# Lincoln County
# &
# City of Caliente
# Hazard Mitigation Plan

July 2016

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## Tables



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## Appendices

| | |
|---|---|
| BLM | United States Bureau of Land Management |
| CDC | Center for Disease Control |
| cfs | cubic feet per second |
| CFR | Code of Federal Regulations |
| City | City of Caliente |
| County | Lincoln County |
| DHS | Department of Homeland Security |
| DMA 2000 | Disaster Mitigation Act of 2000 |
| DOJ | Department of Justice |
| DOT | United States Department of Transportation |
| EHS | Extremely Hazardous Substance |
| EMPG | Emergency Management Planning Grant |
| EOC | Emergency Operation Center |
| EPA | United States Environmental Protection Agency |
| EPCRA | Emergency Planning and Community Right to Know Act |
| FEMA | Federal Emergency Management Agency |
| FBI | Federal Bureau of Investigation |
| GIS | Geographic Information System |
| HAZUS-MH | (abbreviation for **HAZ**ards **U**nited **S**tates) is a geographic information system-based natural hazard loss estimation software package developed and freely distributed by the Federal Emergency Management Agency |
| HMGP | Hazard Mitigation Grant Program |
| HMP | Hazard Mitigation Plan |
| 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 |
| NRC | National Response Center |
| NWS | National Weather Service |
| PDM | Pre-Disaster Mitigation |

| | |
|---|---|
| POC | Point of Contact |
| Planning Committee | Hazard Mitigation Planning Committee |
| SERC | State Emergency Response Commission |
| SFHA | Special Flood Hazard Area |
| SPWB | State Public Works Board |
| Stafford Act | Robert T. Stafford Disaster Relief and Emergency Assistance Act |
| State | State of Nevada |
| UBC | Uniform Building Code |
| UNR | University of Nevada Reno |
| URM | Unreinforced Masonry Buildings |
| USC | United States Code |
| USDA | US Department of Agriculture |
| USEPA | United States Environmental Protection Agency |
| USFS | United States Forest Service |
| USGS | United States Geological Survey |
| WMD | Weapons of Mass Destruction |

Across the United States, natural and human-caused disasters have led to increasing levels of death, injury, property damage, and interruption of business and government services. The toll on families and individuals can be immense and damaged businesses cannot contribute to the economy. The time, money and effort to respond to and recover from these emergencies or disasters divert public resources and attention from other important programs and problems. With one Presidential declaration and 3 flood events in the last eleven years, Lincoln 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 the City of Caliente and Lincoln County 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 Lincoln County and City of Caliente Hazard Mitigation Planning Committee updated the *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 update a hazard mitigation plan that will guide the County and City toward greater disaster resistance in full harmony with the character and needs of the community and region.

People and property in the County and City 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 *Hazard Mitigation Plan* has been updated 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. When the first plan was adopted in 2005, 11 mitigation actions were completed. Since the 2010 update, 13 mitigation actions have been completed. This updated plan identifies on-going and new hazard mitigation actions intended to eliminate or reduce the effects of future disasters throughout the County and City.

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This section provides an overview of the Disaster Mitigation Act of 2000 (DMA 2000; Public Law 106-390), the update, revisions and adoption of the Lincoln County and City of Caliente, Nevada, Multi-Jurisdictional Hazard Mitigation Plan (HMP) by the local governing body, and supporting documentation for the adoption.

## 1.1 DISASTER MITIGATION ACT OF 2000

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

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

## 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.*

The HMP meets the requirements of Section 409 of the Stafford Act and Section 322 of the DMA 2000. This includes meeting the requirement that the HMP be adopted by the City of Caliente (City) and Lincoln County (County), both as continuing participants in this plan.

The local governing body of Lincoln County (Lincoln County Board of Supervisors) and City of Caliente (Caliente City Council) has adopted this update to the HMP. The signed resolution is provided in Appendix A.

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This section provides an overview of the City's 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 and City are eligible to receive Federal mitigation funding after disasters and to apply for mitigation grants before disasters strike. This HMP continues the ongoing process to evaluate the risks different types of hazards pose to the County and City, and to engage the County and City and the community in dialogue to identify the steps that are most important in reducing these risks. This constant focus on planning for disasters continues to make the County and City, including its residents, property, infrastructure, and the environment, much safer.

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

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

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

Adoption by the local governing body demonstrates the jurisdiction's commitment to fulfilling the mitigation goals and objectives outlined in the HMP. Adoption legitimizes the updated HMP and authorizes responsible agencies to execute their responsibilities. The resolution adopting this update to the HMP is 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 Three - Community Description*

Section Three provides a general history and background of the 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 Four - Planning Process*

Section Four 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 Five - Risk Assessment*

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

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

- *Section Six – Vulnerability Analysis*

Section Six 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 City could face and potential social impacts, damages, and economic losses.

- *Section Seven - Capability Assessment*

Although not required by the DMA 2000, Section Seven provides an overview of the 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 Eight- Goals & Actions - Mitigation Strategy*

As Section Eight 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 and objectives, 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 Nine- Plan Maintenance Process*

Section Nine 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 Ten - References*

Section Ten lists the reference materials used to prepare this update to the HMP.

- *Appendices*

The appendices include the Adoption Resolution, Nevada prepared by Craig dePolo from the Bureau of Mines and Geology, UNR; Maps, Planning Committee Meetings, and Public Involvement process.

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

## 3.1 HISTORY, LOCATION, AND GEOGRAPHY

Located in southeastern Nevada, Lincoln County borders both Utah and Arizona on its eastern border and the counties of Nye (western border), White Pine (northern border) and Clark (southern border). Lincoln County is the third largest county in Nevada (after Nye and Elko Counties) covering approximately 10,634 square miles and accounting for nearly 9.6 percent of the state's total surface area. The only incorporated entity within Lincoln County; the City of Caliente is also the County's geographic center. Over 98 percent of the county's total surface area is controlled and managed by the state and Federal government, including the U.S. Bureau of Land Management (BLM), the U.S. Forest Service (USFS), the U.S. Fish and Wildlife Service (USFWS), and the Nevada State Parks.

Named for President Abraham Lincoln, the County was formed on February 25, 1866 from lands previously belonging to the Utah and Arizona Territories. In 1908, an act of the Nevada legislature created Clark County by splintering off the southern end of Lincoln County. Development of the County began with the establishment of the Pahranagat Mining District during the mid-1860s. The City of Caliente was formed as a ranch to provide hay for the mining camps. However, by the early 1870s, the enterprise failed to meet expectations, and the abandonment of the mines in the Pahranagat Valley led to changes in the County's government structure as the county seat moved from Hiko to its present location in the Town of Pioche. Named for Francois L.A. Pioche, the town sprang up around silver claims and became one of the prominent silver-mining towns in Nevada. Known in local lore for being a rough town, legend states 75 men were killed in gunfights prior to the first natural death. This fierce, Old West reputation is immortalized in the creation of "Boot Hill", a recognized landmark in Pioche.

The topography of the County is a mixture of mountain ranges ranging from elevations of 10,440 feet on the slopes of Mount Grafton to 1,900 feet in the valleys of Tule Wash. As a result of its varying topography, natural features abound in Lincoln County: deep gorges, lakes, volcanic formations, valleys and other features indicative of the Great Basin desert and its associated flora and fauna are all present within the County. Five state parks including Beaver Dam State Park, Cathedral Gorge State Park, Spring Valley State Park, Echo Canyon State Park, and Kershaw-Ryan State Park all lie within the County and provide recreation facilities and amenities.

Lincoln County's climate is typical of the Great Basin's "basin and range" topography with dry valleys and moister mountain ranges. Temperatures range from well below freezing in the winter up to the 100's in the summer in some areas of the County. Typically, the southern deserts of the County experience much warmer temperatures throughout the year than the higher elevations in the northern portion.

## 3.2 GOVERNMENT

As noted above, over 98 percent of the unincorporated County's land is federally managed and not available for private or County use. The remaining land consists of one incorporated community, the City of Caliente, and the towns of Pioche, Panaca, and Alamo, and the communities of Rachel, Hiko, Ash Springs, Richardsville, Caselton, Mt. Wilson and Ursine. Governed by a five member Board of Commissioners, Lincoln County utilizes a District form of government where officials are elected at large, by district to serve terms of four years. Other elected officials in the County include the District Attorney, Sheriff, Treasurer, Auditor and Recorder, Assessor, and County Clerk. Lincoln County does not have a County Manager position the duties are shared among several departments.

**Key Officials**

| | | |
|---|---|---|
| Commissioner 1 | | District Attorney |
| Commissioner 2 | Assessor | Sheriff |
| Commissioner 3 | Auditor/Recorder | Treasurer |
| Commissioner 4 | Building & Safety Administrator | Fire Chief/Emergency Management Director |
| Commissioner 5 | Clerk | Judges |
| | Flood Control | Planning |

The City government is an organization type with a mayor and four councilmen each elected to serve 4 year terms, with provisions for the mayor to be the administrative officer.

**Key Officials**

| | |
|---|---|
| Mayor | |
| Councilman | City Attorney |
| Councilman | Clerk |
| Councilman | Public Works |
| Councilman | Parks |

## 3.3 DEMOGRAPHICS

According to the July 1st, 2015 estimate by the Nevada State Demographer the County's population totals 5,327, broken down by: Alamo 1,071, Panaca 960, Pioche 995, with the remainder in the rural communities of Ursine, Mt. Wilson, Hiko, Rachael, McDermit and scattered ranches and farms.

The City of Caliente's population was 1,136 in the July 2015 estimate. The Low to Moderate Income percentage, per Housing and Urban Development data (HUD), for the City is 73 percent. The per capita Income for the City $12,655.

According to this estimate Lincoln County's labor force was 1,736 in July 2015, with a per capita personal income of $19,206.

The primary economic activities within the County include agriculture and cattle ranching, railroad industries, small-scale mining, and government services. The primary agricultural crop within the County is alfalfa. Recently, there have been attempts at dry farming and "designer farm ventures" aimed at exploring the potential for Farmer's Markets in Las Vegas and subsequently Lincoln County. According to the latest available figures (2012 Census of Agriculture), the economic value of crops in Lincoln County was $23,215,000 (up by 49% from the 2007 census).

## 3.4 LAND USE AND DEVELOPMENT TRENDS

As previously noted, 98.2 percent of the County is public land. The BLM is responsible for administering the majority of federal land in Lincoln County for conservation, resource management, and realty purpose. The US Forest Service manages the Humboldt National Forest in the northwestern portion of the County and the United States Fish and Wildlife Service USFWS manages the Pahranagat Valley Wildlife Refuge near Alamo. In addition, The Nevada National Security Site occupies a large portion of the southwestern area of the County, with the State of Nevada managing six state parks within the County. (See Figure B-1, Surface Management Area in Appendix "B")

The federal government regulates most of the land in Lincoln County. In 2005, 13,300 acres of land in southeastern Lincoln County were auctioned by the Bureau of Land Management. This land, known as Toquop, is located along the Lincoln/Clark County border adjacent to the City of Mesquite and will be developed by private developers. However, due to the current economic outlook development is not expected to occur within the next five years, with the possibility of no activity for an even longer period. (See Figure B-1, Appendix "B" for a map of this area)

This sale, known as the Lincoln County Recreation and Development Act of 2004 (LCRDA) further provided for an additional 90,000 Acres of Public Land to be auctioned off for development in the future for expansion of the existing and future communities, as well as an additional 15,000 acres to be available for governmental use as parks and open spaces.

Another 47,000+-acre parcel, (approximately 29,000 acres are located within Lincoln County) of land known as Coyote Springs located along the Lincoln/Clark County border adjacent to US 93 is currently being privately developed, (see Figure B-1, Appendix B). In the Coyote Springs development area, 8000 acres were re-zoned in 2010 as commercial zoning to allow for the proposed construction of a renewable energy solar plant, however development is not anticipated in the near future. Both the Coyote Springs and Toquop projects will be residential, commercial and recreational (golf courses) and are expected to contribute substantially to the economic base of Lincoln County when development occurs. Currently there is limited infrastructure development activity within the Coyote Springs area on the Clark County portion with some potential to move into Lincoln County. Additionally, in 2014, a small development in the

Toquop area was approved for development. No large scale development is anticipated in the near future at either of these locations.

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 update to the HMP. Additional information regarding the Planning Committee and public outreach efforts is provided in Appendices C, D and E.

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

DMA 2000 Requirements: Planning Process

Documentation of the Planning Process

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

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

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

Element

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

*Source: FEMA, March 2008.*

## 4.1 OVERVIEW OF PLANNING PROCESS

The County and City hired Ken Dixon (KYD) to assist with the development of this HMP update and revision. The first step in the planning process was to re-establish the Planning Committee, composed of existing County and City agencies. Rick Stever, Lincoln County Director of Emergency Management, Melissa Free, Lincoln County Planning and Cory Lytle, Lincoln County Building and Planning Administrator, were included with Rick Stever serving as the primary Point of Contact (POC), for the County, City, and the public. See Table 4-1 for a complete listing of HMPC members.

The County and City, assisted by the State of Nevada, Hazard Mitigation Specialist, Karen Johnson updated this HMP. Each section of the previous HMP plan was reviewed for content and the committee revised every section of the plan as needed.

The following table provides the new section format and provides details on the update.

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

| Plan Section | Update Effort | What Changed |
|---|---|---|
| Section 1 – Official Record of Adoption | Minor Revision | The process for plan adoption remains the same but the update provides a discussion of the signed resolution provided in Appendix A. |
| Section 2 - Background | No Change | |
| Section 3 – Community Description | Minor Revisions | This section was updated to include new demographic data information based on the 2010 Census information. The Land Use section was updated. |
| Section 4 – Planning Process | Major Revisions | This section details the current plan's planning process, public and stakeholders outreach efforts. |
| Section 5 – Hazard Analysis | Major Revisions | UNR, Nevada Bureau of Mines and Geology updated their analysis of the earthquake hazard. The committee rated the hazards according to low, moderate or high planning significance. The individual hazard sections were updated to include the last five year historical data with the inclusion of the effects of climate change to the hazards. The sections were then provided to the committee member with expertise to update history and revise as needed. |
| Section 6 – Vulnerability Analysis | Moderate Revisions | Critical Facilities were reviewed and changes made. New HAZUS information was used for the earthquake hazard. Revised mapping, exhibits and tables included new analysis of residential, non-residential, and critical facilities based on mapping efforts tied to hazards. Identified URM's were included. Future development was included. |
| Section 7 – Capability Assessment | Minor Revisions | Reviewed all tables with committee for accuracy. Updated dates and Local Mitigation Capability Assessment Point of Contact Names. NFIP information was added. |
| Section 8 – Mitigation Strategy | Moderate Revisions | The goals and actions were reviewed and progress was included, 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 | The planning process was reviewed by Committee. Planning forms were included in Appendix F to help with the maintenance process. |
| Section 10 – Reference | Minor Revisions | This section was updated with current information, including changes to the document dates and website addresses. |

Plan maintenance performed 3 of the 5 years. There was discussion on mitigation actions taken and/or planned regarding wildfire during the update of the Community Wildfire Protection Plan in 2012. This discussion/action resulted in the formation of the Lincoln County Fire District that encompasses all of the County that is not covered by an existing fire department or fire district. However other than wildfire all information on mitigation action accomplishments and new public input was derived during the update planning process. The

Meadow Valley Wash Conservation Plan provided additional mitigation actions during its development in 2012.

The Planning Committee has been updated and re-established for this 2016 revision. The following five-step planning process took place during the 9-month period from April to December 2015.

- **Organize resources:** The Planning Committee identified resources, including County & City staff, agencies, and local community members, which could provide technical expertise and historical information needed in the update of the HMP.
- **Assess risks:** The Planning Committee identified the hazards specific to County & City, and developed the risk assessment for the thirteen 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 County & City.

## 4.2 HAZARD MITIGATION PLANNING COMMITTEE

### 4.2.1 Formation of the Planning Committee

The original County points of contact formed the advisory body, known as the Planning Committee, utilizing staff from relevant City and County agencies. The Planning Committee members for updating and revising this plan for the 2017 plan are listed in Table 4-1. They include members of the public as well as members who have technical knowledge of the possible hazards within the county.

During the process KYD provided updates via email, and HMPC meetings, Consensus was reached on modifications at meetings and through phone/email and final draft approval was obtained from City and County elected officials.

It should be noted that Karen Johnson, Nevada State Hazard Mitigation Office, while not actually a member of the HMPC, participated either by phone or in person in the update process for this HMP and is considered a valuable asset in the plan update. The Planning Committee meetings are described in Appendix C.

**Table 4-2 -Planning Committee for the Lincoln County Hazard Mitigation Plan**

| Name | Department | Responsibility |
|---|---|---|
| **County** | | |
| Rick Stever | Lincoln County Emergency Management Director | Insure compliance with HMP maintenance and Point of Contact (POC) |
| Melissa Free | Planning Lincoln County Planning Office | Assist with planning expertise for Committee |
| Cory Lytle | Director Lincoln County Building and Planning | Assist with planning, provide and enforce data for building actions needed in Section Six. |
| Gary Davis | Captain Lincoln County Sheriff's Office | Provide expertise in law enforcement areas and local historical information |
| Kevin Phillips | Lincoln County Commissioner | County Commissioner in charge of Emergency Management |
| Nicole Rowe | Lincoln County Public Health Nurse | Provide expertise on health issues and member of LC School Board |
| Steve Hansen | Superintendent Lincoln County School District | Provide input on School District issues and historical information |
| Dave Luttrell | Manager, Lincoln County Power District | Provide information on Power distribution hazards and mitigation actions |
| Wade Poulsen | Lincoln County Water District | Assist HMPC with water related issues within Lincoln County |
| Glennon Zelch | Board Member Pioche Town Board/Public Utilities | Provide input on Pioche Town Board and Utility issues.<br>Chairman, Lincoln County Planning Commission |
| John Stever | Chief, Pioche Fire Department | Provide input from Pioche Fire District |
| Paul Donohue | Supervisor, Lincoln County Telephone | Provide information on communications and area media (Cable TV) |
| Dave Luttrell | Manager, Lincoln County Power District | Provide information on Power distribution hazards and mitigation actions |
| **City** | | |
| Stana Hurlburt | City of Caliente Mayor | Provide input on City of Caliente related hazards and actions |
| Kelli Haluvak | Caliente City Clerk | Provide information on hazards, reviewed plan and mitigation actions |
| Jerry Carter | Caliente Public Works Supervisor | Provide information on hazards, vulnerability, and mitigation actions |
| George Rowe | Caliente Fire Department Chief | Provide information on fire hazard, vulnerability and mitigation actions |
| **Other** | | |
| Steve Meldrum | Alamo Town Board | Provide input on Alamo and Pahranagat Valley issues and historical information |
| Doug Miller | Board Member, Alamo Power District | Provide information on power distribution hazards and mitigation actions |
| Jim Poulson | Manager, Alamo Water & Sewer District | Provide input on utility services |
| Gary Elmer | Board Member, Panaca Town Board | Represent Panaca Town Board and historical information |

| | | |
|---|---|---|
| Connie West | Representative, Town of Rachel | Provide input from Rachel and historical information for surrounding area |
| Richard Higbee | Board Member, Pahranagat Valley Fire District | Provide input from Alamo and Pahranagat Valley hazards and mitigation actions |
| Cory Lytle | Local Agent, NRCS | Assist HMPC with information relating to agriculture issues |
| Melanie Peterson | Environmental Specialist, BLM | Assist HMPC with information on wildland fires and invasive species |
| Joe Liveri | Supervisor, Nevada Division of Forestry | Assist HMPC with information on wildland fire fuel reduction actions |
| Connie Simkins | Joint City County Impact Alleviation Committee | Assist HMPC with radiological hazards, rangeland issues and historical knowledge |
| Jason Bleak | Administrator, Grover C Dills Hospital | Assist HMPC with health related potential hazards and mitigation actions |
| Brad Lloyd | Supervisor, Nevada Division of Transportation, Panaca | Represent NDOT potential hazards and mitigation actions |
| Robert Steel | Supervisor, Nevada Division of Transportation, Alamo | Represent NDOT potential hazards and mitigation actions |
| Kenny Weideman | Manager, Thomas Petroleum Company | Assist HMPC with propone and vehicle fuel related hazards and mitigation actions |
| Ken Dixon | Lead Planner, Consultant | Prepare updated HMP for presentation to State and FEMA |
| Shane Cheeney | Supervisor Lincoln County Road Department | Assist with potential county road hazards and actions. |
| Craig DePolo | NV Bureau of Mines & Geology, UNR | Assisted with the earthquake risk assessment and vulnerability and actions. |
| Ben Johnson | Area Supervisor, Nevada State Parks | Assist HMPC with potential hazards and mitigation actions related to Nevada State Parks, |

### 4.2.2 Planning Committee Meetings & Monthly Progress

*March 2015*

Lincoln County Grants Administrator, Elaine Zimmerman, through a request for proposals process hired Ken Dixon (KYD) to restructure, develop and updated the existing 2012 Hazard Mitigation Plan that would meet the objectives of DMA 2000, continue the hazard mitigation planning process, and develop a public outreach process. KYD discussed the need to include Geographic Information System (GIS) technology as a tool for identifying and mapping known hazards in the County. Also discussed was the need to revive and updated the previous Planning Committee to network with other people in the County, other agencies, and other professionals who might have specialized knowledge about hazards that may affect the County.

*April 2015 through January 2016*

A copy of the 2012 approved plan along with the Plan Review checklist was forwarded to the Committee for review and discussion to familiarize them with the approach and concepts that would be used in the risk identification phase of the HMP update. An additional highlighted copy of the plan identified the specific portions that needed to be addressed in the 2017 HMP and additional potential hazards to be analyzed, as well as asking for any other issues that may need to be added to the updated plan. Among the 20 potential hazards initially discussed (as shown in Section 5.2), five natural hazards were determined to pose the greatest potential risk to the County: drought, earthquakes, floods, wildland fires, and windstorms.

**Table 4-3 Committee Meetings, Formal and Informal**

| Date | Members Present | Topic(s) |
|---|---|---|
| 22 April 2015 | See minutes | Review scope of work for update. General guidelines. Introduce Karen Johnson, NDEM. Discuss planning process. |
| 15 July 2015 | See minutes | Review progress to date. Discuss hazards and historical events, Committee completed hazards ratings and reviewed previous plans mitigation actions. |
| 23 Sep 2015 | See Minutes | Review hazard profile updates. Discuss Critical Facilities & Infrastructure, Maps and mitigation actions. |
| 21 Oct 2015 | See Minutes | Review progress including updates to hazard profiles and demographics. Critical facilities & infrastructure maps. |
| 9 Dec 2015 | See Minutes | Review progress, critical facilities & infrastructure, vulnerability ratings. |
| 6 Jan 2016 | See Minutes | Review progress and updates. Preparation for plan submittal to governmental agencies. |

A detailed accounting of all the HMPC meeting minutes is included in Appendix C.

## 4.3 PUBLIC INVOLVEMENT

The Planning Committee reached out to the community through a press release, a questionnaire and letters to stakeholders.

### Press Release & Public Awareness

In May 2015, a press release was issued regarding the preparation of the HMP update. The press release was sent to the local newspaper, the Lincoln County Record. The press release and notification letter are included in Appendix D.

### Questionnaire

The County Hazard Mitigation Questionnaire was designed to help the Hazard Mitigation Committee identify the community's concerns about natural and human-caused hazards. Public input was also received from a questionnaire (Appendix D) sent out with utility billings from LC Power and City of Caliente in October 2016. Approximately 111 questionnaire responses were returned via the workshop and online. Questionnaire responses were tallied and written comments were reviewed. The questionnaire and the results can be found in Appendix D.

### Letters to Stakeholders and Neighboring Communities

The Planning Committee mailed letters (see Appendix D) regarding the update of the HMP to the following entities:

- Nye County, NV DEM
- Washington County, UT DEM
- Mohave County, AZ DEM
- Clark County, NV DEM
- White Pine County, NV DEM
- Iron County, UT DEM
- Beaver County, UT DEM
- Nellis Air Force Base, NV
- NV Division of Water Resources, Rob Palmer
- NV Department of Transportation, Jim Walker
- FEMA, Juliette Hayes Mitigation Div.

No written responses were received from the above entities. BLM, NRCS, NDEM, and NDF have provided information and input for comment.

## 4.4 INCORPORATION OF EXISTING PLANS AND OTHER RELEVANT INFORMATION

During the update planning process, KYD and the Planning Committee reviewed and incorporated information from existing plans, studies, reports, and technical reports into the HMP, with emphasis on any new plans or studies completed since the 2012 HMP. In order to ensure the integration of the HMP with other planning area documents, the Planning Committee members were selected for their knowledge of existing plans. Most of the committee members contributed to the planning process in developing the existing local plans and are familiar with the contents of these plans. For each major plan the link for information is provided below.

- *Lincoln County Master Plan, 2015*: This plan provides goals, objectives and policies to guide land use planning. HMPC member Cory Lytle, Administrator, LC Planning and Building Dept. has the responsibility of managing this plan.
- *Lincoln County Public Lands Policy Plan, 2015:* This plan is a "sub-plan" of the Master Plan which guides the use of public land and public resources within the County boundaries.
- *The Lincoln County Open Space and Lands Plan, 2011:* This plan is a "sub-plan" of the Master Plan which provides guidelines and requirements for development of parks and open space.
- *Zoning Ordinance of Lincoln County*: This land use zoning ordinance encourages, guides, and provides orderly planned use of land and water resources and future growth and development.
- *City of Caliente Master Plan*: This plan outlines long range planning goals and policies to guide growth in the City over a twenty-year period, this plan includes LCLA land withdrawal areas as well as some private lands recently annexed into the City. Mayor Stana Hurlburt and Ken Dixon, Floodplain Manager are liaisons.
- City of Caliente Planning & Zoning Ordinance, amended 2015. Encourage growth and provide orderly planning/zoning use for any future land uses.
- *FEMA Flood Insurance Study for Lincoln County, Nevada* (FEMA 2010): This study outlined the principal flood problems and floodplains within parts of the County and the City of Caliente. Ken Dixon and Cory Lytle (both ASFPM certified, City Floodplain Managers)
- *Lincoln County Hazardous Materials Response Plan:* This plan provides guidance to emergency response personnel on the general plan of action for a response to a hazardous materials emergency and provides for a resource directory. Rick Stever, Lincoln County Emergency Management Director.
- *State of Nevada Multi-Hazard Mitigation Plan as updated in October of 2013:* This plan, prepared by NDEM, was used by KYD to ensure that the County's & City's HMP was consistent with the State's Plan.

- *LC Evacuation, Sheltering and Mass Care Plan.(Ecology and Environment, Inc. March 2009. )* Rick Stever, LC Emergency Management Director
- *Landscape-Scale Wildland Fire Risk/Hazard/Value Assessment*, Wildlands Fire Associates The following FEMA guides were also consulted for general information on the HMP process:
- *Local Multi-hazard Mitigation Planning Guidance* (FEMA March 20, 2015)
- *State and Local Planning How-to Guides.* (FEMA 386-1 through 8)
- *Multi-Hazard Identification and Risk-Assessment* (FEMA)
- *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 Section 10, References.

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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 the 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.

During the first HMP meeting, the Planning Committee using *The State of Nevada Enhanced Hazard Mitigation Plan* and the previous HMP as a starting point and reviewing previous disaster declarations and events, the Committee reviewed 23 existing hazards of the plan. Two new hazards (marijuana cultivation and traffic event) were included for review however it was determined that neither should be profiled at this time as other planning mechanisms are better suited. See Table 5-1.

The addition of traffic hazards due to disruption of traffic on the major east/west Interstate (I-15) just south of Lincoln County has been added because of a flood event in September 2014 that closed I-15 in both directions for several days, resulting in all Interstate traffic being diverted

through Lincoln County and Washington County, Utah. This diversion overwhelmed all of Lincoln County and adjoining Washington County, Utah, creating enormous traffic jams and long delays in travel between Las Vegas, NV and Cedar City, UT. This item is shown in this plan primarily because it is a problem outside of the control of Lincoln County and the City of Caliente. This mitigation process must be addressed on a State and Federal level.

The addition of illegal drug farming and processing is shown as a hazard due to the very real possibility of serious bodily harm or death to any individual inadvertently coming across one of these growing areas. These growing areas are also a very costly item, both in manpower and equipment for local, state and federal agencies to eradicate once they are discovered. Lincoln County has some very large uninhabited areas with isolated water sources that pre-disposes itself to this type of activity. This again is a national problem as well as a local one and is in this plan as a very real hazard.

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

| Hazard Category | Hazard Type | Should it be Profiled | Is this a new Hazard | Explanation |
|---|---|---|---|---|
| | Earthquake | Yes | No | Several active fault zones pass through the County |
| | Wildland Fire | Yes | No | The terrain, vegetation and weather conditions in the region are favorable for the ignition and rapid spread of wildland fire. |
| | Dam Failure | No | No | There are high hazard dams within the County and these risks are assessed in the flood areas. Profiled under Flood. |
| | Avalanche | No | No | There are no populated areas prone to significant snowfall. |
| | Land Subsidence | No | No | Local occurrences have not been recorded |
| | Landslide | No | No | No significant historic events have ever been recorded |
| | Tornado | No | No | No significant historic events have ever been recorded |
| | Volcano | No | No | No significant historic events have ever been recorded |
| | Infestations | No | No | No significant historic events have ever been recorded in Lincoln County. Invasive plants are addressed in a separate document and an agreement is in place with Tri-County Weed Control Program. |
| Weather Extremes | Drought | Yes | No | Statewide drought is an issue, no indications for a severe drought are in sight for Lincoln County. Drought may be considered in future updates to this plan. |
| | Flood | Yes | No | Flash flood events can occur during rainstorms. Other flood events are usually caused by heavy winter snowfall and rapid melting. |
| | Windstorm | Yes | Yes | Lincoln County is susceptible to severe wind, previous events have caused moderate property damage. |
| | Winter Storm | No | No | Frequency is low but has occurred, closing roads, schools and impacting ranching/farming operations for short periods. |
| | Hailstorm | No | No | No significant historic have been recorded |

| | | | | |
|---|---|---|---|---|
| | Thunderstorms | No | No | This event is addressed in Flood section |
| | Extreme Heat | No | No | Very seldom occurs in populated areas of Lincoln County |
| Special Hazards | Traffic Events | No | Yes | Local events have been recorded, see item 5.2.2 above |
| | Marijuana Growing Areas | No | Yes | Local events have been recorded, see item 5.2.3 above |
| Man Made | Radiological Incident | No | No | Lincoln County recognizes the close proximity of the Nevada National Security Site and assumes the Federal Government has a mitigation plan in place. The Yucca Mountain Repository project is addressed separately from this plan. |
| | Disease/Epidemic | No | No | This hazard is addressed in the State Hazard Mitigation Plan |
| | Hazards Material Event | No | No | There are two facilities in Lincoln County with reportable amounts, they are operated by licensed operators and are in compliance with regulations. These materials are transported through the County by rail and highway by licensed carriers, there have been no significant events reported within the last 15 years. |
| | WMD/Terrorism/ Civil Disturbance | No | No | This is considered a low risk, with the most potential threat being an incident involving Union Pacific Railroad transportation. |

***Assigning Vulnerability Ratings***

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

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

**Table 5-2 Vulnerability Ratings Rubric**

| | | Frequency | Magnitude/Severity | Warning Time | Duration |
|---|---|---|---|---|---|
| Lowest | 1 | 1000+ years | 1-5% Damaged; No deaths; Local | > 48 hrs | 1 - 3 Days |
| | 2 | 100 -1000 years | 5-15%; No deaths; City/Community | 24 to 48 hrs | 4 - 7 Days |
| | 3 | 10 -100 years | 15-30%; < 5 Deaths; County | 12 to 24 hrs | 8 - 14 Days |
| | 4 | 5 -10 years | 30-50%; > 5 Deaths; State | 6 to12 hrs | 15 - 20 Days |
| Highest | 5 | 0 - 5 years | 50+%; Significant Deaths; Region IX | < 6 hrs | 20+ Days |

The Committee referenced the NDEM historical records, and data provided in the 2012 Hazard Mitigation Plan, as well as HAZUS runs from the Nevada Bureau of Mines and Geology (NBMG) for scientific data used for magnitude, economic and frequency scores based on historical frequencies and/or projected probabilities of the hazards identified, as well as members' knowledge of previous occurrences and technical expertise.

The Committee calculated scores for magnitude, economic and frequency based on historical frequencies and/or projected probabilities of the hazards identified.

Upon obtaining total scores for each hazard, the Planning Committee utilized the scores to analyze and prioritize the hazards to focus upon during the profiling, vulnerability assessment and mitigation strategy. Table 5-3 provides the summary of the hazards scoring results of both the members present at the meeting and those that supplied feedback via e-mail after the meeting.

Planning Committee ranked the 12 hazards which pose a threat to the County and City.

**Table 5-3 Hazard Ratings**

| **Natural Hazards Rating** | | |
|---|---|---|
| **Rating** | **Hazard** | **Total** |

| | | |
|---|---|---|
| Very High | Earthquake | 21.5 |
| High | Flood | 18.75 |
| High | Wildfire | 17 |
| Medium | Drought | 15.5 |
| Medium | Windstorm | 16.5 |
| Low | Dam Failure | 14.75 |
| **Man Made** | | |
| Very High | Radiological | 20.5 |
| Very High | Epidemic | 20.5 |
| High | Hazardous Material Event | 19.25 |
| Medium | WMD/Terrorism | This was not rated is considered a low risk |
| Medium | Traffic Event | 14 |
| Medium | Marijuana Grow | 12.5 |

The County and City had the same rankings. The Committee then discussed the results of the exercise and through Committee deliberation that drought changed from high to medium. The two new hazards ranked as medium. All others remained at the same ranking. Due to limited resources the five hazards posing the greatest risk were profiled; drought, earthquake, flood, wildfire and windstorm.

