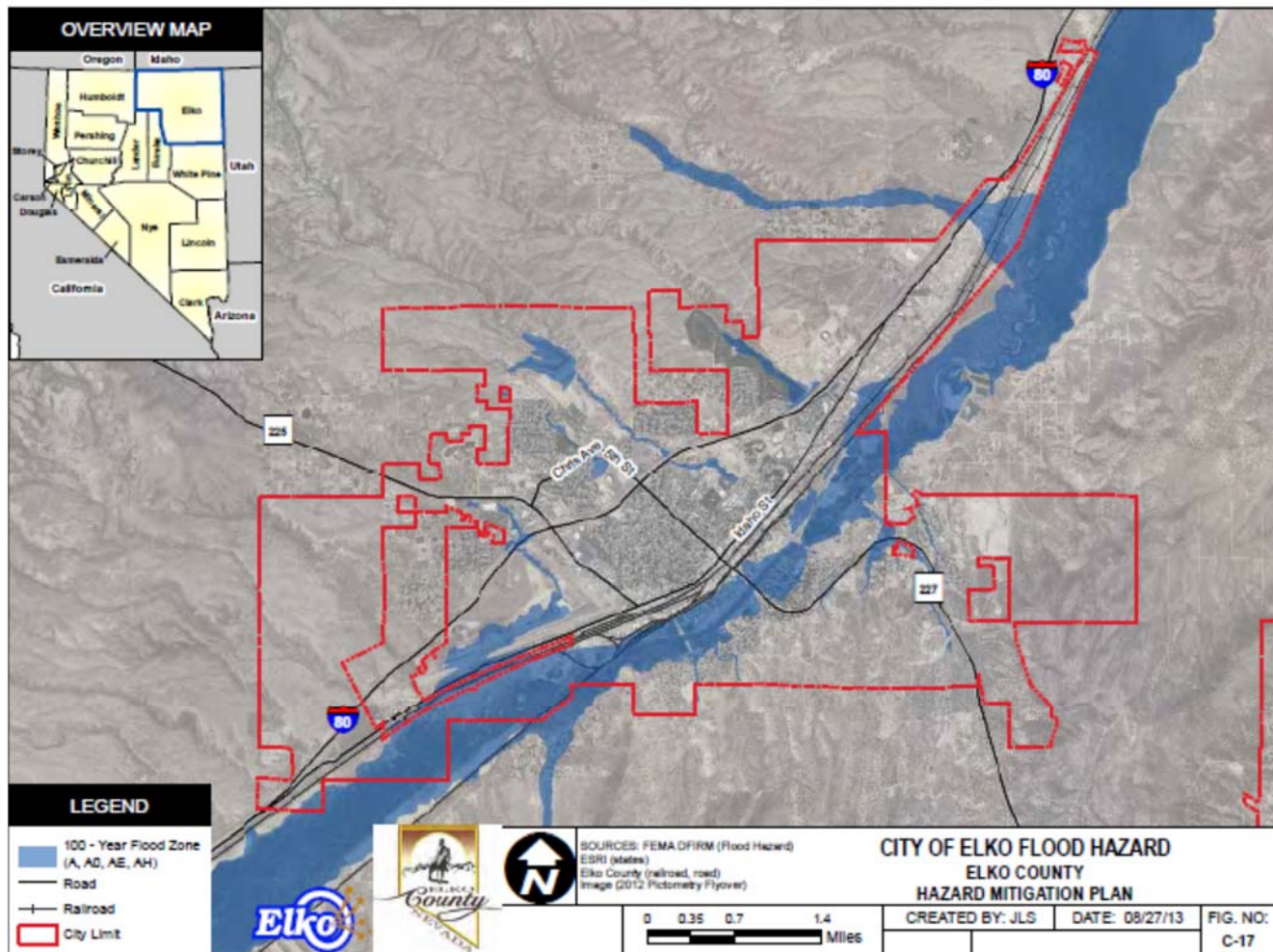


Figure C-18 City of Wells Flood Hazard

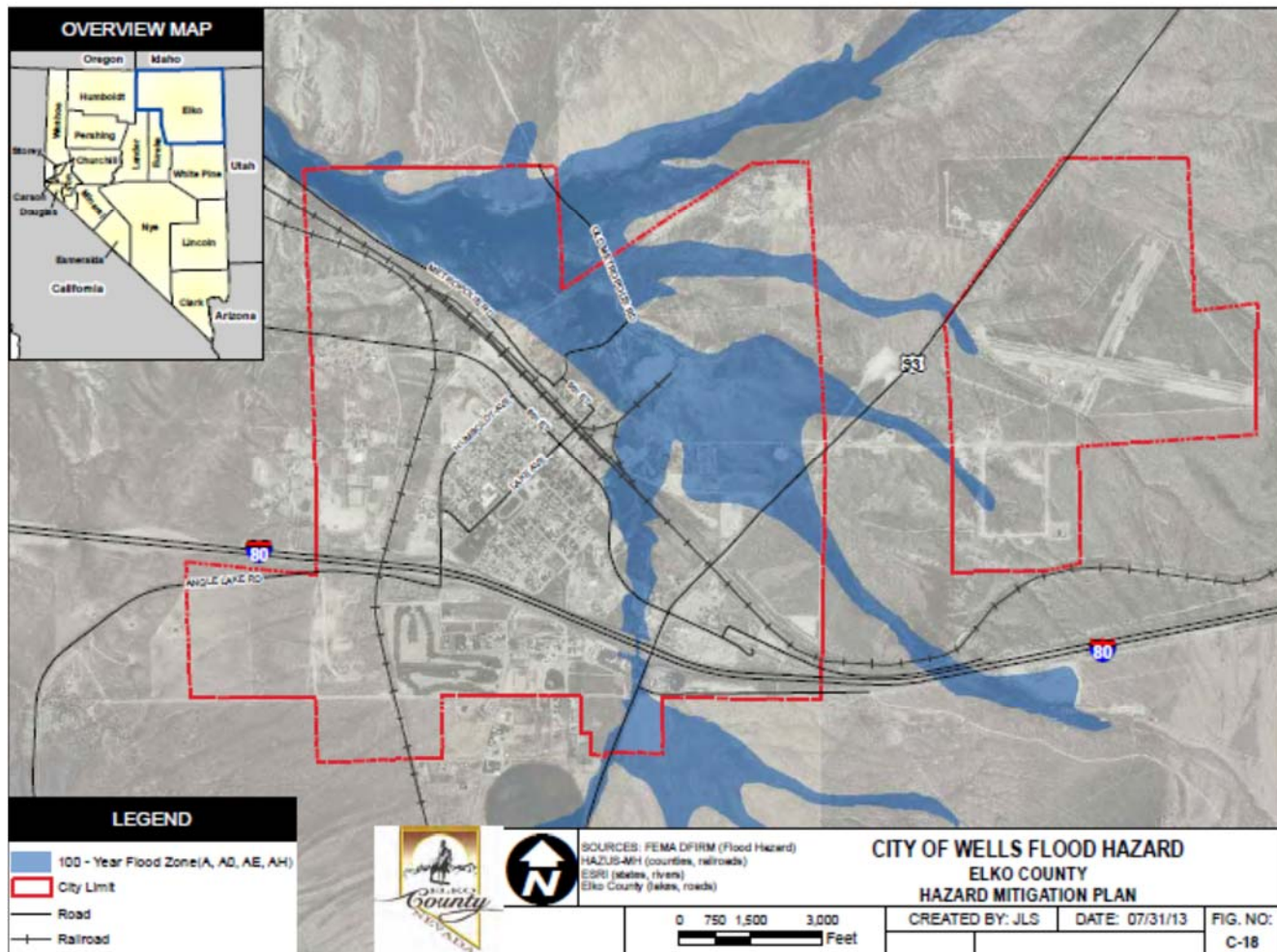




Figure C-19 City of West Wendover Flood Hazard

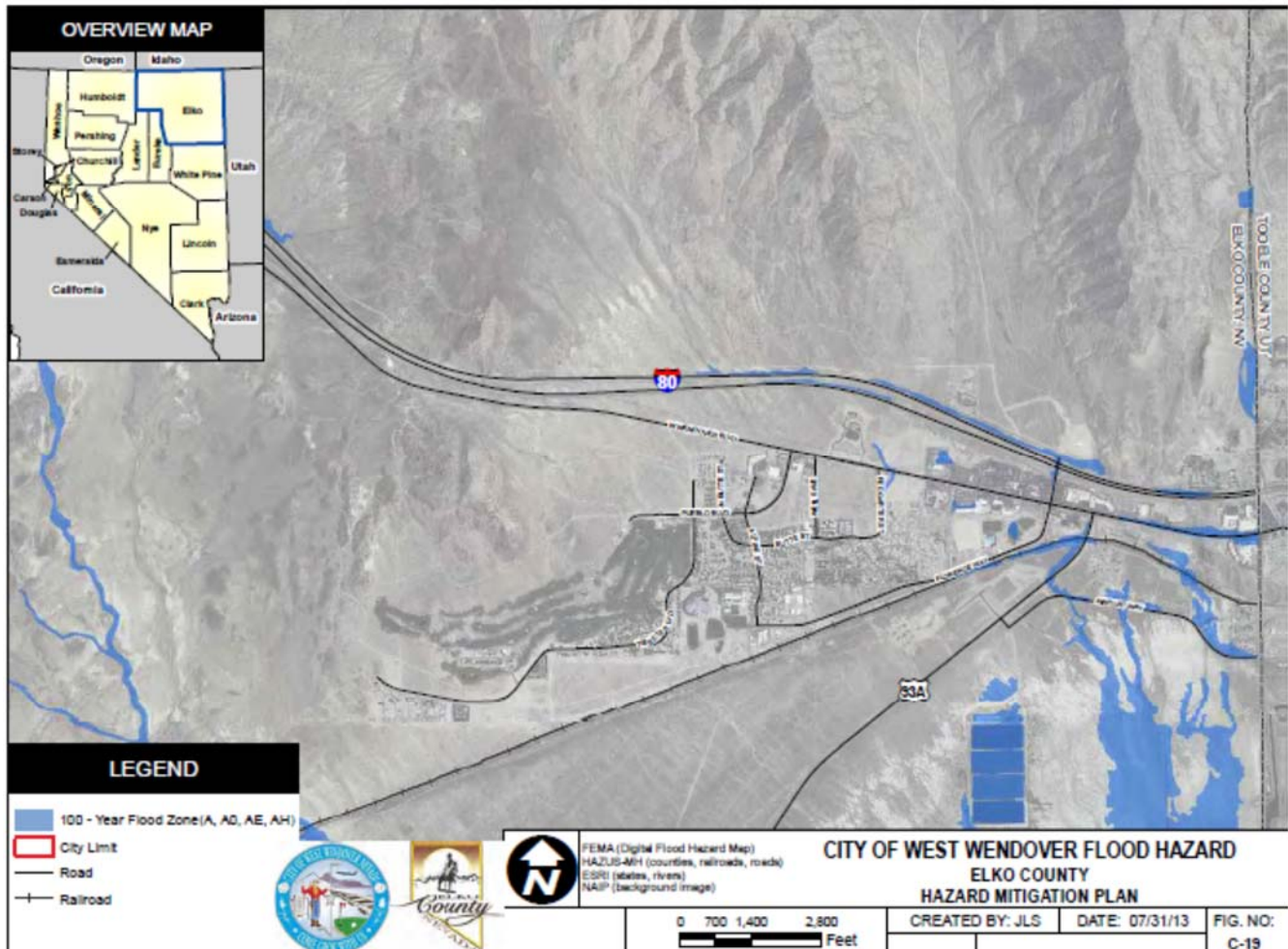


Figure C-20 Elko Effluent Storage Ponds Inundation

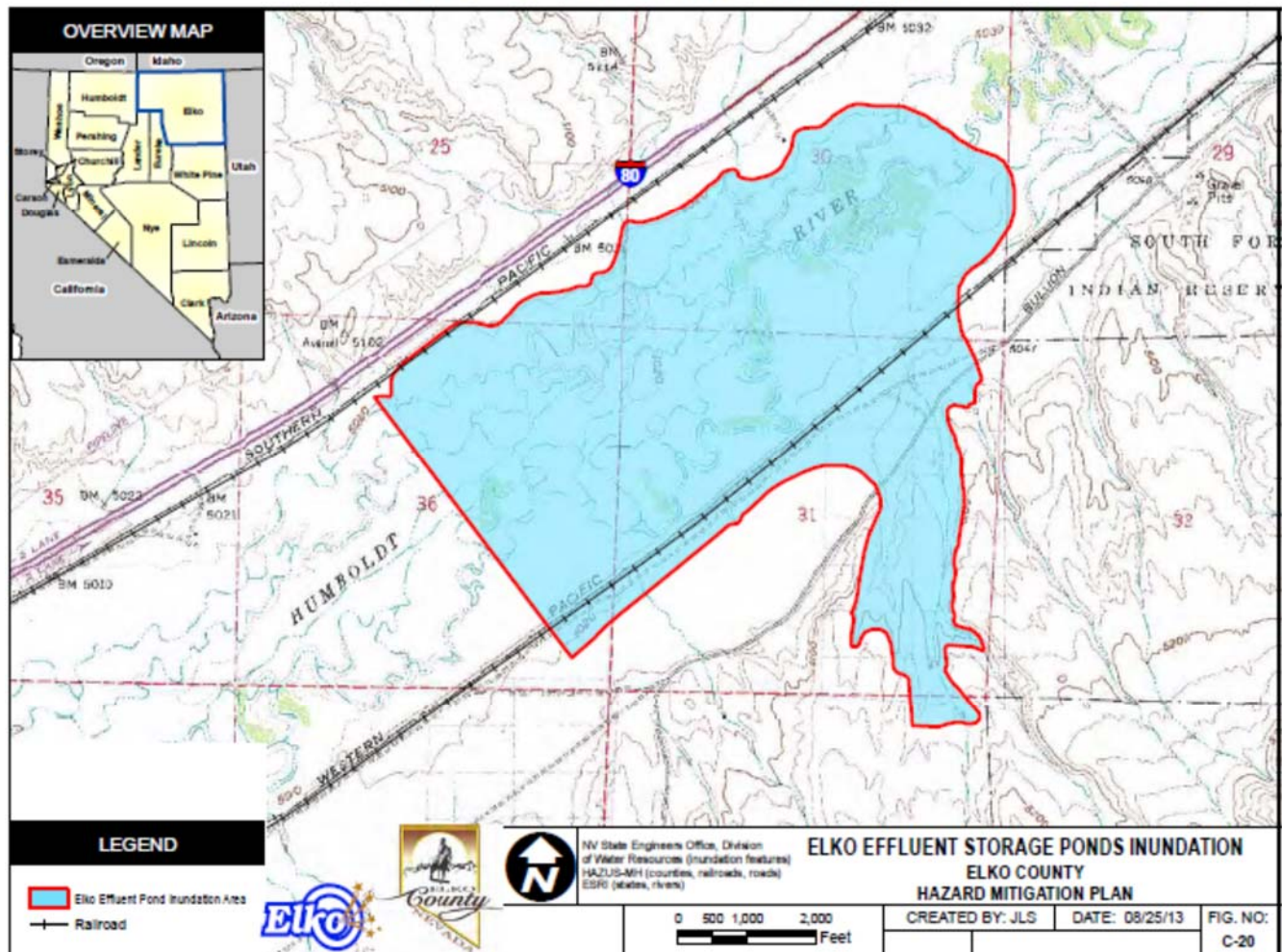




Figure C-21 Fifth St Dam Inundation