Should the risk from these hazards increase in the future, the HMP can be updated to incorporate a vulnerability analyses for these hazards.

## 5.2 HAZARD PROFILES

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
- Climate change
- Probability of future events

Each hazard was reviewed for climate change. To the extent each hazard was affected, climate change considerations were incorporated in the *Location, Extent, and Probably of Future Events* section of each hazard profile.

The hazards profiled for the County and City and presented in Section 5.2 are in alphabetical order. The order of presentation does not signify the level of importance or risk. Committee members were tasked to provide information for each profile. Earthquake was revised with the information provided by Craig DePolo of UNR, Bureau of Mines and Geology. Revisions were made to update the historical information and new information was incorporated for current updates to this plan.

### 5.2.1 Drought

Planning Significance - Medium

See Figure B-7 in Appendix B for Lincoln County current drought information.

#### 5.2.1.1 Nature

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

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

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

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

Drought differs from other natural hazards in three ways. First, the onset and end of a drought are difficult to determine due to the slow accumulation and lingering of effects of an event after its apparent end. Second, the lack of an exact and universally accepted definition adds to the confusion of its existence and severity. Third, in contrast with other natural hazards, the impact of drought is less obvious and may be spread over a larger geographic area. These characteristics have hindered the preparation of drought contingency or mitigation plans by many governments.

### *5.2.1.2 History*

The US Drought Monitor (USDM) produced weekly since 2000 can be used to visualize trends in drought over the region. The map, which rates drought from D0 (abnormally dry) to D4 (exceptional drought), is based on measurements of climatic, hydrologic and soil conditions as well as reported impacts and observations from more than 350 contributors around the country.

According to information from the USDM, Nevada has been, for the most part, in some degree of drought since 2000, as seen in **Figures 5-1 and 5-2.**

**Figure 5-1 Drought Severity Comparison**
**April 15 2014 vs April 7, 2015**

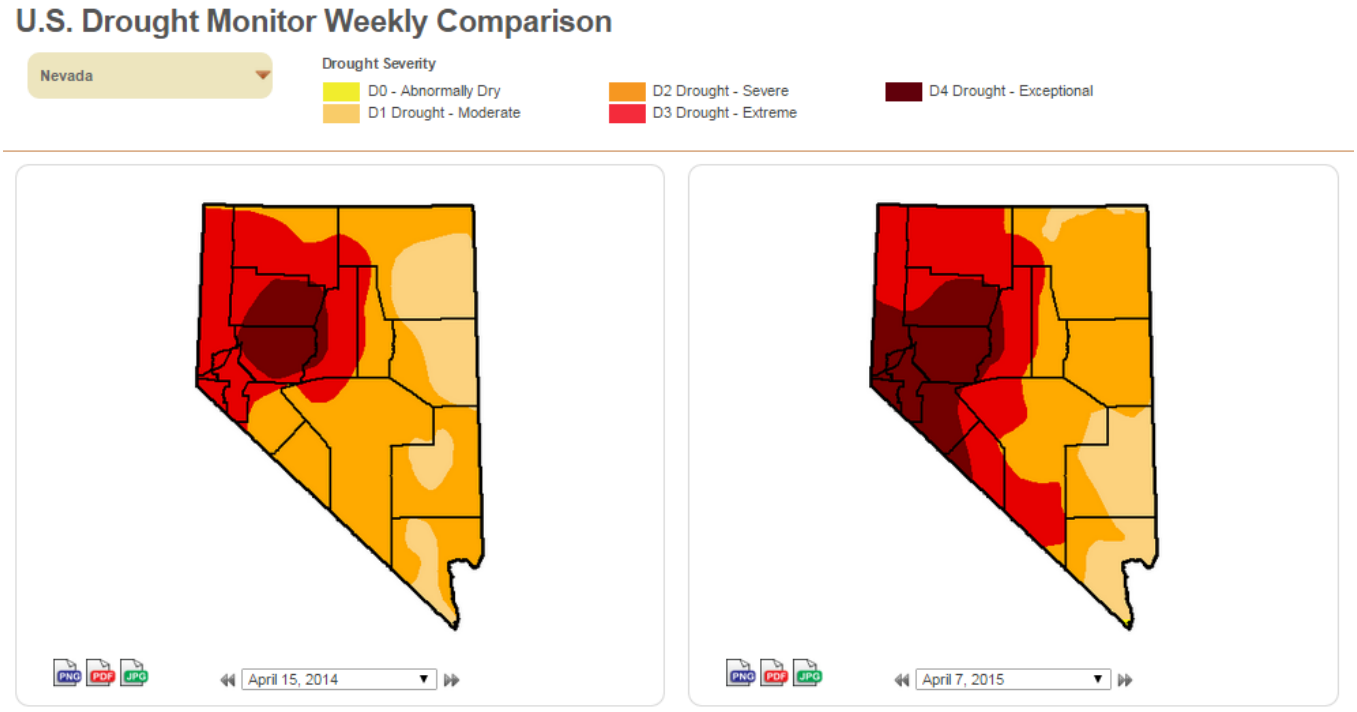


**Figure 5-2 Drought Severity Comparison**
**November 29, 2011 vs November 25, 3014**

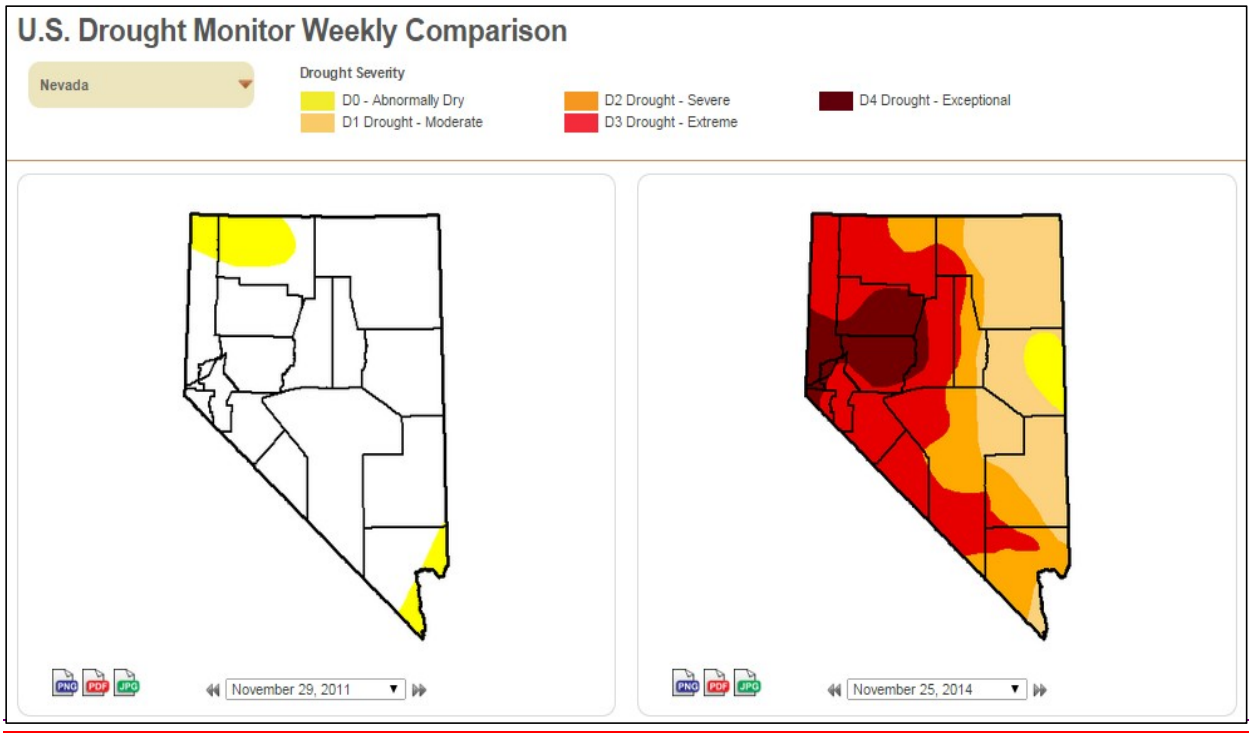
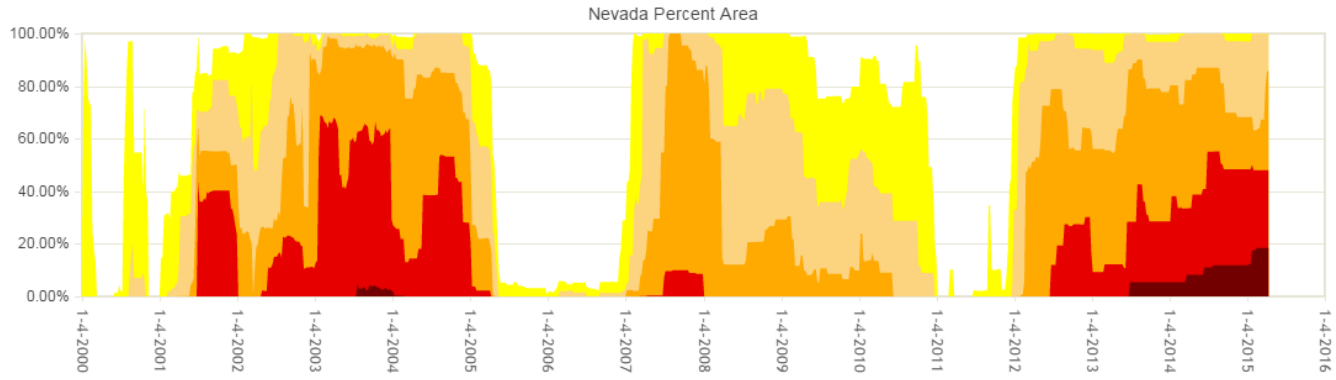



**Figure 5-3** shows the percentage of the state suffering from a given drought level (D0-yellow, D1-tan, D2-orange, D3-red, D4-dark red). During these same periods the County has suffered varying degrees of drought as well. The Statewide ongoing drought since 2012 has had less impact on the County which remained in the Moderate to Severe severity.

**Figure 5-3 Nevada Percent Area**



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

The longer-term forecasting by the Palmer Drought Severity Index estimates that Lincoln County can expect severe or extreme drought at least 10 percent of the time in the future. Some agricultural wells have been affected in northern Lincoln due to the current drought and if the drought continues it would affect water tables and wells as well as agriculture within the County. A drought risk assessment would be needed to study the extent of prolonged drought on wells.

***Climate Change***

There is an expectation that the effects of climate change will result in rising snow levels. The rising snow levels will result in a large fraction of winter precipitation falling as rain instead of snow. As a result of the predicted changing precipitation source, maintaining the current practice of conjunctive use and ground water recharge will become even more important for maintaining and storing water supplies.

Disruption of services is highly variable: in urban areas with municipal water systems and reservoir storage, disruption may be quite minimal during a typical few -year drought. In that same drought, however, disruption of water supplies to rural and agricultural communities, it may be considerable as those areas depend more on ground water which can be depleted quickly in drought conditions.

Drought is one of the least predictable hazards. The current state of seasonal weather prediction science is such that it is nearly impossible to predict well in advance the beginning or the ending of droughts with meaningful confidence levels. With that said, periods of drought have regularly occurred in the recent history and as such drought can be expected to occur with some regularity in the future.

Climate Change has not been properly studied in regards to drought, however it may make weather more extreme and therefore drought could be more severe and may be more frequent. When additional information is available Lincoln Co. will include the information in the plan.

## 5.2.2 Earthquake

Planning Significance – Very High

### *5.2.2.1 Nature*

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

The severity of ground motion generally increases with the amount of energy released and decreases with distance from the fault or epicenter of the earthquake. Ground motion causes waves in the earth's interior, also known as seismic waves, and along the earth's surface, known as surface waves. There 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).

| Intensity | Shaking | Description/Damage |
|---|---|---|
| I | Not felt | Not felt except by a very few under especially favorable conditions. |
| II | Weak | Felt only by a few persons at rest,especially on upper floors of buildings. |
| III | Weak | Felt quite noticeably by persons indoors, especially on upper floors of buildings. Many people do not recognize it as an earthquake. Standing motor cars may rock slightly. Vibrations similar to the passing of a truck. Duration estimated. |
| IV | Light | Felt indoors by many, outdoors by few during the day. At night, some awakened. Dishes, windows, doors disturbed; walls make cracking sound. Sensation like heavy truck striking building. Standing motor cars rocked noticeably. |
| V | Moderate | Felt by nearly everyone; many awakened. Some dishes, windows broken. Unstable objects overturned. Pendulum clocks may stop. |
| VI | Strong | Felt by all, many frightened. Some heavy furniture moved; a few instances of fallen plaster. Damage slight. |
| VII | Very strong | Damage negligible in buildings of good design and construction; slight to moderate in well-built ordinary structures; considerable damage in poorly built or badly designed structures; some chimneys broken. |
| VIII | Severe | Damage slight in specially designed structures; considerable damage in ordinary substantial buildings with partial collapse. Damage great in poorly built structures. Fall of chimneys, factory stacks, columns, monuments, walls. Heavy furniture overturned. |
| IX | Violent | Damage considerable in specially designed structures; well-designed frame structures thrown out of plumb. Damage great in substantial buildings, with partial collapse. Buildings shifted off foundations. |
| X | Extreme | Some well-built wooden structures destroyed; most masonry and frame structures destroyed with foundations. Rails bent. |

### *5.2.2.2 History*

The largest earthquake (M 6.0) ever recorded in Lincoln County occurred on August 16, 1966 in the City of Caliente. There is no record of significant damage from this event, however several longtime residents reported items falling from bookcases, etc. Numerous smaller earthquakes have been recorded throughout the County over the past 100 years.

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

Lincoln County is located within the Basin and Range province, which is characterized by parallel mountain ranges and valleys, bounded by normal-slip faults. There are 270 known normal-slip faults within Nevada, with several relatively small (12- to 24-mile-long) faults within central Lincoln County. In fact, over three-dozen faults are located in the Caliente Quadrangle (which covers Lincoln County). Although relatively small in size, these fault zones are capable of delivering M 6.0–7.0 earthquakes. See Figure B-8 for Quaternary Earthquake Fault Map. See Figures B-10 through B-12 for Shake maps for some of the more recent earthquake events that have occurred in the County.

Additionally, Lincoln County is susceptible to background earthquakes, which are not linked to any known fault and do not rupture at the surface, as well as earthquake sequences and earthquakes caused by subsurface faults.

The Nevada Bureau of Mines and Geology (NBMG) suggest that the Peak Ground Acceleration within the County over the next fifty years may produce a moderate to strong earthquake of M VI to VII. (See Appendix B, Figure B-9)

The below estimates are derived from a M 6.6 Quake (See page 334 of NV HMP, 2010)

**Table 5-4. Earthquake Probabilities occurring within 50 years and 31 miles of major communities in County**

| Location | % of probability of magnitude greater than or equal to | | | | | Ranking | Estimated Economic Loss |
|---|---|---|---|---|---|---|---|
| | **5.0** | **5.5** | **6.0** | **6.5** | **7.0** | | |
| Pioche | 30-40 | ~20 | 6-10 | 2-3 | <.5 | 1st | $20,000,000 |
| Alamo | 70-80 | ~50 | 20-25 | 6-8 | <.5 | 2nd | $5.100.000 |
| Caliente | 50-60 | ~35 | 10-15 | 4 | <.5 | 3rd | $12,000,000 |

## 5.2.3 Flood

Planning Significance - High

### *5.2.3.1 Nature*

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

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

Flooding is the accumulation of water where there usually is none or the overflow of excess water from a stream, river, lake, reservoir, or coastal body of water onto adjacent floodplains. Floodplains are lowlands adjacent to water bodies that are subject to recurring floods. Floods are natural events that are considered hazards only when people and property are affected. Nationwide, floods result in more deaths than any other natural hazard. Physical damage from floods includes the following:

- Inundation of structures, causing water damage to structural elements and contents.
- Erosion or scouring of stream banks, roadway embankments, foundations, footings for bridge piers, and other features.
- Impact damage to structures, roads, bridges, culverts, and other features from high-velocity flow and from debris carried by floodwaters. Such debris may also accumulate on bridge piers and in culverts, increasing loads on these features or causing overtopping or backwater effects.
- Destruction of crops, erosion of topsoil, and deposition of debris and sediment on croplands.
- Release of sewage and hazardous or toxic materials as wastewater treatment plants are inundated, storage tanks are damaged, and pipelines are severed. Floods also cause economic losses through closure of businesses and government facilities; disrupt communications; disrupt the provision of utilities such as water and sewer service; result in excessive expenditures for emergency response; and generally disrupt the normal function of a community. In Lincoln County, flash flooding is most commonly associated with local convective storms formed over the Gulf of California and southern Pacific Ocean. Due to the aridity of the County, the area is dry except during and shortly after these storms. When a major storm develops, water collects rapidly in a short period of time. As a consequence, flows are of the flash-flood type. Flash floods are generally understood to involve a rapid rise in water level, high velocity, and large amounts of debris, which can lead to significant damage that includes the uprooting of trees, undermining of buildings and bridges, and scouring of new channels. The intensity of flash flooding is a function of the intensity and

duration of rainfall, steepness of the watershed, stream gradients, watershed vegetation, natural and artificial flood storage areas, and configuration of the streambed and floodplain.

In the planning area, flooding is most commonly associated with unusually heavy rainfall due to tropical storms coming from the South. Due to the aridity, the area is dry except during and shortly after these storms. When a major storm develops, water collects rapidly in a short period of time. As a consequence, flows are of the flash-flood type. Flash floods are generally understood to involve a rapid rise in water level, high velocity, and large amounts of debris, which can lead to significant damage that includes the uprooting of trees, undermining of buildings and bridges, and scouring of new channels. The intensity of flash flooding is a function of the intensity and duration of rainfall, steepness of the watershed, stream gradients, watershed vegetation, natural and artificial flood storage areas, and configuration of the streambed and floodplain. It is important to note that even in drought, scattered summer thunderstorms can bring excessive rainfall and flash flooding, particularly near wildfire burn scars that enhance water runoff. These kinds of floods produce debris flows, large amounts of water runoff laden with burn debris and mud.

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

The City of Caliente is especially susceptible to flooding due to the confluence of two major drainage channels, the Meadow Valley Wash and Clover Creek merge at Caliente and flow through the City for a distance of 1.25 miles. These two active watersheds drain an area in excess of over 1200 square miles, plus an additional in-active (500 year flood event or more) watershed of over 1000 square miles.

Other than flash floods, the major cause of flooding in Lincoln County is heavy snow packs in the mountains during the winter months with unusual warm rains or warm weather causing rapid snowmelt.

**Dam Failure.** Hazard designations for dams are assigned based on downstream hazard potential in the event of a dam failure (NAC 535.140). A high hazard designation (H) is assigned to a dam if there is reasonable potential for loss of life and/or extreme economic loss. A significant hazard designation (S) is assigned to a dam if there is a low potential for loss of life but an appreciable economic loss. Lastly, a low hazard designation (L) is assigned to a dam if there is a vanishingly small potential for loss of life and the economic loss is minor or confined entirely to the dam owner's own property. There is no history of dam failure in Lincoln County and the probability of dam failure is considered low. However since dam failure for Lincoln County is shown as a hazard in the State HMP, the HMPC has profiled dam failure in this section.

#### *5.2.3.2 History*

The largest flood ever recorded in Lincoln County occurred in Caliente in 1938. This flood event had an estimated peak discharge of 15,000 cfs (170-year event). The National Climate Data Center recorded twenty two instances of flooding within Lincoln County between 1996 and March of 2010. These events led to over $20.8 million in reported damages. These flooding events along with recent events between 2010 and 2015 are described below:

- On June 15, 1996, persistent strong to severe thunderstorms over the Clover Mountains east of Caliente resulted in high runoff levels that filled a retention basin in the Clover Creek drainage basin. Consequently, the basin failed and sent water, mud and debris down the Clover Street in Caliente flooding homes and businesses, washing out roads, and sweeping at least three cars away. No deaths or injuries occurred, however $250,000 in property damage was recorded.
- On August 4, 1997, heavy rain showers fell on a 9,000-acre burn area in northeast Lincoln County and resulted in a flash flood that began in Camp Valley Creek and ended in Eagle Valley Canyon. Floodwaters reached as high as 20 feet in places and swept through a ranch damaging property, machinery and haystacks. The waters also washed out several sections of the road in Eagle Valley Canyon before they were contained in the Eagle Valley Reservoir three miles north of Ursine. Recorded damages from this event included $100,000 in property damage and $10,000 in crop damage.
- On August 9, 1997, heavy thunderstorm rains caused another flash flood in Camp Valley Creek and Eagle Canyon where flooding occurred less than a week earlier. The water took a similar course as the previous flood and there were no reports of injuries or additional damage.
- On August 10, 1997, the flash flood-prone Eagle Valley Canyon was again reported to be running with water at 12:50 pm PST. By 2:45 pm PST, the water had made its way down the canyon and caused the Eagle Valley Reservoir to overflow its embankment. An estimated 3,000 fish were washed over the bank and left to die. State Highway 322, between Pioche and Ursine, was also flooded. The Lincoln County Sheriff reported the road closed for a few hours. Reported property damage from this event totaled $10,000.
- On September 9, 1997, thunderstorms produced yet another flash flood which swept down Camp Valley Creek and Eagle Canyon in northern Lincoln County. A wall of water estimated at 20 feet high rushed down Camp Valley Creek then fanned out and flooded the Pearson Ranch. Some fields were washed out and fences knocked down. Reported damages included $5,000 in property damage and $5,000 in crop damage.
- On September 11, 1998, a widespread flash flood event began with heavy rain in the vicinity of Panaca and Cathedral Gorge State Park. The Lincoln County Sheriff first reported flooding across the road in Cathedral Gorge at 11:20 am PST followed by washed out roads between Pioche and Echo Canyon State Park shortly after. Redeveloping thunderstorms produced upwards of 1.5 inches of rain within a couple hours causing major flash flooding around Panaca and also at Eagle Valley State Park during the afternoon. No significant reports of damage were received.
- On August 29, 2000, flash flooding caused a car to be washed off Highway 93 just north of the Clark County line. The highway was littered with mud, water, and rocks from the Clark County line to mile marker 15. Reported property damages from this event totaled $10,000.
- On August 15, 2003, an intense thunderstorm produced flash flooding in and around the City of Caliente. Several roads in town were impassable from mud and debris.
- On January 10-12, 2005, flooding in and around the City of Caliente at Clover Creek Wash and Meadow Valley Wash inundating approximately one-third of the City causing over $2 million in damages and a Presidential declaration.
- On July 6, 2005 a flash flood at Hiko lasting about ¾ hours, covered SR 318 with debris

- On July 27th 2008 near Ursine, Highway 322 was washed out between mile markers 9 and 14. Reported damages estimated at $25,000.
- On Oct 4th 2010 near Panaca, debris was washed across U.S. Highway 93 at mile marker 109, closing the highway for approximately 30 minutes.
- On 21 December 2010 near Elgin, flash flooding washed out portions of Highway 317 through Rainbow Canyon, as well as Kane Springs Road. Closing SR 317 for one day.
- In December of 2010, flooding of Clover Creek Wash occurred in Caliente. Due primarily to the obstruction caused by the existing culverts under the road to the Caliente Youth Center, this flooding threatened the major electrical substation serving the City. The final costs involved in the efforts to save the substation and clear the debris that threatened the south bridge across US Highway 93 are were approximately $320,000.
- On July 18th 2015 a thunderstorm centered on Caliente, created flash flooding from lateral drainage washes causing an estimated $35,000 damages to public and private property and an estimated $45,000 in costs to remove debris and gravel from the main Meadow Valley Wash to alleviate possible flood damage from any future event upstream in the main drainage areas.
- On the 18th of October 2015 an extended rainstorm of 4 days over most of Lincoln County caused a large amount of water to flow through Meadow Valley Wash and Clover Canyon. This event caused extensive flooding of the roads and washes in Northern Lincoln County again depositing a significant amount of debris and gravel throughout the County and City of Caliente. The estimated costs for debris and gravel removal for both the July event and October event, to date is $105,000.

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

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

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

- Rainfall intensity and duration
- Antecedent moisture conditions
- Watershed conditions, including steepness of terrain, soil types, amount and type of vegetation, and density of development and the results of wildland fires.
- The existence of attenuating features in the watershed, including natural features such as swamps and lakes and human-built features such as dams
- The existence of flood control features, such as levees and flood control channels
- Velocity of flow
- Availability of sediment for transport, and the erodibility of the bed and banks of the watercourse.

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

The magnitude of flood used as the standard for floodplain management in the United States is a flood having a 1 percent probability of occurrence in any given year. This flood is also known as the 100-year flood or base flood. The most readily available source of information regarding the 100-year flood is the system of Flood Insurance Rate Maps (FIRMs) prepared by FEMA. These maps are used to support the National Flood Insurance Program (NFIP). The FIRMs show 100-year floodplain boundaries for identified flood hazards. These areas are also referred to as Special Flood Hazard Areas (SFHAs) and are the basis for flood insurance and floodplain management requirements. The FIRMs also show floodplain boundaries for the 500-year flood, which is the flood having a 0.2 percent chance of occurrence in any given year. FEMA has prepared a FIRM for Lincoln County dated October 1985, with an update for the Ursine area and the City of Caliente dated October 2010. Both the County and City have officially adopted FEMA FIRMs, including the recent updates, and have adopted the latest versions of the International Code Council codes as they pertain to development in Special Flood Hazard Areas. See Figures B-13 through B-19.

The major areas of flooding sources within Lincoln County, including the City of Caliente, are as follows:

- The Meadow Valley Wash, which is formed by the confluence of the Spring Valley Creek and the Patterson Wash. This wash flows 95 miles south through Ursine, Panaca, and Caliente where it merges with Clover Creek then flows through Rainbow Canyon to the Muddy River. The Meadow Valley Wash 100-year flood event at Caliente has an estimated peak discharge of 13,088 cfs.
- The mountains to the east of Panaca are a potential threat in the event of a severe thunderstorm. In the mid-thirties, a series of wooden drop structures were constructed along the washes in this range as well as a major diversion levee from the northern edge of town to a point south of town. These structures and other problem areas were addressed in a drainage study by Leslie and Associates in 2007. Lincoln County has not been able to address the results of this study due to financial issues.
- The Clover Creek Wash, which flows westward and merges with the Meadow Valley Wash at Caliente. The Clover Creek Wash 100 year flood event has an estimated peak discharge of 15,000 cfs.
- The White River, which flows southward through the towns of Hiko, Ash Springs, and Alamo. The White River 100-year flood event at Alamo has an estimated peak discharge of 10,080 cfs. Flash flooding in the Alamo area is of concern because of the mountains to the west and the large amount of drainage area that collects runoff and directs it towards Alamo. The existing dikes and diversions that were constructed some years back are in dire need of maintenance and in some cases, reconstruction. A large amount of these dikes and/or irrigation channels have, over the years, been converted to piping. This no longer allows for the conveyance of any runoff water and even a minor storm can wreak havoc and cause a serious flooding issue. This has the potential for major property damage in a severe storm event.

Lincoln County is currently in the process of addressing flood and drainage issues for areas of concern. Engineered planning for storm water capital improvement has been done for Alamo, Pioche, Panaca and Eagle Valley/Ursine, to-date. The City's plan will be complete in 2016 Incorporation of plans and addressing issues will be financially challenging however.

Lincoln County tends to receive the most rainfall (and therefore has the greatest chance for flash flooding) between July and September, when convective monsoonal storms over southern Nevada are most prevalent. However, cloud burst storms can also cause localized flooding.

Considered in this plan is a report by Natural Channel Design completed in January of 2015 on the Meadow Valley Wash Corridor Analysis of a study and recommendations on the Meadow Valley Wash from just north and east of Caliente to below Elgin in the Rainbow Canyon area.

Climate Change has not been properly studied in regards to Flood, however it may make weather more extreme and therefore flood could be more severe and may be more frequent. When additional information is available Lincoln Co. will include the information in the plan."

The probability of flooding in Lincoln County and the City of Caliente is high based on past occurrences.

**Dam Failure -** The information shown below in Table 5-4, has been taken from Appendix G of the 2013 State HMP and adjusted by the local Committee so far as ranking of hazards.

**TABLE 5-5. Dams in Lincoln County**

| Federal ID | State ID | Name | Height | Owner | Hazard Rating | Area Affected |
|---|---|---|---|---|---|---|
| NV00117 | J-116 | Echo Canyon | 58 Ft. | NV Wildlife Div. | S | Dry Valley |
| NV00118 | J-063 | Hollinger Debris Basin | 16 Ft. | NV Parks Div. | L | Above Eagle Valley Reservoir<br>Ursine |
| NV10001 | J-028 | Pine Canyon | 97 Ft. | USCOE | H | Caliente |
| NV10002 | J-033 | Mathews Canyon | 75 Ft. | USCOE | H | Caliente |
| NV00119 | J-054 | Schroder Dam | | NV Wildlife Div. | Has been removed | None |
| NV00153 | XJ-169 | Tempiute Tailings | 75 Ft. | UMETCO | S | No longer structures below |
| NV10125 | n/a | Upper Pahranagat | 15.8 Ft | US Fish & Wildlife | L | No |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | | structures below |
| NV10422 | J-399 | Caliente Waste Water | 14 Ft. | City of Caliente | L | Caliente |
| NV00186 | n/a | Caselton Last | 28 Ft. | Bunker Hill Mining | L | No water pumped into |
| NV00185 | n/a | Caselton #4 | 32 Ft. | Bunker Hill Mining | L | No water pumped into |
| NV00184 | n/a | Caselton #5 | 29 Ft. | Bunker Hill Mining | L | No water pumped into |
| NV00183 | n/a | Caselton #8 | 16 Ft. | Bunker Hill Mining | L | No water pumped into |
| NV00182 | n/a | Caselton #9 | 36 Ft. | Bunker Hill Mining | L | No water pumped into |
| NV00181 | n/a | Caselton #10 | 15 Ft. | Bunker Hill Mining | L | No water pumped into |
| NV00137 | n/a | Caselton Middle | 20 Ft. | Bunker Hill Mining | L | No water pumped into |
| NV00116 | J-078 | Eagle Valley Reservoir | 62 Ft. | NV Div. Nat. Resources | H | See App. B-20<br>Echo<br>Ursine |
| N/A | n/a | Pahranagat Upper Dike | n/a | US Fish & Wildlife | H | No structures below until Clark County |

L=Low, S=Significant, H=High

| Hazard Potential Classification | Loss of Human Life | Economic, Environmental, Lifeline Losses |
|---|---|---|
| Low | None expected | Low and generally limited to owner |
| Significant | None expected | Yes |
| High | Probable. One or more expected | Yes (but not necessary for this classification) |

The Eagle Valley Reservoir dam inundation map is attached in Appendix B-20. Inundation maps for the other structures are available from the NV Division of Water Resources.

**Drop Structure failure.** There are 6 drop structures located throughout the County (shown in table 5-5). While these drop structures are designed to control siltation, due to their age and condition they are also considered to be at high risk of flood damage. If these structures should fail they will raise the risk of increasing the damage potential downstream. The most probable structure in danger is the Mathews Drop Structure below Panaca. Lincoln County and the Lincoln County Conservation District are working together to secure funding to reconstruct this structure. A preliminary engineering study has been completed by NDOW and Lincoln County to identify repair/reconstruction options. Additionally, plans are in progress to rehabilitate and/or maintain the other existing drop structures in the County

### *Climate Change*

Increased warming increases the capacity of the atmosphere to hold moisture, which leads to more water vapor in the atmosphere. Warmer conditions between summer thunderstorms can additionally dry and compact the soil, making it more impervious to heavy rain, and further increase the rate of runoff during flash flood events. These conditions may result in possible injury and more damage to the communities.

## 5.2.4 Wildfire

Planning Significance - High

### *5.2.4.1 Nature*

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

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

**Topography:** As slope increases, the rate of wildland fire spread increases. South-facing slopes are also subject to more solar radiation, making them drier and thereby intensifying wildland fire behavior. However, ridgetops may mark the end of wildland fire spread, since fire spreads more slowly or may even be unable to spread downhill.

**Fuel:** The type and condition of vegetation plays a significant role in the occurrence and spread of wildland fires. Certain types of plants are more susceptible to burning or will burn with greater intensity. Dense or overgrown vegetation increases the amount of combustible material available to fuel the fire (referred to as the "fuel load"). The ratio of living to dead plant matter is also important. The risk of fire is increased significantly during periods of prolonged drought, as the moisture content of both living and dead plant matter decreases. The fuel's continuity, both horizontally and vertically, is also an important factor.

**Weather:** The most variable factor affecting wildland fire behavior is weather. Temperature, humidity, wind, and lightning can affect chances for ignition and spread of fire. Extreme weather, such as high temperatures and low humidity, can lead to extreme wildland fire activity. By contrast, cooling and higher humidity often signals reduced wildland fire occurrence and easier containment.