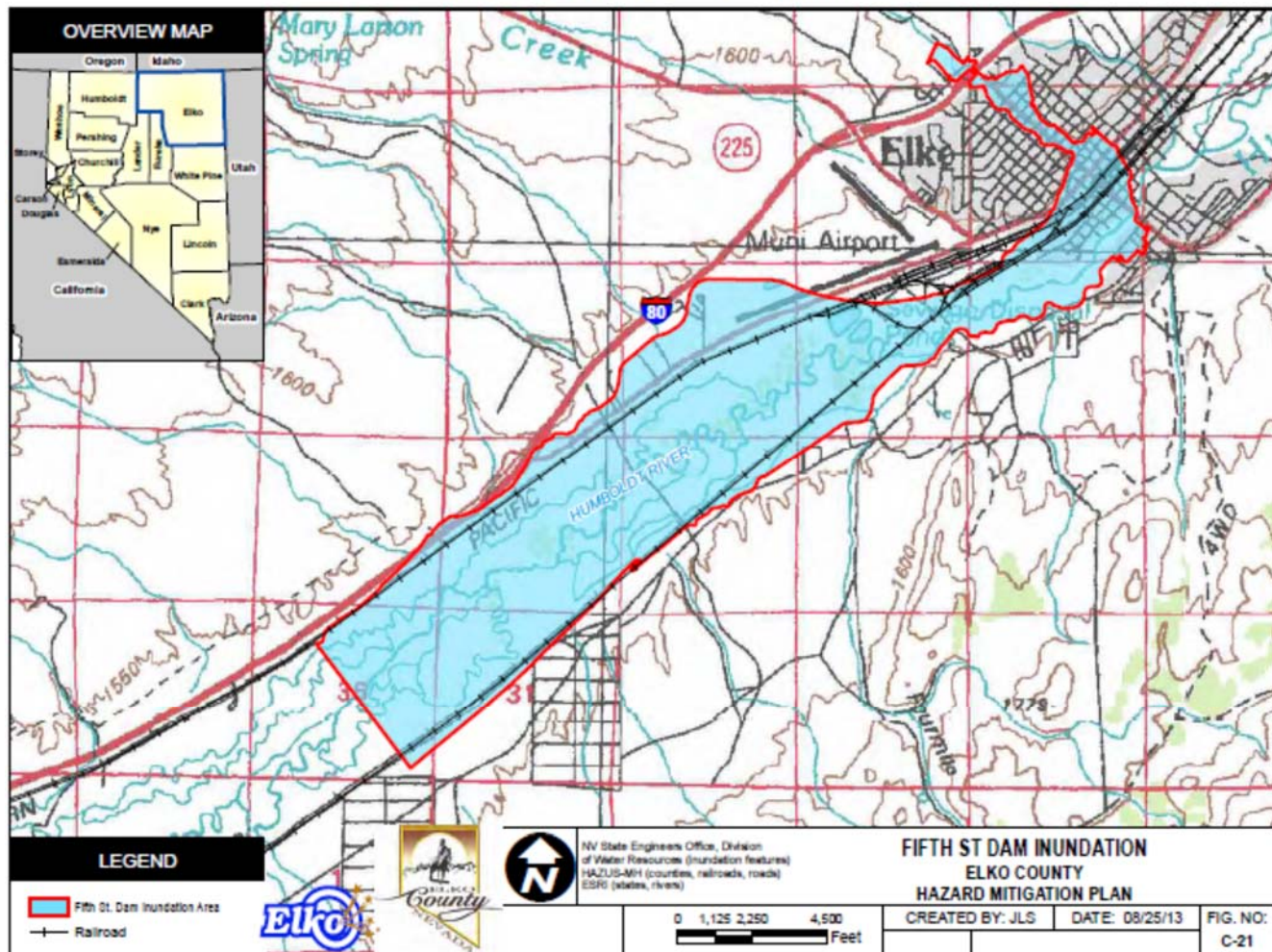


Figure C-22 Eight Mile Dam Inundation

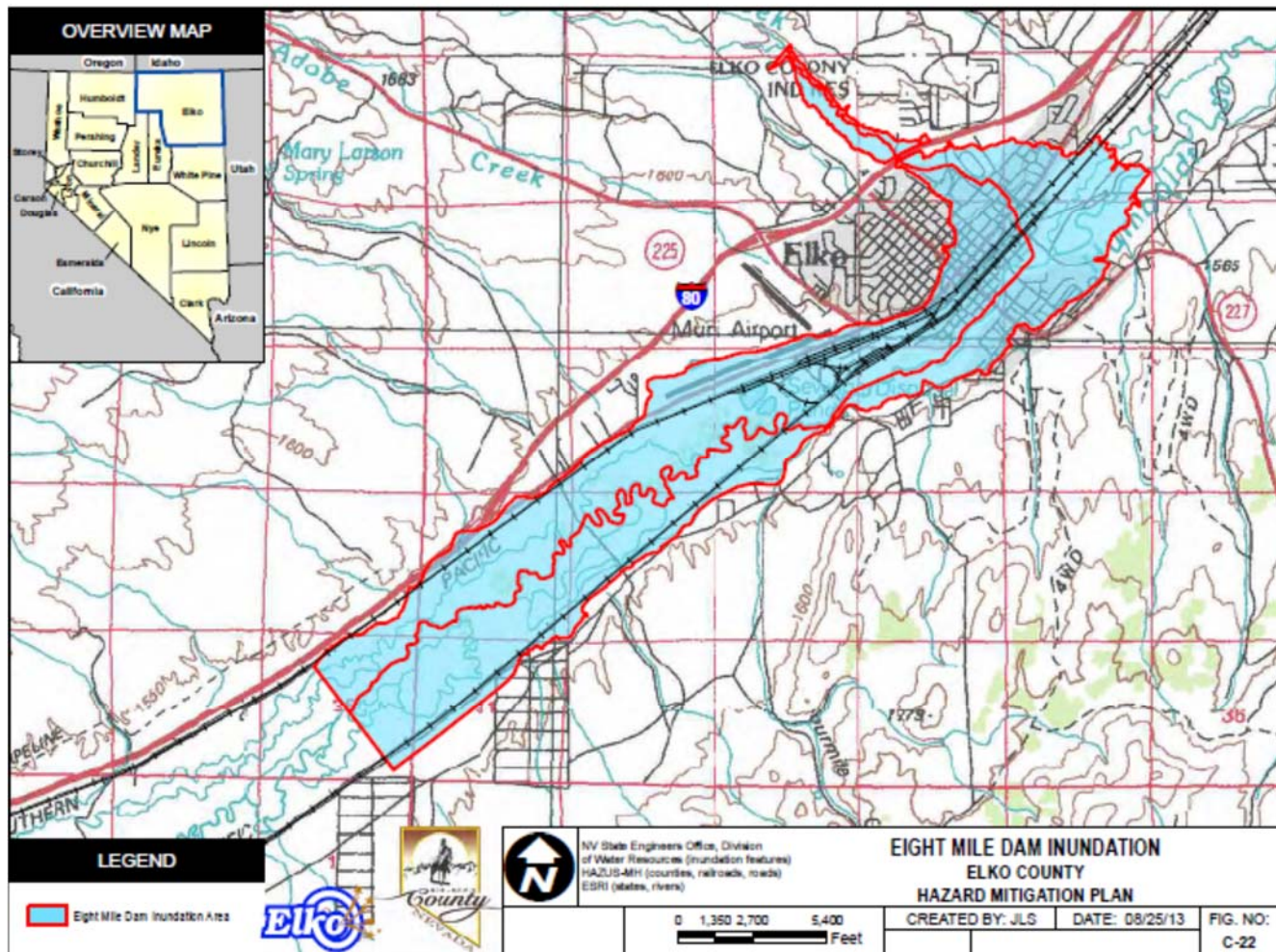




Figure C-23 South Side Dam Inundation

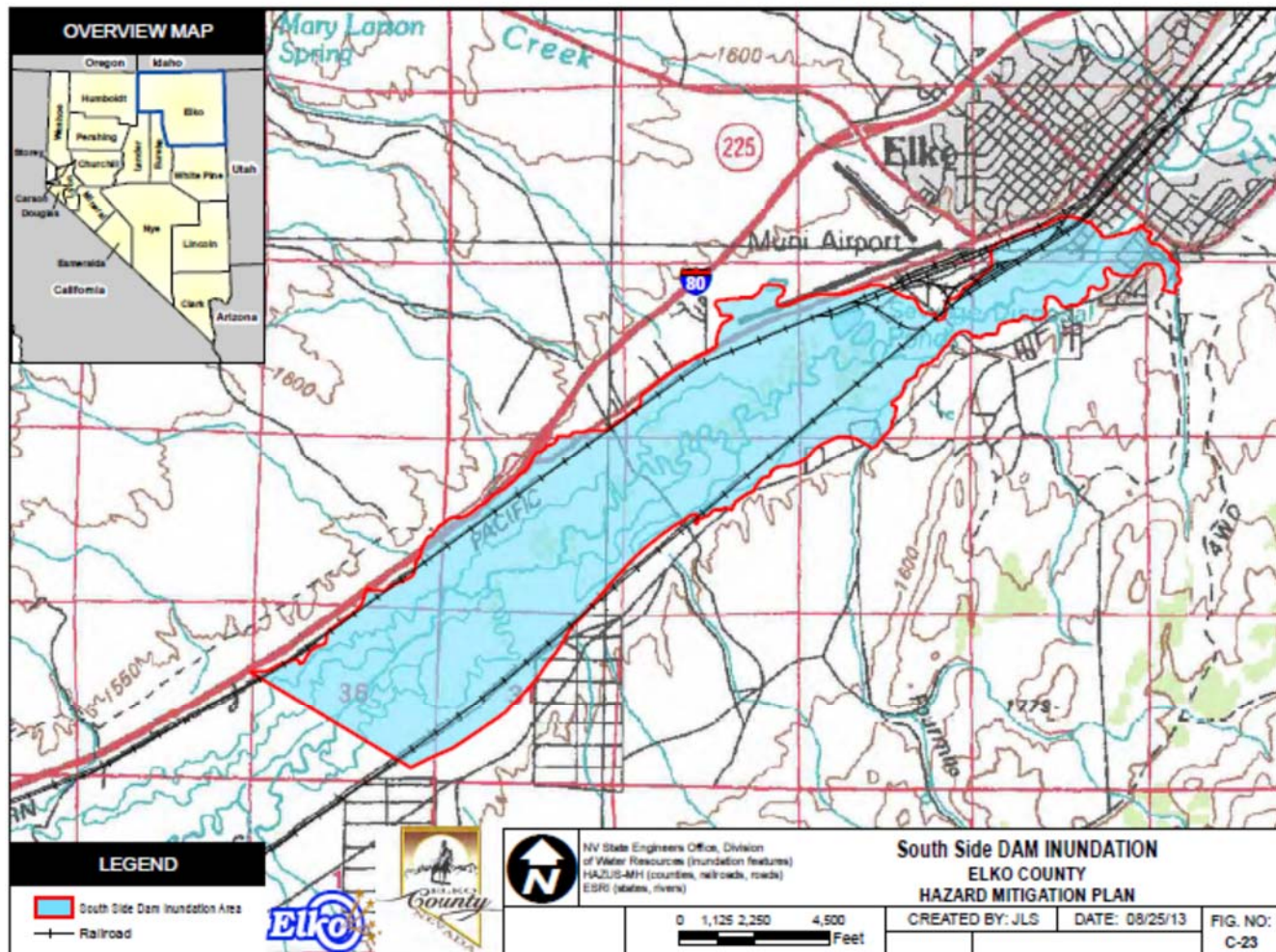
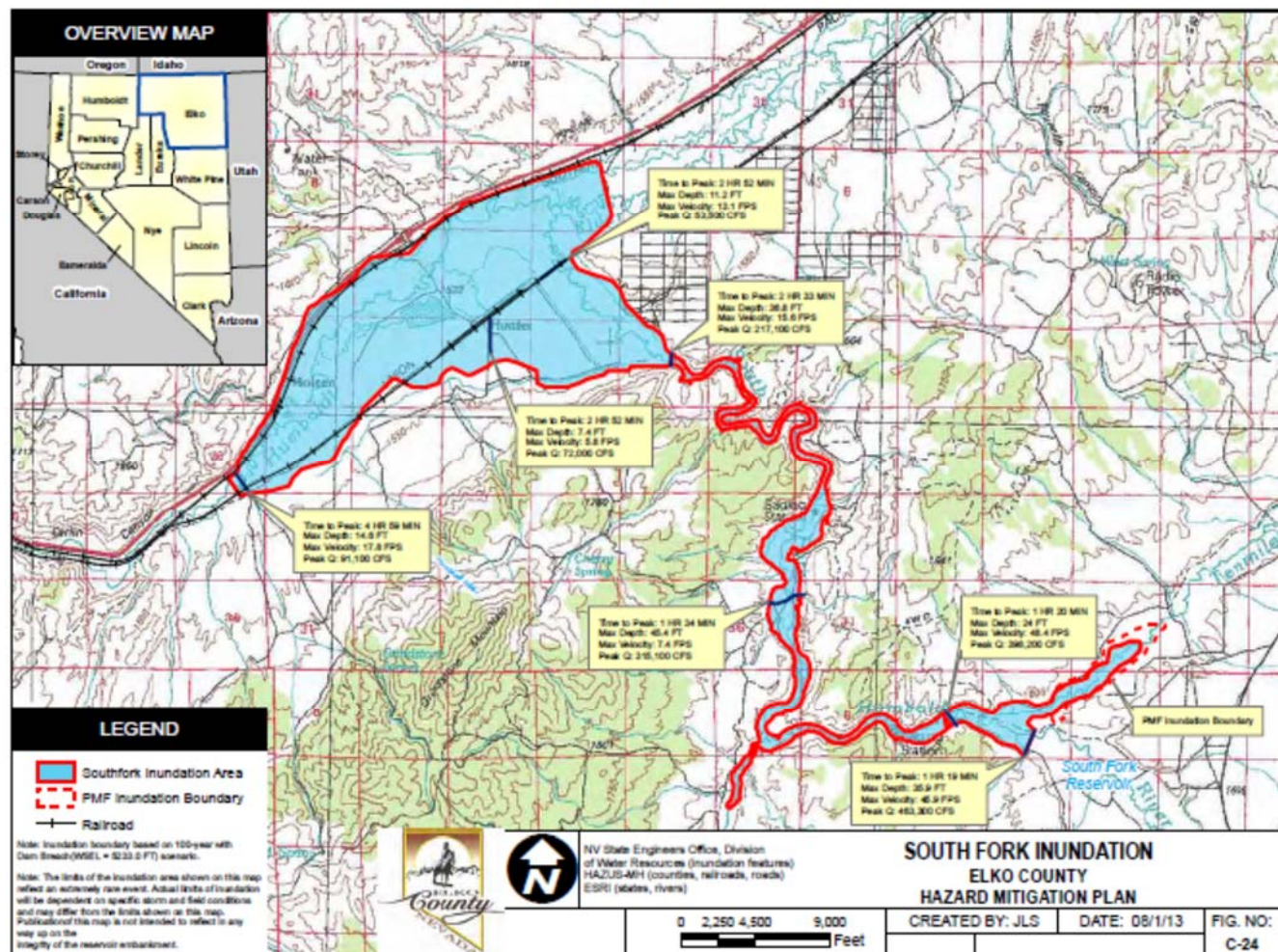


Figure C-24 South Fork Inundation



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**Appendix D**  
**Critical Facilities**