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

The indirect effects of wild land fires can be catastrophic. In addition to stripping the land of vegetation and destroying forest resources, large, intense fires can harm the soil, waterways, and the land itself. Soil exposed to intense heat may lose its capability to absorb moisture and support life. Exposed soils erode quickly and enhance siltation of rivers and streams, thereby increasing flood potential, harming aquatic life, and degrading water quality. Lands stripped of vegetation are also subject to increased debris flow hazards, as described above

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### 5.2.4.2 History

As shown in Table 5-5, there have been several large wild land fires in Lincoln County over the past ten years. The largest wildfire ever recorded within the County was a 214,038-acre fire, (Duzaak Fire) in 2005 in the Clover Mountains and Tule Desert area. Approximately 80 percent of the recorded fires were caused by lightning. See Figure B-19 for latest fire map.

**Table 5-6. Summary of Fire History Data, 1996-2015**

| Year | Number of Fire Ignitions | Total Fire Acreage |
|---|---|---|
| 1996 | 278 | 69,334 |
| 1997 | 71 | 9,776 |
| 1998 | 99 | 15,404 |
| 1999 | 160 | 40,227 |
| 2000 | 195 | 61,244 |
| 2001 | 125 | 1,962 |
| 2002 | 131 | 18,693 |
| 2003 | 103 | 715 |
| 2004 | 224 | 9,857.6 |
| 2005 | 107 | 612,573.0 |
| 2006 | 179 | 118,430.4 |
| 2007 | 54 | 5,047.1 |
| 2008 | 59 | 1,241.4 |
| 2009 | 77 | 549.2 |
| 2010 | 26 | 409.1 |
| 2011 | 100 | 14,712 |
| 2012 | 139 | 55.198 |
| 2013 | 113 | 11,421 |
| 2014 | 94 | 10,801 |
| 2015 | 92 | 167 |

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

The majority of fires that have occurred over the past fourteen years have been located in extensive fuel load and steep slopes areas of the eastern portion of the County.

Climate Change - Climate Change has not been properly studied in regards to wildfire, however it may make weather more extreme and therefore wildfire could be more severe and may be more frequent. When additional information is available for Lincoln Co. the information will be included in the plan."

The extent, or severity, of wildland fires in each Lincoln County community has been determined using a hazard ranking system of low to extreme. This methodology assesses four primary factors that affect potential fire hazard including: community design, structure survivability, availability of fire suppression, and physical conditions such as fuel loading and topography. As such, Mount Wilson and Pioche/Caselton Heights have extreme fire hazard ratings, Eagle Valley/Ursine has a high hazard rating, and the City of Caliente, Panaca, and Rachel have moderate hazard ratings. Alamo is the only community to have a low hazard rating. The undeveloped communities of Coyote Springs and Toquop were not addressed, however their areas are shown in Wildland Fire Associates 2008 study as having a moderate rating. Wildland Fire Associates study also rated Alamo and Panaca as having a moderate rating for wildlands fire risk.

**Table 5-7. Wildfire Risk**

| Locality | Extreme | High | Moderate |
|---|---|---|---|
| Pioche/Caselton | X | | |
| Mt Wilson, Pony Springs, McDermit | X | | |
| Ursine/Eagle Valley | | X | |
| Alamo | | | X |
| Caliente | | | X |
| Panaca | | | X |
| Ash Springs/Hike | | | X |

Based on historical records over the past ten years, the County can expect approximately 147 fire ignitions annually.

#### Climate Change

Climate Change has not been properly studied in regards to wildfire, however it may make weather more extreme and therefore wildfire could be more severe and may be more frequent. When additional information is available for Lincoln Co. the information will be included in the plan."

### *Nevada Community Wildfire Risk Assessment*

An risk/hazard/value/assessment was prepared in 2008 by Wildland Fire Associates for the Bureau of Land Management that outlined all of the wildland fire risks for all of Lincoln County. This is the latest available study of record conducted by a public agency, and the updated information included in this document has been obtained from several sources and is considered reasonable accurate.

While this analysis from Wildland Fire Associates did not change the rating of any communities in the planning area, it identified additional consideration of wildland fire hazards. Following below is a summary of findings from this analysis:

This assessment used the capabilities of GIS to determine the vulnerability of a given area to wildland fire and to identify areas that would benefit from fuels treatments or other activities used to mitigate risk. The final product is a tool that can be used by land managers and others to identify areas and values that are vulnerable to wildland fire and to set priorities for fuels treatment or fire threat mitigation projects.

In order to achieve the desired results, three primary layers were produced: fuel hazard, risk of fire occurrence and combined values at risk. These primary layers were combined into a final overlay—the risk/hazard assessment summary—which identified and ranked areas based on the severity of threat posed by wildland fire. In order to conform to standards established by the Nevada State Fire Board (see footnote in section 1.0) and to simplify the planning process, ratings of low, moderate, high, and extreme were selected. A full explanation of the process can be found in Section 5.1.6 Assessment Methodology.

Fuel hazard was assessed by using FlamMap, a landscape-scale fire behavior prediction tool that determines fire behavior based on a range of factors related to fuels, weather, and topography. The key outputs—fireline intensity, flame length, and rate of spread—were rated on a scale ranging from 1 to 4; 1 being low, 2 moderate, 3 high, and 4 extreme. Slightly less than two-thirds (61%) of the county for which data were available fell into the high to extreme categories, while the remainder of the county fell into the low or moderate categories (Table 2).

Table 2. Fuel Hazard Rating.

| Rating Class | | Acres | Percent of Total Acres |
|---|---|---|---|
| Numeric | Adjective | | |
| 1 | Low | 65,333 | 01.0 |
| 2 | Moderate | 2,601,873 | 38.0 |
| 3 | High | 1,992,066 | 29.0 |
| 4 | Extreme | 2,145,405 | 32.0 |

Risk of fire occurrence was determined by the relative frequency of wildfires within the entire assessment area based on historical fire occurrence data and lightning strike history. The levels of risk were calculated by defining the spatial location of historical fires, 100 acres or greater, caused by both humans and natural phenomena; lightning density was also factored in. It was determined that almost the entire county was at moderate to high risk for fire occurrence (Table 3).

Table 3. Risk of Fire Occurrence.

| Rating Class | | Acres | Percent of Total Acres |
|---|---|---|---|
| Numeric | Adjective | | |
| 1 | Low | 4,521 | 00.1 |
| 2 | Moderate | 4,200,626 | 62.0 |
| 3 | High | 2,527,437 | 37.0 |
| 4 | Extreme | 72,382 | 01.0 |

Combined values at risk or those features, both tangible and intangible, on the landscape that could potentially be damaged by wildfire were identified, combined, and included in this model. Values at risk include essential infrastructure, community values such as significant landscapes and historic places, and wildlife habitat. Ninety-four percent of the identified values at risk were found to be at low or no risk from the impacts of wildland fire (Table 4).

Table 4. Combined Values at Risk.

| Rating Class | | Acres | Percent of Total Acres |
|---|---|---|---|
| Numeric | Adjective | | |
| 0 | No Values at Risk | 950,290 | 14.00 |
| 1 | Low | 5,449,172 | 80.00 |
| 2 | Moderate | 380,169 | 06.00 |
| 3 | High | 24,290 | 00.40 |
| 4 | Extreme | 1,045 | 00.02 |

The final product, entitled risk/hazard assessment summary, is a weighted overlay of each of the three individual components listed above. The components were each assigned a weight (using a numerical scale) based on the relative degree of risk or hazard before being combined for the final assessment (for methodology see Section 5.1).

When all three of the components are factored into the final output, almost the entire county for which data were available (98%) is considered to be at a moderate to high threat level for the occurrence of large wildland fires that could potentially impact values at risk. It is important to note that the process used to arrive at the risk/hazard/value assessment summary (Risk Assessment Summary) may mask critically important and high-value areas of wildlife habitat or isolated communities of native plants, and it may be difficult to identify areas facing a low or extreme threat in Figure 2 or even larger scale maps due to relative size and scale.

The results of the overall assessment are shown in Table 5 and Figure 2. A larger scale map can be found in Appendix B.

Table 5. Risk Assessment Summary.

| Rating Class | | Acres | Percent of Total Acres |
|---|---|---|---|
| Numeric | Adjective | | |
| 1 | Low | 64,643 | 01.0 |
| 2 | Moderate | 3,266,807 | 48.0 |
| 3 | High | 3,377,849 | 50.0 |
| 4 | Extreme | 95,379 | 01.4 |

Overall, 98% of the values at risk in Lincoln County are at moderate or high threat from the impacts of wildland fire.

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## 5.2.5 Windstorm

Planning Significance - Medium

### *5.2.5.1 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 United States, frontal winds can remain at 20–30 mph for several hours and reach peak speeds of more than 60 mph. Winds equal to or greater than 57 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.

### *5.2.5.2 History*

A total of six significant windstorm events were identified in Lincoln County, with an estimated $310,500 in damages reported. However, due to the large expanse of rural and non-urbanized land area within the County, many events are often not recorded. The following summaries are provided for the events identified:

**Table 5-8. Historical Wind Events**

| Date | Description |
|---|---|
| 4/18/1995 | Thunderstorm downburst winds damaged several small sheds resulting in $5,000 in damages. |
| 6/27/1995 | Thunderstorm microburst winds damaged power lines near the Pahranagat Wildlife Refuge. Damage estimates from these winds were not recorded. |
| 4/15/2002 | A strong low-pressure system producing 72-knot winds caused considerable damage to portions of Lincoln County. Shingles were blown off many roofs, several empty building were blown down, power outages were wide spread, down power lines started many fires across town, and several wind caused rock slides causing people to be stranded were reported. Due to the damages reported, the County Commissioner declared a state of emergency and restricted travel within the county for a 24 hour period. Estimated damages, mostly to private property, for this storm was in excess of $250,000. |
| 1/5/2003 | A strong area of low pressure brought high winds to areas of southern Nevada. Kane Springs RAWS in Lincoln County recorded a wind gust of 83 mph. No damage estimates were recorded. |

| | |
|---|---|
| 5/10/2004 | A strong late season cold front brought strong winds estimated at 64 knots to areas in southern Nevada. No damage estimates were recorded. |
| 7/12/2008 | In Caliente, a strong wind took off part of the roof from the Administration Building of the local hospital. The total damage cost was $35,000. |
| 04/07/2011 | A widespread high wind event associated with a frontal passage produced a wind gust of 82 mph (71 kt) west of the town of Rachel. |
| 11/30/2011 | A strong cold front brought wind exceeding 65 mph (highest measured at 67 mph) that caused widespread damage to electrical transmission towers. Damage total of $500K. |
| 07/23/2012 | A strong thunderstorm produced a microburst with gusts to 84 mph (73 kt) near Rachel. A wall of dust was observed with this wind. |
| 08/30/2013 | Thunderstorm winds blew down a power pole, which landed on a house, causing $15K in damage. |
| 02/28/2014 | Measured wind gust of 55 mph (48kt) caused minor damage in Rachel. |

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

Severe wind events within the planning area are the result of two weather events known as the "Nevada low" and the Southwest Monsoon Flow. The Nevada low is a local name given to a low or deep trough that develops over California and Nevada between February and April in advance of an associated cold front moving down from the north. A well-developed Nevada low system can sustain 17–23 mph winds with 34–46 mph gusts throughout Lincoln County. However, Lincoln County has recorded severe winds speeds of 80–100 mph during a Nevada low event.

In addition to the Nevada low, the planning area, particularly the southern portion of the County, can be affected by south-southeast winds associated with the summertime monsoonal thunderstorm activity. These strong and severe winds often precede thunderstorm activity. In addition, as thunderstorms decay, microbursts can produce severe wind gusts. However, these events are usually isolated and localized.

Lincoln County also experiences local thermally driven winds due to the area's valley/mountain topography.

As can be seen with Winter and Spring events, we can expect widespread impacts from hazardous wind events. With these large-scale events associated with synoptic scale low-pressure systems and frontal passages, we commonly see winds in excess of 50 mph and on occasion exceeding 75 mph. The highest wind is normally over in the first 15-30 minutes as a front passes. however, windy conditions on the order of 30-40 mph often precede a front and persist for several hours after the front has passed.

With smaller-scale events, such as winds generated by a thunderstorm, we will often see an intense, localized burst of wind that commonly exceeds 50 mph with some storms producing wind gusts in excess of 80 mph. These events are much smaller in scale, on the order of 20-100 km^2. The initial burst, lasting 5-10 minutes is followed by windy conditions of 25-35 mph persisting for 15-30 mins after the onset of thunderstorm wind.

Our data is limited by the rural nature of Lincoln County. Impacts would be more widespread and better documented if there were a higher population density in the area.

Severe wind events occur every year within the planning area, however, 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 and is virtually impossible to predict with any degree of accuracy. Based on past history the probability of reoccurring events is high.

### *Climate Change*

Climate Change has not been properly studied in regards to windstorms, however it may make weather more extreme and therefore windstorms could be more severe and may be more frequent. When additional information is available Lincoln Co. will include the information in the plan.

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, critical facilities and infrastructure. Assets and insured values throughout the County and City are identified and discussed in detail below.

### 6.1.1 Population and Building Stock

Population data was obtained from the 2014 estimated U.S. Census where available. Data was collected at the census block level for the City and the County.

Estimated numbers of residential and nonresidential buildings and replacement values for those structures, shown in Table 5-2, were extrapolated from information obtained from the Nevada State Demographer and the currently available 2014 estimated Census information.. A total of 1,975 residential buildings for the entire planning area were considered in this analysis, including single-family dwellings, mobile homes, multi-family dwellings, temporary lodgings, institutional dormitory facilities, and nursing homes. A total of 42 nonresidential buildings in the entire planning area were also analyzed as being critical facilities (essential to preserving the quality of life and safety or considered as providing emergency response and disaster recovery functions).

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 the Committee 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 versions of the HMP.

**Table 6-1 Estimated Population and Building Inventory**

| | Population | Residential | | Non-residential | |
|---|---|---|---|---|---|
| **Community** | **2015 Estimate** | **Total Buildings** | **Total estimated values (x 1000)** | **Total Buildings** | **Total estimated values (x 1000)** |
| Lincoln County | 4,191 | 1,544 | $152,800 | 36 | $179,212 |
| City of Caliente | 1,136 | 431 | $34,480 | 37 | $184,190 |
| Totals | 5,327 | 1975 | $187,280 | 73 | $363,402 |

### 6.1.2 Critical Facilities and Infrastructure

A critical facility is defined as a public or private facility that provides essential products and services to the general public, such as preserving the quality of life in the City and fulfilling important public safety, emergency response, and disaster recovery functions. Similar to critical facilities, critical infrastructure is defined as infrastructure that is essential to preserving the quality of life and safety in the City.

The City's critical facilities are listed in Table 6-2 and shown in Appendix B, Figure B-7, Critical Facilities; NV State buildings are not included.

**Table 6-2 Critical Facilities and Infrastructure**

| Category | Type | Location | Number | Estimated Values |
|---|---|---|---|---|
| **City of Caliente** | | | | |
| Facilities | Fire Stations Ambulance | 288 Lincoln St.<br>970 Front St.<br>800 N. Spring St. | 3 | $2,955,000 |
| | EOC | City Hall – 100 Depot Ave. | 1 | $1,611,000 |
| | Hospitals/ Clinics | 700 & 800 North Spring St. | 2 | $1,985,000 |
| | Schools | Caliente Elem. School, 289 Lincoln St.<br>C.O. Bastion High, CYC | 2 | $6,593.000 |
| Infrastructure | State & Federal Highways | Within City Limits | 4.3 Miles | $4,728,581 |
| | Bridges | #B705 Hwy 93, Cove | | $10,400.000 |
| | | #B704 Hwy 93 Meadow Vly. Wash | | |
| | | #B558 Hwy 93, Antelope Canyon | | |
| | | #B220 Hwy 93, Clover Canyon | | |
| | | #B219 Hwy 93, Meadow Vly Wash | | |
| | | Caliente Youth Center,( under const.) | | |
| **Lincoln County** | | | | |
| Critical Facilities | Sheriff Stations EOC, Jail | 225 Justice Way, Pioche<br>Alamo Annex, Joshua Tree St., | 2 | $8,038,000 |
| | Fire Stations | Alamo Fire, 307 Yucca St.<br>Alamo Ambulance, 655 Box Cnyn. St.<br>Panaca Ambulance, 1470 Edwards Pl.<br>Panaca Fire, 1470 Edwards Pl.<br>Pioche Fire, 357 Airport Road<br>Pioche Fire 220 Meadow Valley St. | 6 | $3,572,000 |
| | Public Schools | Pioche Elementary, 651 Airport Road<br>Panaca Elementary, 87 Main St. | 7 | 57,154,700 |

| | | | | |
|---|---|---|---|---|
| | | Lincoln Co. High, 1111 Edwards, Panaca<br>Meadow Vly Middle School, 91 N 4th Panaca<br>Pahranagat Elementary, 26 Broadway, Alamo<br>Pahranagat Vly Middle Sch., 158 S Main, Alamo<br>Pahranagat Vly High, 158 S Main, Alamo | | |
| | Medical Clinic | Alamo Clinic, 29 Joshua St., Alamo | 1 | 735,000 |
| | Communication Facilities | Mt Irish – Ella Mountain – Highland Mountain<br>Bald Mountain – Treasure Hill – Mt. Wilson<br>Caliente Repeater – Alamo – Repeater<br>Coyote Springs Repeater | 10 | $1,345,000 |
| | Drop Structures Flood Control | Mathews Drop Structure - MV Wash Rock Dam<br>Francis Grade Structure – Rose Valley – Hiko Debris Basin – Eagle Vly. Drop Structure | 6 | $930, 000 |
| Infrastructure | Dams | (See Table 5-4) | 17 | n/a |
| | Airports | 595 Airport Road, Panaca<br>897 Box Canyon Road, Alamo | 2 | $5,940,000 |
| | Bridges | B1622, Rose Vly, - B510, Panaca – B509 Panaca - B510, Panaca – B706, Love Ranch - | 5 | $4, 450,000 |

## 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, EPA, HAZUS, Nevada Bureau of Mines and Geology, and NWS. This analysis is a simplified assessment of the potential effects of the hazard on values at risk without consideration of probability or level of damage.

Using GIS, the building footprints of critical facilities were compared to locations where hazards are likely to occur. If any portion of the critical facility fell within a hazard area, it was counted as impacted. Using census block level information, a spatial proportion was used to determine the percentage of the population and residential and nonresidential structures located where hazards are likely to occur. Census blocks that are completely within the boundary of the hazard area were determined to be vulnerable and were totaled by count. A spatial proportion was also used to determine the amount of linear assets, such as highways and pipelines, within a hazard area. The exposure analysis for linear assets was measured in miles. For drought, population was the only asset analyzed, as drought mainly affects people and agricultural lands (which were not considered in this version of the HMP).

Replacement values or insurance coverage were developed for physical assets. These values were obtained from the City's Assessor's Office, Public Works, NV State Risk Management and HAZUS-MH run (for earthquake). 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.

## 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 compiled 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 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.

### 6.3.1 Future Development

The planning area has historically low growth with an average of less than 1% per year for population. As discussed in at the end of Section 3 – Community Description there are several area which have growth potential however due to the economic climate no growth is expected in the next five years. New development is not considered to have an impact on the vulnerability section because it will be built to current NV International Code Council standards which address building in a flood plain, seismic standards, wind standards, and fire standards.

## 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: 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: 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: 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 tables were not updated due to the lack of growth during the five year period and no new flood maps.

**Table 6-3**
**Potential Hazard Vulnerability Assessment – Critical Facilities**

| | Hazard | Sheriff Station | | Fire Station | | EOCs | | Schools | | Hospital Clinics | | Comm Facilities | | Total | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | # | Value[1] | # | Value[1] | # | Values[1] | # | Values[1] | # | Value[1] | # | Value[1] | # | Value[1] |
| City of Caliente | Drought | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a |
| | Earthquake M-5 | 0 | 0 | 2 | 1.985 | 0 | 0 | 2 | 6,900 | 2 | 8,900 | 1 | 235 | 7 | 18.020 |
| | Floods | 0 | 0 | 1 | 345 | 0 | 0 | 1 | 6,593 | 2 | 8939 | 0 | 0 | 4 | 15,876 |
| | Wildfire | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 50 | 12 | 50 |
| Lincoln County | Drought | n/a | n/s | n/s | n/s | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a |
| | Earthquake M-5 | 2 | 5,253 | 4 | 2,809 | 0 | 0 | 8 | 7,155 | 2 | 3,429 | 7 | 2,000 | 23 | 68,646 |
| | Floods[0] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Wildfire | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 3,540 | 0 | 0 | 7 | 1,185 | 8 | 4,725 |

[1] Value = Estimated value (x1000)

[2] EOC = EOCs for Lincoln County and the City of Caliente are located in the Sherriff and Fire Stations and therefore are not counted as a separate facility.

[3] Drought N/A = Not Applicable

[4] Floods N/A = FIRM maps used where available; HAZUS ability not available: HMPC and historical experience shown where possible.

[1] Value = in millions/buildings only.
[2] Data acquired from Nevada Bureau of Mines and Geology HAZUS-MH with additions estimated by Planning Committee.
N/A = Not Applicable

**Table 6-3 Potential Vulnerability Assessment – Critical Facilities cont'd**

| | Hazard | Highways | | Airports | | Bridges | | Flood Drop Structures | | Electrical Power Distribution | | Electrical Switch Station | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Miles | Value | # | Value[1] | # | Value[1] | # | Value[1] | Miles of Line | Value[1] | # | Value[1] |
| Caliente | Drought[a] | n/a | n/a | n/a | n/a | n/a | n/a | 0 | n/a | Note 2 | Note 2 | n/a | Note 2 |
| | Earthquake M-5 | n/a | n/a | 2 | 2,200 | 6 | 1,700 | 0 | n/a | 2 | 60 | 2 | 2,500 |
| | Floods | n/a | n/a | 0 | 0 | 6 | 5.400 | 0 | n/a | n/a | 0 | 1 | 1,250 |
| | Wildfire | n/a | n/a | 0 | 0 | 6 | 5,400 | 0 | n/a | 0 | 0 | 0 | 0 |
| Drought[2] | Drought | n/a | n/a | n/a | n/a | n/a | n/a | 0 | n/a | Note 2 | Note 2 | Note 2 | Note 2 |
| | Earthquake M-5 | n/a | n/a | 2 | 5,940 | 9 | 1,800 | 3 | 350 | 10 | 300 | 1 | 2,500 |
| | Floods[3] | n/a | n/a | 1 | 2,100 | 9 | 1,800 | 3 | 350 | 15 | 450 | 1 | 2,500 |
| | Wildfire | n/a | n/a | 2 | 5,940 | 00 | 0 | 0 | n/a | 435 | 28,450 | 8 | 800 |

[1]Value=Estimated Value(x 1,000)
[2]Extended drought will have a severe impact due to power restrictions out of Hoover Dam.
3Floods n/a= up to date FIRM maps not available: HAZUS unable to develop flood models.

### 6.4.1 Drought

According to the U.S. Seasonal Drought Monitor, the entire planning area is at equal risk to a drought event. Therefore, all people located within both the City and County are equally susceptible to this hazard. Currently the seasonal outlook for Lincoln County does not include any drought forecast (see Figure B-4, Appendix B), however this risk needs to be monitored as conditions change.

### 6.4.2 Earthquakes

**Caliente**

A Magnitude 5 earthquake as modeled by HAZUS would possibly affect 14 percent of the residential buildings of the City of Caliente. Specifically the City of Caliente would sustain damage to approximately 53 residential structures at a loss of $6.4 million, and 1 nonresidential structure at a loss of $2.9. Fortunately, none of the critical facilities identified by HAZUS fell into even the lowest category of damage. Additionally, all critical facilities were listed as having at least fifty-percent functionality the first day of the event. The affected population, building inventories, and values were calculated from the 2000 Census via HAZUS-MH-R1. As such, the current values for probable damage would be substantially higher than the amounts listed in the above tables. Additionally, Caliente has 15 commercial and 10 residential URMs which include the Fire Hall. These buildings are estimated to sustain complete or substantial damage as well as business disruption in a 5.0 or higher.

**Lincoln County**

The HAZUS model for the Lincoln County-Unincorporated area for a Magnitude 5 earthquake indicated it could possible affect 14 percent of the residential buildings; specifically, 201 residential structures at a loss of $24.3 million, and 1 nonresidential structure at a loss of $2.9 million. Fortunately none of the critical facilities identified by HAZUS fell into even the lowest category of damage. Additionally, all critical facilities were listed as having at least fifty-percent functionality the first day of the event. The affected population, building inventories, and values were calculated from the 2000 Census via HAZUS-MH-R1. Currently the 2010 Census information, with the exception of population figures, is not yet available and as such, the current values for probable damage would most likely be substantially higher than the amounts listed in the above tables. Additionally, the County has 11 commercial and 25 residential URMs including the County Annex building. These buildings are estimated to sustain complete or substantial damage as well as business disruption in a 5.0 or higher.

**Table 5-11 URM Buildings**

| Building Classification | Year of Construction | Address | Community | Critical Structure |
|---|---|---|---|---|
| Commercial | 1908 | 209 Field St | Pioche | |
| | 1961 | 282 Lacour St | | |
| | 1907 | 673 Main St. | | |
| | 1920 | 723 Main St. | | |
| | 1948 | 662 Main St. | | |
| | 1948 | 696 Meadow Valley St. | | |
| | 1940 | 810 Main St. | Panaca | |
| | 1949 | 1122 Main St. | | |
| | 1960 | 500 Spring St. | Caliente | |
| | 1915 | 140 Tennille St. | | |
| | 1910 | 80 Tennille St. | | |
| | 1913 | 160 Front St. | | |
| | 1956 | 170 Front St. | | |
| | 1908 | 127 Spring St. | | |
| | 1932 | 690 Front St. | | |
| Commercial | 1925 | 143 Clover St. | Caliente | |
| | 1937 | 121 Clover St. | | |
| | 1919 | 101 Clover St. | | |
| | 1908 | 197 Clover St. | | |
| | 1915 | 180 Bank St. | | |
| | 1935 | 112 Hill St. | | Fire Hall |
| | 1905 | 201 Clover St. | | |
| | 1930 | 33 North US Hwy 93 | Alamo | |
| | 1908 | 121 Joshua St | | County Annex |
| | 1963 | 367 South US Hwy 93 | | |
| | **Year Constructed** | **Address** | **Community** | **Comments** |
| Residential | 1961 | 151 Lightner | Pioche | |
| | 1920 | 343 No. 3rd | Panaca | |

| | | | | |
|---|---|---|---|---|
| | **1960** | **286 No, 3rd** | | |
| | **1908** | **230 No. 3rd** | | |
| | **1920** | **1175 Main St.** | | |
| | **1872** | **24 No. 5th** | | |
| | **1935** | **51 So. 2nd** | | |
| | **1937** | **1252 E. Main St.** | | |
| | **1925** | **1000 No. Spring St.** | | |
| | **1976** | **251 Ryan St.** | | |
| | **1979** | **217 Ada St.** | | |
| | **1935** | **190 Main St.** | **Caliente** | |
| | **1928** | **310 Front St.** | | |
| | **1970** | **691 Main St.** | | |
| | **1937** | **782 Lincoln St.** | | |
| | **1937** | **760 A St.** | | |
| | **1896** | **75 Clover St.** | **Caliente** | |
| | **1937** | **255 Spring Heights** | | |
| **Residential** | **1951** | **115 No. Main St.** | | |
| | **1908** | **67 Joshua Tree St.** | | |
| | **1932** | **76 So. Main St.** | | |
| | **1964** | **167 Weeping Willow Ave.** | **Alamo** | |
| | **1963** | **212 Broadway St.** | | |
| | **1973** | **40 Broadway St.** | | |
| | **1977** | **111 Lamb Blvd.** | | |
| | **1965** | **9745 Dills Road** | | |
| | **1912** | **Bob Stewart Road** | | |
| | **1885** | **2306 Rose Valley Hill Rd.** | | |
| | **1964** | **2430 Rose Valley Hill Rd.** | **General County** | |
| | **1954** | **Oak Lane** | | |
| | **1910** | **2799 Richardville Rd.** | | |
| | **1954** | **Nelson Ranch Rd.** | | |

| | | | | |
|---|---|---|---|---|
| | **1964** | **1708 So. Richardville Rd.** | | |
| | **1971** | **651 Desert Lane** | | |
| | **1902** | **Delmue Ranch Rd.** | | |

### 6.4.3 Floods

There are new digital FIRMs, for portions of the County, primarily the Ursine area, and for the City. Therefore, the flood analysis was performed for the City of Caliente, the Ursine area and the County areas covered by older FIRMs, i.e., the Alamo area FIRM dated 1984. Within the flood hazard areas identified in the City, the risk posed by the 100-year flood is high. With the adoption of the new FIRM, exposed within the approximate 100-year flood zone are 70% of the residential buildings consisting of 270 residential buildings (worth $33.7 million), one non-residential building, and 3 critical facilities, two schools, one clinic and one hospital (worth $15.5 million). The affected building inventories, and values were calculated from the local insurance agency providing coverage for government facilities and from the Lincoln County Assessor's Office. There are currently no repetitive loss structures in the County or City.

The City of Caliente's vulnerability to flood is compounded by the fact that the community is designated as Poor/Impoverished by HUD. A mobile park is particularly affected by flood. Additionally, the highway running through town and crossing the river twice can be affected by flood events and restrict travel.

**Dam Failure**

Dam failure has never occurred in Lincoln County and is considered a low hazard and vulnerability was not estimated for this update. Should dam failure occur which would affect Ursine or Caliente the potential for property damage is estimated to be similar to damage from a 100 year flood as stated above.

Drop Structures shown/listed were all built prior to current engineering standards are considered to be at high risk of failure from flood events.

### 6.4.4 Wildland Fire

According to wildland fire risk information provided in the Nevada Community Wildfire Risk/Hazard Assessment Project for Lincoln County April 2005, prepared by Resource Concepts Inc., the risk posed by wildland fire in Lincoln County is defined by the Hazard Ratings of Low, NA, Moderate, High, and Extreme. Alamo is the only community rated as low. Given a moderate rating are the communities of Caliente, Panaca, and Rachel. The Eagle Valley/Ursine area was the only area rated as high. However, the communities of Pioche/Caselton Heights and Mt. Wilson were rated as extreme. The study by RCI was supplemented by an additional study by Wildlands Fire Associates in 2008 which adjusted the remainder of the County to moderate. (See Section 5.3.3.4 for WFA summary results)

**Caliente**

The primary concerns in Caliente, which lead to their moderate hazard rating, are focused on community design factors such as limited fire protection and water sources. As such, all structures are possibly at risk. There are approximately 1,123 people, 390 residential buildings (worth $312 million), and 36 non-residential buildings (worth $28 million).

**Lincoln County**

The area of Eagle Valley/Ursine rated as high, has 60 residential buildings (worth $4.2 million) and one non-residential building (worth .7 million) The communities of Pioche/Caselton Heights and Mt. Wilson are rated as extreme, this area has approximately 890 residential buildings (worth $ 71million)and 32 non-residential buildings (worth 81million). The Alamo – Hiko area has approximately 520 residential buildings (worth 41 million) and 11 nonresidential buildings (worth $55 million). The building inventories were provided directly from Lincoln County Department of Emergency Management; the values were derived partially from the County Assessor's Office and various insurance agencies currently serving the planning area. As such, the current values for probable damage should be reasonably accurate. The County's power transmission lines cross BLM land which is vulnerable to wildland fire and would cut power to County residents and businesses.

### 6.4.5 Windstorm

According to the NWS, the entire planning area is at equal risk to a windstorm event. Therefore, all people residing and all structures located within both the planning area are equally susceptible to this hazard. This hazard primarily affects power transmission lines and roofs/shingles of structures in both the County and City.

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

## 7.1 LEGAL AND REGULATORY CAPABILITIES

The County and City currently supports hazard mitigation through their regulations, plans, and programs. The Building Codes outline hazard mitigation-related ordinances. Additionally, the City of Caliente Master Plan identifies goals, objectives, and actions for natural hazards, including floods. In addition to policies and regulations, the County and City carry out hazard mitigation activities by participating in the National Flood Insurance Program (NFIP) see section 7.4.1.