Figure D-1 City of Carlin Critical Facilities

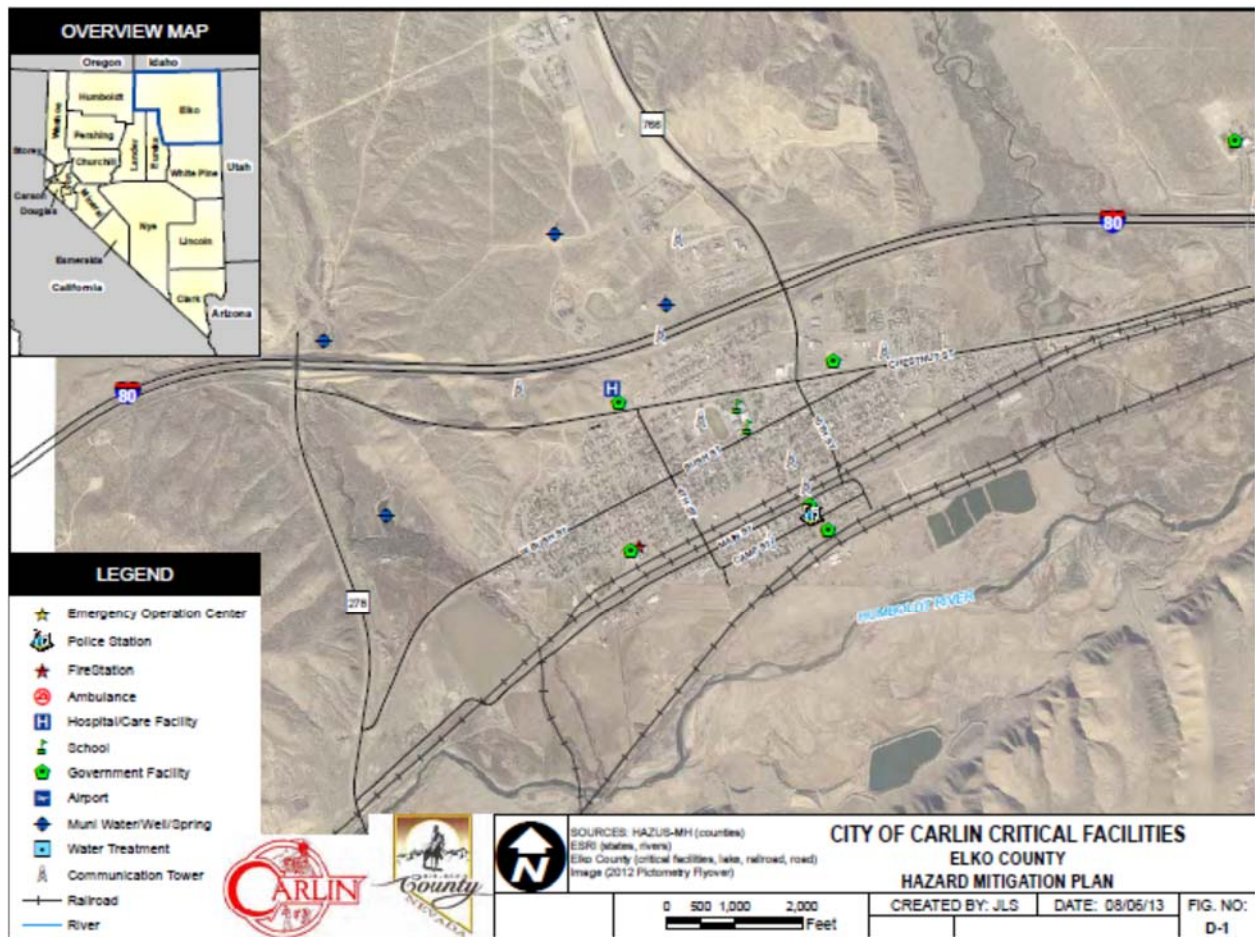


Figure D-2 City of Elko Critical Facilities

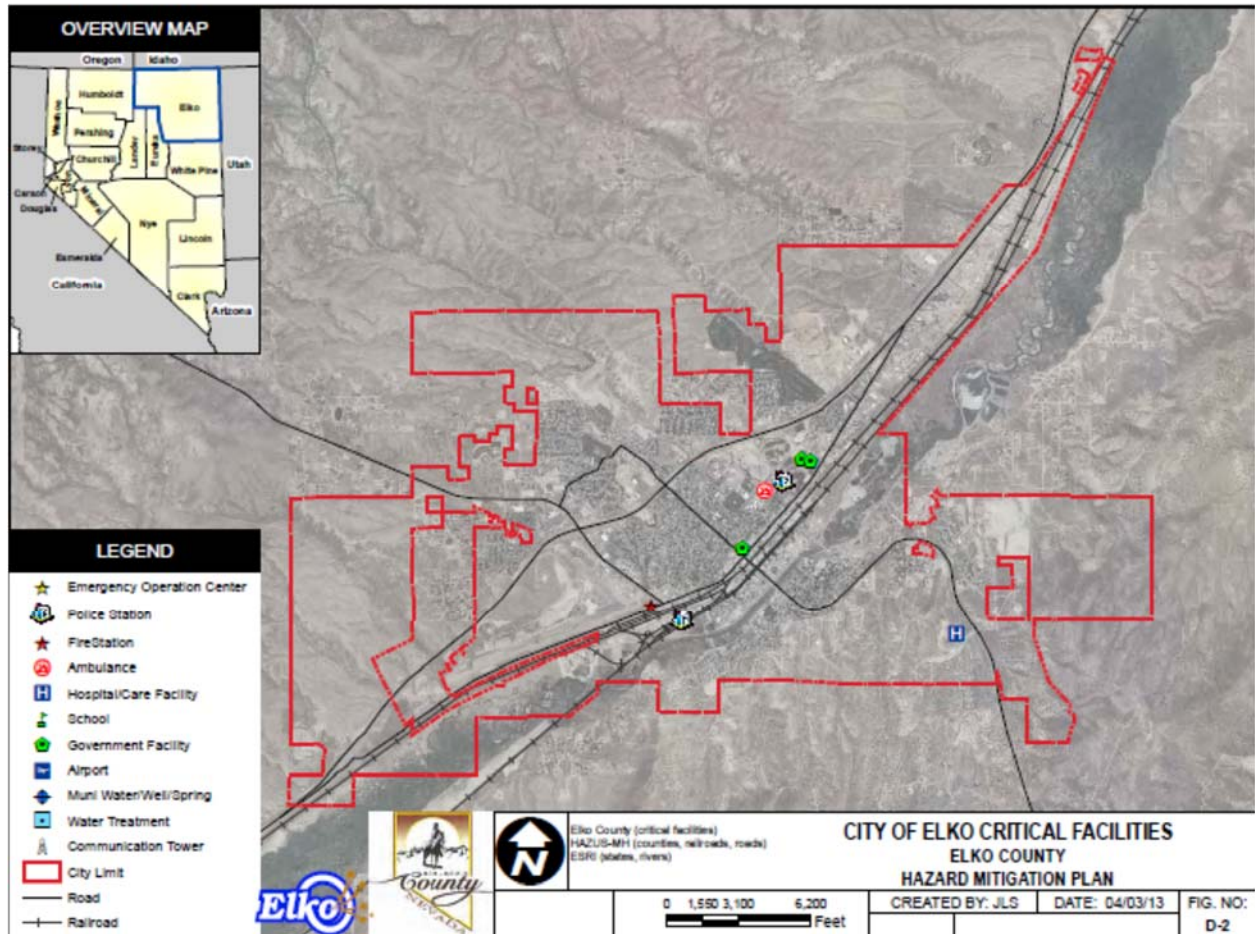


Figure D-3 City of Wells Critical Facilities

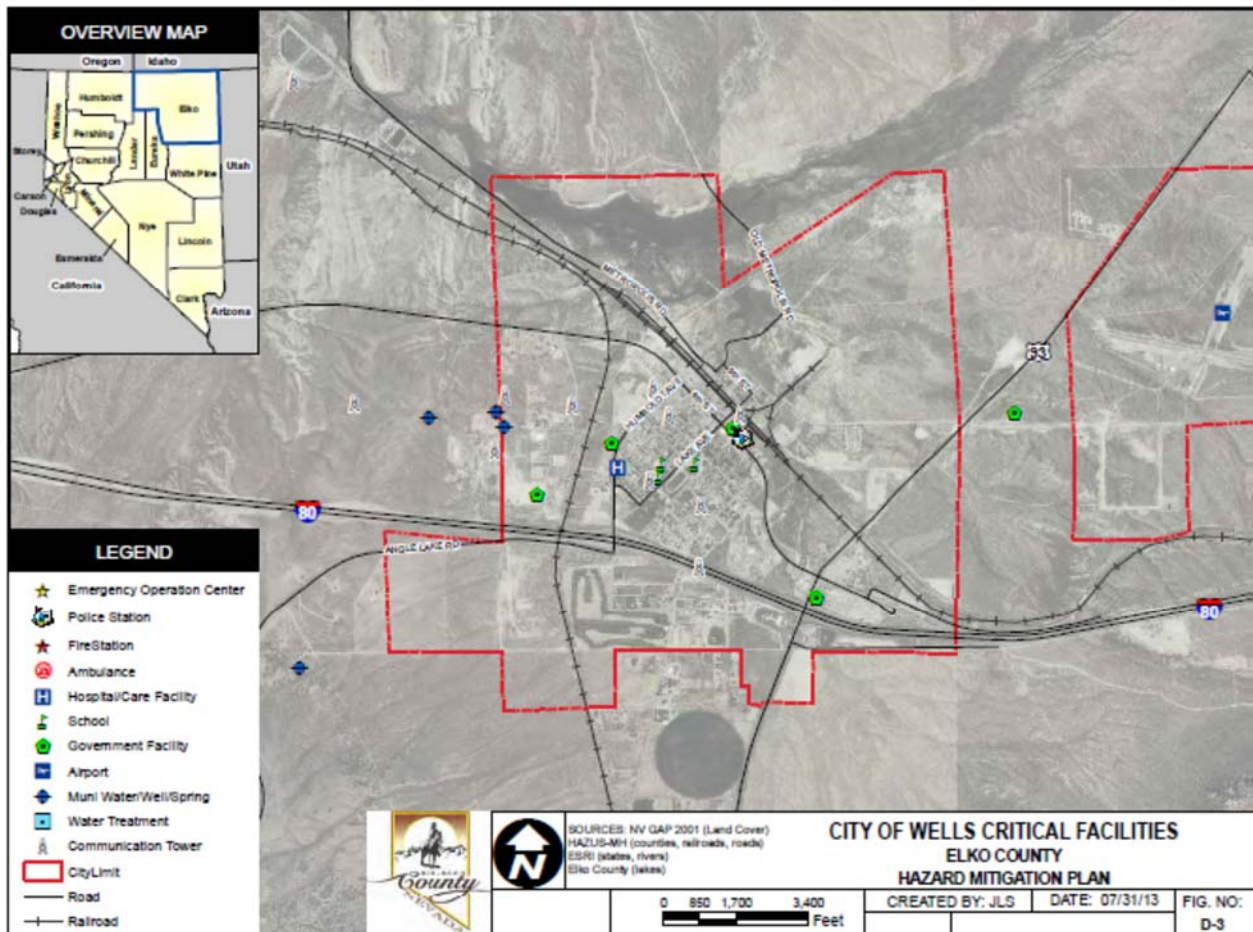




Figure D-4 City of West Wendover Critical Facilities

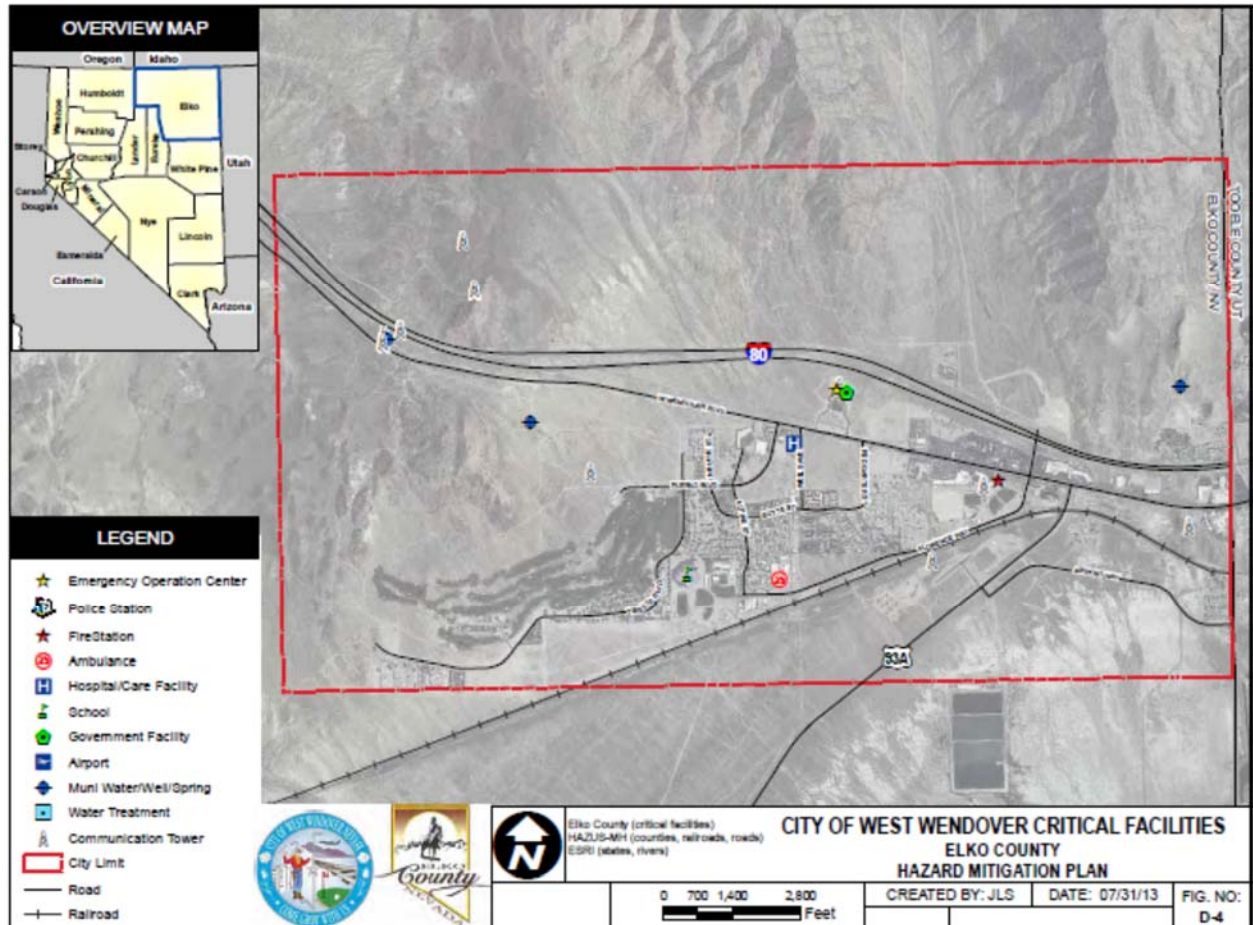


Figure D-5 City of Carlin Extremely Hazardous Substance Facilities

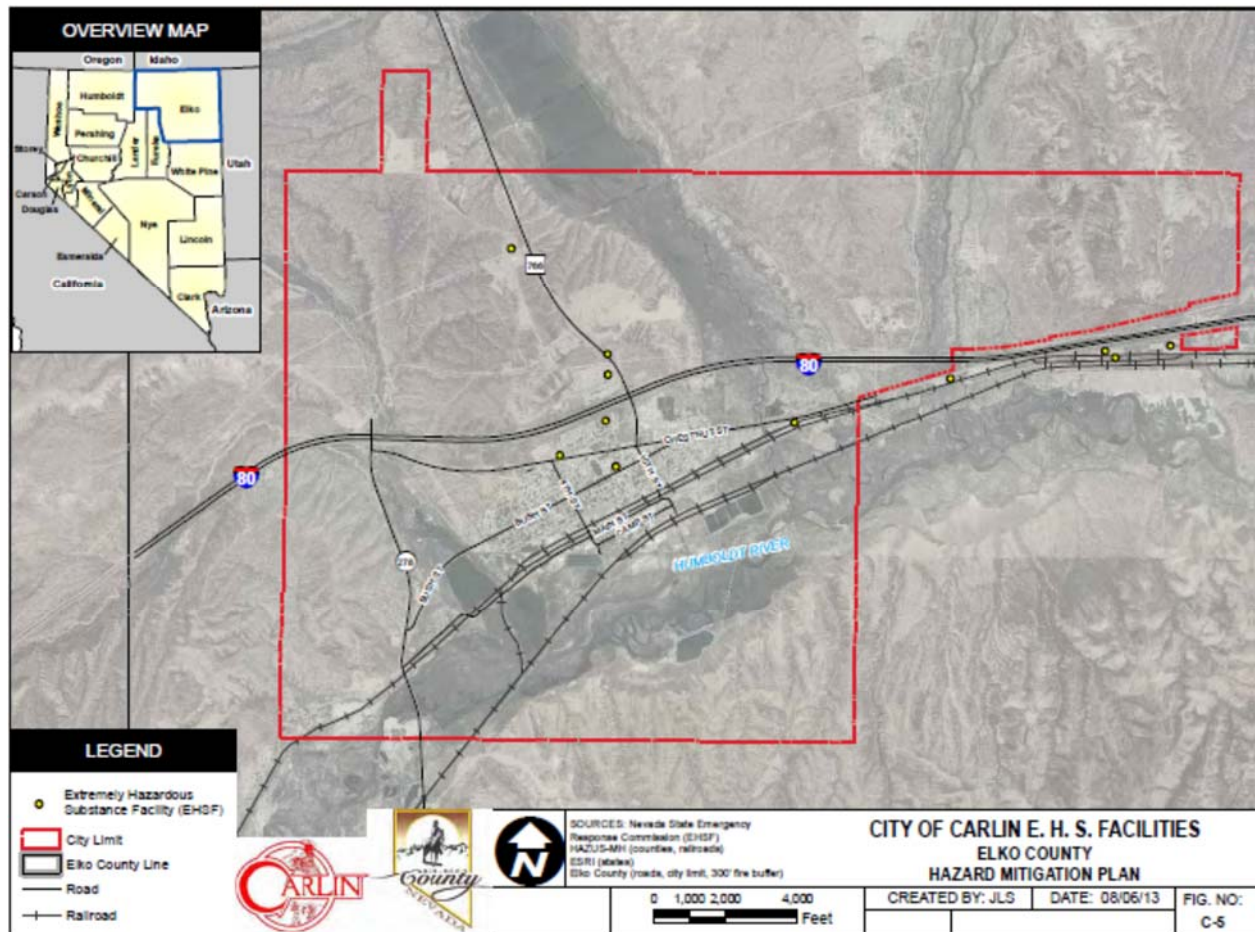


Figure D-6 City of Elko Extremely Hazardous Substance Facilities

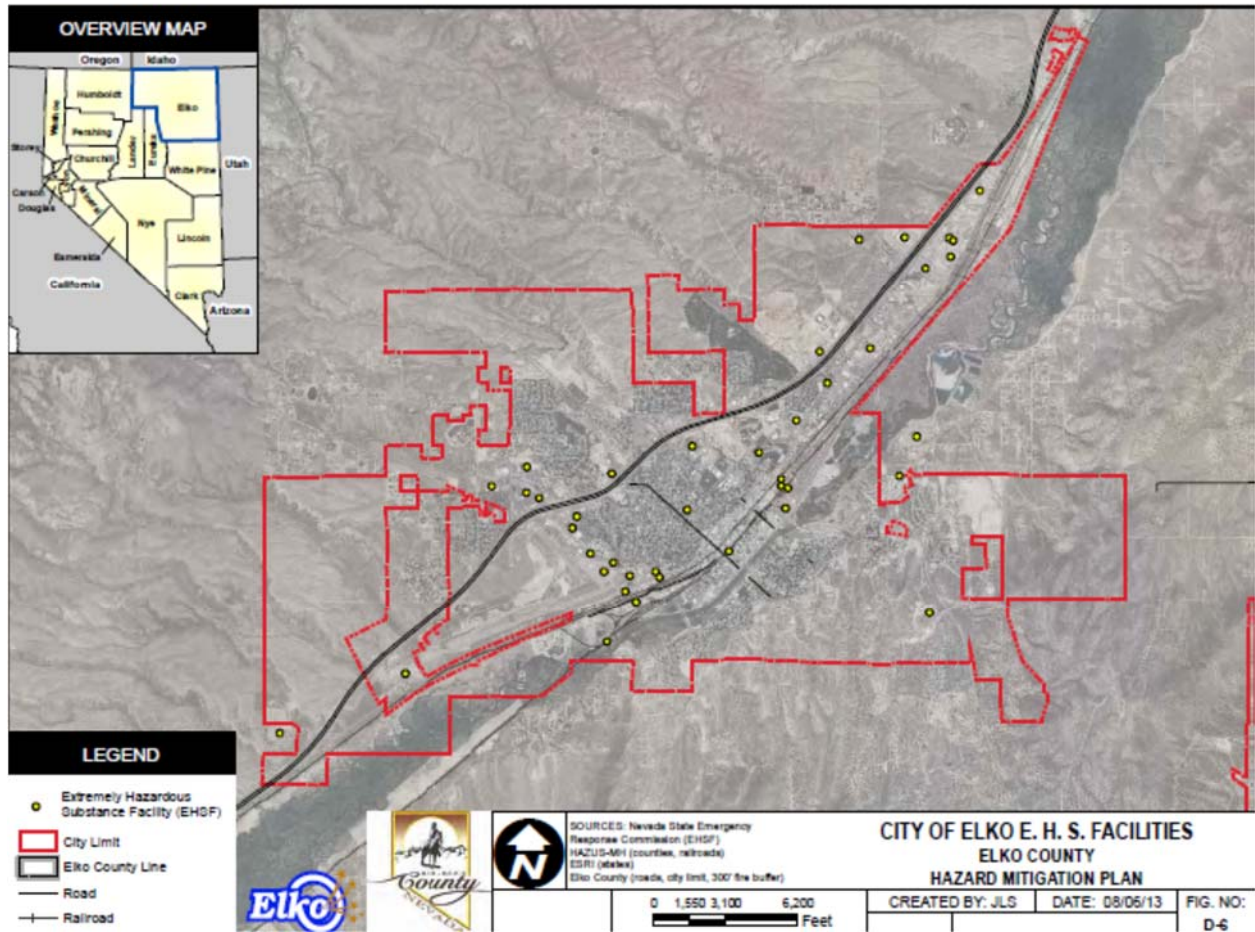




Figure D-7 City of Wells Extremely Hazardous Substance Facilities

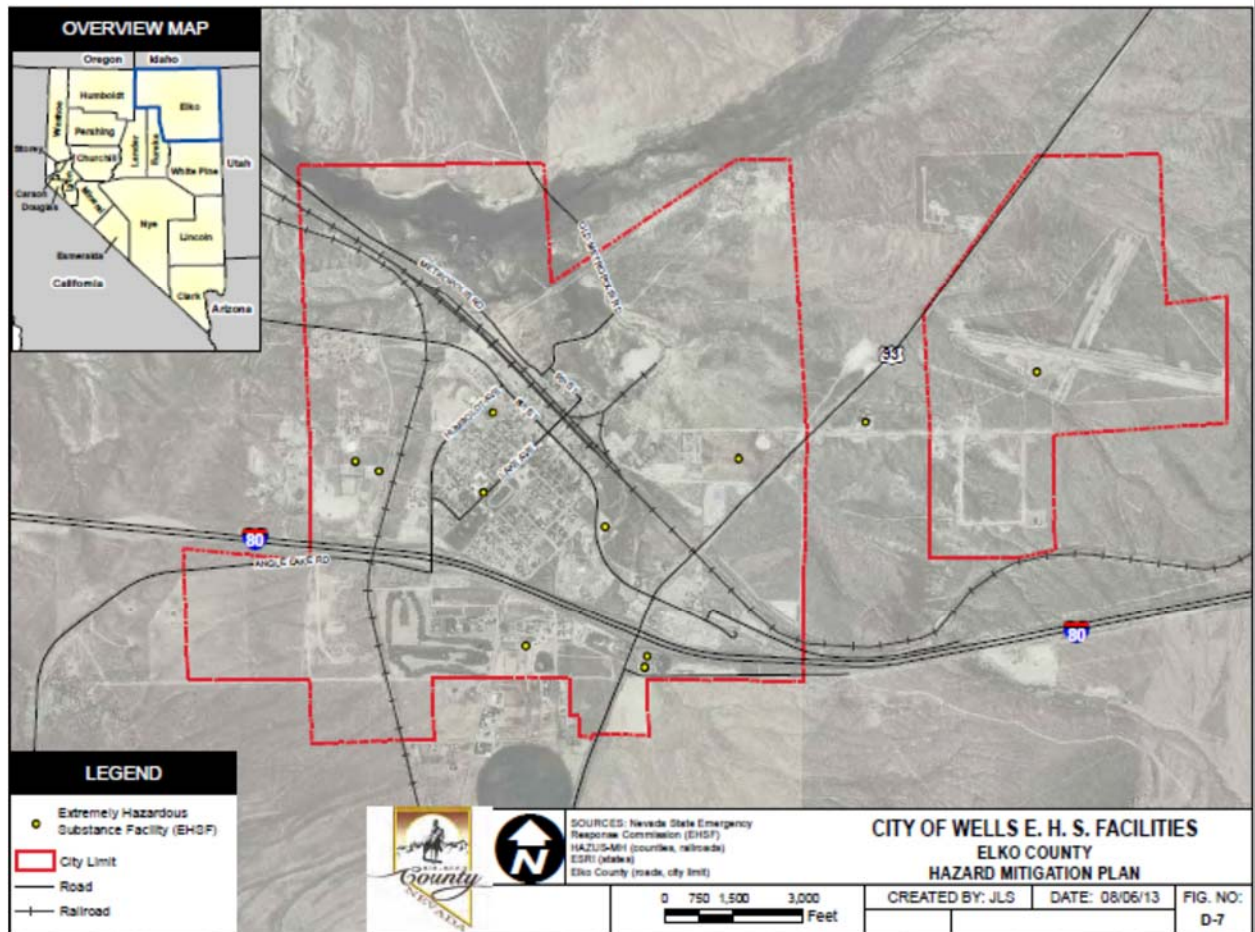
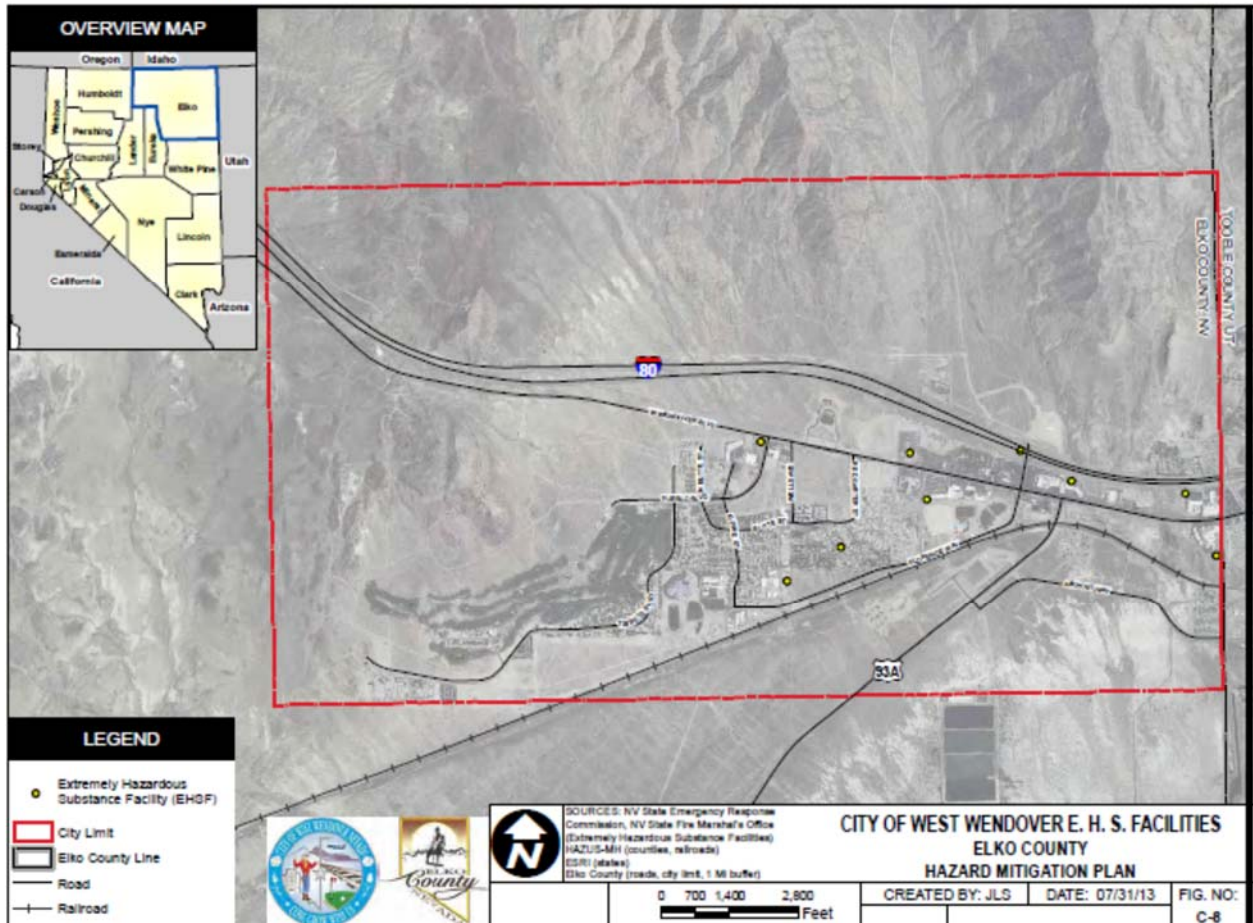


Figure D-8 City of West Wendover Extremely Hazardous Substance Facilities





**Appendix D**  
**Public Information**

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**Appendix E**  
**Meeting Agendas & Handouts**

**Meeting #1 -AGENDA**  
**ELKO COUNTY LOCAL EMERGENCY PLANNING COMMITTEE**  
**GENERAL MEMBERSHIP MEETING**

**February 21, 2013 at 1:30 pm**

**Great Basin