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

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

| Regulatory Tool | Title | Effect on Hazard Mitigation |
|---|---|---|
| Plans | Lincoln County Master Plan | 2015. Update included restrictions on development in floodplain. |
| | City of Caliente Master Plan | Update in 2011 includes hazard mitigation in the flood section. |
| | Nevada Community Wildfire Risk/Hazard Assessment Project: Lincoln County | 2013. Provides Wildfire hazards. Enables the County to mitigate fuel loads. |
| | Meadow Valley Wash Conservation Plan | 2012. Committee continue to meet to review conservation efforts along the wash. |
| | Hazardous Materials Plan | 2013. Provides emergency response to reduce impact of HAZMAT spill. |
| | Eureka County School District School Emergency Response Plan | Provides emergency response procedures for natural disasters and other emergencies. |
| | Lincoln County Emergency Operations Plan | 2009. Provide directives to reduce future hazard impact. |
| Programs | National Flood Insurance Program | The County and City adopts and enforces a floodplain management ordinance to reduce future flood damage. In exchange, the NFIP makes Federally backed flood insurance available to homeowners, renters, and business owners |
| Ordinances | Building Code (IBC 2012) County & City | Master Plan, Land Use Plan Element, Building, Fire, |

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

| Regulatory Tool | Title | Effect on Hazard Mitigation |
|---|---|---|
| and Policies | Fire Code County & City | and Zoning codes and ordinances. Provides regulations to reduce hazard impact. City of Caliente Zoning Ordinance revised 2015. |
| | Zoning Ordinances | |
| | Special purpose ordinances | Floodplain management, storm water management, wildfire ordinances, hazard set back requirements |

## 7.2 ADMINISTRATIVE AND TECHNICAL CAPABILITIES

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

**Table 7-2: Administrative and Technical Resources for Hazard Mitigation**

| Staff/Personnel Resources | Department / Agency |
|---|---|
| County | |
| Planner(s) or engineer(s) with knowledge of land development and land management practices | Building, Planning & County Engineer |
| Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure | Building & County Engineer |
| Planner(s) or engineer(s) with an understanding of manmade or natural hazards | Building, Planning, Fire Dept. |
| Staff with education or expertise to assess the community's vulnerability to hazards | Building, Fire, County Engineer, Emergency Manager |
| Floodplain manager | Building & Safety |
| Personnel skilled in GIS and/or HAZUS-MH | Not at this time |
| Scientist familiar with the hazards of the community | UNR, Bureau of Mines & Geology for Earthquakes |
| Emergency Services | Fire Department, Emergency Management, Sherriff |
| Finance (purchasing) – Fiscal Management | Auditor/Recorder |
| Public Information Officers, Planner(s) | Sheriff's Office, Fire Department, Executive Staff |
| City of Caliente | |
| Planner(s) or engineer(s) with knowledge of land development and land management practices | Building, Planning & Public Works |

| | |
|---|---|
| Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure | Building & Public Works |
| Planner(s) or engineer(s) with an understanding of manmade or natural hazards | Building, Planning, Fire Dept., Emergency Mgmt. |
| Staff with education or expertise to assess the community's vulnerability to hazards | Building, Emergency Management, Public Works |
| Floodplain manager | Building Official |
| Personnel skilled in GIS and/or HAZUS-MH | Not at this Time |
| Scientist familiar with the hazards of the community | UNR, Bureau of Mines & Geology for Earthquakes |
| Emergency Services | County Sheriff's Dept. |
| Finance (purchasing) – Fiscal Management | City Clerk |
| Public Information Officers, Planner(s) | City Clerk |

## 7.3 FINANCIAL CAPABILITIES

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

**Table 7-3: Financial Resources for Hazard Mitigation**

| Financial Resources | Effect on Hazard Mitigation |
|---|---|
| Local (County & City) | |
| Authority to levy taxes for specific purposes | Yes. Upon approval of the County Board of Commissioners or City Council, staying within the stipulations set forth in the Nevada Revised Statues. |
| Capital Improvement Plans and Impact Fees | Assigns impact development fees to finance fire and flood control capital improvement programs. |
| Community Development Block Grants | Yes. Subject to grant from Fed/State. |
| Incur debt through general obligation bonds | Yes. Staying within the stipulations set forth in the Nevada Revised Statues. |
| Incur debt through special tax and revenue bonds | Yes. Upon voter approval, staying within the stipulations set forth in the Nevada Revised Statues. |
| Incur debt through private activity bonds | Yes. Upon voter approval, staying within the stipulations set forth in the Nevada Revised Statues. |
| Withhold spending in hazard-prone areas | Yes. |
| Ability to apply for and manage grants | Yes. |

**Table 7-3: Financial Resources for Hazard Mitigation**

| Financial Resources | Effect on Hazard Mitigation |
|---|---|
| State | |
| Question #1 State Bond | Funding for Parks which can include re-vegetation. |
| Federal | |
| FEMA Hazard Mitigation Project Grants (HMPG) and Pre-Disaster Mitigation (PDM) grants | Provides technical and financial assistance for cost-effective pre-disaster and post-disaster mitigation activities that reduce injuries, loss of life, and damage and destruction of property. |
| FEMA Flood Mitigation Grant Program (FMA) | Mitigate repetitively flooded structures and infrastructure. |
| USFA Assistance to Firefighters Grant (AFG) Program | Provide equipment, protective gear, emergency vehicles, training, and other resources needed to protect the public and emergency personnel from fire. |
| FEMA/DHA Homeland Security Preparedness Technical Assistance Program (HSPTAP) | Build and sustain preparedness technical assistance activities in support of the four homeland security mission areas (prevention, protection, response, recovery) and homeland security program management. |
| US HUD Community Block Grant Program Entitlement Communities Grants | Acquisition of real property, relocation and demolition, rehabilitation of residential and non-residential structures, construction of public facilities and improvements, such as water and sewer facilities, streets, neighborhood centers, and the conversion of school buildings for eligible purposes. |
| EPA Community Action for a Renewed Environment (CARE) | Through financial and technical assistance offers an innovative way for a community to organize and take action to reduce toxic pollution (i.e., storm water) in its local environment. Through CARE, a community creates a partnership that implements solutions to reduce releases of toxic pollutants and minimize people's exposure to them. |
| EPA Clean Water State Revolving Fund (CWSRF) | A loan program that provides low-cost financing to eligible entities within state and tribal lands for water quality projects, including all types of non-point source, watershed protection or restoration, estuary management projects, and more traditional municipal wastewater treatment projects. |
| CDC Public Health Emergency Preparedness (PHEP) Cooperative Agreement. | Funds are intended to upgrade state and local public health jurisdictions' preparedness and response to bioterrorism, outbreaks of infectious diseases, and other public health threats and emergencies. |

## 7.4 CURRENT MITIGATION CAPABILITIES & ANALYSIS

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

**Table 7-4: County Local Mitigation Capability Assessment**

| Agency Name (Mission/ Function) | Programs, Plans Policies, Regulations, Funding, or Practices | Point of Contact Name and Phone | Effect on Loss Reduction | | | Comments |
|---|---|---|---|---|---|---|
| | | | Support | Facilitate | Hinder | |
| Building & Planning | Code Enforcement, Permitting, Flood Plain Mgmt., economic develop. | Cory Lytle | ✓ | ✓ | | Engineering and Flood Management |
| Roads Dept./Public Works | Roads, water, sewer, capital projects, building maintenance, parks | Shane Cheeney | ✓ | ✓ | | Construction and culverts; engineering, detailed knowledge of infrastructure |
| Emergency Management | Emergency Management, Mitigation Plan | Rick Stever | ✓ | ✓ | | Familiar w/mitigation grants, knowledge of vulnerability |
| County Battalion Fire Chief - Wildland Fire | Fuels mitigation, public education | Rick Stever | ✓ | ✓ | | Detailed knowledge of vulnerability |
| School District | Identify and implement mitigation actions for school property | Steve Hanson | ✓ | ✓ | | Familiar w/school district infrastructure |
| Sherriff's Office | Public Safety | Kerry Lee | ✓ | ✓ | | Familiar w/terrorist mitigation |
| Grants | Grants | Elaine Zimmerman | ✓ | ✓ | | Grant Application and Administration |
| Health/Human Services | Social Services | Nicole Rowe | ✓ | ✓ | | Familiar w/ epidemic and CDC grants, health capability |
| Nuclear Waste/Haz Mat | Nuclear Waste Project/EMS | Connie Simkins | ✓ | ✓ | | Hazardous materials |

**Table 7-4: City Local Mitigation Capability Assessment**

| Agency Name (Mission/ Function) | Programs, Plans Policies, Regulations, Funding, or Practices | Point of Contact Name and Phone | Effect on Loss Reduction | | | Comments |
|---|---|---|---|---|---|---|
| | | | Support | Facilitate | Hinder | |
| Building & Planning | Code Enforcement, Permitting, Flood Plain Mgmt., economic develop. | City Hall<br>Ken Dixon | ✓ | ✓ | | Engineering and Flood Management |
| Roads Dept./Public Works | Roads, water, sewer, capital projects, building maintenance, parks | City Hall<br>Jerry Carter | ✓ | ✓ | | Construction and culverts; engineering, detailed knowledge of infrastructure |
| Emergency Management | Emergency Management, Mitigation Plan | City Hall<br>Ken Dixon | ✓ | ✓ | | Familiar w/mitigation grants, knowledge of vulnerability |
| Fire/EMS/ Hazardous Mtl. | Fuels mitigation, public education | George Rowe | ✓ | ✓ | | Detailed knowledge of vulnerability |
| Grants | Grants Administration | Ashley Tibetts | ✓ | ✓ | | Grant Applications and Administration |

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

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

### 7.4.1 National Flood Insurance Program

DMA 2000 Requirements: Mitigation Strategy – National Flood Insurance Program

National Flood Insurance Program (NFIP) Compliance)

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

Element

- Does the updated plan document how the planning team reviewed and analyzed this section of the plan and

DMA 2000 Requirements: Mitigation Strategy – National Flood Insurance Program

whether this section was revised as part of the update process?

- Does the new or updated plan describe the jurisdiction(s) participation in the NFIP?)
- Does the mitigation strategy identify, analyze and prioritize actions related to continued compliance with the NFIP?
- *Source: FEMA, March 2008.*

The County and City have identified special flood-hazard areas. The County and City participate in the NFIP; however, neither 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.

The Counties and City are a CRS Class 10 community. The Counties and City outlined mitigation actions listed under goals for flood detailed below in Table 8-3, Mitigation Goals and Potential Actions. Neither the County or City has any repetitive loss properties. The Building Departments work closely with the public to ensure that construction standards are met and there is a good understanding of impacts from flooding and measures to minimize impacts.

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The following provides an overview of the four-step process for preparing a mitigation strategy: developing mitigation goals and objectives, 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

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 Committee reviewed the previously developed goals which will reduce or avoid long-term vulnerabilities to the identified hazards (**Table 8-1**). All hazards profiled by the Committee have a specific goal. Actions under current Goals 1 and 2 can be used to advance hazard mitigation for all hazards.

**Table 8-1 Mitigation Goals**

| Goal | Goal |
|---|---|
| 1 | Promote increased and ongoing 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 damage and losses due to floods |
| 6 | Reduce the possibility of damage and losses due to wildland fires |
| 7 | Reduce the possibility of damage and losses due to wildland fires |

## 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

DMA 2000 Requirements: Mitigation Strategy

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. The Planning Committee worked together as a group to review the 2012 HMP and compiled information from the annual maintenance table top exercises, and provided the status as shown in Appendix G. Then the members were tasked to provide new mitigation actions. The Planning Committee and KYD reviewed the HMP risk assessment as a basis for developing potential mitigation actions. In addition, particular emphasis was placed on actions that reduced the effects of hazards on both new and existing buildings and infrastructure.

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

| Goals | Action | New or Existing Structure | Description |
|---|---|---|---|
| ***Goal 1: Promote increased and ongoing involvement in hazard-mitigation planning and projects*** | 1.A | N/E | Update Master Plan to be Consistent w/HMP |
| | 1.B | N/E | Develop GIS Hazard Maps |
| | 1.C | N/E | Seek new data from other government, academic and private org. for HM and EM response |
| | 1.D | N/E | Share Hazard Info. Btw City & Co., public and private org. through public awareness |
| | 1.E | N/E | Devlp. Database w/ inventory of hazard areas that can be used for passive recreation. |
| | 1.F | N/E | Review FEMA grant application procedures and establish internal procedures to streamline the application process. |
| | 1.G | N/E | Apply for Pre-disaster Mitigation (PDM) and Hazard Mitigation Grant Program (HMGP) grants to fund mitigation actions identified in this HMP. |
| ***Goal 2: Build and support local capacity to enable the public to prepare for, respond to, and recover from disasters*** | 2.A | N/E | Establish a budget and identify funding sources for mitigation outreach. |
| | 2.B | N/E | Work with school district to develop a public outreach campaign that teaches children how to avoid danger and behave during an emergency. |
| | 2.C | E | Support the efforts and education of people with disabilities to prepare for disasters. |
| | 2.D | E | Develop a join City-County public outreach campaign about hazards risks and hazard mitigation efforts that homeowners can initiate and implement to enhance natural hazard safety in their own community. |
| | 2.E | N/E | Obtain emergency generators to reduce impact of hazards on critical facilities. |

| Goals | Action | New or Existing Structure | Description |
|---|---|---|---|
| ***Goal 3: Reduce the possibility of damage and losses due to Drought*** | 3.A | N/E | Devlp. and adopt a water conservation ordinance that may stipulate landscaping requirements, hours for irrigation, retro-fitting motels and households for low-flow toilets and showers, and penalties for wasting water. |
| | 3.B | E | Pursue the creation of a water conservation and public awareness program. |
| ***Goal 4: Reduce the possibility of damage and losses due to earthquakes*** | 4.A | N/E | Enforce the NV International Code Council (ICC) provisions pertaining to grading and construction relative to seismic hazards, with special emphasis regarding construction of any building in close proximity to existing fault lines. |
| | 4.B | E | Seismically retrofit critical facilities that are in close proximity to a fault line. |
| | 4.C | E | Implement a program to repair/replace Unreinforced Masonry (URM) buildings. Inspect the ID'd URM buildings to evaluate safety issues. See Table 6-3 for list of URM buildings. |
| | 4.D | E | Develop and provide managers of mobile home parks with information on how to improve the seismic performance of mobile homes. |
| | 4.E | N/E | County - Encourage utility companies to evaluate the seismic risk to their high-pressure transmission pipelines and implement mitigation measures such as automatic shut-off valves in SE corner of Lincoln County. |
| ***Goal 5:*** | 5.A | N/E | County & City & FEMA update the remaining outdated FIRMs into new DFIRMs and ensure any new developments have the requirement to complete FIRMs as part of permit. City to complete LOMR for CYC Bridge Installation. |
| ***Reduce the possibility of damage and losses due to floods*** | 5.B | N/E | County and City continue their participation in the NFIP and enforce their respective floodplain ordinances. |
| | 5.C | N | Ensure mobile home parks are not located within the 100-year floodplain or near a major fault. |

| Goals | Action | New or Existing Structure | Description |
|---|---|---|---|
| | 5.D | E | Designate all floodways as Open Space, as it is done in Alamo. |
| | 5.E | E | Ensure that the NV State Engineers Office inspects high hazard dams in the planning area on a timely basis, per NRS 535.030. |
| | 5.F | N/E | Install culverts and storm water facilities to relieve floodwater. (i.e. US 93 through Caliente) |
| | 5.G | N/E | City - Remove sediment from rivers and washes to allow flow during flooding. |
| | 5.H | E | City – Relocate Exiting Mobile Home park out of 100 year flood zone. |
| ***Goal 6: Reduce the possibility of damage and losses due to Wildland Fire*** | 6.A | E | Ensure that adequate fuels reduction treatments are in place and that all new development within the planning area meets the National Fire Code and Standards. |
| | 6.B | N/E | Complete project to provide street names and address signage so emergency responders can easily locate at risk structures in the planning area communities that may be affected by low visibility during a wildland fire event. (Changed, signage and street names are now 99% complete) |
| | 6.C | N/E | (Amended goal) Develop and adopt defensible space measures for existing as well as any new master planned communities and subdivisions. |
| | 6.D | N/E | Develop a public outreach campaign of the extreme wildland fire dangers and steps that can be taken to reduce these dangers. |
| | 6.E | E | City - Develop an annual free curb-side weed removal pick-up program. |
| | 6.F | E | Fuel Reduction Projects including work with the Bureau of Land Management and the Nevada Division of Forestry to conduct fuel reduction projects on federal property surrounding any community within the planning area. |
| | 6.G | E | Develop a fuel reduction program to clear vegetation around and under electrical transmission lines, sub-stations and rights of way.(See fig. B-7) |
| ***Goal 7:*** | 7.A | N | Protect existing assets, as well as new development, from severe winds. |

| Goals | Action | New or Existing Structure | Description |
|---|---|---|---|
| ***Reduce the possibility of damage and losses due to Windstorms*** | 7.B | N/E | Develop restrictions on planting large or rapidly-growing trees near power lines and major arterials. |
| | 7.C | N/E | Improve the safety and reliability of overhead lines through improved design, maintenance, right-of-way management, and inter-utility cooperation. |
| | 7.D | N | Ensure all new construction is in compliance with wind design standards shown in Section 16 of the IBC. |
| | 7.E | N/E | City - Adopt Meadow Valley Wash TRT measures to relieve siltation and lower flood risk from MV south of US 93 bridge 219 |

Reduce Hazard Effect on N = New Buildings, E = Existing Buildings, N/E = New and Existing Buildings

## 8.3 EVALUATING AND PRIORITIZING MITIGATION ACTIONS

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

DMA 2000 Requirements: Mitigation Strategy - Implementation of Mitigation Actions

Implementation of Mitigation Actions

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

Element

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

*Source: FEMA, March 2008.*

The 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 used as a starting point by the committee. See Table 8-3 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 FEMA Benefit Cost Analysis | Benefit/cost of action; Contributes to other economic goals; Outside funding required; FEMA Benefit Cost Analysis |
| Environmental | The impact on the environment because of public desire for a sustainable and environmentally healthy community | Effect on local flora and fauna; Consistent with community environmental goals; Consistent with local, State and Federal laws |

Upon review by the Planning Committee, mitigation actions were selected for those that best fulfill the goals of the HMP and were appropriate and feasible to implement during the 5-year lifespan of this update to 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 lead committee used the Staple+E results (see Appendix E) as a starting point and then through discussion and consensus made adjustments to include actions that were considered a

high, moderate and low priority to the County and City. These are shown in Table 8-4.

## 8.4 IMPLEMENTING A MITIGATION ACTION PLAN

A Mitigation Action Plan Matrix was prepared for the City detailing the priority of the mitigation actions, how the overall benefit-cost were taken into consideration, and how each mitigation action will be implemented and administered. This matrix can be found in Table 8-4.

It should be noted that significant actions have been taken in fuel reduction programs by both NDF and BLM, between 2012 and 2015 for mitigation of wildfires, (Action Items 6.A.6 and 7). Since much has been done the rating for this action item has changed. The final action plan is outlined in Table 6-3.

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

| Community | Action Number and Item | Department or Agency | Potential Funding Source | Cost & Implementation Timeline | Economic Justification | Priority Level |
|---|---|---|---|---|---|---|
| Entire Area | 1.A – Update Master Plan to be Consistent w/HMP | Planning | HUD, General Fund | Ongoing<br>Staff Time | Improve resilience to hazards and reduce injuries and costs during events. | High |
| Entire Area | 1.B Develop GIS Hazard Maps | Planning | General Fund | Ongoing<br>Staff Time<br>1 New Person | Improve resilience to hazards and reduce injuries and costs during events. | Medium |
| Entire Area | 1.C – Seek new data from other government, academic and private org. for HM and EM response | Flood Plain Management<br>Emergency Management | General Fund<br>PDM, FEMA, EMPG, UNR NBMG | Ongoing<br>Staff Time | Improve resilience to hazards and reduce injuries and costs during events. | Medium |
| Entire Area | 1.D – Share Hazard Info. Btw City & Co., public and private org. through public awareness | Flood Plain Management<br>Emergency Management | General Fund | Ongoing<br>Staff Time | Improve resilience to hazards and reduce injuries and costs during events. | High |
| Entire Area | 1.E – Devlp. Database w/ inventory of hazard areas that can be used for passive recreation. | City Flood Plain Management<br>County Emergency Management | General Fund | 24 months<br>Staff Time<br>1 New Person | Improve resilience to hazards and reduce injuries and costs during events. | Low |
| Entire Area | 1.F - Review FEMA grant application procedures and establish internal procedures to streamline the application process. | Grants | General Fund | Ongoing<br>Staff Time | Improve resilience to hazards and reduce injuries and costs during events. | Low |

| | | | | | | |
|---|---|---|---|---|---|---|
| Entire Area | 1.G - Apply for Pre-Disaster Mitigation (PDM) and Hazard Mitigation Grant Program (HMGP) grants to fund mitigation actions identified in this HMP. | Grants | FEMA, PDM, HMGP | Ongoing<br>Staff Time | Improve resilience to hazards and reduce injuries and costs during events. | Medium |
| Entire Area | 2.A - Establish a budget and identify funding sources for mitigation outreach. | County EM<br>City Mayor | General Fund | 12 Months<br>Staff Time | Improve resilience to hazards and reduce injuries and costs during events. | Low |
| Entire Area | 2.B Work with school district to develop a public outreach campaign that teaches children how to avoid danger and behave during an emergency. | School District, Emergency Management, Floodplain Management | School District Funding, NDEM, NV Flood Awareness | Ongoing<br>Staff Time | Education can be passed onto all family members. | High |
| Entire Area | 2.C - Support the efforts and education of people with disabilities to prepare for disasters. | Emergency Management | NDEM, SERC, General Fund | Ongoing<br>Staff Time | Reduce the cost of evacuation and injury. | Medium |
| Entire Area | 2.D - Develop a joint City-County public outreach campaign about hazards risks and hazard mitigation efforts that homeowners can initiate and implement to enhance natural hazard safety in their own community. | Lincoln County Emergency Management and City staff | NDEM, SERC, Private grant funding. | 2012<br>Staff Time | Involvement of the community is invaluable in the success of this effort. | High<br>This item was never addressed in original plan |
| Entire Area<br>New | 2.E Obtain emergency generators to reduce impact of hazards on critical facilities. | County & City<br>Public Works Dept. | NDEM, Fire Grants, PDM, HMGP, General Fund | 12 Months<br>$50,000 | Would allow the government to continue to function and provide critical services | Medium due to funding |
| Entire Area | 3.A - Devlp. and adopt a water conservation ordinance that may stipulate landscaping requirements, hours for irrigation, retro-fitting motels and | County & City Building Dept. | HUD, NDWR, CDBG, General Fund | 12 Months<br>Staff Time | Reducing water usage will make community more resilient to Drought and allow growth. | Low |

| | | | | | | |
|---|---|---|---|---|---|---|
| | households for low-flow toilets and showers, and penalties for wasting water. | | | | | |
| Entire Area | 3.B - Pursue the creation of a water conservation and public awareness program. | County & City Public Works | HUD, NDWR, CDBG, General Fund, | 12 Months<br>Staff Time<br>1 New Person | Reducing water usage will make community more resilient to Drought and allow growth. | Medium. This item was never addressed in original plan |
| Entire Area | 4.A - Enforce the International Building Code (IBC) provisions pertaining to grading and construction relative to seismic hazards, with special emphasis regarding construction of any building in close proximity to existing fault lines. | Building Dept. | General Fund | Ongoing<br>Staff Time | Improve resilience to hazards and reduce injuries and costs during events. | High |
| Entire Area | 4.B - Seismically retrofit critical facilities that are in close proximity to a fault line. | Public Works, School District | PDM, HMGP, Fire Grants, General Fund | Unknown<br>$2,000,000 | Improve resilience to hazards and reduce injuries and costs during events. | Low |
| Entire Area | 4.C - Implement a program to repair/replace Unreinforced Masonry (URM) buildings. Inspect the ID'd URM buildings to evaluate safety issues. See Table 6-3 for list of URM buildings. | Emergency Management, Building Department, School District | PDM, HMGP, General Fund | Unknown<br>$5,000,000 | This action is a step to ensure critical facilities will remain operational in an earthquake event. | High. This item was never addressed in original plan |
| Entire Area | 4.D - Develop and provide managers of mobile home parks with information on how to improve the seismic performance of mobile homes. | Emergency Management<br>Existing Staff | General Fund & Existing Staff | Ongoing<br>Staff Time | Action saves lives & property reducing cost to repair or purchase another home. | High. This item was never addressed in original plan |
| COUNTY | 4.E - Encourage utility companies to evaluate the seismic | Emergency Management, | Emergency Management, | Ongoing | Improve resilience to hazards and reduce injuries and costs | Medium |

| | | | | | | |
|---|---|---|---|---|---|---|
| | risk to their high-pressure transmission pipelines and implement mitigation measures such as automatic shut-off valves in SE corner of Lincoln County. | Utilities | Public Works, Existing Staff | Staff Time | during events. | |
| Entire Area | 5.A County & City & FEMA update the remaining outdated FIRMs into new DFIRMs and ensure any new developments have the requirement to complete FIRMs as part of permit. | Planning<br>Flood Control<br>Zoning | HMGP, PDM grants, General Fund, Private developers, | On-going project from original plan<br>$300,000 | Controlling development within the 100-year floodplain will save lives and property. | High. This item was never addressed in original plan |
| CITY | 5a.1 Apply for LOMR upon completion of CYC Bridge Installation, based on removal of obstruction. | Floodplain Manager<br>New data from engineer | HMPG, PDM Grants<br>General fund | 24 months<br>Staff Time | FIRM revision will lower costs to homeowner | High, bridge will impact flooding danger in channel. |
| Entire Area | Action 5.B- County and City continue their participation in the NFIP and enforce their respective floodplain ordinances. | Building & Safety<br>Floodplain management | HMGP,<br>PDM, General Fund | Ongoing<br>Staff Time | Building/safety Codes save lives and property. | High |
| Entire Area | 5.C - Ensure mobile home parks are not located within the 100-year floodplain or near a major fault. | Building & Safety<br>Floodplain management<br>Existing staff | HMGP,<br>PDM, General Fund | Ongoing<br>Staff Time | Improve resilience to hazards and reduce injuries and costs during events. | High |
| Entire Area | 5.D - Designate all floodways as Open Space, as it is done in Alamo. | Existing Staff<br>Public Works & Elected Officials | HMGP,<br>PDM, General Fund | Ongoing<br>Staff Time | Improve resilience to hazards and reduce injuries and costs during events. | Low |
| County | 5.E - Ensure that the NV State Engineers Office inspects high hazard dams in the planning area on a timely basis, per NRS | Flood plain Manger<br>County EM | General Fund | Ongoing<br>Staff Time | Improve resilience to hazards and reduce injuries and costs during events. | Low |

| | | | | | | |
|---|---|---|---|---|---|---|
| | 535.030. | ~~City Mayor~~ | | | | |
| Entire Area<br>New | 5.F - Install culverts and storm water facilities to relieve floodwater | Public Works, Roads | PDM, HMGP, NDOT, General Fund | 24 Months<br>$2,000,000 | Improve resilience to hazards and reduce injuries and costs during events. | Medium due to funding. |
| CITY New | 5.G Remove sediment from river and wash to allow flow during flood periods | Public Works | NDWR, USACE, HMGP | Ongoing<br>$50,000/year | Reduce the impact of flooding. | High |
| CITY New | 5.H Attempt to relocate existing mobile home park out of 100 year flood zone. | Public Works | PDM, HMGP, HUD | 3 years<br>$1,500,000 | Improve resilience to hazards and reduce injuries and costs during events. | Low due to funding. |
| Entire Area | 6.A - Ensure that adequate fuels reduction treatments are in place and that all new development within the planning area meets the National Fire Code and Standards. | Local Fire Departments<br>BLM<br>NDF | Fire Grants, NDF, BLM, NDEM, NRCS, NV Fire Safe Council | On-going project from original plan<br>$75,000/year | Reducing the fuels surrounding communities will save lives and property. | Medium. Much of this project has been completed within the last 5 years. |
| County is 90%<br>CITY IS 100% | 6.B - Complete improvement of street and address signage so that emergency responders can easily locate at risk homes or areas in all communities of low visibility during a wildland fire event. 99% complete | Public Works<br>Fire Department<br>Existing Staff | NDF,<br>BLM, Fire Safe Council, General Fund, NV Fire Safe Council | 12 Months<br>$50,000 | Quicker, more efficient emergency response saves lives. | Medium. This project is approx. 90% complete |
| Entire Area | 6.C - (Amended goal) Develop and adopt defensible space measures for existing as well as any new master planned communities and subdivisions. | County Building Dept.<br>City Building Dept. | General Fund | 12 Months<br>Staff Time | Reducing the fuels surrounding communities will save lives and property. | Medium. |
| Entire Area | 6.D - Develop a public outreach campaign of the extreme wildland fire dangers and steps that can be taken to reduce these dangers. | Local Fire Dept.<br>Mayor's Office<br>County EM | General Fund | 12 Months<br>Staff Time<br>½ New Person | Reducing the fuels surrounding communities will save lives and property. | Medium. |

| | | | | | | |
|---|---|---|---|---|---|---|
| CITY | 6.E - Develop an annual free curb-side weed removal pick-up program. | Existing Staff, Local Fire Departments | General Fund, Waste Disposal | 12 Months<br>Staff Time<br>½ New Person | Reducing the fuels surrounding communities will save lives and property. | Medium. |
| Entire Area | 6.F - Work with the BLM and the NDF to conduct fuel reduction on federal property surrounding all communities within the planning area. | Local Fire Departments<br>BLM<br>NDF | Fire Grants, NDF, BLM, NDEM, NRCS, NV Fire Safe Council | On-going project from original plan<br>Staff Time | Reducing the fuels surrounding communities will save lives and property. | Medium. Much of this project has been completed within the last 5 years. |
| County | 6.G - Develop a fuel reduction program to clear vegetation around and under electrical transmission lines, sub-stations and rights of way.(See fig. B-7) | Lincoln Power Company | PDM, HMGP, Fire Grants, NDF, BLM | 24 Months<br>$400,000 | Reducing the fuels surrounding communities will save lives and property. | High |
| Entire Area | 7.A - Protect existing assets, as well as new development, from severe winds. | Building & Safety | General Fund, PDM, HMGP, CDBG | 24 Months<br>$100,000 | Improve resilience to hazards and reduce injuries and costs during events. | Low |
| Entire Area | 7.B - Develop restrictions on planting large or rapidly-growing trees near power lines and major arterials. | Building & Safety | General Fund, CDBG | 12 Months<br>Staff Time | Improve resilience to hazards and reduce injuries and costs during events. | Low |
| Entire Area | 7.C - Improve the safety and reliability of overhead lines through improved design, maintenance, right-of-way management, and inter-utility cooperation. | Lincoln Co. Power<br>City Public Works | Power Rates | Ongoing<br>$500,000 | Improve resilience to hazards and reduce injuries and costs during events. | Medium |
| Entire Area | 7.D - Ensure all new construction is in compliance with wind design standards shown in Section 16 of the IBC. | Building & Safety | General Fund | Ongoing<br>Staff Time | Improve resilience to hazards and reduce injuries and costs during events. | Low |
| CITY New | 7 E. Adopt Meadow Valley Wash | Floodplain Mngr | NV DEM | 24 months | Provide more flow capacity | High, much of |

| | | | | | | |
|---|---|---|---|---|---|---|
| | TRT measures to relieve siltation and lower flood risk from MV south of US 93 bridge 219 | NDOT<br>NV EM | General fund<br>NDOT | $50,000/year | through MV Wash in City | the problem in Wash is because of limited flow capacity |

**BLM= Bureau of Land Management**
**DHS= Dept. of Homeland Security**
**EMPG = Emergency Management Performance Grant**
**HMGP = Hazard Mitigation Grant Program**
**NDEP = Nevada Division of Environmental Protection**
**NDF = Nevada Department of Forestry**
**PDM = Pre-Disaster Mitigation**
**SERC = State Emergency Response Commission**
**USDA = U.S. Department of Agriculture**
**USEPA = U.S. Environmental Protection Agency**
**USFS = U.S. Forest Service**
**USGS = U.S. Geological Survey**

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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 Planning Committee intends 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.*

Maintenance on the previous plan was conducted annually. The committee annually completed maintenance table top exercises, which compiled information on plan integration, hazards, new events, collecting data and the mitigation actions were reviewed and progress was documented.

The Planning Committee recognizes the need for plan maintenance and wanted to include tools into the plan for improved maintenance. The HMP was prepared as a collaborative effort between the Planning Committee and Nevada Division of Emergency Management. To maintain momentum and build upon this hazard mitigation planning effort and successes, the Planning Committee will monitor, evaluate, and update the HMP. The Planning Committee will be responsible for implementing the Mitigation Action Plan. The Lincoln County Emergency Manager, will serve as the primary point of contact and will coordinate all local efforts to monitor, evaluate, and revise the HMP.

The Planning Committee 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 Emergency Manager will initiate the annual review one month prior to the date of adoption. The findings from this review will be presented annually to the County and City. 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's and City's risk of natural or human-caused hazards.
- Impacts of land development activities and related programs on hazard mitigation.
- Progress made implementing the Mitigation Action Plan (identify problems and suggest improvements as necessary).
- The adequacy of resources for implementation of the HMP.

The process of reviewing the progress on achieving the mitigation goals and implementing the Mitigation Action Plan activities and projects will also be accomplished during the annual review process. During each annual review, a Mitigation Action Progress Report will be submitted to the Planning Committee and provide a brief overview of mitigation projects completed or in progress since the last review. As shown in Appendix 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 City's risk of natural and man-made hazards.
- Provide a new annual review (as noted above), plus a review of the three previous annual reports.
- Provide a detailed review and revision of the mitigation strategy.
- Prepare a new action plan with prioritized actions, responsible parties, and resources.
- Prepare a new draft HMP and submit it to the County Commissioners and City Council 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

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

plans, when appropriate.

Element

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

*Source: FEMA 2008.*

The 2012 HMP was considered in the planning process for the revision of the City of Caliente Master Plan when it was updated in 2011 and included in future land use 3.1.2 Flood Prevention. There were no changes to the County Master Plan that included Hazard Mitigation when it was updated in 2015. This oversite will need to be corrected the next time the County Master Plan is updated.

The County, City and Committee will continue to ensure that the HMP, in particular the Mitigation Action Plan is incorporated into existing planning mechanisms such as the Master Plan – Land Use Element and the Emergency Operations Plan, where mitigation actions are already a part of these County and City documents and refers readers to the HMP updates.

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 but are not necessarily limited to:
    - *Lincoln County Master Plan*
    - *Lincoln County Public Lands Policy Plan*
    - *Lincoln County Open Space and Lands Plan*
    - *City of Caliente Master Plan*

- 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

DMA 2000 Requirements: Plan Maintenance Process - Continued Public Involvement

stakeholders?)

*Source: FEMA 2008.*

Both the County and City 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. The City is currently moving forward with a plan to develop a web site and will place this document on the web site when it is activated. These sites will also contain an e-mail address and phone number to which people can direct their comments or concerns.