College- Health Science Building (HSCI), 108**

**1500 College Parkway**

**Elko, NV 89801**

*The Committee may take action on items marked "Discussion/For Possible Action." Items may be taken out of the order presented on the agenda at the discretion of the chairperson. The Committee at the discretion of the chairperson may combine items for consideration. Items may be pulled or removed from the agenda at any time.*

- **Call to Order (Non-action Item)**
- **Introduction (Non-action Item)**
  
- **Approval of minutes for January 17, 2013 (Discussion/For Possible Action)** – The Committee will review and approve or deny the January 17, 2013 LEPC meeting minutes. Comments from members of the public will be considered.
- **Training (Discussion/For Possible Action)** – This item addresses upcoming trainings and/or reports on training that was held. Comments from members of the public will be considered.
- **Grants (Discussion/For Possible Action)** – This item addresses the status of the all current grants as well as upcoming grants including the FY14 SERC Planning, Training, Equipment Grant application that is due March 8, 2013. Comments from members of the public will be considered.
- **Elko County Multi-Jurisdictional Hazard Mitigation Plan (Discussion/For Possible Action)** - This items addresses the Elko County Multi-Jurisdictional Hazard Mitigation Plan which was last reviewed in October 2008. Karen Johnson and Elisabeth Ashby from the Division of Emergency Management will lead the discussion regarding the planning process and the existing plans. Comments from members of the public will be considered.
- **CERT Update (Non-action Item)**
- **Committee reports (Non-action Item)**- Reports from any standing committees to LEPC
  - a) Grants Committee
  - b) Mutual Aid Agreement Committee
  - c) Hazmat Plan Committee
- **PUBLIC COMMENT (Non-action Item)** – No action may be taken upon a matter raised under this item of the agenda until the matter itself has been specifically included on an agenda as an item upon which action may be taken. Public comments are limited to three minutes unless the Committee elects to extend the comments for purposes of further discussion. Comments will not be restricted based on viewpoint.
  
- **Adjournment (Discussion/For Possible Action)**

*This is a public meeting. In conformance with the Nevada Public Meeting Law, I, Bailey Billington, posted or caused the posting of this agenda on or before February 14, 2013, at the following locations:*

## Appendix E

### Meeting Agendas, Sign In Sheet & Handouts

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*Elko City Hall, 1751 College Avenue - Elko*

*Elko County Courthouse, 540 Court Street - Elko*

*Elko County Library, 720 Court Street - Elko*

*Elko County Sheriff's Office, 775 West Silver Street – Elko*

*Wells City Hall, Wells, NV*

*West Wendover City Hall, West Wendover, NV*

*We are pleased to make reasonable accommodations for members of the public who are disabled. If special arrangements are necessary, please notify Bailey Billington at (775) 753-9600. Twenty-four hour advance notice is requested.*

# Appendix E Meeting Agendas, Sign In Sheet & Handouts

April 11 <sup>2013</sup>  
Next Meeting

## Elko County LEPC Sign In Sheet

Please Print

Feb. 21, 2013  
List ↓

Name	Agency	Email
MICHAEL FITZSIMMONS	NATIONAL WEATHER SERVICE	MICHAEL.FITZSIMMONS@NWS.NV.GOV
Dan Tanner	AMateur Radio Emerg. Svc.	KF7GGR@ARRL.NET
GARY JOHNSON	NV BUREAU OF MINES + GEOLOGY	G-LJOHNS@BUREAU.MNR.NV.GOV
Bill Micheli	Elko County School District	bmicheli@ecsdnv.net
Luke Opperman	N DWR	Lopperman@water.nv.gov
John Anderson	City of Elko	johnanderson@ci.elko.nv.us
Annette Kerr	Elko County Sheriff-EM	akerr@elkocounty.nv.us
PAT ANDERSON	GREAT BASIN COLLEGE	patricia.anderson@gbcnv.edu
Pam And	NNRH	Pamela.And@ipnt.net
Dennis Mense	NNRH	Dennis.Mense@LPNT.NET
Curtis Calder	CITY OF ELKO	citymanager@ci.elko.nv.us
Lawrence Whitworth	National Weather Service	lawrence.whitworth@nws.nv.gov
Jolene Supp	City of Wells	wellscityhall@frontier.com
Gray Corrada	West Wendover	gcorrada@westwendovercity.com
Rebecca Sharp	NNRH	rebecca.sharp@ipnt.net
Mary Ann Laffoon	Northeast NV Cit. Corp. Cooke	mlaffoon@elkocounty.nv.us
JEFFREY SECORD	Elko Co. Assessor (GIS Tech)	jsecord@elkocounty.nv.us
Randy Brown	Asst Co. Manager Elko County	rbrown@elkocounty.nv.us
Tom Ballew	CITY OF CARLIN	tballew@cityofcarlin.net
Dylan Baker	Elko Blm Fire	dbaker@blm.gov
Tim Woodward	NDF	timwoodward@forestnv.gov
Jim Urresti	NDF Elko Co. Fire	jurresti@Forestry.NV.GOV
Allen Case	Chief Wells Fire	wellsfirehall@frontier.com
Patricia Hunter	Chief Jackpot Fire	jackpotfirefighters@yahoo.com
Chris Sloman	Elko County Ambulance	csloman@elkocounty.nv.us
WABE FRUGE	UG BRT Coordinator	WABE@BARRICK.COM
Mikel P Riley	Surface BRT Coordinator	mriley@barrick.com
Kory Soderquist	Emergency Response Coordinator - Newmont	Kory.Soderquist@newmont.com
Mike Smith	ECSD	msmith@ecsdnv.net
Karla M Jones	Carlin VFD	Kjones@cityofcarlin.com
Linda Bingham	Carlin VFD	lmbffemt@gmail.com
DARLA LOZANO	Elko Band Emergency Specialist	dlemergencyspecialist@yahoo.com

any  
change  
mail  
me #  
I would you, thank

# Appendix E

## Meeting Agendas, Sign In Sheet & Handouts

Margie Garner Event Plan Support mygarner@nuclear.org  
 Center  
 JOSEPH L. MOON ELKO BAND ebcepacoordinator  
 @ yahoo.com

### 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 been 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?			

<b>Incorporation of Existing Plans/Study Table</b>	
<b>Plan / Study</b>	<b>Findings / Incorporation</b>
<b><i>Elko County Master Plans</i></b>	Land Use
Southfork May 2001	Limits use of land in areas subject to natural hazards including earthquake, fire and flood.
Jackpot 1995	No mention of hazard
NE NV Regional Railport Industrial land Use Master Plan 2006	Hazardous materials land use
Open Space September 2003	Provides recommendations to Master Plan. Recommends space for wildfire protection.
Spring Creek/Lamoille 2006	No mention hazards.
Public Lands 2008	Section 8 Noxious Weeds and Invasive Species. Policy 20-1 to 20-5. Wildland Fire collaborative efforts
Water Resources 2007	Drought conditions and water conservation suggestions.
<b><i>Building Code 2005</i></b>	IBC 2003
<b><i>FEMA Flood Insurance Study, Elko Co. Nevada (FEMA 20 ):</i></b>	This study addresses all flood plain issues
<b><i>State of Nevada Multi-Hazard Mitigation Plan</i></b>	The state MHMP is updated every three years by the SHMO and includes all hazards to be addressed in this.HMP.
<b><i>_____ Regional Floodplain Management Plan</i></b>	To develop strategies for floodplain management that can be applied regionally as well as locally.

## Appendix E

### Meeting Agendas, Sign In Sheet & Handouts

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<b><i>Hazardous Materials Emergency Response Plan 20_____</i></b>	
<b><i>Community Wildfire Protection Plan, RCI ( June 2005)</i></b>	This document includes findings and recommendations for mitigating the threat to property from wildland fires.
<b><i>Emergency Operations Plan ( )</i></b>	This document is the main reference source for managing disasters and large scale emergencies in Mineral County.
Elko County Fire Code ????	
Mass Illness Plan ?????	
Carlin Master Plan	
City of Elko Master Plan	
W. Wendover Master Plan	
Wells Master Plan	



### Funding Impacted by the Plan

<b>Individual Assistance</b> After a disaster, Federal funds are provided to qualified individuals to facilitate recovery. Assistance comes in the form of low interest loans (SBA), housing assistance, cash grants etc.	→	Not impacted by plan
<b>Public Assistance</b> Categories A&B: Emergency measures and debris removal	→	Not impacted by plan
Categories C-G: Reconstruction of public facilities and infrastructure to current codes and standards.	→	An approved State or Tribal plan is required in order to receive funding.
<b>Mitigation</b> <u>Hazard Mitigation Grant Program (HMGP)</u> : Up to 15% (20% for States with an approved Enhanced Mitigation Plan) of the total disaster grants awarded by FEMA to implement long-term hazard mitigation measures after a major disaster declaration. <u>Pre-Disaster Mitigation Program (PDM)</u> : An annual competitive grant not tied to disaster.	}	An approved State or Tribal and Local, Multi-jurisdictional or Local Tribal plan is required in order to received funding for projects. Funding support for planning remains available.
<b>Wildfire</b> Fire Management Assistance Grants (FMAG): Financial assistance in the form of grants to the state for firefighting costs.	}	An approved State or Tribal and Local, Multi-jurisdictional or Local Tribal plan is required in order to received funding for projects. Funding support for planning remains available.
<b>Flood Management Assistance Grants</b> Flood Management Assistance program (FMA), Repetitive Flood Claim program (RFC), Severe Repetitive Loss Claim program (SRL): An annual competitive grant program.	}	An approved State or Tribal and Local, Multi-jurisdictional or Local Tribal plan is required in order to received funding for projects. Funding support for planning remains available.



**Meeting 2 Agenda**

**ELKO COUNTY LOCAL EMERGENCY PLANNING COMMITTEE**  
**GENERAL MEMBERSHIP MEETING**

**April 11, 2013 at 1:30 pm**  
**Great Basin College- Health Science Building (HSCI), 108**  
**1500 College Parkway**  
**Elko, NV 89801**

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- **Call to Order (Non-action Item)**
- **Introduction (Non-action Item)**
- **Approval of minutes for February 21, 2013 (Discussion/For Possible Action)** – The Committee will review and approve or deny the February 21, 2013 LEPC meeting minutes. Comments from members of the public will be considered.
- **Training (Discussion/For Possible Action)** – This item addresses upcoming trainings and/or reports on training that was held. Comments from members of the public will be considered.
- **Grants (Discussion/For Possible Action)** – This item addresses the status of the all current grants as well as upcoming grants including the FY14 SERC Planning, Training, Equipment Grant application. Comments from members of the public will be considered.
- **Elko County Multi-Jurisdictional Hazard Mitigation Plan (Discussion/For Possible Action)** - This items addresses the Elko County Multi-Jurisdictional Hazard Mitigation Plan which was last reviewed in October 2008. Section leaders to report back on their various sections. Documents to be discussed: [Hazard Mitigation Questionnaire](#), [Hazard Identification and Screening](#), [Section 3 Community description](#) (attached). Comments from members of the public will be considered.
- **CERT Update (Non-action Item)**

- **Committee reports (Non-action Item)-** Reports from any standing committees to LEPC
  - d) Grants Committee
  - e) Mutual Aid Agreement Committee
  - f) Hazmat Plan Committee
- **PUBLIC COMMENT (Non-action Item)** – No action may be taken upon a matter raised under this item of the agenda until the matter itself has been specifically included on an agenda as an item upon which action may be taken. Public comments are limited to three minutes unless the Committee elects to extend the comments for purposes of further discussion. Comments will not be restricted based on viewpoint.
- **Adjournment (Discussion/For Possible Action)**

*This is a public meeting. In conformance with the Nevada Public Meeting Law, I, Bailey Billington, posted or caused the posting of this agenda on or before February 14, 2013, at the following locations:*

*Elko City Hall, 1751 College Avenue - Elko*

*Elko County Courthouse, 540 Court Street - Elko*

*Elko County Library, 720 Court Street - Elko*

*Elko County Sheriff's Office, 775 West Silver Street – Elko*

- *City of Carlin – 101 South 8<sup>th</sup> St., Carlin*
- *City of Wells – 1279 Clover Ave., Wells*
- *City of West Wendover – 801 Alpine St., West Wendover*

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## Meeting No. 2 Sign In Sheet

4/11/13

### Elko County LEPC Sign In Sheet

Please Print

Name	Agency	Email
Karen Johnson	NDEM	Kjohnson@dps.state.nv.us
Elizabeth Ashby	NDEM	eashby@dps.state.nv.us
MICHAEL FISHER	NWS	MICHAEL.FISHER@NWS.GOV
Randy Brown	Elko County	rbrown@elkocounty.nv.net
R. Jeff Williams	Elko Co. Comm.	rjeffwilliams1@Hotmail.com
MIKE FORD	BLM	MFORD@BLM.GOV
Linda Bingham	Carlin Fire	lmbfremt@gmail.com
Will Lehmann	Elko PD	wlehmann@ci.elko.nv.us
Jack French	ECSID	jfrench@acsd.nv.net
Mary Ann Laffan	Citizen Corps/CSCT	mlaffan@elkocounty.nv.net
Matt Griego	Elko Fire	mgriego@ci.elko.nv.us
MICHAEL PECK	NEWMOHT MINING	MICHAEL.PECK@NEWMOHT.COM
Mikel P. Riley	BGMF	mriley@barrick.com
Delmo Andreozzi	City of Elko	dandreozzi@ci.elko.nv.us
Jeremy Draper	City of Elko	jdraper@ci.elko.nv.us
MARLA GARNEC	Great Basins Surgical Center	mgarnier@runlaxa.org
Jim Urresti	NDF Elko Co. Fire	jurresti@forestry.nv.gov
Allen Case	City of Wells	wellsfirehall@frontier.com
Tim Wacker	NDF	twacker@Forestry.nv.gov
JEFF SECORD	Elko County Assessor of	jsecord@elkocounty.nv.net
Brian Hochne	Elko Co Ambulance	
Chris McLean	Elko County Ambulance	cmclean@elkocounty.nv.net

## Meeting No. 2 Handouts

From 2008 HM Plan Section 3, Community Description and Results of Hazard ID and Screening. Presentations on Drought, Earthquake, Severe Weather and Wildfire.