The Emergency Management Director will also identify opportunities to raise community awareness about the HMP and the planning area's hazards. This will include attendance and provision of materials at County and City-sponsored events. Any public comments received regarding the HMP will be collected by the Emergency Management Director, included in the annual report to the Board of Commissioners, and considered during future HMP updates.

The Emergency Management Director will convene a meeting of the HMP Planning Committee **at least every 12 months as a portion of the public input and to facilitate the annual updating and report to the Board of County Commissioners**. These meetings will be properly posted as public meetings, advertised and, if possible, notices of meeting will also be distributed in each community through utility billings.

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This section has been revised to include the latest revision of FIRMs for the planning area, the drainage study for Panaca, as well as updated wildland fire planning studies, additional drought studies and assessments and the final report on Meadow Valley Wash Corridor Analysis by Natural Channel Designs.

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# Appendix A
# Adoption Resolution

**A RESOLUTION TO ADOPT**
**LINCOLN COUNTY**
**HAZARD MITIGATION PLAN**

**WHEREAS** the City Council of Caliente, Nevada recognizes that various hazards may exist to the lives and property of the residents of Lincoln County, both natural and man made; and

**WHEREAS** it is required by Section 409 of the Stafford Act, and Section 322 of the Disaster Mitigation Act of 2000, and CFR 44; and

**WHEREAS** the City Council has caused that a Plan to address these issues be formulated in concert with the Commissioners of Lincoln County; and

**WHEREAS** the City Council members having reviewed said Plan;

**NOW THEREFORE**, be it resolved by the Caliente City Council that:

The Lincoln County, Nevada, Multi-Jurisdictional Hazard Mitigation Plan be adopted by said Council.

Dated this 22nd day of December, 2005.

Kevin J. Phillips, Mayor

Tom Acklin, Council Member

Ashley Moore, Council Member

Laura Tibbetts, Council Member
Mayor Pro Tem (January 2006)

Walter Zawrotny, Council Member

Attest: Patrice Lytle, City Clerk

**A RESOLUTION TO ADOPT**
**LINCOLN COUNTY**
**HAZARD MITIGATION PLAN**

**WHEREAS** the Commissioners of Lincoln County recognize that various hazards may exist to the lives and property of the residents of Lincoln County, both natural and man made, and;

**WHEREAS** it is required by Section 409 of the Stafford Act, and Section 322 of the Disaster Mitigation Act of 2000, and CFR 44, and;

**WHEREAS** the Board of Lincoln County Commissioners have caused that a Plan to address these issues be formulated; and

**WHEREAS** the Board members having reviewed said Plan;

**NOW THEREFORE,** Be it resolved by the Lincoln County Commissioners that:

The Lincoln County, Nevada, Multi-Jurisdictional Hazard Mitigation Plan (HMP) be adopted by said board.

Dated this 19th day of December, 2005.

George T. Rowe, Chairman

Ronda Hornbeck, Vice Chair

Absent
Spencer Hafen, Member

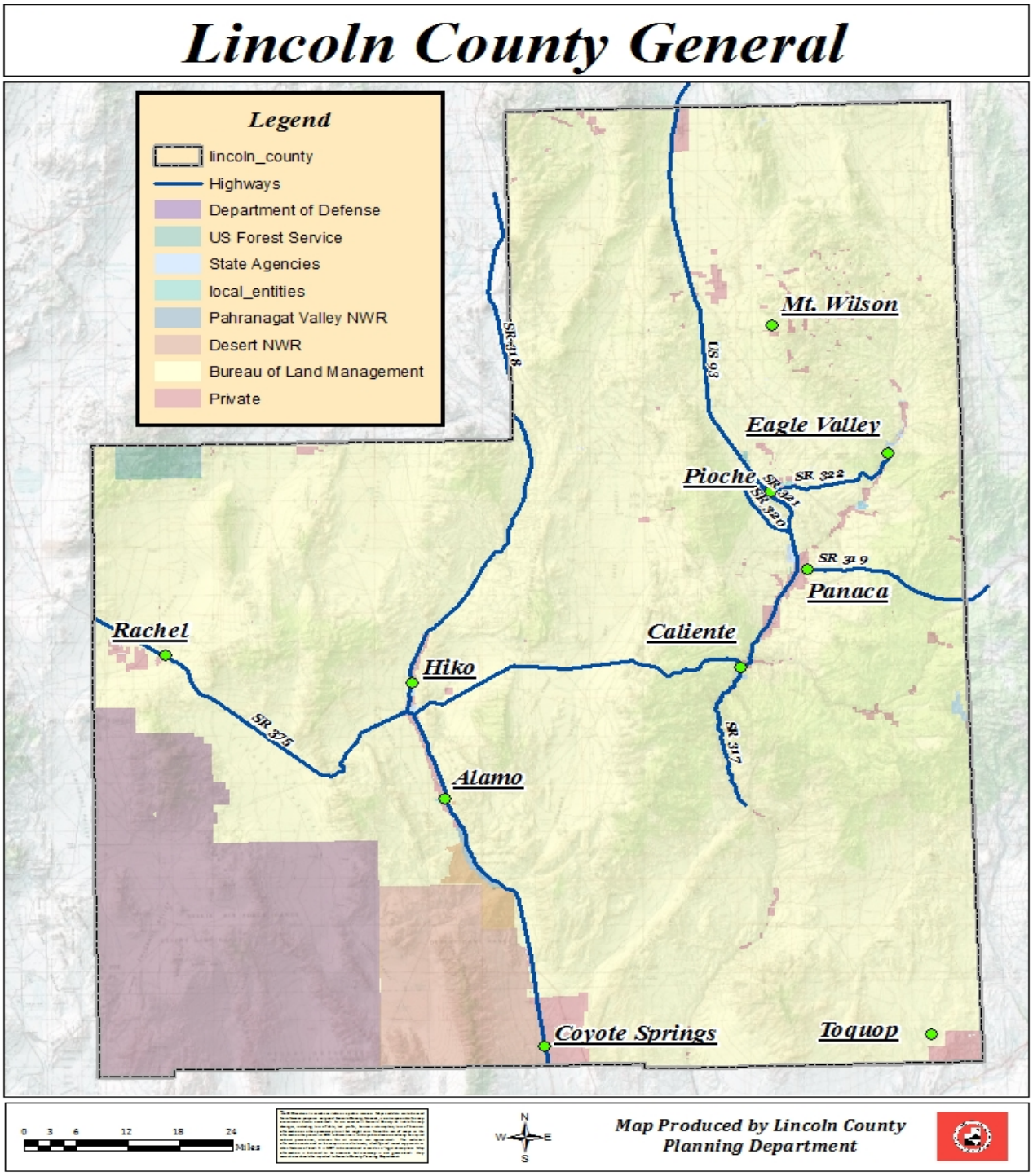
Hal Keaton, Member

Wade Poulsen, Member

Attest: Deputy
Corrine Fogan
Lincoln County Clerk

# Appendix B
# Figures

**Figure B-1**


Lincoln County General
Legend
lincoln_county
Highways
Department of Defense
US Forest Service
State Agencies
local_entities
Pahranagat Valley NWR
Desert NWR
Bureau of Land Management
Private
Mt. Wilson
Eagle Valley
Pioche
Panaca
Caliente
Hiko
Rachel
Alamo
Coyote Springs
Toquop
SR-318
US 93
SR 322
SR 321
SR 320
SR 319
SR 317
SR 375
0 3 6 12 18 24
Miles
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Map Produced by Lincoln County
Planning Department

## Figure B-2

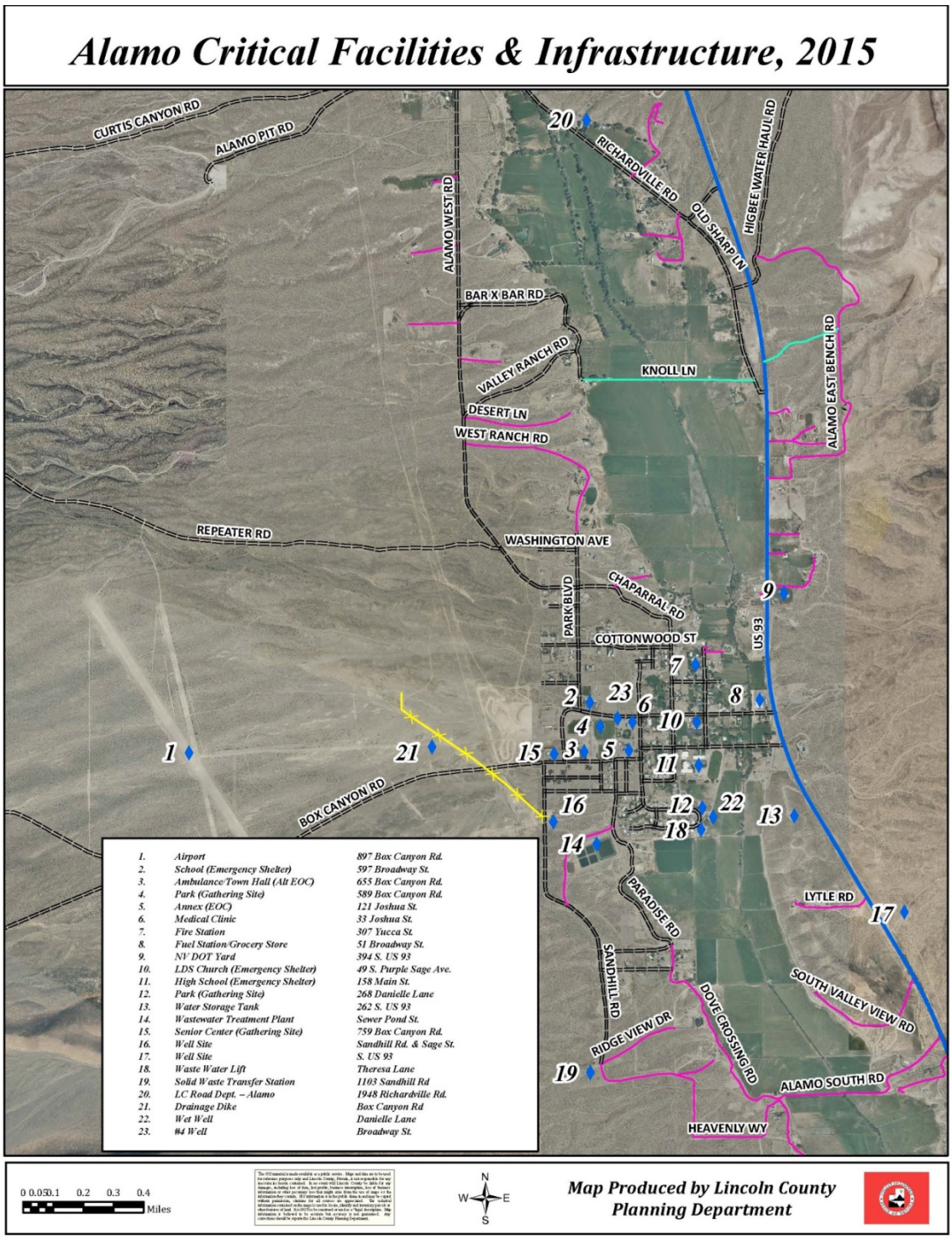
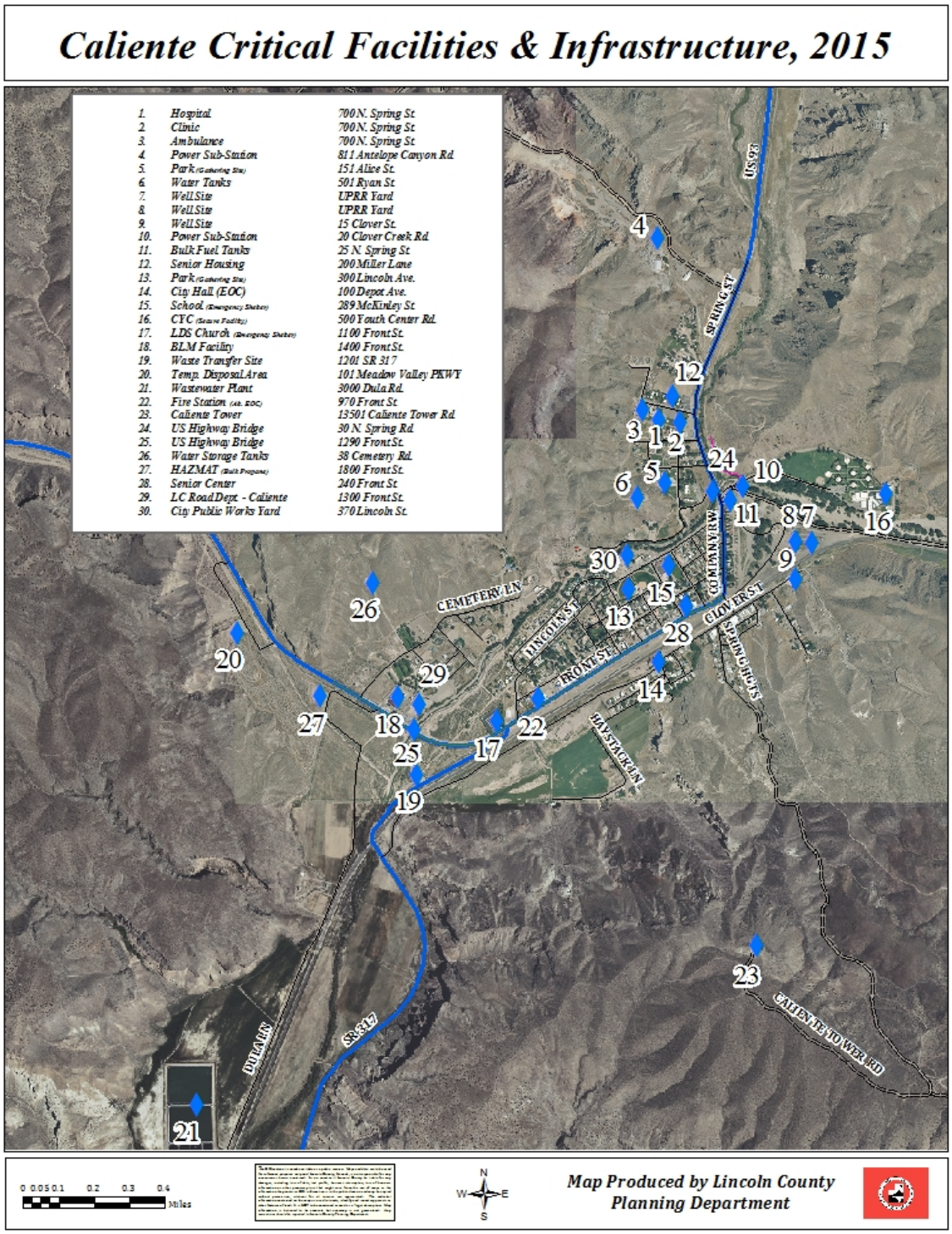
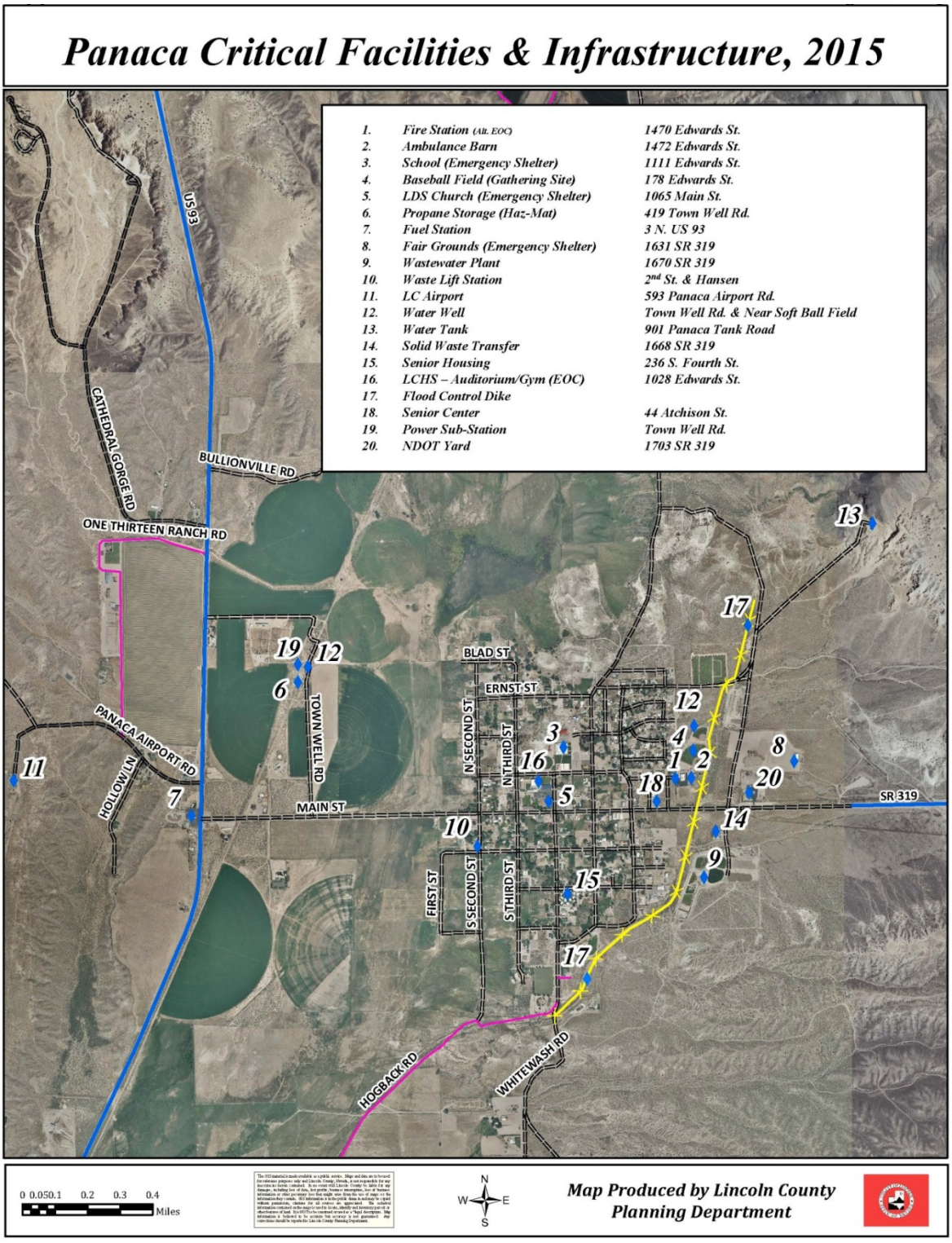

Alamo Critical Facilities & Infrastructure, 2015
CURTIS CANYON RD
ALAMO PIT RD
ALAMO WEST RD
RICHARDVILLE RD
OLD SHARP LN
HIGBEE WATER HAUL RD
BAR X BAR RD
VALLEY RANCH RD
KNOLL LN
ALAMO EAST BENCH RD
DESERT LN
WEST RANCH RD
REPEATER RD
WASHINGTON AVE
CHAPARRAL RD
PARK BLVD
COTTONWOOD ST
US 93
BOX CANYON RD
PARADISE RD
SANDHILL RD
LYTLE RD
SOUTH VALLEY VIEW RD
RIDGE VIEW DR
DOVE CROSSING RD
ALAMO SOUTH RD
HEAVENLY WY
1. Airport 897 Box Canyon Rd.
2. School (Emergency Shelter) 597 Broadway St.
3. Ambulance/Town Hall (Alt EOC) 655 Box Canyon Rd.
4. Park (Gathering Site) 589 Box Canyon Rd.
5. Annex (EOC) 121 Joshua St.
6. Medical Clinic 33 Joshua St.
7. Fire Station 307 Yucca St.
8. Fuel Station/Grocery Store 51 Broadway St.
9. NV DOT Yard 394 S. US 93
10. LDS Church (Emergency Shelter) 49 S. Purple Sage Ave.
11. High School (Emergency Shelter) 158 Main St.
12. Park (Gathering Site) 268 Danielle Lane
13. Water Storage Tank 262 S. US 93
14. Wastewater Treatment Plant Sewer Pond St.
15. Senior Center (Gathering Site) 759 Box Canyon Rd.
16. Well Site Sandhill Rd. & Sage St.
17. Well Site S. US 93
18. Waste Water Lift Theresa Lane
19. Solid Waste Transfer Station 1103 Sandhill Rd
20. LC Road Dept. – Alamo 1948 Richardville Rd.
21. Drainage Dike Box Canyon Rd
22. Wet Well Danielle Lane
23. #4 Well Broadway St.
0 0.05 0.1 0.2 0.3 0.4 Miles
N W E S
Map Produced by Lincoln County Planning Department

**Figure B-3**


Caliente Critical Facilities & Infrastructure, 2015
1. Hospital 700 N. Spring St
2. Clinic 700 N. Spring St
3. Ambulance 700 N. Spring St
4. Power Sub-Station 811 Antelope Canyon Rd
5. Park (Gathering Site) 151 Alice St.
6. Water Tanks 501 Ryan St
7. Well Site UPRR Yard
8. Well Site UPRR Yard
9. Well Site 15 Clover St.
10. Power Sub-Station 20 Clover Creek Rd.
11. Bulk Fuel Tanks 25 N. Spring St
12. Senior Housing 200 Miller Lane
13. Park (Gathering Site) 300 Lincoln Ave.
14. City Hall (EOC) 100 Depot Ave.
15. School (Emergency Shelter) 289 McKinley St.
16. CYC (Secure Facility) 500 Youth Center Rd.
17. LDS Church (Emergency Shelter) 1100 Front St.
18. BLM Facility 1400 Front St.
19. Waste Transfer Site 1201 SR 317
20. Temp. Disposal Area 101 Meadow Valley PKWY
21. Wastewater Plant 3000 Dula Rd.
22. Fire Station (Alt. EOC) 970 Front St.
23. Caliente Tower 13501 Caliente Tower Rd.
24. US Highway Bridge 30 N. Spring Rd
25. US Highway Bridge 1290 Front St.
26. Water Storage Tanks 38 Cemetery Rd.
27. HAZMAT (Bulk Propane) 1800 Front St.
28. Senior Center 240 Front St
29. LC Road Dept - Caliente 1300 Front St.
30. City Public Works Yard 370 Lincoln St.
US 93
SPRING ST
CEMETERY LN
LINCOLN ST
FRONT ST
CLOVER ST
COMPANY RW
SPRUCE HOLW
HAY STACK LN
DULA LN
SR 317
CALIENTE TOWER RD
0 0.05 0.1 0.2 0.3 0.4 Miles
N
W E
S
Map Produced by Lincoln County Planning Department

## Figure B-4


Panaca Critical Facilities & Infrastructure, 2015
1. Fire Station (All. EOC) 1470 Edwards St.
2. Ambulance Barn 1472 Edwards St.
3. School (Emergency Shelter) 1111 Edwards St.
4. Baseball Field (Gathering Site) 178 Edwards St.
5. LDS Church (Emergency Shelter) 1065 Main St.
6. Propane Storage (Haz-Mat) 419 Town Well Rd.
7. Fuel Station 3 N. US 93
8. Fair Grounds (Emergency Shelter) 1631 SR 319
9. Wastewater Plant 1670 SR 319
10. Waste Lift Station 2nd St. & Hansen
11. LC Airport 593 Panaca Airport Rd.
12. Water Well Town Well Rd. & Near Soft Ball Field
13. Water Tank 901 Panaca Tank Road
14. Solid Waste Transfer 1668 SR 319
15. Senior Housing 236 S. Fourth St.
16. LCHS – Auditorium/Gym (EOC) 1028 Edwards St.
17. Flood Control Dike
18. Senior Center 44 Atchison St.
19. Power Sub-Station Town Well Rd.
20. NDOT Yard 1703 SR 319
US 93
CATHEDRAL GORGE RD
BULLIONVILLE RD
ONE THIRTEEN RANCH RD
PANACA AIRPORT RD
HOLLOW LN
TOWN WELL RD
MAIN ST
BLAD ST
ERNST ST
N SECOND ST
N THIRD ST
S FIRST ST
S SECOND ST
S THIRD ST
SR 319
HOGBACK RD
WHITEWASH RD
0 0.05 0.1 0.2 0.3 0.4 Miles
N
W E
S
Map Produced by Lincoln County Planning Department

## Figure B-5

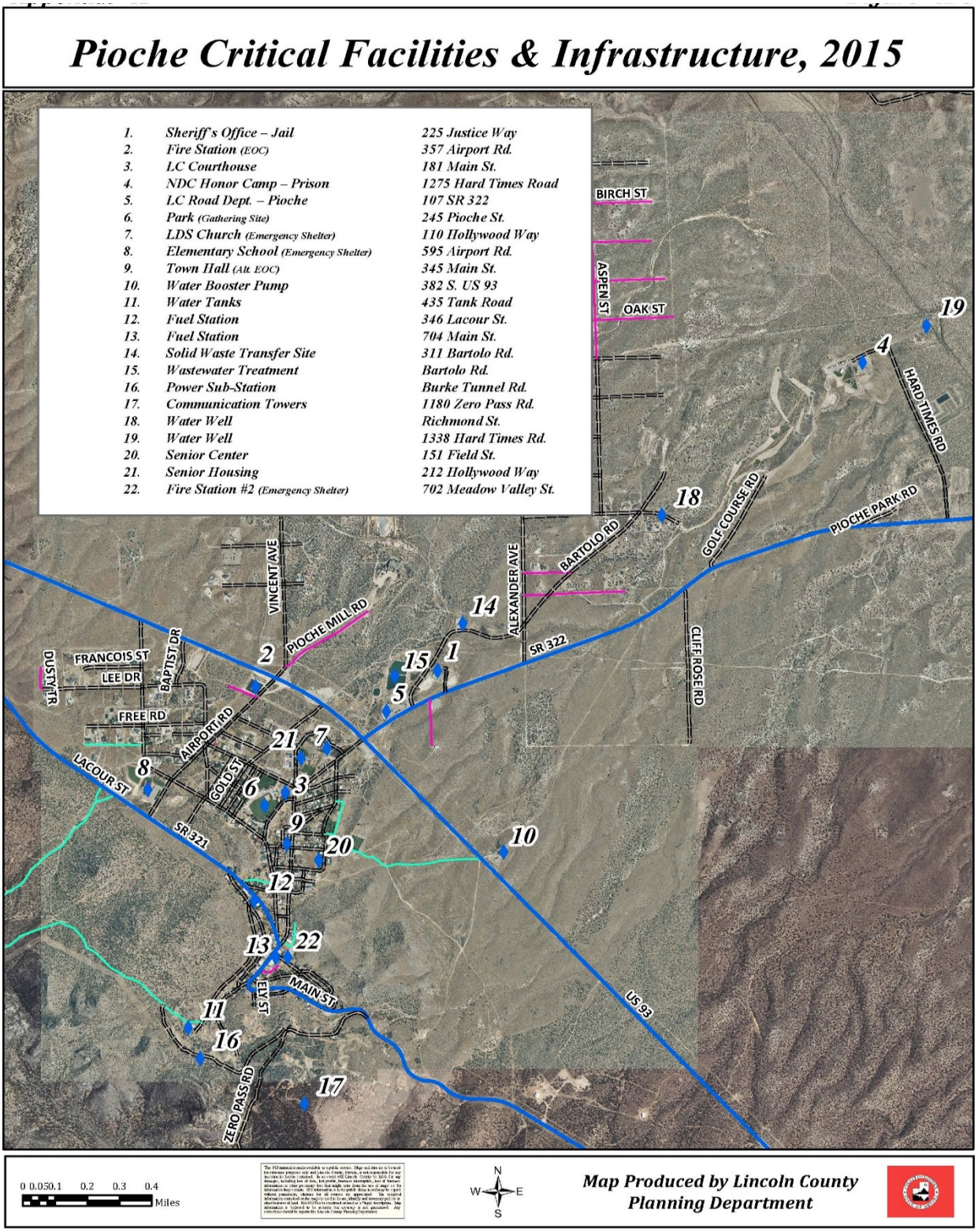

Pioche Critical Facilities & Infrastructure, 2015
1. Sheriff's Office – Jail 225 Justice Way
2. Fire Station (EOC) 357 Airport Rd.
3. LC Courthouse 181 Main St.
4. NDC Honor Camp – Prison 1275 Hard Times Road
5. LC Road Dept. – Pioche 107 SR 322
6. Park (Gathering Site) 245 Pioche St.
7. LDS Church (Emergency Shelter) 110 Hollywood Way
8. Elementary School (Emergency Shelter) 595 Airport Rd.
9. Town Hall (Alt. EOC) 345 Main St.
10. Water Booster Pump 382 S. US 93
11. Water Tanks 435 Tank Road
12. Fuel Station 346 Lacour St.
13. Fuel Station 704 Main St.
14. Solid Waste Transfer Site 311 Bartolo Rd.
15. Wastewater Treatment Bartolo Rd.
16. Power Sub-Station Burke Tunnel Rd.
17. Communication Towers 1180 Zero Pass Rd.
18. Water Well Richmond St.
19. Water Well 1338 Hard Times Rd.
20. Senior Center 151 Field St.
21. Senior Housing 212 Hollywood Way
22. Fire Station #2 (Emergency Shelter) 702 Meadow Valley St.
BIRCH ST
ASPEN ST
OAK ST
HARD TIMES RD
GOLF COURSE RD
PIOCHE PARK RD
BARTOLO RD
ALEXANDER AVE
VINCENT AVE
PIOCHE MILL RD
SR 322
CLIFF ROSE RD
FRANCOIS ST
LEE DR
DUST TR
BAPTIST DR
FREE RD
AIRPORT RD
LACOUR ST
GOLD ST
SR 321
MAIN ST
FLY ST
US 93
ZERO PASS RD
0 0.05 0.1 0.2 0.3 0.4 Miles
N
W E
S
Map Produced by Lincoln County Planning Department

**Figure B-6**

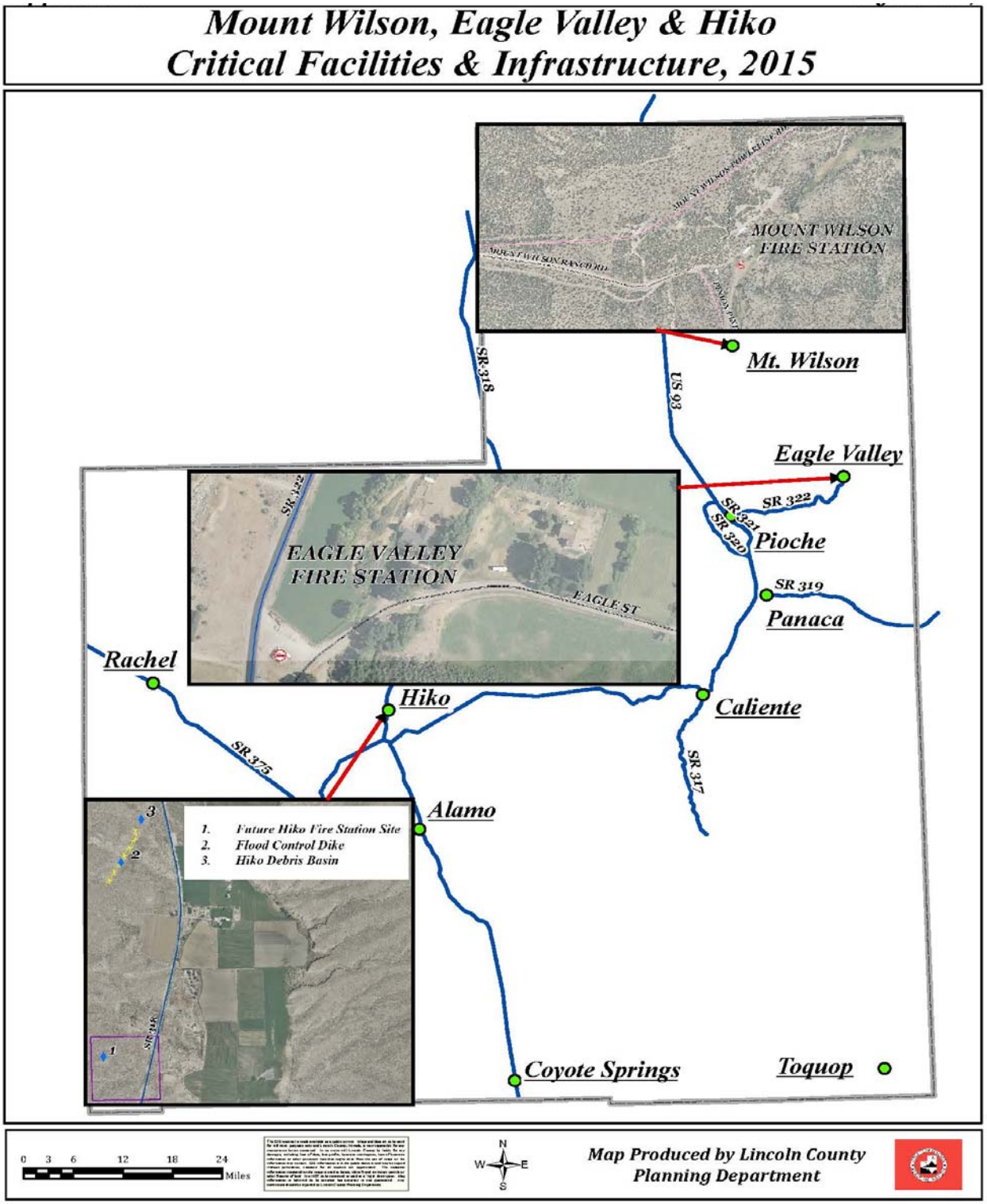

Mount Wilson, Eagle Valley & Hiko
Critical Facilities & Infrastructure, 2015
MOUNT WILSON FIRE STATION
Mt. Wilson
SR-318
US 93
Eagle Valley
SR 322
SR 321
SR 320
Pioche
SR 319
Panaca
EAGLE VALLEY FIRE STATION
EAGLE ST
Rachel
Hiko
Caliente
SR 375
SR 317
Alamo
1. Future Hiko Fire Station Site
2. Flood Control Dike
3. Hiko Debris Basin
Coyote Springs
Toquop
0 3 6 12 18 24 Miles
N
W E
S
Map Produced by Lincoln County
Planning Department

**Figure B-7**

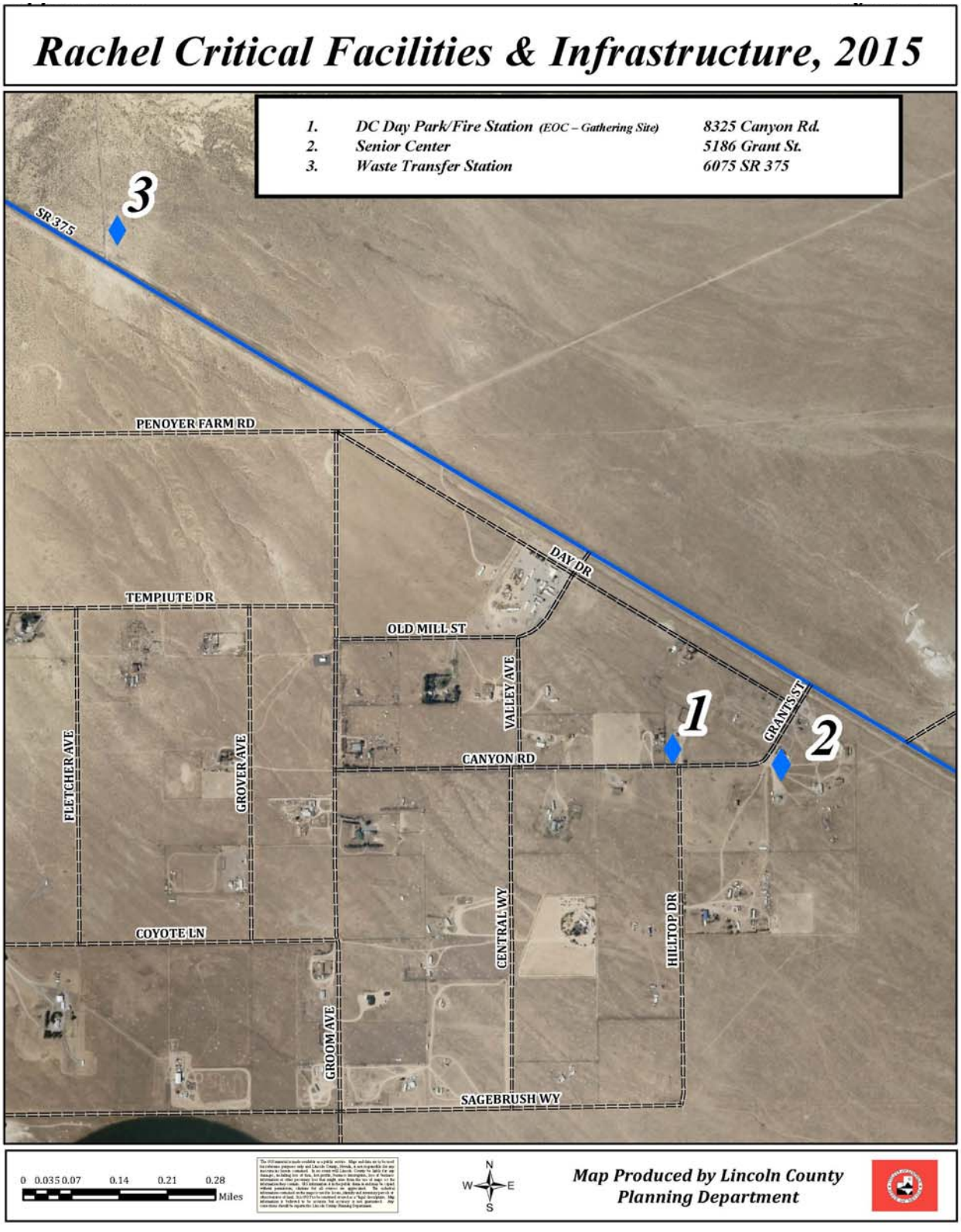

Rachel Critical Facilities & Infrastructure, 2015
1. DC Day Park/Fire Station (EOC – Gathering Site) 8325 Canyon Rd.
2. Senior Center 5186 Grant St.
3. Waste Transfer Station 6075 SR 375
SR 375
PENOYER FARM RD
DAY DR
TEMPIUTE DR
OLD MILL ST
VALLEY AVE
GRANTS ST
CANYON RD
FLETCHER AVE
GROVER AVE
COYOTE LN
CENTRAL WY
HILLTOP DR
GROOM AVE
SAGEBRUSH WY
0 0.035 0.07 0.14 0.21 0.28
Miles
N
W
E
S
Map Produced by Lincoln County Planning Department

**Figure B-8**

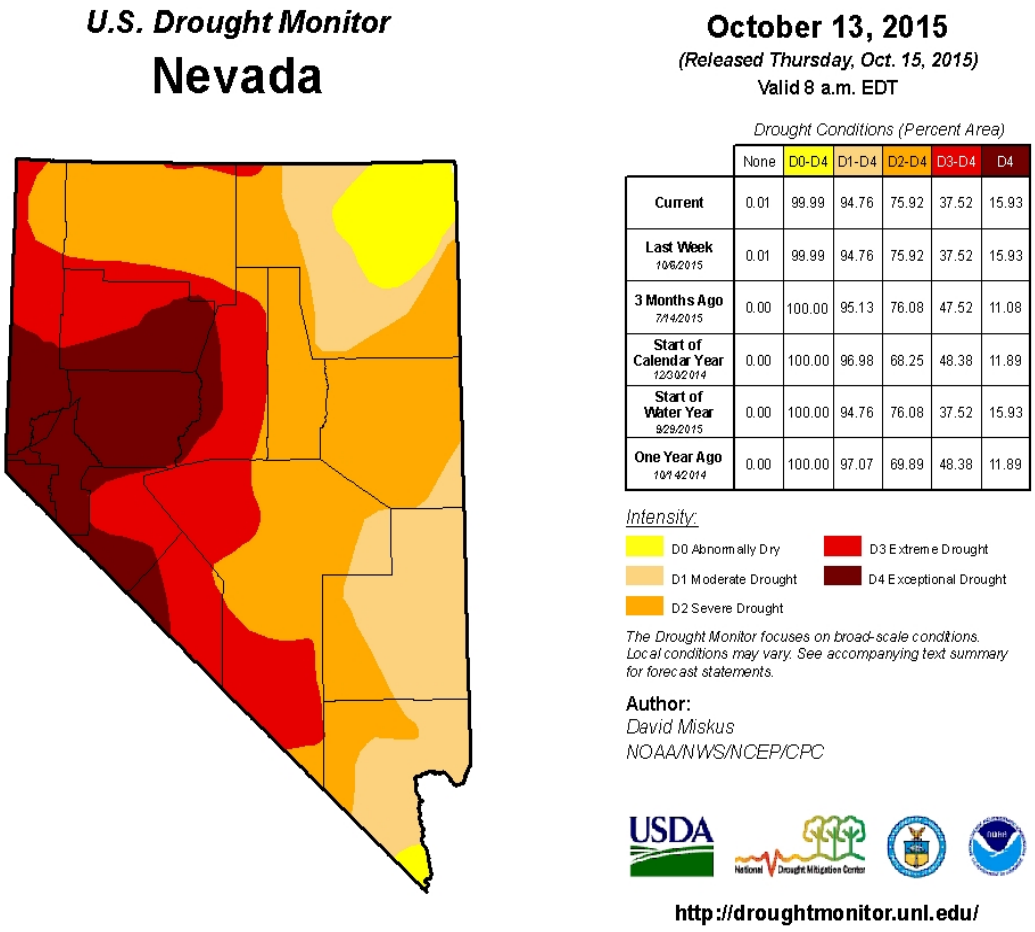

U.S. Drought Monitor
Nevada
October 13, 2015
(Released Thursday, Oct. 15, 2015)
Valid 8 a.m. EDT
Drought Conditions (Percent Area)
None D0-D4 D1-D4 D2-D4 D3-D4 D4
Current 0.01 99.99 94.76 75.92 37.52 15.93
Last Week 10/6/2015 0.01 99.99 94.76 75.92 37.52 15.93
3 Months Ago 7/14/2015 0.00 100.00 95.13 76.08 47.52 11.08
Start of Calendar Year 12/30/2014 0.00 100.00 96.98 68.25 48.38 11.89
Start of Water Year 9/29/2015 0.00 100.00 94.76 76.08 37.52 15.93
One Year Ago 10/14/2014 0.00 100.00 97.07 69.89 48.38 11.89
Intensity:
D0 Abnormally Dry
D1 Moderate Drought
D2 Severe Drought
D3 Extreme Drought
D4 Exceptional Drought
The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.
Author:
David Miskus
NOAA/NWS/NCEP/CPC
USDA
National Drought Mitigation Center
http://droughtmonitor.unl.edu/

**Figure B-9**

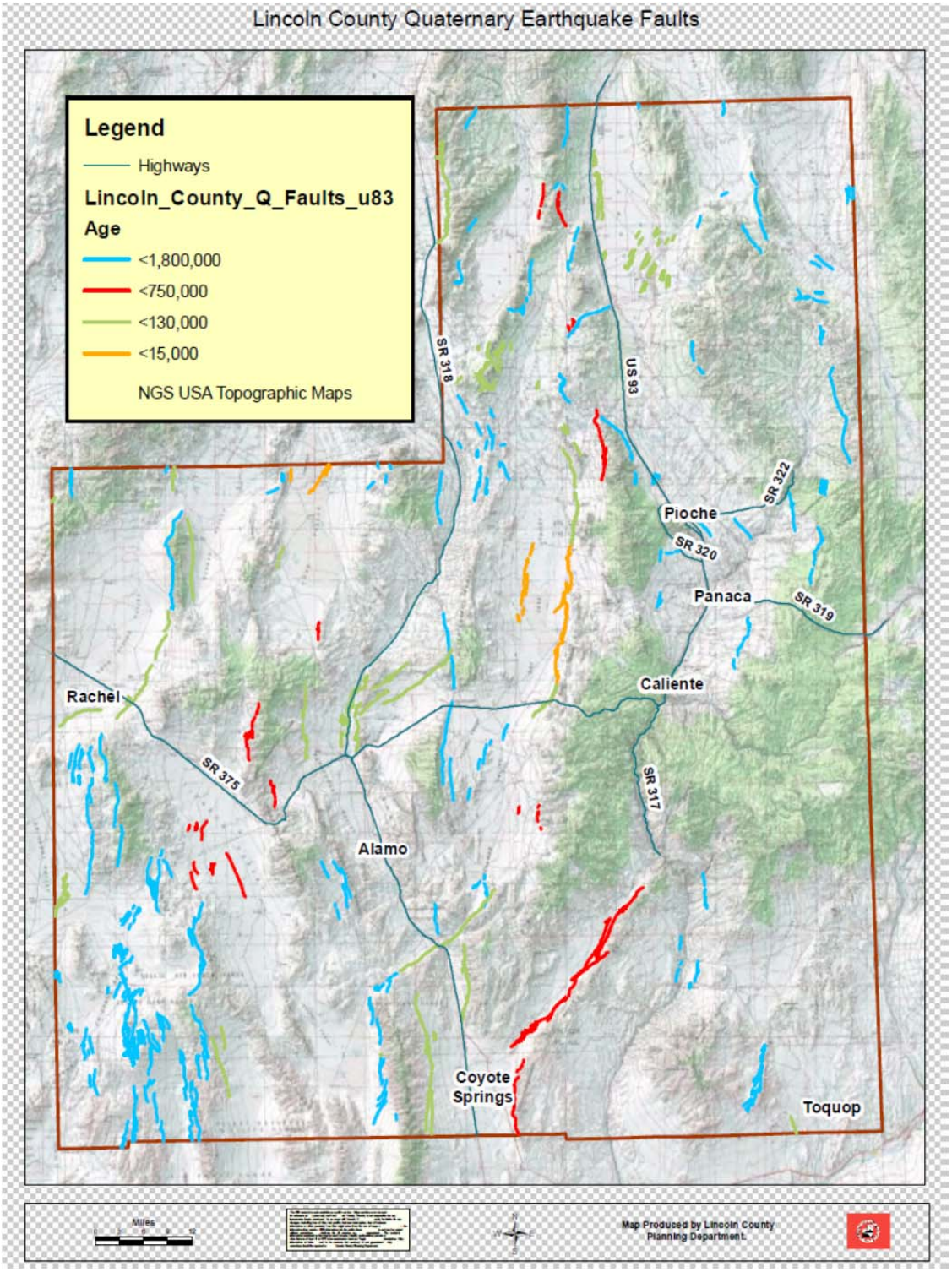

Lincoln County Quaternary Earthquake Faults
Legend
Highways
Lincoln_County_Q_Faults_u83
Age
<1,800,000
<750,000
<130,000
<15,000
NGS USA Topographic Maps
SR 318
US 93
SR 322
Pioche
SR 320
Panaca
SR 319
Caliente
Rachel
SR 375
SR 317
Alamo
Coyote Springs
Toquop
Miles
Map Produced by Lincoln County Planning Department.

**Figure B-10**

**Earthquake Probabilities within next 50 years for Lincoln County General Area**

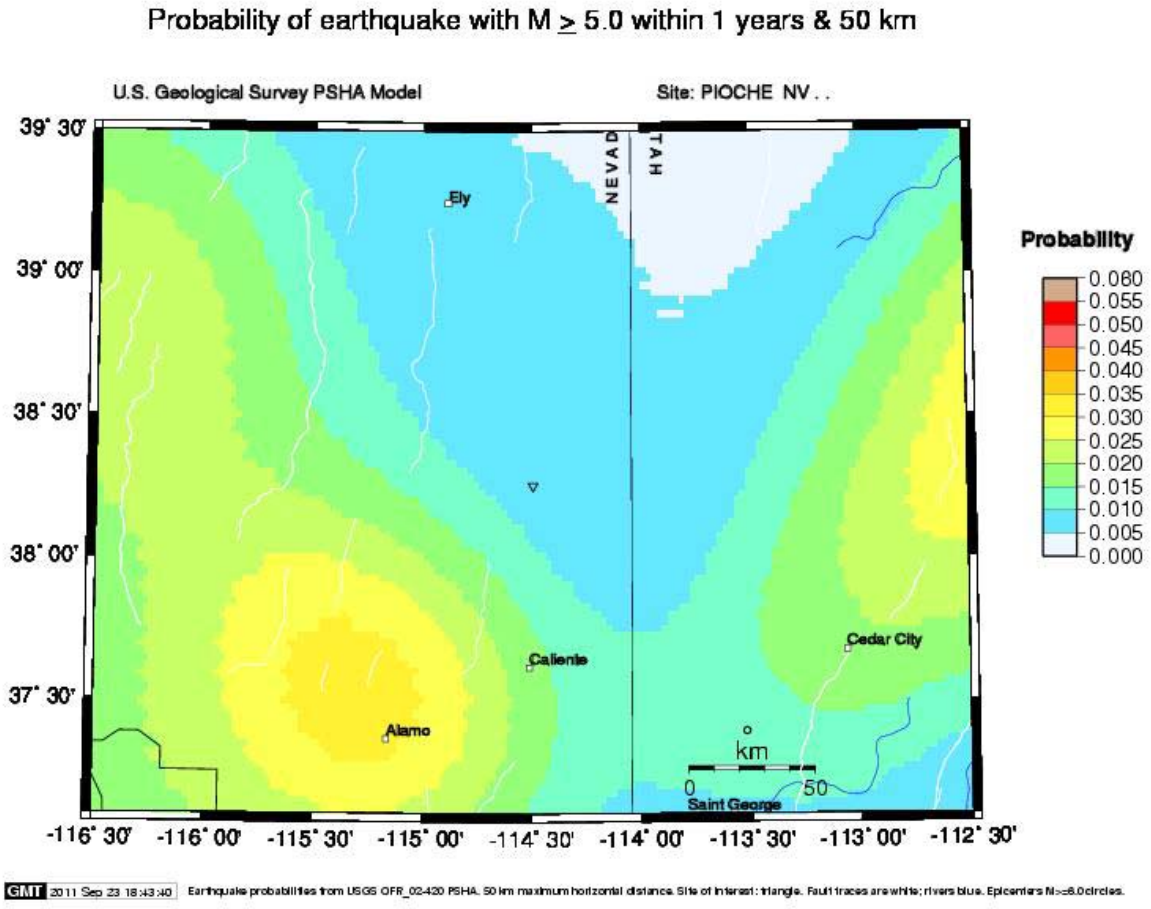


**FIGURE B-11**

**Pioche Area**

**ShakeMap from the Nevada Seismological Laboratory at UNR**

**Magnitude 3.0**
**1 mile SSE of Pioche**
**on Jan. 31, 2008**

**The earthquake was not obviously on a mapped fault.**

**A magnitude 6.0 earthquake can occur anywhere in Nevada, on a fault that is not exposed at the Earth's surface.**

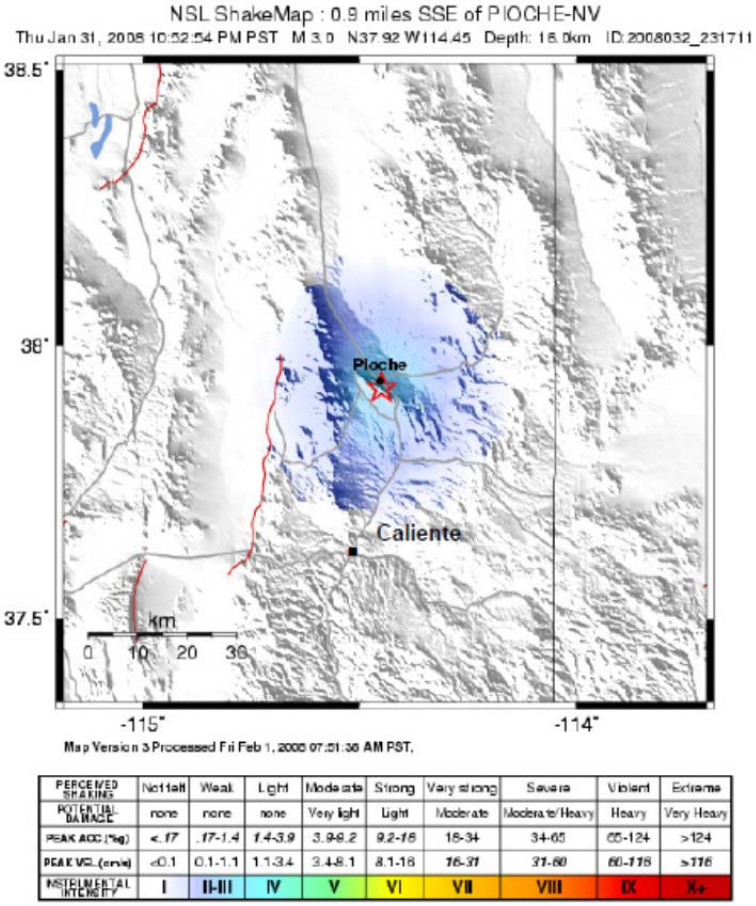


**Figure - B-12 Alamo**

ShakeMap from the Nevada Seismological Laboratory at UNR

Magnitude 3.9
55 miles SW of Caliente
on April 27, 2007
at 8:42 a.m.

Near Alamo

A magnitude 6.0 earthquake can occur anywhere in Nevada, on a fault that is not exposed at the Earth's surface.

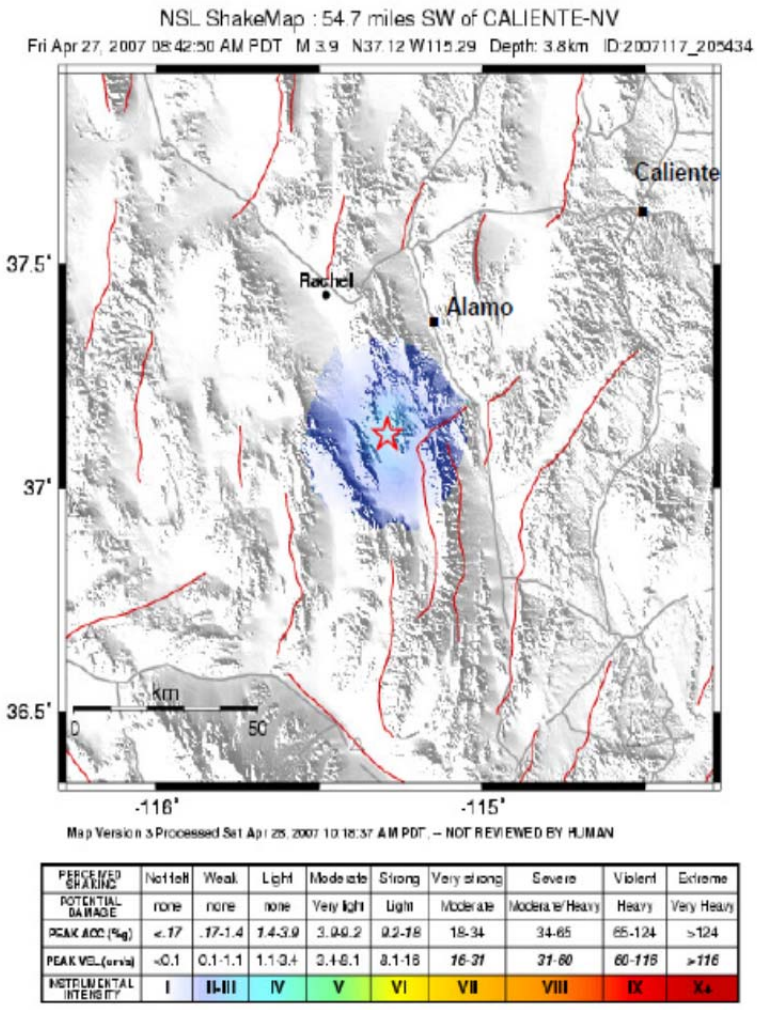


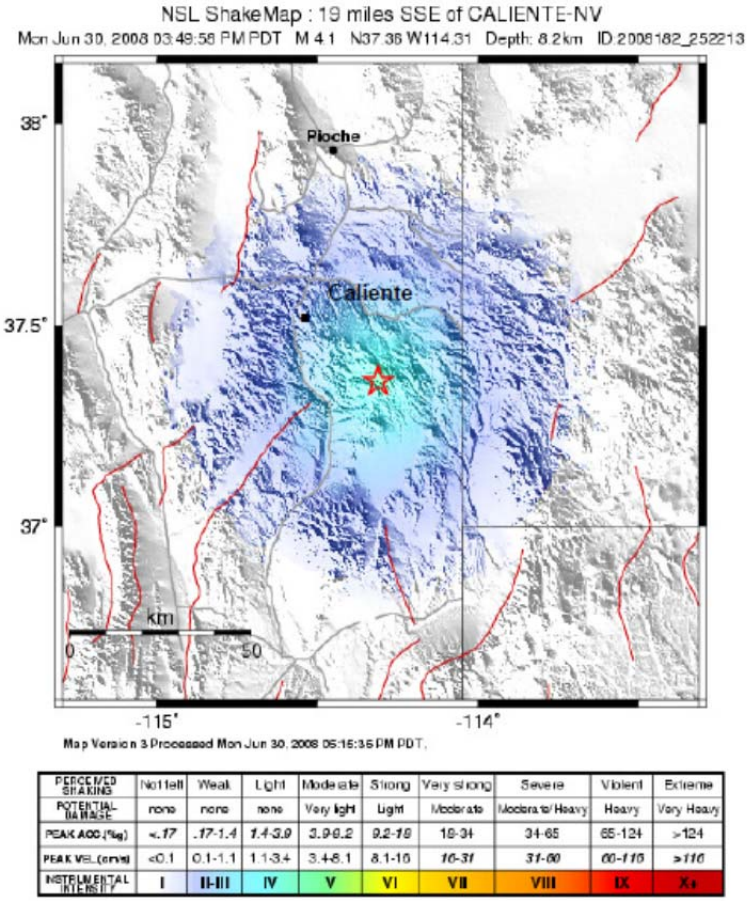
**FIGURE B-13 - Caliente Area**

**ShakeMap from the Nevada Seismological Laboratory at UNR**

**Magnitude 4.1**
**19 miles SSE of Caliente**
**on June 30, 2008**

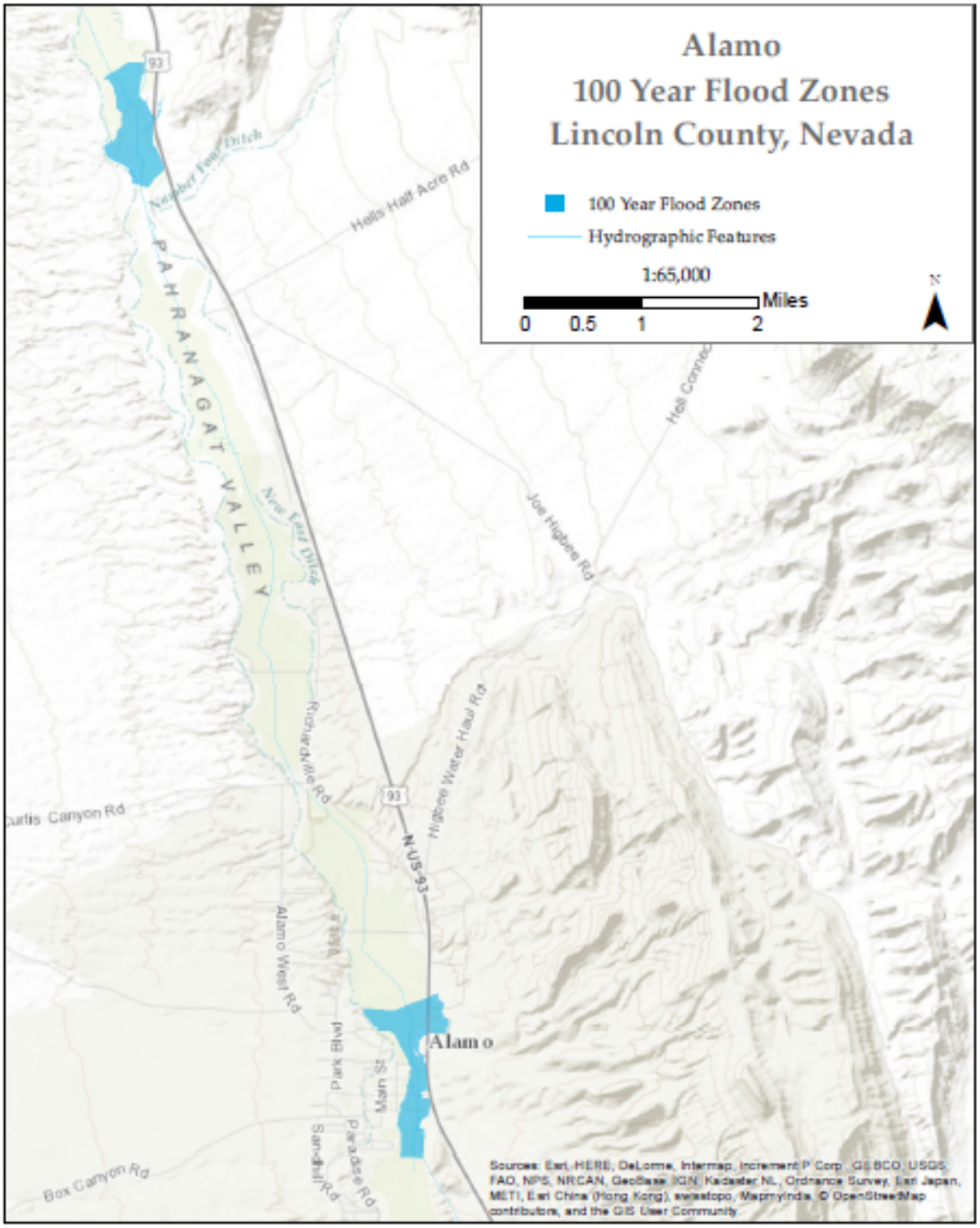
**The earthquake was not obviously on a mapped fault.**

**A magnitude 6.0 earthquake can occur anywhere in Nevada, on a fault that is not exposed at the Earth's surface.**



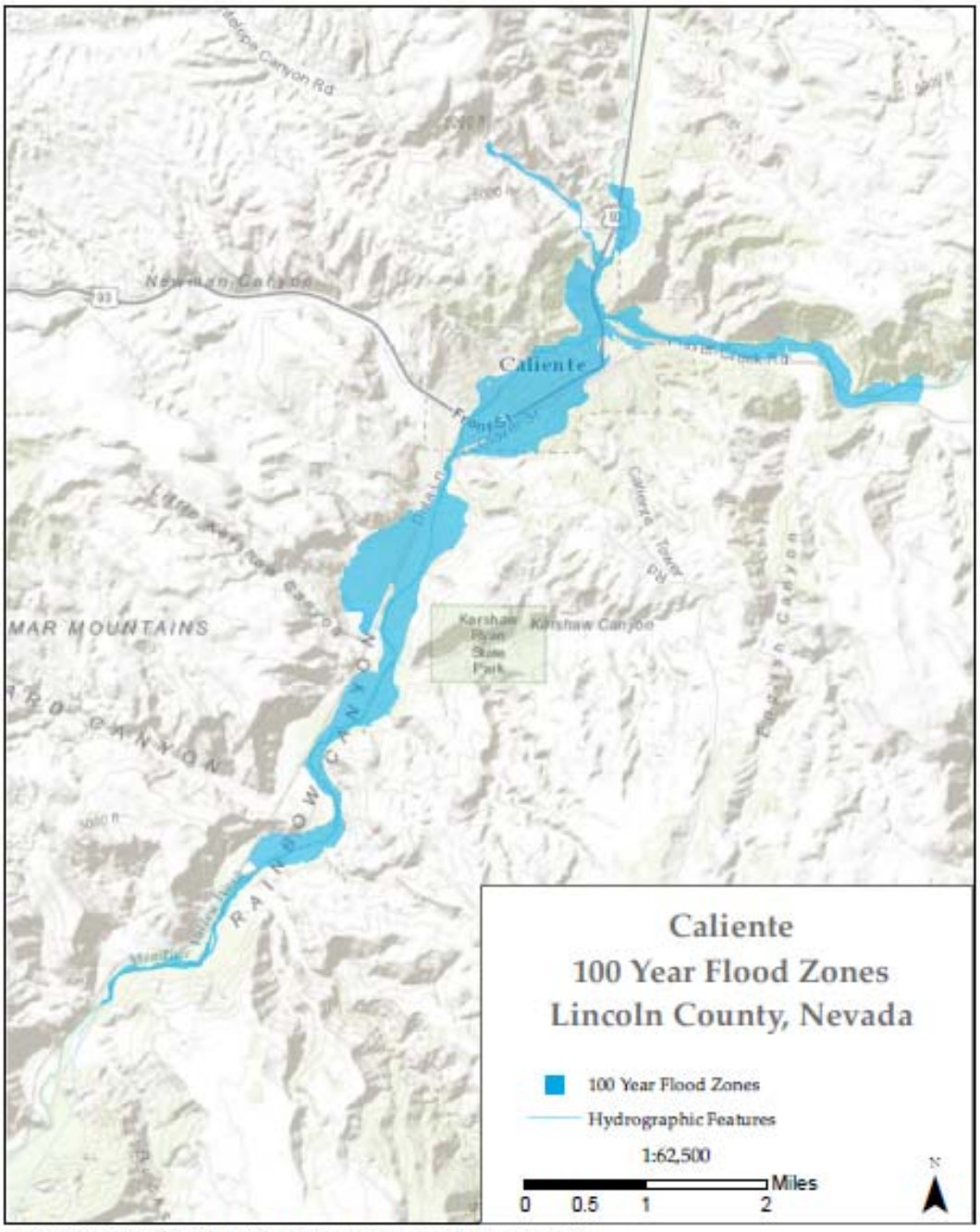

| PERCEIVED SHAKING | Not felt | Weak | Light | Moderate | Strong | Very strong | Severe | Violent | Extreme |
|---|---|---|---|---|---|---|---|---|---|
| POTENTIAL DAMAGE | none | none | none | Very light | Light | Moderate | Moderate/Heavy | Heavy | Very Heavy |
| PEAK ACC.(%g) | <.17 | .17-1.4 | 1.4-3.9 | 3.9-9.2 | 9.2-18 | 18-34 | 34-65 | 65-124 | >124 |
| PEAK VEL.(cm/s) | <0.1 | 0.1-1.1 | 1.1-3.4 | 3.4-8.1 | 8.1-16 | 16-31 | 31-60 | 60-116 | >116 |
| INSTRUMENTAL INTENSITY | I | II-III | IV | V | VI | VII | VIII | IX | X+ |