## Meeting No. 3 Agenda

### AGENDA

#### **ELKO COUNTY LOCAL EMERGENCY PLANNING COMMITTEE** **GENERAL MEMBERSHIP MEETING**

**July 18, 2013 at 1:30 pm**  
**Great Basin College- Health Science Building (HSCI), 107**  
**1500 College Parkway**  
**Elko, NV 89801**

*The Committee may take action on items marked "Discussion/For Possible Action." Items may be taken out of the order presented on the agenda at the discretion of the chairperson. The Committee at the discretion of the chairperson may combine items for consideration. Items may be pulled or removed from the agenda at any time.*

- 1. Call to Order (Non-action Item)**
- 2. Introduction (Non-action Item)**
- 3. Approval of minutes for May 8, 2013 (Discussion/For Possible Action)** – The Committee will review and approve or deny the May 8, 2013 LEPC meeting minutes. Comments from members of the public will be considered.
- 4. Training (Discussion/For Possible Action)** – This item addresses upcoming trainings and/or reports on training that was held. Comments from members of the public will be considered.
- 5. Grants (Discussion/For Possible Action)** – This item addresses the status of the all current grants as well as upcoming grant including the awarding of the FY14 SERC Planning, Training, Equipment Grant. Comments from members of the public will be considered.
- 6. Stakeholder meeting (Discussion/For Possible Action)** – This item addresses any stakeholder comments on potential confidentiality issues concerning the disclosure of hazardous materials and substances (including Tier II chemicals) to the public under Nevada law, including but not limited to NRS Chapters 239, 239C, and 459, and under Federal Law, including but not limited to 42 USC § 11022 ("EPCRA") and information pertaining to the same (including Tier II lists).
- 7. South Fork dam failure analysis model (Non-action Item)** – Nevada Division of Water Resources will be presenting and discussing the recently completed South fork dam failure analysis model.
- 8. CERT update (Non-action Item)**

**9. Committee reports (Non-action Item)-** Reports from any standing committees to LEPC

- a) Grants Committee
- b) Mutual Aid Agreement Committee
- c) Hazmat Plan Committee

**10. PUBLIC COMMENT (Non-action Item) –** No action may be taken upon a matter raised under this item of the agenda until the matter itself has been specifically included on an agenda as an item upon which action may be taken. Public comments are limited to three minutes unless the Committee elects to extend the comments for purposes of further discussion. Comments will not be restricted based on viewpoint.

**11. Presentation by Karen Johnson (Non-action Item).**

**12. Adjournment (Discussion/For Possible Action)**

*This is a public meeting. In conformance with the Nevada Public Meeting Law, I, Terri Dillon, posted or caused the posting of this agenda on or before July 18, 2013, at the following locations:*

*Elko City Hall, 1751 College Avenue - Elko  
Elko County Courthouse, 540 Court Street - Elko  
Elko County Library, 720 Court Street - Elko  
Elko County Sheriff's Office, 775 West Silver Street – Elko  
City of Carlin – 101 South 8<sup>th</sup> St., Carlin  
City of Wells – 1279 Clover Ave., Wells  
City of West Wendover – 801 Alpine St., West Wendover*

*We are pleased to make reasonable accommodations for members of the public who are disabled. If special arrangements are necessary, please notify Terri Dillon, 775-738-3454. Twenty-four hour advance notice is requested.*

**Meeting No. 3 Sign In Sheet**

# Appendix E

## Meeting Agendas, Sign In Sheet & Handouts

### Elko County LEPC Sign In Sheet Meeting Date: Thursday July 18, 2013

#### Please Print

Name	Agency	Email
Dennis Moore	NNRH	dennis.moore@LPNT.NET
Michael Fitzsimmons	National Weather Service	michael.fitzsimmons@noaa.gov
Delyne Kirkham	National Weather Service	delyne.kirkham@noaa.gov
Jenna Damon	NDWR	jdamon@water.nv.gov
Karen Johnson	NDEAL	kjohnson@dps.state.nv.us
Will Lehmann	EPD	wlehmann@ci.elko.nv.us
Becky Sharp	NNRH	rebecca.sharp@lpnt.net
Pat Anderson	GBC	patricia.anderson@gbcnv.edu
Eleanor O'Donnell	Elko County	eodonnell@elkocounty.nv.net
Peggy Pierce-Fitzgerald	Elko Co. Planning	pfitzgerald@elkocounty.nv.net
Jack French	ECSD	jfrench@ecsdnv.net
Annette Kerr	Elko County Sheriff's Office	a.kerr@elkocounty.nv.net
Rich Perry	NV Division Water Res.	rmperny@water.nv.gov
JEFFREY SECORD	Elko County	jsecord@elkocounty.nv.net
Jim Ulvesti	NDF	julvesti@forestry.nv.gov
Sherrin McCarthy	Central Dispatch	smccarty@elko-ed.com
GARY ZUNIGA	Elko County Fire	gzuniga@elkocounty.nv.net
Robert Phillips	Barrick Goldstrike	rphillips@barrick.com
MICHAEL PECK	NEW MONT MINING	MICHAEL.PECK@NEWMONT.COM
Kyle Rock	Truckee Meadows Communities	kyle.rock88@gmail.com
Brittany Melton	ECAS	<del>brittany</del> bmelton@elkocounty.nv.net
Chris McMan	ECAS	cmcman@elkocounty.nv.net
Jim Pitts	Elko County Sheriff's Office	j.pitts@elkocounty.nv.net
Mike Hecht	EPD	mhecht@ci.elko.nv.us
Terri Dillon	NDF	tdillon@forestry.nv.gov

Jeremy Draper - City of Elko Engineer

### Meeting No. 3 Handouts

Draft Vulnerability tables and Action Matrix distributed for comments and Staple E distributed.

## Appendix E



### Meeting Agendas, Sign In Sheet and Handouts

STAPLE + E Evaluation Table																										
	S		T			A			P			L			E				E					P T		
	(Social )		(Technical)			(Administrati ve)			(Political)			(Legal)			(Economic)				(Environmental)							
Consideration s	Mitigati on Action s		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.. HMP into Master Plan & Ordinances																										
1.B.Up date land acq. & future devlp to include hazard s																										
1.C Review Master Plans & modify to include Hazard s																										
2.A Enhance GIS																										
2.B School																										



## Appendix E

### Meeting Agendas, Sign In Sheet and Handouts

STAPLE + E Evaluation Table																									
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	(Social )	(Technical)			(Administrati ve)			(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
District PA																									
2.C Public Outreach																									
3.A Coord. w/Bishop Dam																									
3.B Rezone Bishop Dam Inundation area																									
3.C City of Elko Update EOP w/inundation maps																									
3.C City of Elko Build park																									



## Appendix E

### Meeting Agendas, Sign In Sheet and Handouts

STAPLE + E Evaluation Table																								
	S	T			A			P			L			E			E					P		
	(Social )	(Technical)			(Administrative)			(Political)			(Legal)			(Economic)			(Environmental)					T		
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Mitigation Actions																								
on designation land for dam detention																								
4.A Drought response measures																								
4.B Zerocapping																								
4.C Carlin Water Storage Fac																								
5.A. Adopt current IBC																								
5.B. Building Inspection																								
5.C Retrofit																								



## Appendix E

### Meeting Agendas, Sign In Sheet and Handouts

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	S	T			A			P			L			E			E					P T			
	(Social )	(Technical)			(Administrati ve)			(Political)			(Legal)			(Economic)			(Environmental)								
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Critical Bldgs																									
5.D Verify URM																									
6.A Support NV State Health																									
7.A City Elko & Wells Complete H & H of storm drain																									
7.B Minor flood projects																									
7.C Join CRS																									
7.D Wells Boteris storm drain																									
8.A																									

## Appendix E

### Meeting Agendas, Sign In Sheet and Handouts

STAPLE + E Evaluation Table																									
	S	T			A			P			L			E			E				P T				
	(Social )	(Technical)			(Administrati ve)			(Political)			(Legal)			(Economic)			(Environmental)								
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Business HazMat & LEPC																									
8.B UPR & BNSF R Preparedness																									
8.C County webpage for HazMat 9.A Public Outreach storms																									
9.B Stability of Critical roofs																									
9.C Storm Ready Community																									
10A Count																									

## Appendix E

### Meeting Agendas, Sign In Sheet and Handouts

STAPLE + E Evaluation Table																											
	S	T			A			P			L			E			E				P T						
	(Social )	(Technical)			(Administrative)			(Political)			(Legal)			(Economic)			(Environmental)										
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y School District Elko & Wells Zero scapin g defensi ble space																											
10.B County Roadside Vegetative Mgmt.																											
10.C Public Education Program																											
10.D Participate in statewide effort public aware																											

## Appendix E

### Meeting Agendas, Sign In Sheet and Handouts

STAPLE + E Evaluation Table																									
	S	T			A			P			L			E			E					P			
	(Social )	(Technical)			(Administrati ve)			(Political)			(Legal)			(Economic)			(Environmental)					T			
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ness																									
10.E Chippe r Progra m																									
10.F Vegeta tion Mgmt.																									
11.A Tree prunin g for Windst orms																									
11.B Adopt rules for overhe ad lines																									

**Appendix F**  
**Plan Maintenance Documents**

Sample Press Release for  
Annual Maintenance Meeting

Mineral 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.elkocountynv.net](http://www.elkocountynv.net) .

Public comments and participation are welcomed. For additional information or to request to participate, or to submit comments, please contact \_\_\_\_\_, Elko County Emergency Management, at (775) \_\_\_\_\_ or (email).



## Annual Review Questionnaire

PLAN SECTION	QUESTIONS	YES	NO	COMMENTS
<b>PLANNING PROCESS</b>	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?			
<b>HAZARD PROFILES</b>	Has a natural and/or human-caused disaster occurred in this reporting period?			
	Are there natural and/or human-caused hazards that have not been addressed in this HMP and should be?			
	Are additional maps or new hazards studies available? If so, what have they revealed?			
<b>VULNERABILITY ANALYSIS</b>	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?			
<b>MITIGATION STRATEGY</b>	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?			



Plan Goal(s) Address

Goal: \_\_\_\_\_

Indicator of Success: \_\_\_\_\_

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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?

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

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C. How was each problem resolved?

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

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Other Comments:

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**Appendix G**  
**Mitigation Action Status from 2008 Plan**

**Table 8-2      2008 Mitigation Goals and Potential Actions Status**

<b>Jurisdiction</b>	<b>Goal Number &amp; Description</b>	<b>Action Number</b>	<b>Action Description</b>	<b>Status</b>
Planning Area	Goal 1: Promote disaster-resistant development	1.A	Integrate elements from the MJHMP into other local planning documents, including general plans, hazard-specific zoning ordinances, and emergency operation plans.	Ongoing continued in updated plan. Elko Co. – Working on Master Plan update. Floodplain ordinance reviewed 2013. Also review each new planned development for hazards. Carlin – Working on Master Plan Elko – Integrated FIRMs in Master Plan 2011 Wells – Master Plan updated 2012 W. Wendover – EOP Updated 10/2013. Flood plain ordinance to be reviewed in the next 3 yrs.
Planning Area		1.B	Update land acquisition/future development criteria to include a hazard analysis component (similar to flood zones) for dam inundation and wildfire hazard areas with possibility of consultation with University of Nevada – Reno (UNR) regarding possible earthquake faults, etc.	Ongoing continued in updated plan. Carlin – WUI Development Plan Elko – updated floodplain ordinance, conducting a land inventory for parks Wells – Annexation of land over next 5 years needs to include wildfire plan.
Planning Area		1.C	Review the existing County/City’s general/master plans and zoning ordinances to determine how these documents help limit development in hazard areas. Recommend modifications with additional guidelines, regulations, and land use techniques as necessary within the limits of local and state statutes.	Ongoing continued in updated plan. Carlin – Working on Master Plan Elko – Completed. Wells – Flood Ordinance & 2012 IBC. Join CRS in 2014.
Cities of Carlin, Elko, Wells, and West Wendover	Goal 2: Build and support local capacity to enable community members to prepare for,	2.A	Enhance the Planning Area’s GIS capabilities to include updated hazard and asset figures and developing jurisdictional GIS data sharing agreements that allows all communities within the Planning Area to share/utilize existing and new GIS hazard and asset information.	All – County GIS coordinating. Ongoing continued in plan with public added. Carlin – Public Works has GIS. Elko – completed, Lidar completed. In next 3 years GIS out to public.