**Figure B-14**



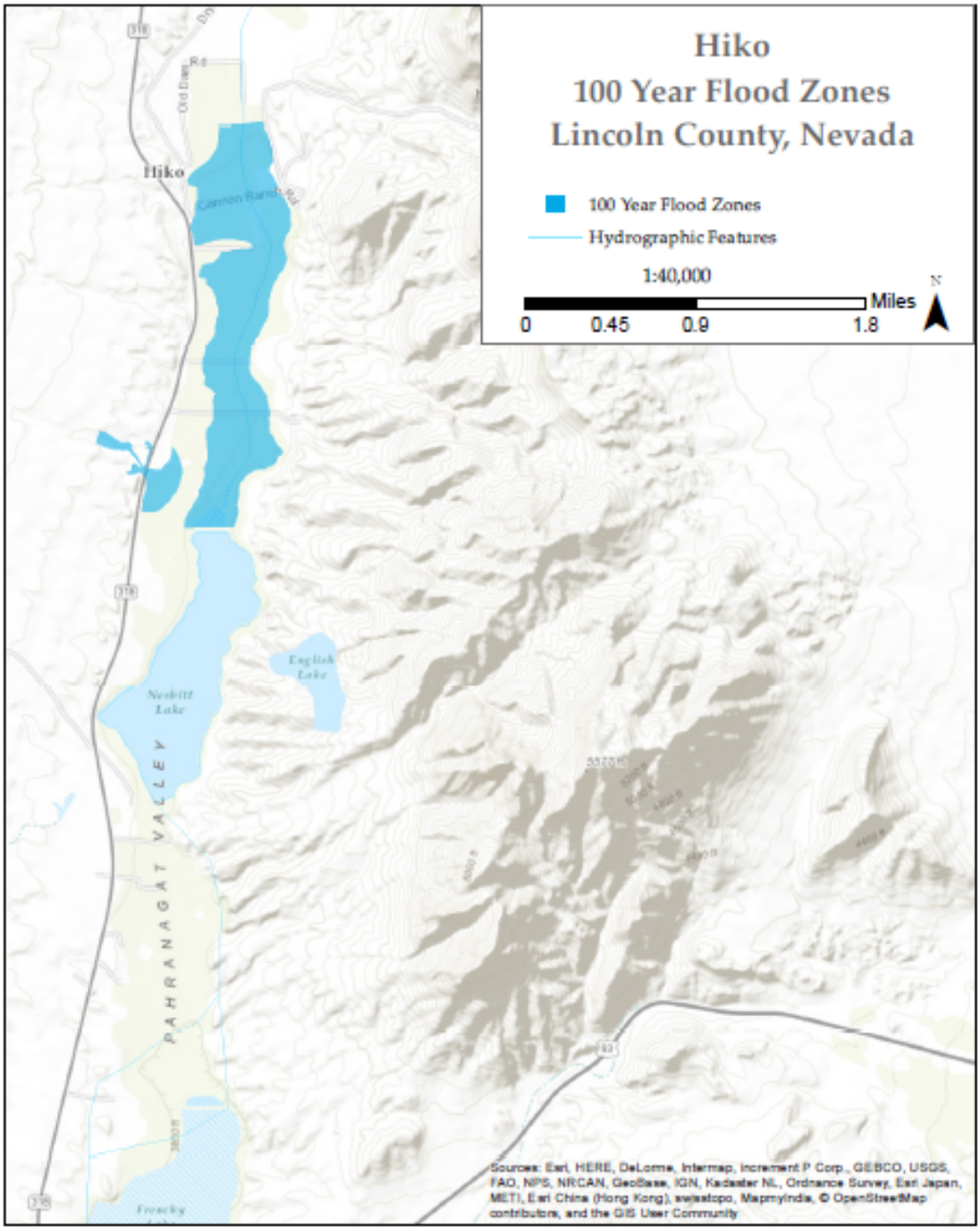

100 Year Flood Data Source: Federal Emergency Management Agency (FEMA)
Map created by the Nevada Bureau of Mines and Geology, January 2016

**Figure B-15**




100 Year Flood Data Source: Federal Emergency Management Agency (FEMA)
Map created by the Nevada Bureau of Mines and Geology, January 2016

**Figure B-16**




100 Year Flood Data Source: Federal Emergency Management Agency (FEMA)
Map created by the Nevada Bureau of Mines and Geology, January 2016

**Figure B-17**

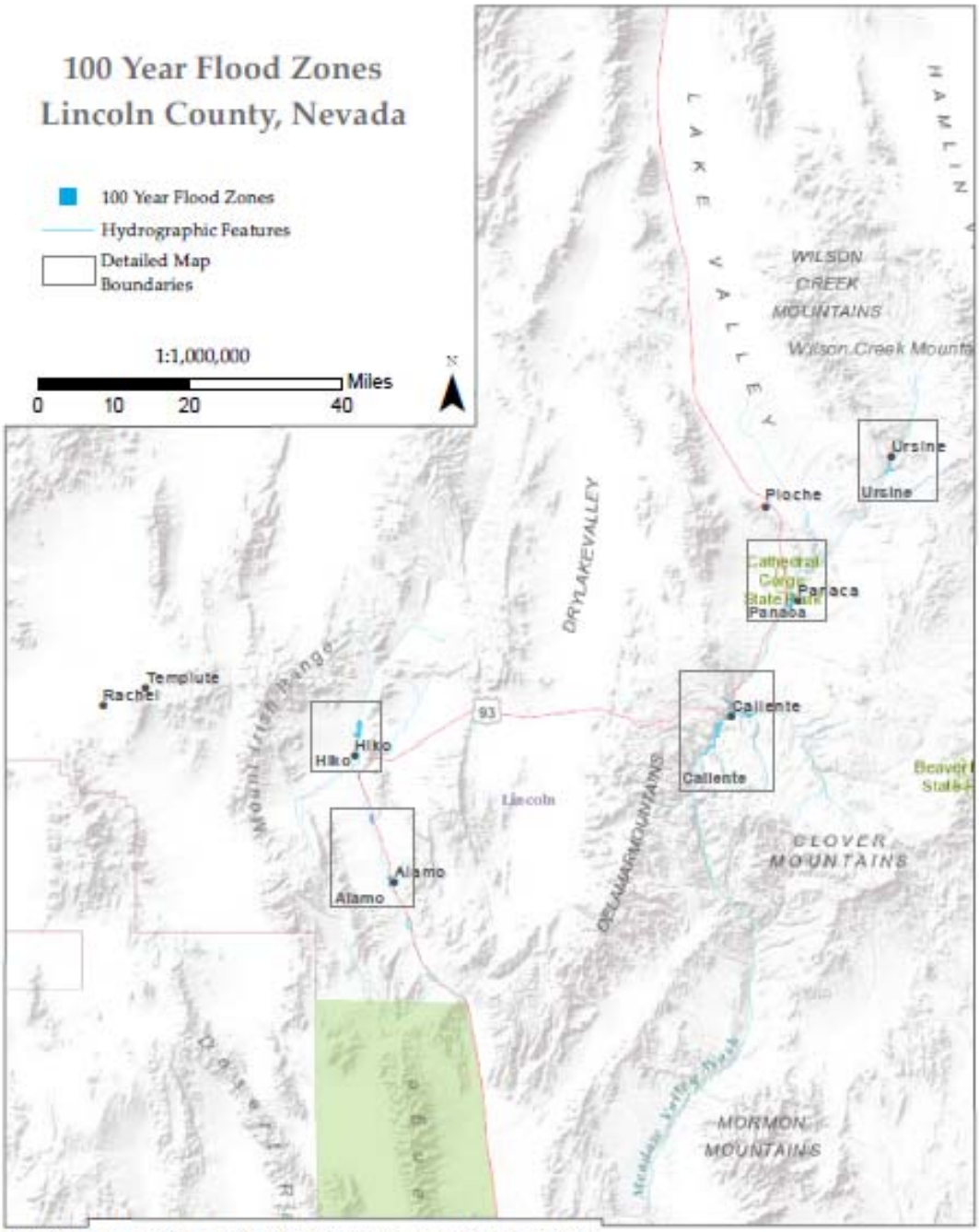
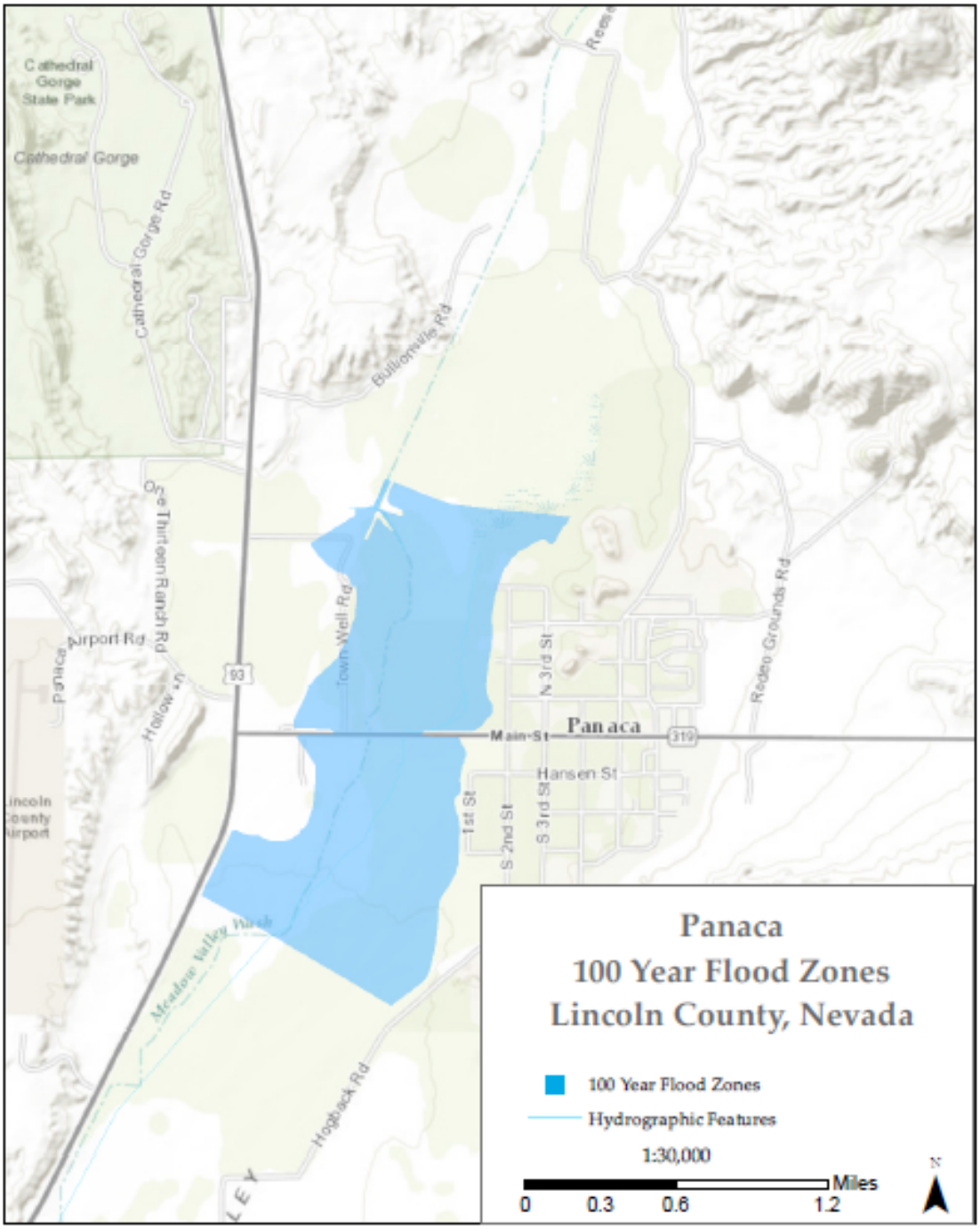
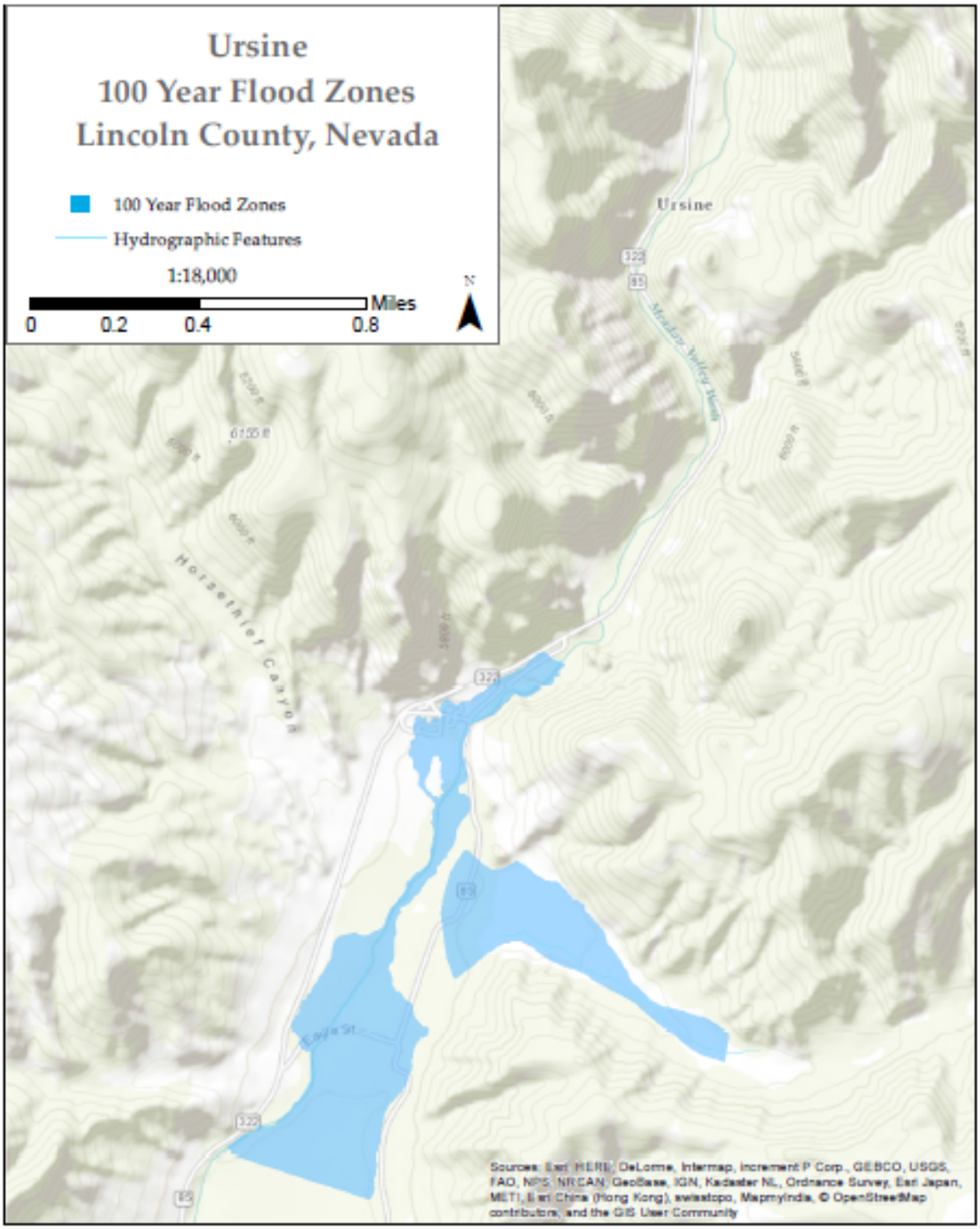

100 Year Flood Zones
Lincoln County, Nevada
100 Year Flood Zones
Hydrographic Features
Detailed Map Boundaries
1:1,000,000
0 10 20 40
Miles
N
LAKE VALLEY
HAMLIN
WILSON CREEK MOUNTAINS
Wilson Creek Mountains
Ursine
Ursine
Ploche
DRY LAKE VALLEY
Cathedral Gorge State Park
Panaca
Panaca
Templute
Rachel
Meadow Valley Range
93
Hiko
Hiko
Caliente
Caliente
Lincoln
DELAMAR MOUNTAINS
CLOVER MOUNTAINS
Alamo
Alamo
Pahranagat Range
MORMON MOUNTAINS
100 Year Flood Data Source: Federal Emergency Management Agency (FEMA)
Map created by the Nevada Bureau of Mines and Geology, January 2016

**Figure B-18**



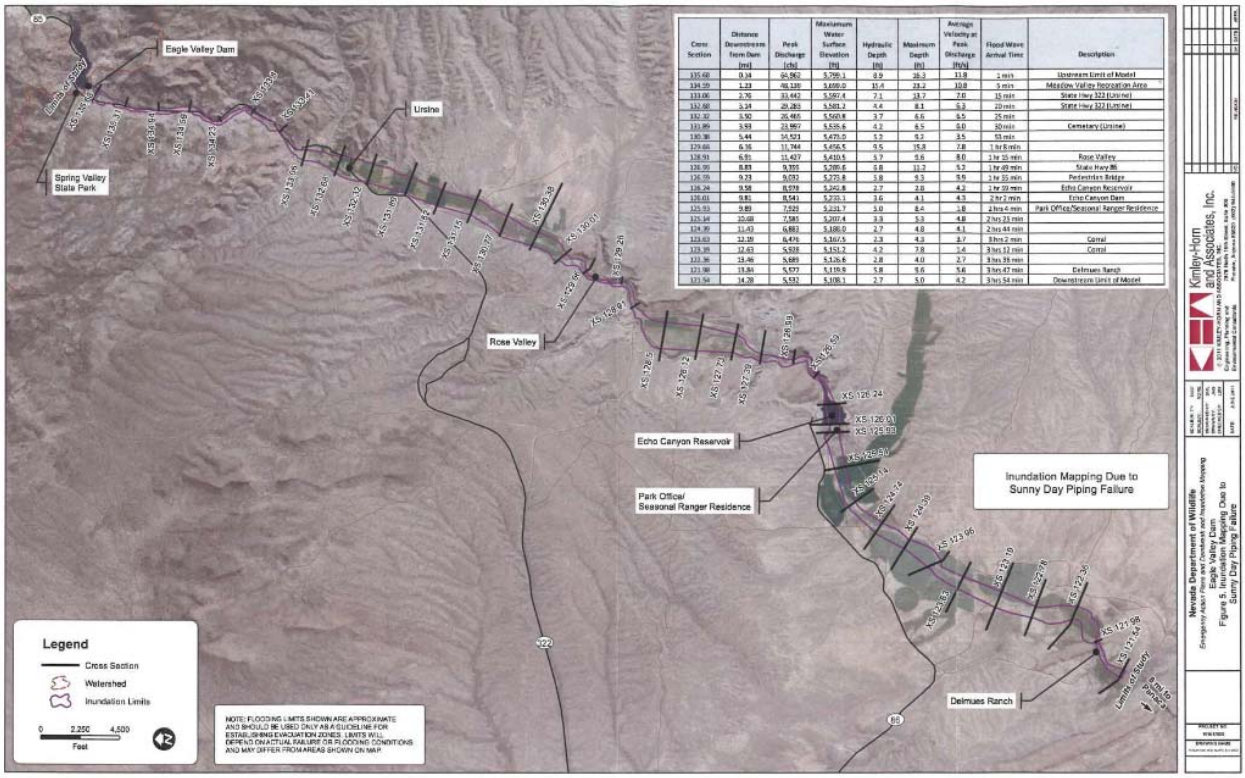

100 Year Flood Data Source: Federal Emergency Management Agency (FEMA)
Map created by the Nevada Bureau of Mines and Geology, January 2016

**Figure B-19**



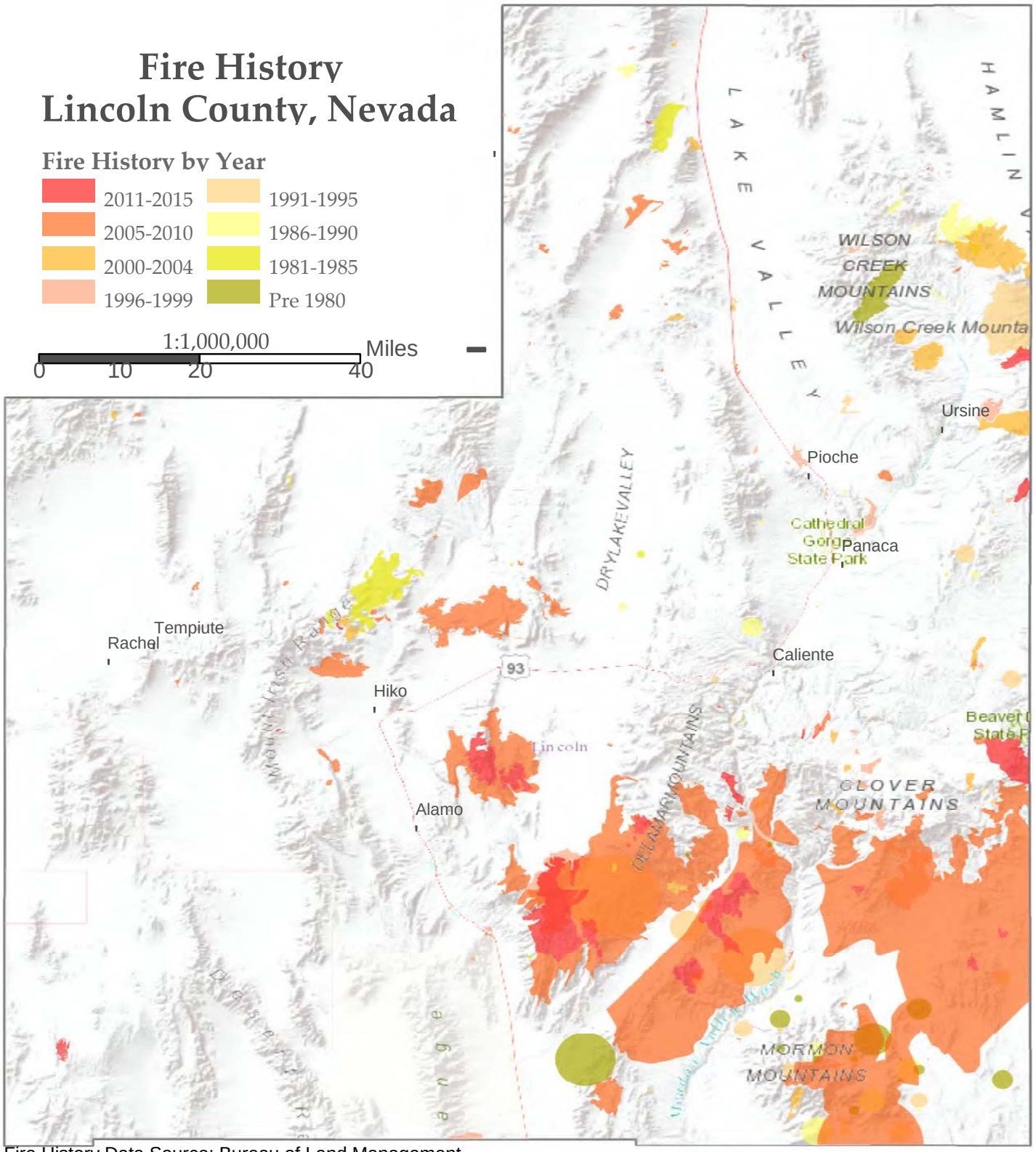

100 Year Flood Data Source: Federal Emergency Management Agency (FEMA)
Map created by the Nevada Bureau of Mines and Geology, January 2016

## Figure B-20




| Cross Section | Distance Downstream from Dam (mi) | Peak Discharge (cfs) | Maximum Water Surface Elevation (ft) | Hydraulic Depth (ft) | Maximum Depth (ft) | Average Velocity at Peak Discharge (ft/s) | Flood Wave Arrival Time | Description |
|---|---|---|---|---|---|---|---|---|
| 135.60 | 0.34 | 64,962 | 5,795.1 | 8.9 | 16.2 | 11.8 | 1 min | Upstream Limit of Model |
| 134.59 | 1.23 | 48,139 | 5,699.0 | 15.4 | 23.2 | 10.8 | 5 min | Meadow Valley Recreation Area |
| 133.06 | 2.70 | 31,442 | 5,587.4 | 7.1 | 13.7 | 7.0 | 15 min | State Hwy 322 (Ursine) |
| 132.60 | 3.14 | 29,283 | 5,581.2 | 4.4 | 8.1 | 5.2 | 20 min | State Hwy 322 (Ursine) |
| 132.32 | 3.42 | 28,485 | 5,560.8 | 3.7 | 6.6 | 6.5 | 25 min | |
| 131.89 | 3.93 | 23,997 | 5,535.6 | 4.2 | 6.5 | 5.0 | 30 min | Cemetary (Ursine) |
| 130.36 | 5.44 | 16,523 | 5,470.0 | 5.3 | 9.2 | 3.5 | 45 min | |
| 129.66 | 6.16 | 11,744 | 5,456.5 | 9.5 | 15.8 | 2.8 | 1 hr 5 min | |
| 128.91 | 6.91 | 11,427 | 5,410.5 | 5.7 | 9.6 | 8.0 | 1 hr 15 min | Rose Valley |
| 126.99 | 8.83 | 9,705 | 5,289.6 | 6.8 | 11.2 | 5.2 | 1 hr 49 min | State Hwy 86 |
| 126.55 | 9.23 | 9,033 | 5,275.8 | 3.8 | 6.3 | 9.9 | 1 hr 55 min | Pedestrian Bridge |
| 126.24 | 9.58 | 8,779 | 5,242.8 | 2.7 | 2.8 | 4.2 | 1 hr 59 min | Echo Canyon Reservoir |
| 126.01 | 9.81 | 8,541 | 5,232.1 | 3.6 | 4.1 | 4.3 | 2 hr 2 min | Echo Canyon Dam |
| 125.93 | 9.89 | 7,929 | 5,231.7 | 1.0 | 8.4 | 1.8 | 2 hrs 4 min | Park Office/Seasonal Ranger Residence |
| 125.54 | 10.68 | 7,581 | 5,207.4 | 3.3 | 5.3 | 4.8 | 2 hrs 23 min | |
| 124.99 | 11.43 | 6,883 | 5,188.0 | 2.7 | 4.8 | 4.1 | 2 hrs 44 min | |
| 123.63 | 12.39 | 6,476 | 5,167.5 | 2.3 | 4.3 | 3.7 | 3 hrs 2 min | Corral |
| 123.35 | 12.63 | 5,928 | 5,151.2 | 4.2 | 7.8 | 1.4 | 3 hrs 12 min | Corral |
| 122.36 | 13.46 | 5,889 | 5,126.6 | 2.8 | 4.0 | 2.7 | 3 hrs 35 min | |
| 121.90 | 13.84 | 5,577 | 5,119.0 | 5.8 | 9.6 | 5.6 | 3 hrs 47 min | Delmues Ranch |
| 121.54 | 14.28 | 5,532 | 5,108.1 | 2.7 | 5.0 | 4.2 | 3 hrs 54 min | Downstream Limit of Model |

# Fire History
# Lincoln County, Nevada




Fire History Data Source: Bureau of Land Management
Map created by the Nevada Bureau of Mines and Geology, January 2016

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# Appendix C
# Planning Team Meeting Minutes

**Detailed HMPC Meeting Minutes**

## MINUTES FOR THE HAZARD MITAGITION PLANNING COMMITTEE WORKSHOP HELD AT 10:00 AM, April 22nd, 2015 AT PANACA FIRE HALL, PANACA, NV

**ATTENDING**

| | | | |
|---|---|---|---|
| Ken Dixon | Gary Elmer | Joanne Dixon | Steve Hansen |
| Glenn Zelch | Jason Bleak | Gary Davis | George Rowe |
| Connie Simkins | Kyle Donohue | Kyle Teil | Cory Lytle |

Special Representative from NDEM: Karen Johnson

10:00 a.m.

1. Call to order: Roll Call, Pledge of Allegiance.

   Meeting was called to order at 10:00. Roll call was not verbally taken as a sign in sheet was completed. The pledge was led by Ken Dixon, Coordinator. Karen Johnson from the NDEM was introduced to members present.

2. Public Comment. There was no public comment at this time.

3. Discussion/Action: Any and all action necessary to review and update the existing 2012 Hazard Mitigation Plan to meet the current standards and obtain approvals from the State of Nevada and the Federal Emergency Management Agency of the five year renewal of this plan.

   a. Introduction of members
   b. Review existing plan for items in need of adjustment and updating.

   Ken turned the meeting over to Karen Johnson to advise the committee of their responsibilities and reasons for this plan to be updated. She cited the Moapa Indian Tribe that had the big flood last year and they had not done their HMP. So they are working on a plan now while rebuilding their community. Once they have their plan in place they will get help with their losses.

   Most of Caliente is designated in the hundred year flood zone which has made the residents have to purchase expensive flood insurance. Ken said that when they finish the current work on the new bridge for the Youth Center he will work on having their FEMA map redone but it is an expensive item.

   Karen did not have a current time table for the next fiscal year grant deadlines, however she said she would get us them once they are finalized at the end of April. She told the members that any federal dollars that get handed down have to go through a request for proposals. You may not have to use the lowest bidder,

but you will need to explain your reasoning. The company that does the engineering for the project cannot be the one that will be doing it.

She suggested getting the engineering work done first and then apply for the grant. This way you avoid the conflict of interest rule that you cannot use the engineer for the work.

Jason Bleak asked about the route grant money has to go through. Karen stated that all federal money has to have a request for proposal or sole source might be approved. Ken stated that 73 percent of Caliente is low to moderate income and the current flood insurance fees are a hardship in Caliente.

Karen then advised the committee that only projects that are in the HMP can be approved for grant funds. So they should be careful to include all the possible problems the City/County might have in the future. A representative for the Panaca Town Board asked about funds to work on a project relating to flood areas in Panaca. She explained they had to be in the plan to be acceptable. She said they now have a new person in their office to help entities with mapping their plans.

Jason Bleak, Grover C Dills administrator, asked about research money, she explained that was not covered. Ken said he would work with Jason on his grant proposal.

Steve Hansen, L.C. School District Superintendent, wants to work with the town of Panaca on their flood plan as the school is in the area that would be affected.

It was asked if the future funds are dependent upon Congress passing the budget? Karen stated some funds have already been approved. But future funds have not.

Ken told the group he would appreciate any help the committee members could give him. He then went through the Hazard Mitigation Plan Update materials that were passed out to everyone, in particular the Scope of Work for the plan update. These items were:

**Scope of Work:**

**Item #1**. **Planning Process**: Ken stated that most of these items are in the current plan and some need to be updated. This is a multi-jurisdictional plan for covering both the City of Caliente and Lincoln County as a whole. He told the committee they would probably have three more meetings in different communities. The plan goes to the County Commission, the State, and the Federal agency for final approval.

**Item #2, Hazard Identification: (A).** It was mentioned that Ursine was in the FEMA Caliente Flood FIRM that was updated in 2010. Cory Lytle said he has a FIRM plan for Ursine. Glen said he just turned in a flood plan for Pioche. Ken asked him for a copy of the plan. Ken said the state is supposed to inspect the condition of major dams yearly, but this does not always happen.

The wind information comes from the weather information center and we need to be sure that wild fire information is included in the plan.

Karen said the state geological plan will be updated in October when the State HMC will meet in Caliente. Our committee should hold off on this portion until the State plan is updated. Ken

asked if that would be done before November as the plan needs to be completed by then. She said we could ask Elaine Zimmerman, Grants Administrator, to extend the deadline if needed.

**Item 2, Hazard Mapping: (B).** Connie asked about the Code Red that was implemented by the Lincoln County Sheriff's Office. Gary Davis, Captain LCSO, everyone would be on it by their home phone number. If you want your cell phone on it you have to apply for it. You can do this on their web site. He stated that the county is in dire need of mountain top communication systems with back-up generators. Ken said we will include this item in the HMP. Communication is a vital part of any warning system. Karen said that Kelly Anderson does grants for that.

**Item 2, Vulnerability Assessment: (C).** Ken asked Karen if there was a GIS person at the state level that could help with that. We need to develop a map showing all our critical facilities showing in Item 3 (B) including any in Mt. Wilson, McDermitt and Rachel. Karen said to be sure to put this project in the HMP.

It was asked if we could get funding to supply generators for the entities in Lincoln County. Karen said only after a disaster happens can you apply for funds so be sure to put it in your plan. PDM grants are not available for this type of equipment

I**tem 3, Multiple Hazard Mitigation Strategy:**

**(A) List of Goals:).** Ken said we need to follow through with this plan once it is approved. Once it is done no one is directing things and there is no follow through. Maybe this committee should plan to meet at quarterly or at least once a year. Ken will work on including some sort of action by the next meeting date.

**Item 3 (B) Action Steps:** Karen suggested the committee look into examples of what other counties in Nevada have already done for their plan.

Fiscally city and county cannot do a lot of items due to funding restrictions.
A large percentage of buildings in L.C. do not meet criteria. It hard to justify costs to restore some of the older buildings.

**Item 3(C) Definition of substantial damages to structure:** At this point we do not have repetitive damage. Remainder of this item will be included in the plan.

**Item 3 (D) Maps depicting structures, land use, etc.).** Has mostly been completed.

**Item 3 (E) FEMA Firm maps:** Economics hold us back because FEMA mapping is very expensive. The FIRM map in Alamo is not adequate. Cory said there is a level of resistance from residents because of insurance rates. He said it involves mostly the West side of Alamo. Connie asked if the problem was between public and private land. Should this be included in the plan? Karen said FEMA can only do projects on private or county owned land not BLM. She said FEMA is only involved in the building environment. FEMA cannot fund projects on Federally held land. Glen asked how long does it take for BLM to release land. No specific answer could be given at this time.