## Appendix G

### Mitigation Actions 2008

Table 8-2 2008 Mitigation Goals and Potential Actions Status				
Jurisdiction	Goal Number & Description	Action Number	Action Description	Status
Elko County	respond to, and recover from disasters.	2.B	Work with the school district to develop a program that teaches children about hazards in the community and what they can do to mitigate, prevent, and prepare for these hazard events (i.e., in order to reduce urban flooding, don't put garbage and/or green waste into stormwater drains).	Ongoing continued in plan. Elko – participated in NV shakeout Wells – participated in NV shakeout.
Planning Area		2.C	Develop a sustained public outreach program that encourages consistent hazard mitigation content. For example, consider publishing tsunami inundation maps in telephone books, wildland fire defensible space tips with summer water bills or along highway billboards, and the safe handling and disposal of hazardous waste and chemicals with garbage bills.	All – Ongoing - Participate in Living w/Fire thru UNR Cooperative Ext. Carlin – Through building permit process. Elko – Ongoing fire department. Public Safety Picnic annually. Wildfire Awareness Week. Wells – email distribution for events. Wells plans on having a website in next 5 years.
Elko County	Goal 3: Reduce the possibility of damage and losses due to a dam failure.	3.A	Identify structures located within the Bishop Dam inundation area and retrofit and/or elevate, as needed.	Changed to Coordinate with Bishop Dam and retrofit dam for safety.
Elko County		3.B	Rezone the Bishop Dam inundation area as low intensity, nonresidential land uses to avoid placing new high density and/or residential construction in this hazard area.	Continue in update.
Planning Area and Elko County School District	Goal 4: Reduce the possibility of damage and losses due a drought.	4.A	Implement drought response measures as defined in the Department of Conservation and Natural Resources State of Nevada Drought Plan.	County. - Drought ordinance enacted in 2009. Incentive based tax reduction for water reduction in Jackpot. Elko City has a low impact development ordinance for storm water. Carlin – Commercial construction requires xeroscaping. Meters on new construction Elko – City has water restrictions in summer and new construction requires meters. Wells – 2007 Water conservation ordinance & plan and update every 2 years.

## Appendix G

### Mitigation Actions 2008

Table 8-2 2008 Mitigation Goals and Potential Actions Status				
Jurisdiction	Goal Number & Description	Action Number	Action Description	Status
		4.B	Mandate the use of xeriscaping or desert landscaping for appropriate existing and new County/City facilities and projects.	County increased re-use of water on golf course. Carlin – Ongoing but not mandatory. Elko – re-use of water on golf courses and parks and has ordinance. Wells – promoting but not mandatory.
Planning Area	Goal 5: Reduce the possibility of damage and losses due to an earthquake.	5.A	Adopt and enforce the International Building Code (IBC) provisions pertaining to grading and construction relative to seismic hazards.	City of Elko IBC 2009. Working towards 2012. Wells - IBC 2012. Carlin – IBC 2003 – Tend to stay in line w/County.
Planning Area and Elko County School District		5.B	Develop a voluntary building inspection program in which homes, businesses, and schools are inspected by a building official for weak or poorly anchored parapets, signs, glass, machinery, shelving, fixtures, and other nonstructural elements or architectural detailing that might cause injury if they were to fall or break during an earthquake. In conjunction with this action, develop a nonstructural retrofitting program to correct identified problems.	Completed & Ongoing for County and Cities. Continued in update  Non structural inspection scheduled for future.IBC for new construction. Elko – Inspection required for new business licenses. Wells - completed after 2008 earthquake. Future earthquake rally for funds to do retrofitting.
Planning Area and Elko County School District		5.C	Retrofit any critical assets within strong shaking areas that do not meet the IBC requirements for seismic safety. Priority for retrofitting should be given to emergency response facilities, schools, and shelters.	All - Budget constraints. Continued in update Elko – Would like to build new police station. Added to update. Wells – substation, water & sewer evaluated and upgraded after 2008 earthquake.
Planning Area		5.D	Work with utility companies to evaluate the seismic risk to their high-pressure transmission pipelines and implement mitigation measures, such as automatic shut-off valves.	Not continued in update. Almost complete. City of Elko - SW Gas 85% complete. Carlin – new construction requires.



## Appendix G

### Mitigation Actions 2008

Table 8-2 2008 Mitigation Goals and Potential Actions Status				
Jurisdiction	Goal Number & Description	Action Number	Action Description	Status
Planning Area and Elko County School District	Goal 6: Reduce the possibility of damage and losses due to an epidemic.	6.A	Support the Nevada State Health Department and the Nevada Department of Agriculture to increase surveillance and to develop more stringent requirements at high-risk facilities, (i.e., day-care centers, hospitals, nursing homes, schools, restaurants, hotels, resorts, and casinos) to an epidemic outbreak.	All – Health Clinics are private. Budget issues.
Cities of Elko and Wells	Goal 7: Reduce the possibility of damage and losses due a flood.	7.A	Complete hydrology and hydraulic analysis of storm drain hydraulic system to address minimal flooding in city due to storm drains repeatedly backing up with river water.	All - Budget issues. Continued in update.
Cities of Elko & Wells and Elko County School District		7.B	Carry out minor flood and stormwater management projects that would reduce damage to existing infrastructure and residential buildings due to flooding. These projects include the modifying or replacing existing culverts and bridges, upgrading capacity of storm drains, stabilizing streambanks, clearing streambanks of debris and vegetation, and creating of debris or flood/stormwater retention basins in small watersheds.	All - Budget issues. Continued in update.  Elko – Stizel culvert & open ditch and Mitzler wash culvert completed. Ongoing maintenance. Post construction stormwater runoff ordinance in draft. Wells – New construction (ie. New gas station south of 80 required detention basin).
Planning Area and Elko County School District	Goal 8: Reduce the possibility of damage and losses due to a hazardous materials event.	8.A	Require businesses that use, store, or transport hazardous materials to ensure that adequate measures are taken to protect public health and safety and that these measures are submitted to the Local Emergency Planning Committee (LEPC) for review.	All – Ongoing as part of annual fire inspection program.  Elko – annually have E waste cleanup and HW pickup.
		8.B	Work with the Union Pacific Railroad and Burlington Northern Santa Fe Railroad to ensure adequate precaution and preparedness regarding rail transport of hazardous materials.	All - UPR now part of LEPC.
Planning Area		8.C	Create a Planning Area webpage that includes information regarding the safe handling and disposal of household chemicals and e-waste.	All – Scheduled for 2016 County to provide each City can link. Include radon testing and venting in update.

## Appendix G

### Mitigation Actions 2008

**Table 8-2      2008 Mitigation Goals and Potential Actions Status**

<b>Jurisdiction</b>	<b>Goal Number &amp; Description</b>	<b>Action Number</b>	<b>Action Description</b>	<b>Status</b>
Planning Area	Goal 9: Reduce the possibility of damage and losses due to a severe storm.	9.A	Develop a public outreach campaign that informs the public on how to protect their homes from severe (hail and snow) storms and thunderstorms. Example protection measures include: cutting tree branches away from roofs, windows, and power/phone lines, strengthening/securing carports and rooftops to withstand high winds and/or extreme snow load.	All - Ongoing. Updated in 2013 HMP to include wind and all jurisdictions become a Storm Ready Community.  Elko & School District– Storm Ready Communities
Planning Area and Elko County School District		9.B	Determine the structural stability of critical facility roofs, carports, and garages to withstand ice and snow loads.	All - Ongoing. Updated in 2013 to include “or historical” and wind. County - Public Works in Strickland. Elko – Fire Station roof, City Hall roof. Wells – New City Hall & Public Works at IBC 2009 building codes.
Elko County & School District, Cities of Elko & Wells	Goal 10: Reduce the possibility of damage and losses due to a wildfire.	10.A	Install “green belts” utilizing grass seed mixture recommended by fire specialist in order to help maintain defensible space around the built environment.	All -Ongoing continued in update with addition of zeroscaping. Has occurred largely through county with interagency applications by NDF, Federal agencies; and Nevada Fire Safe Council. Note: fire safe council is now defunct and seeking other avenues to achieve same objectives. Elko – Maintain fire break around City. Wells - rock zero scaping on new City buildings.
Elko County		10.B	Implement a roadside vegetation management program that reduces vegetation and maintain roads by keeping all vegetation to a height of no more than four inches for a distance of twenty feet from the edge of the road on both sides of the road.	All - Ongoing continued in update. Deleted “by keeping.....the road”.  Elko – annually maintain.

## Appendix G

### Mitigation Actions 2008

Table 8-2 2008 Mitigation Goals and Potential Actions Status				
Jurisdiction	Goal Number & Description	Action Number	Action Description	Status
Planning Area		10.C	Create a public education program that explains fire safe measures in clear and emphatic terms, which will have an impact on residents of the wildland-urban interface. Informed community members will be more inclined to make efforts to effectively reduce wildfire hazards around their homes and neighborhoods.	All - Ongoing continued in update. Continuing public awareness programs annually and at local events. This includes, Local agencies, Federal and NDF. Pursuing Fire wise or Fire Adapted Communities Style of programming to replace Fire safe council tasks. Use Living w/Fire public awareness. Elko – Annual Safety Picnic.
Planning Area		10.D	Support and participate in a statewide effort to include federal, state, county, and city agencies to provide awareness to key government members, public entities, and private citizens regarding their community's risk to the Wildland-Urban Interface hazard.	All - Ongoing continued in update. Use Living w/Fire public awareness. NV Wildfire Awareness Week.
Planning Area		10.E	Develop a countywide chipper program in which local residents and business owners do their own vegetation management and the community offers free or reduced-cost roadside chipping.	No action due to budget. Continued in update with “chipper” in sentence. All – Free dump day cleanup. Wells – plans on starting program in 2014.
Elko County		10.F	Create a vegetation management program that provides vegetation management services to elderly, disabled, or low-income persons who lack the resources to remove flammable vegetation around their homes.	Completed. Available through grant opportunities on limited basis for those who give permission.
Planning Area		10.G	Implement both applied and emerging vegetation management activities along the destructive wildland interface and intermix hazard areas. Examples of activities include creating fuel breaks to separate housing encroachment from brush fields and mechanically constructing fire breaks within brush fields and forests.	Ongoing - Continued in update has occurred largely through County with interagency applications by NDF, Federal agencies; and Nevada Fire Safe Council.  Note: fire safe council is now defunct and seeking other avenues to achieve same objectives.

**Appendix G**  
**Mitigation Actions 2008**

<b>Table 8-2      2008 Mitigation Goals and Potential Actions Status</b>				
<b>Jurisdiction</b>	<b>Goal Number &amp; Description</b>	<b>Action Number</b>	<b>Action Description</b>	<b>Status</b>
Planning Area and Elko County School District	Goal 11: Reduce the possibility of damage and losses due to a windstorm event.	11.A	Develop and implement tree-pruning program to minimize threat to life and damage to property and public infrastructure during windstorm events.	Change in plan to Public Awareness. NV Energy in City of Elko maintains. Wells & Carlin – Rural Electric has tree trimming program Elko – Public Awareness. Maintain City Parks.
Planning Area and Elko County School District		11.B	Develop a FEMA-approved debris management plan (as outlined in the 2007 Public Assistance Pilot Program) in order to receive an increase cost share for Category A project worksheets.	Not completed due to funding and personnel. FEMA pilot program not continued. Not continued in plan.
Planning Area		11.C	Adopt more prescriptive rules relative to the construction and maintenance of overhead lines.	Elko - New construction requires underground lines.