**Item #4, Hazard Mitigation Plan Maintenance Process:.** Self explanatory.

**Item #5, Additional State Requirements:** Self explanatory.

**Item #6, Plan Hazard Mitigation and Adoption:.** Karen asked that there be more representation from the City of Caliente. Ken stated Mayor Hurlburt had something come up and could not attend this meeting, but plans on attending the remainder. Ken is working on sending out notices through the Caliente Utility billing system in order to get the residents involved. Maybe this could also be done through the L.C. Power District billing. Kyle Donohue, L.C. Power District, said it could be worked out. This could be in the form of a questionnaire for the residents of L.C., Karen will send us a copy of questionnaire we could use.

This completed the scope of work.

Cory asked what was needed from the committee. Ken said anything that you might see that needs to be included in the HMP would be appreciated. He said if anyone needed a copy of the revisions he would e-mail a copy to them. Gary Elmer asked if the Panaca plan should be in the HMP, Karen said yes. If a hazard is man-made it is up to the community to include in the HMP.

However Karen asked to have such hazards forwarded to her office. i.e. UP Railroad and the fact that Arizona has closed the Virgin River Gorge to wide-load traffic so all of these trucks are coming through L.C.

The next meeting will be held after the Meadow Valley Wash T.R.T. meeting in Caliente on July 15 2015 at 10am. Our HMP committee will meet at 1:00pm in the Caliente Depot right after the MV Wash TRT meeting.

Meeting adjourned at 11:20.

# MEETING MINUTES (Approved 23 Sep 2015)

**FOR THE LINCOLN COUNTY & THE CITY OF CALIENTE HAZARD MITIGATION PLANNING COMMITTEE MEETING HELD ON JULY 15th , 1:00 pm AT THE CALIENTE CITY HALL, CALIENTE NV.**

**ATTENDING:**

Gary Davis Ken Dixon Joanne Dixon Gary Elmer Steve Hansen Stana Hurlburt

Karen Johnson Connor Long Cory Lytle Doug Miller Rob Palmer Tyler Petersen

George Rowe Connie Simkins Rick Stever Kyle Teel Glennon Zelch Jason Bleak

**1.** Call to order: Roll Call; Pledge of Allegiance.

Ken opened the meeting at 1:05, welcomed those attending and led the Pledge of Alegance. Ken handed out changes that have been made since the last meeting to those who did not have them.

**2.** Public Comment: (Public comment is limited to 3 minutes per individual)

There was no public comment at this time.

**3.** Discussion/Action: Review/amend/approve minutes from 22 April 2015 meeting.

Motion to approve the meeting minutes of 22 April 2015 meeting by Steve Hansen, seconded by George Rowe. Motion carried unanimously.

**4.** Discussion/Action: Any and all action necessary to review and update the existing 2012 Hazard Mitigation Plan to meet the current standards and obtain approvals from the State of Nevada and the Federal Emergency Management Agency for the five year renewal of this plan.

a. Introduction of members/guests Ken introduced the members of the NDEM, Karen Johnson, Connor Long, and Nevada Diviision of Water Rrescouces member Rob Palmer. He then had committee members introduce themselves.

b. Review changes/updates made to the existing plan since the last meeting and any additional items in need of adjustment and updating.

## DETAILED DISCUSSION ITEMS FOR JULY 15TH 2015 MEETING:

a. Cost replacement values for critical buildings, structures, facilities: (charts 5-7 and 5-8)

Hospital Couthouse, City Hall Detention Center,

Honor Camp Highway Bridges Communications towers
Telephone system facilities Dams and drop structures
Highway Bridges Schools Fire stations

Any others??

Ken reminded the members that he needs replacement costs for all official buildings and facilities in the County. He referred them to chart 5-7 and 5-8. They also suggested the power company needs to be on the list. If a main line or main transfer station goes down the whole county could be without electricity.

Ken them said that we need to address what kind of mitigation actions we could do if the drought continues.

Karen said that the Nevada State Governor has a plan on the state website.

Connie mentioned the senior centers, recreation facilities, the Panaca Fair Board building, the swimming pools.

Karen stated only those facilities that are critical to the community as a whole will be covered under FEMA.

b. Updates to any Charts/Maps/Figures:

Wildland fire updates Earthquake figures

Drought figures Add URM buildings (Unreinforced Masonry) Chart (in progress)

Any others??

All of the above items are still being updated.

c. Pass out copies of Vulnerability questionnaire, walk thru procedure to fill out, and set up completion schedule.

Ken said that this questionnairehas been sent out in the ulility billing in Caliente and they received several responses. He gave one to every member to take with them and fill them out. He asked members to complete them and mail or take them to City Hall in Caliente. Ken has asked the L.C Power Company to send out the questionnaire in their next billing cycle.

d. Discuss what mitigation actions may be taken on drought issues.

This was discussed under Item a.

e. Any other action items needed.

Gary Elmer asked if the residents of Caliente get rated for flood insurance. Rob Palmer said, yes. If you live in the 100 year flood plain you have to have flood insurance. The rates did change because of the Insurance Afffordability Act. A primary residence has a $25.00 sur-charge which will go up 18% per year until they reach the full rate. Rates in some areas will go up as high as 25% per year. If you insure an out building (shed, storage, building, barn, etc.) the surcharge can be $250.00 per year. If you live in the 500 year flood area you don't have to have insurance but are advised to get it at a greatly reduced price. Gary Elmer, Panaca Town Board, asked if they have a dyke, would that help with their insurance rates? They are trying to aleviate the flooding in certain areas in Panaca. They currently have a plan being worked on by Sunrise Engineering. Karen reminded them that the company doing the plan cannot do the work if they want FEMA's help. Are they going to be hit with mandatory flood Insurance? Ken stated that if you have a federally backed mortgage on your property, the mortgage company insists that you must have flood insurance. Karen, if you do a project that corrects the flooding problem then we can take them out of the flood area map. She sited the changing of the Caliente Youth Center when the new bridge structure will be put in place. An indiviual taking action to aleveate flooding is different than a community making a change.

Ken asked Karen if they could get a pre-mitigation grant to work on the dykes? Karen

Responded with a maybe.

> Karen said that farm and ranch land themselves, are not covered by FEMA, only structures.

Cory asked if the insurance covered the structure and the contents? Karen said to prioritize your facilities and the value of the facility. If a fire station has fire trucks that would be damaged by a flood they would be covered. The amounts prioritized need to be in the millions not small amounts. George R. asked if the contents in the hospital would be covered as well as the buildings and how do we assess the amount to be covered. Karen, you should be able to get that from your insurance agent.

Connie asked about things to add in Panaca, amulance barns, Panaca Town Board building, in Alamo, the annex? Karen said the values are in the current plan if they look okay then we can leave them alone.

The drop structures around the county were discussed. It was estimated that it would cost about $35,000 to replace one of them. They are drop structures not levys.

Ken asked Kyle if BLM had an updated wild land fire map. He said he would get a 2014 map for him. Ken asked if it would include the fire reduction sites? Kyle, maybe. Gary if our dykes are satisfactory for Panaca and they need work on can FEMA money be used. Rob, yes but that would depend on flood finsurance.

Karen told the members that they are having a meeeting in Caliente Nov. 12 and they will have updated earthquake maps at that time. Rick S. said the earthquake committee is having an earthquake meeting in Caliente in August. He did not know date or times.

Regarding the UMR, Ken is working on a chart for those that have been cited in the City of Caliente and the county as a whole. These structures are of critical concern in an earthquake. The last one we had at 4.8 did not do any damage, however, a larger one might bring them down. One example is city hall, rocks stacked and mortored, with no reinforcement therefore the roof structure depends on the walls. We cannot do a lot about them, but we need to have them in the plan if we want help from FEMA.

Ken then asked members around the room to state their concerns that needed addition attention in the plan.

Gary Davis, LC Sheriff's Department, asked about the communications facilities in Coyote Springs, would they be covered. Ken stated that Clark County should help with that. Gary also stated that communications are a critical concern all over the county.

We have used various cites for shelter in place when emergencies arise in any particular place. Rick Stever, L.C. Emergency Manager, said he has verbal agreements with various agencies but nothing in writing. Karen they should be in the plan.

Glenn noted we would need to take care of the utilities, substations and retention basins for Pioche. Sunrise Engineering is currently working on flood issues for all areas in the County.

Doug Miller, Alamo, said their real issues have been drought and floods. The irrigation ditches are now pipes so there is nowhere for the flood waters to flow. Their detentions are full at this point. He feels they should get the ditches cleaned out.

Karen reminded the group that FEMA does not infringe on or compensate property that belongs to a state or government facility. It has to be private property.

**4.** Schedule date and time for next committee meeting.

Next meeting will be Wednesday, September 23, at 10:00 in Pioche at the Town Hall building.

**5.** Public Comment: (Public comment is limited to 3 minutes per individual)

Meeting adjourned at 2:30.

# Meeting Minutes

**APPROVED MINUTES**

**FOR THE LINCOLN COUNTY & THE CITY OF CALIENTE HAZARD MITIGATION PLANNING COMMITTEE MEETING HELD ON SEPTEMBER 23rd , 10:00 am AT THE PIOCHE TOWN HALL, PIOCHE NV.**

**ATTENDING:** **Ken Dixon** **Gary Elmer** **Joanne Dixon**
**Steve Hansen** **David Luttrell** **Cory Lytle**
**Connie Simkins** **Rick Stever** **Glennon Zelch**

**10:00 AM** **1.** Call to order: Roll Call; Pledge of Allegiance.
Meeting called to order at 10:10 a.m. No flag available for pledge.

**2.** Public Comment: (Public comment is limited to 3 minutes per individual)
None at this time.

**3.** Discussion/Action: Review/amend/approve minutes from 15 July 2015 meeting.
Motion to approve minutes by Cory, seconded by Steve.

**4.** Discussion/Action: Any and all action necessary to review and update the existing 2012 Hazard Mitigation Plan to meet the current standards and obtain approvals

from the State of Nevada and the Federal Emergency Management Agency of the five year renewal of this plan.

a. Introduction of members/guests

b. Review changes/updates made to the existing plan since the last meeting and any additional items in need of adjustment and updating.

Materials for this item were available on each table.

| | |
|---|---|
| Hospital | Courthouse, City Hall |
| CYC | Detention Center, Honor Camp |
| Highway bridges | Communication towers |
| Telephone system facilities | Dams and drop structures |
| Schools | Fire Stations |
| Any Others? | |

4b (cont'd). Ken has received most of the follow up costs for replacement of critical facilities in the County. He has not received inormation on fire stations, Rick said he would follow up on getting this information to Ken. Connie asked about the Panaca Senior Center, the old elementry school and the town hall in Panaca. Discussion followed as to if these facilities were considered critical.

Cory asked if all the schools had back up generators? Steve said, at this time no. The question was then asked if the townships and Caliente had back up generators? Rick said the Panaca Fire station had one. Gary said there was one on the Panaca sewer lift station. Cory thought that each of these areas should have at least one back up generator. Ken asked Dave for information on the back up system that Lincoln County Power District has. A mobile generator for each area would be useful as they could be moved where ever the immediate need was.

Regarding the drop structures Cory said that the appoximate cost for replacement of the Mathews structure will be $125,000 (corrected to $325,000 when minutes were approved in Oct meeting) and that most of the other structures needing replacement or repair would probably fall in the same cost area. This amount does not include the engineering needed for each structure.

Ken does not have the school replacement evaluations. Steve said he would work on getting them to him.

Ken then addressed the print out regarding the critical facilities the state had suggested.

Dave asked about the substations, Ken asked him to mark them on the map.

Maps for each area were then discussed. Ken went around the room and asked members to make notes on the critical structure maps as they deem necessary.

Ken asked David to please send out the Hazard Mitigation questionaire in the next power billing cycle. He said he would and asked Ken to e-mail him a copy.

Cory said he thought they needed more addresses on the maps. Different ways to do this were discussed, adding the addresses to the legend on the face of the map would probably be the best way. Ken was asked when this project had to be completed and this year was the answer. He said they were not under a real crunch but the funding is out in 2016.

Connie felt the senior center in Panaca should be on the map as a critical structure.

Ken then asked Dave about the timing in getting the power up and running if an earthquake hit. Dave said a few days to weeks depending upon how large an area was affected. We could basically be out of power for a week. This would be a major problem for the whole county. Rick said he has a five year plan and is trying to get money to put one generator in each community where the most people would congregate. Steve said all the schools in the county have showers and kitichen faciltiies that would be available in an emergency.

Ken and Cory will get together to decide on how to get the maps that are needed printed out.

Ken then reminded the committee about the State meeting on November 19. Rick, this meeting would also address earthquakes. Ken will forward the agenda to the committee members.

**5.** Schedule date and time for next committee meeting. October 21, 2015, 10:00 a.m.

Alamo Annex

**6.** Public Comment: (Public comment is limited to 3 minutes per individual)

None. Meeting adjourned at 11:15 a.m.

**Meeting Minutes**

**Nevada Hazard Mitigation Planning Committee**

| | | | |
|---|---|---|---|
| **Attendance** | **DATE** | Thursday, November 19, 2015 | |
| | **TIME** | 9:00 AM | |
| | **LOCATION** | Caliente Council Chambers<br>100 Depot Ave.<br>Caliente, NV 89008 | |
| | **METHOD** | Teleconference | |
| | **RECORDER** | Karen Johnson/Traci Pearl | |
| **Committee Members** | **Present** | **Staff and Others** | **Present** |
| Ryan Turner | | Rick Martin (NDEM Staff) | X |
| Aaron Kenneston | X | Karen Johnson (NDEM Staff) | X |
| Vance Payne | X | Traci Pearl (NDEM Staff) | X |
| Rick Diebold | X | Cameron Boyce, BLM | X |
| Robb Fellows | X | Rob Bidart, State PW Dept | X |
| Andrew Trelease | X | Dan Darby, State PW Dept | X |
| Craig dePolo | X | Kyle Donohue, Lincoln Co Power Dist | X |
| Rob Palmer | X | David Luttrell, Lincoln Co Power Dist | X |
| VACANT (NDOT) | | Rick Stever, Lincoln County EM | X |
| Ron Lynn | X | Rob Anderson, R.O. Anderson Engineering | X |
| Jim Reagan | | Stana Hurlburt, City of Caliente, Mayor | X |
| Terri Garside | | Ken Dixon, City of Caliente, PW | X |
| | | Jerry Carter, City of Caliente | X |
| | | Elaine Zimmerman, Lincoln Co Grants | X |

| | | | |
|---|---|---|---|
| | | Connie Simkins, Lincoln Co Oversight | X |
| | | Robert Whitney, AG's Office, LV | PHONE |

**1. CALL TO ORDER, INTRODUCTIONS AND ESTABLISH QUORUM -**

Chair, Craig dePolo, called the NHMPC meeting to order. Roll call was performed. Quorum was established for the meeting.

**2. PUBLIC COMMENT**

Craig dePolo opened the meeting for public comment. Aaron Kenneston stated that the committee has enjoyed the City of Caliente's hospitality.

**3. APPROVAL OF MINUTES**

Craig dePolo asked for a motion to approve the meeting minutes from the Nevada Hazard Mitigation Planning Committee (NHMPC) meeting held August 6, 2015. Ron Lynn moved and Vance Payne seconded. There was no discussion and the motion passed unanimously.

**4. UNIVERSITY OF NEVADA, RENO, BUREAU OF MINES & GEOLOGY PRESENTATION REGARDING EARTHQUAKE VULNERABILITY** (Discussion only)

Chairman dePolo briefed the committee on the Lincoln County earthquake history and current vulnerability.

NV is an earthquake active state, with about 220,000 earthquakes recorded in the State. If we filter out and just look at Magnitude 4 and greater, we still have quite a few earthquakes in the Lincoln County area.

We haven't had a major one in a while, since 1960 (except for Wells earthquake). A comment made at the NESC indicates that earthquakes are generational, but that's not necessarily true. We have had earthquakes year after year, some with high magnitudes, and are in an active earthquake state, similar to the number in California. But we haven't had a significant one in a while**.**

We just celebrated the centennial of the biggest earthquake in Nevada on Oct 2nd.

For this area, I looked at My Hazard/My Plan website, where you can click on individual sites for detail. The southern part of the county is quite active. The 1966 Caliente earthquake was magnitude 5.6 in this area; 1902 earthquake was a Magnitude 6 across the border; there are a whole lot of little earthquakes, so much so that we have a name for this area, the Southern NV Seismic Belt (SNSB). The heart of this belt is right through Lincoln County. Looking at Caliente, and the Clover Mountains just south of us, this is where the big 1966 earthquake occurred (visual presentation).

SNSB is connecting into the Wasatch Front. Craig pointed out on the map recent earthquakes

occurred in May in the Caliente area. The sequence itself (looking at a couple of days before, and then after) is parallel to one of the potential picking up a north-south alignment, to analyze potential fault points.

There are over 1,500 earthquake faults in the state. In Lincoln County again, we have several average faults, with average activity like in the western part of the state but more dramatic here. These faults are moving relatively fast. Interestingly there are some low-angle faults here, not at a normal angle but instead at a significant angle.

Craig pointed out (map) a fault-bounded block called King Springs Wash Fault, mapped at less than 750,000 years, so we need to re-analyze the data. Craig views these ones that haven't happened in a long time as dangerous, as the odds are they will be active soon. The Pinaca fault (down here) is more clear; it's a commercial environment so we haven't taken a look at it. Ash Springs and Alamo (Alamo has a lot of earthquakes), and just south of Alamo, we see E/NE faults that are part of that East/West zone that are taking up more expansion down here than up north. Three UNR graduate students are currently analyzing this.

Craig referred all to the UNR Bureau of Mines web site to access Hazard Fault information (can access computer simulation of earthquakes). There is potential for a $4M loss if Lincoln County has a Magnitude 6; and up to $40M loss for a Magnitude 7 earthquake. The Wells earthquake is the most recent one we've had, and was predicted as only a 12% chance of occurring. Eastern hazards are over-shadowed by the western earthquakes in the State. In Lincoln County, it runs about a 5-20% chance of earthquakes.

Through the Nevada Earthquake Safety Council (NESC), we are talking with engineers re: how buildings are built, to further prevent/mitigate earthquake damage. Is there a foundation? Are homes tied to the foundation? Is there adequate foundation? Are there dangerous elements around, like chimneys? etc.

There was a canvasing study done of the state re: URM (un-reinforced masonry) structures, using assessor's data. There are 102 possible URM's in Lincoln County (27 are residential). Communities are looking at this data for mitigation purposes and looking for grants-in-aid to fund it. Ken Dixon (Caliente PW) stated that they are in the middle of updating their Hazard Mitigation Plan (HMP) and he is noting and including all of this information for it, like action items to structurally retro-fit, etc.

[Ron Lynn] But aside from fixing things, is the need to identify, and even label the buildings, to get your first responders to understand what they might be going into, and what is most vulnerable to earthquakes; so that they can understand and will take precautions for themselves as well.

[Craig dePolo] I'm a geologist, not an engineer, but I keep wondering about solutions that usually make the engineers cringe. Because what is it that we can do now to make things safer, in the face of all these hurdles? We're also working on mitigating dangers around entrances and exits If balconies could be affixed stronger. In Wells, they have big snow loads. Wells got rid of almost all of their URM's since that quake, and they lost a lot of heritage.

I would recommend that we go for prioritizing the risks of these buildings: how are they occupied, utilized; how many people are in them, etc. Characterize the buildings a little bit more, which will lead to a little more intelligence on how to handle these older buildings. What can we do? For instance, we waive permit fees; or if the building is abandoned, put some signage on it that indicates so; mitigate structural building codes (which Nevada is doing). Remind people about 'drop, cover, and hold' when there is an incident. Social norming is needed, with a consistent message; and repeat it at least 7 times. Get everyone involved in the annual Great Nevada Shake-Out (October) so that injury prevention techniques are automatic.

**5. CITY OF CALIENTE PRESENTATIONS REGARDING PRE DISASTER MITIGATION GRANT 2011 SPRING STREET PROJECT**

Ms. Stana Hurlburt, Mayor of Caliente briefed the committee on the Flood Project and City demographics. She passed around a 6-page handout with summation of the project and pictures. Please see the 'City of Caliente Spring Heights Flood Control Project' attachment for details read by Ms. Hurlburt. The project was successfully completed in February 2015. Some recent flooding in June and October was successfully mitigated from this project's construction, and the City sees it as a very valuable and successful project. Karen Johnson of Nevada Division of Emergency Management (NDEM) indicated that there is going to be significantly more grant funds available to the states next year (federal FEMA Pre- and post- disaster (PDM) funds).

**6. LINCOLN COUNTY HAZARD PRESENTATION –** (Discussion Only)

Emergency Manager Mr. Rick Stever & City of Caliente Flood Plain Manager - Ken Dixon briefed the committee on area hazards. Passed out 14-pgs. of photos of some of the county's hazard-prone areas (See attached). Reviewed a map similar to Craig's presentation earlier. Highlights included: Lincoln County covers a large areaand a majority of the land is government-owned. Two new developments are proposed for the County, southern (Coyote Springs),and Toquop, which borders Mesquite. The economic downturn had a big impact on the Coyote Springs development, and its development is currently with Clark County (structure/infrastructure); Lincoln County will take care of schools and stuff. Toquop is N/NW of Mesquite and we have been working with the City of Mesquite for infrastructure needs, etc. The county will have to put in power sources, water, sewer facilities, and similar infrastructure.

High percentage of the southern lands is BLM, US Forest Service, and/or test range territory. Reviewed latest population figures for the County. Large geographic area with low population. Two main water sheds that run north-south. Most communities are near a wash.

Discussed the County's hazard issues: in fire-prone areas we have done a lot of fuel-reduction projects with BLM and the NDF; engineering studies to decide most productive way to handle flooding for all four communities; trying to increase tracking of inventory resources and critical infrastructure. Working on HMP with the County and have had good participation from the County Planning Department.

There are several dams in the area, where drop structures were put in in the 30's or 40's. Have considered possible fire and landslide consequences. There is a potential for wind damage, and we're getting more information on earthquakes. Also looking at Hazardous Material routes in the

County.

Fire has been a big problem, mostly in the Pioche area. Discussed a recent fire and possible causes (children? Or a squirrel?!). Have previously experienced a loss of all communications in the County during a fire.

In regard to flooding, more pictures were shown of riskier areas in the county. Some recent flooding in Caliente that ran north into the Youth Center (See #7 below). Culverts are 7-8 feet in diameter (can handle a lot of water, if not plugged up). Plus the flood from the north, when you're coming into Caliente on Hwy 93. These floods tend to take the roads out.

We've had some pretty strong winds, close to 100 mph in the canyon. Took some roofs off of buildings; tipped power poles; ripped off tree tops (possibility of tornado).

Another issue is 'transportation.' When I-15 flooded out earlier this year, the road from Panaca to Alamo was a mess. A normal15-min trip took 2-3 hours. Miles and miles of cars, bumper to bumper. The mayor and staff went out to Panaca to serve as crossing guards; RV parks were thrilled. This went on for about three days, and state patrol had to come in and direct traffic (big commercial trucks). No restrooms from Cedar City, UT to Caliente for about 70 miles; and from Alamo to here, 55 miles. People were relieving themselves wherever they could (outside). Had a handful of medical calls and fender benders, but nothing major for this incident.

We are in process of updating our HMP, and mitigating the hazards that we know we've got. Most of the county has internet service and cell phone service, but communication is limited. Our main goal is to protect public safety. The County has an amazing amount of citizen volunteers in times of crisis.

Ken Dixon, City of Caliente Flood Plain Manager, gave an overview of Caliente-specific issues (water shed drainage; dry lakes). Had some severe rain storms on July 18th; then again in October, an area-wide event of flooding. No disaster declarations, though. Of primary concern, however, is earthquakes. One of our buildings was built in 1855, so structure is weak. Some of the older buildings have been torn down. The depot building we are in (City Hall) was built in 1928, and was rebuilt later by the railroad after a major fire.

Kyle Donohue & David Luttrell, Lincoln County Power District stated that Lincoln County has about 600 miles of power lines, with a 9,000 volt power line for the county originating at the Moapa area; if damaged (by fire, etc.), the County could lose power. Efforts are being made this year to clear open and around structures (with grants). There has been a significant change in federal land management, now allowing us to do clearing around structures and right-of-way's (fire issues; sage grouse issues). We have hundreds of miles of lines to catch up on. We are currently working with contractors, as we don't have the manpower to do this. Hopefully we'll be awarded a PDM grant or similar for 2016 to stay on top of it.

Karen Johnson, NDEM, added that guidance prohibits use of FEMA dollars on federal land; however, there are right-of-way's for the power lines, and this may be allowable by FEMA.

Ken Dixon: can take 4-5 days to replace a power line pole. (Lincoln County Power Co. does have mutual-aid agreements with other jurisdictions and facilities in the State of Nevada). Ken completed with a review of the pictures that were handed out, particularly those of Meadow Valley Wash.

Karen Johnson mentioned that NHMPC Committee member Jim Walker, the Nevada Department of Transportation (NDOT) representative, now works for NDEM, so he will be resigning from NHMPC and that vacancy will need to be filled.

**7. STATE PUBLIC WORKS BOARD PRESENTATIONS REGARDING PRE DISASTER MITIGATION GRANT 2012 CALIENTE YOUTH CENTER BRIDGE –** (Discussion Only) **–** Mr. Dan Daily, State Public Works Board –

Mr. Daily briefed the committee on the Flood Project. Dan was the Project Manager for this project. Been working on this for 3-4 years; have an approved PDM grant. Need to redesign the bridge and abutments; replace two culverts in which sediment has built up. The 2010 flood surrounded and swirled around the sub-station, so if that went down, this is a huge mitigation resolution. We had to make sure we passed the 100-year flood levels; provided positive economic analysis; bids received ranged from $2.1M to 2.8M. We stepped up with in-kind services of about $30K along with the County and the City of Caliente. Still need access to the area, however, so are putting in a temporary bypass road (Lincoln County is putting this in); putting in a 48" culvert.
The railroad gave some surrounding property to the City of Caliente in the 80's, but it was transferred back to the BLM in 1997 (who had it originally); now Thomas Petroleum owns it. We are currently in negotiations with the contractor, Meadow Valley Construction, and will be awarding the contract fairly quickly. Will start construction around April. January is when they have the most risk for flooding in the area.

Rob Anderson (R.O. Anderson Engineering) expressed his thanks to the NHMPC for their assistance in the process.

**8. PLANNING SUBCOMMITTEE REPORT –** (Discussion only)--

Nothing to report at this time.

**9. NEVADA EARTHQUAKE SAFETY COUNCIL REPORT–** (Discussion only)—

Ron Lynn, Nevada Earthquake Safety Council (NESC), Chair—Mr. Lynn provided a report on the NESC for the committee**.** The Nov 10th meeting was a joint meeting with the States of Utah and Idaho present. Utah's URM problem is immense—160,000 URM structures located along the Wasatch Front, 85% of Utah's population is affected by Wasatch Front activity. So first thing, identify the URM's; if you can't fix them, don't fix them. But try to minimize the impacts in the event of a disaster.

Attendees also toured the UNR Seismic Shake Lab/tables that has a lot of open facilities and conference rooms, and houses the largest shake lab in the nation (5 tables). We have an interesting system in both monitoring fires in rural areas, and studying earthquake activity in

those areas. This opens up the opportunity to be eligible for more funding sources.
In Clark County, we have gone out with engineers and interns, using tachometers to see if structures are under-reinforced; this task reduced by 85% the list of concerns originally found in Clark County's analysis.
We had a great presentation from the Incident Commander of the Wells earthquake regarding same. It ties into an initiative from the Western States Seismic Policy Council (WSSPC) initiative to develop an Incident Commander Mini-Book (how-to book with not a lot of verbiage, but just enough to check off and remember). Nothing like FEMA's, but from a national level.

In stick-built structures, the risks are from contents falling down and around. For instance, we asked a teacher why she put the expensive glass globe on the top shelf, and the soft furry animals on the bottom? This type of mitigation costs virtually no money.
Also giving homeowners information on the web regarding elevated stem walls and the problems associated with them, and that it's something they should not accept, is one way of increasing public awareness and prevention opportunities.

Earthquake Safety Week had billboards displayed in Northern and Southern Nevada. We got most of the main media stations to say something about it.

**10. REPORT ON THE STATUS OF OPEN PRE-DISASTER MITIGATION AND HAZARD MITIGATION GRANT PROGRAM ALLOCATED NEVADA GRANTS**

Karen Johnson, Nevada Division of Emergency Management, gave an overview and update of the open pre-disaster mitigation and hazard mitigation grants (see attached). Mrs. Johnson gave an update on the status of each open grant. She also introduced Traci Pearl from NDEM as the new State Hazard Mitigation Officer (SHMO).

**11. ADJOURN**

Craig dePolo adjourned the meeting.

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# Appendix D
# Public Information

**Community/Regional Letter**

**Notification Letter to Nevada DEM**

# LINCOLN COUNTY & THE CITY OF CALIENTE

## HAZARD MITIGATION PLANNING COMMITTEENotiication Letter to Nev

**PO Box 1006, Caliente NV 89008**

17 July 2015,

Nevada Division of Emergency Management

2478 Fairview Drive

Carson City, NV 89701

ATTN: Debbie Tanaka, Mitigation Officer:

In 2005 the County of Lincoln and the City of Caliente launched a planning effort, known as the *City of Caliente and Lincoln County, Nevada Multi-jurisdictional 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 pre-requisite for receiving certain forms of Federal disaster assistance and was subsequently adopted by Lincoln County and the City of Caliente. Under this Act the plan is required to be updated every 5 years, the plan was updated and completed in 2012. This will be the third renewal process for this plan

and is expected the draft plan will be available in October with the final plan to be completed and submitted in late 2015 or early 2016.

Planning efforts will focus on potential impacts of disasters including disease, drought, earthquake, flood, wildland fires, and windstorms within the County. Mitigation measures will focus on prevention, property and natural resource protection, public education and awareness, enhanced emergency services, and improved management practices for structural projects.

The public, including local, state, and Federal entities, is invited to participate in this planning process. For additional information, or to submit comments, please contact the Project Manager: Ken Dixon at 775-962-1213, email at kyd901@hotmail.com.

Mailing address is: City/County Hazard Mitigation Plan, PO Box 1006, Caliente, NV 89008

Thank you for your attention and please advise us of any concerns or comments that you may have.

Sincerely Yours,

Ken Dixon, Coordinator

Lincoln County & City of Caliente

Hazard Mitigation Committee

**PRESS RELEASE**

**For Local Media and Webs**

## TO CITY OF CALIENTE AND LINCOLN COUNTY RESIDENTS:

The floods in Caliente in 2005 and 2010, the flooding in Ursine in 2005 as well as the flooding on I-15 in September of 2014 at the Overton turnoff, resulting in all of the interstate traffic on I-15 being diverted through Lincoln County, demonstrated to us all that Lincoln County can be vulnerable to disasters. This includes drought, earthquakes, floods, severe winds, thunderstorms, wildland fires, and winter storms.

It also shows us that a disaster need not happen in Lincoln County to create a major problem for the City and County. The huge increase in traffic by the closure of I-15 created massive cell phone and land line communications interruptions, major traffic jams, and a large increase in traffic accidents.

The risks posed by these hazards increases as the State & County's population continues to grow.

In 2005 the City of Caliente and County of Lincoln launched a planning effort, known as the **Multi-jurisdictional City of Caliente & Lincoln County, Nevada Hazard Mitigation Plan** to assess risks posed by natural and manmade disasters and identify ways to reduce those risks. This plan was revised and updated in 2012 and is now in the process of being revised and updated for the next 5 year period. This plan is required under the Federal Disaster Mitigation Act of 2000 as a pre-requisite for receiving certain forms of Federal disaster assistance. As a part of the requirements, this plan must be updated every five years. The City of Caliente and Lincoln County have started the process to update the existing plan.

The draft update plan will be made available in early fall of 2015. The City & County plans to submit the draft version of this plan to the State and FEMA by late December of 2015.

The public is invited to participate in this planning process. Your local planning office has pamphlets and brochures outlining some of the issues. For additional information, or to submit any comments, contact;

City/County Hazard Mitigation Plan, PO Box 1006, Caliente, NV 89008 or contact the Project Manager: Ken Dixon, kyd901@hotmail.com Cell 775- 962-1213

## Questionnaire with results

This questionnaire is designed to help the Hazard Mitigation Planning Committee identify the community's concerns about natural and human-caused hazards. Please complete and return to the address at the bottom of the page. All individual responses are strictly confidential and for research purposes only. *Questions call (775)962-1213.*

**GENERAL HOUSEHOLD INFORMATION**

1. RESIDENT (Y)? 208 (No) 0 # YEARS IN County? 0-1: 7 2-5: 12 6-10: 51 11 or more: 128.

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

| Natural | | | | Human Caused | |
|---|---|---|---|---|---|
| 69 | Floods | | Avalanche/landslide | 3 | Hazardous Materials Release |
| 44 | Wild Fire | | Health Alert/Mass Disease | | |
| 85 | Earthquake | 80 | Severe Windstorm | | |
| 89 | Severe Winter Weather | 9 | Expansive Soils | | |
| 61 | Drought | | | | |

3. What is the most effective way for you to receive information about how to make your home safer?
*(Check all that apply)* Newspaper: 59 Internet: 57 Public Meetings 48 Utility Bill: 107 Mail: 115

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

| Have you or someone in your household: | all that apply |
|---|---|
| Attended meetings or received written information on natural disasters or emergency preparedness? | 88 |
| Talked with family members about what to do in case of a disaster or emergency? | 117 |
| Developed a "Household/Family Emergency Plan" in order to decide what everyone would do in the event of a disaster? | 67 |
| Prepared a "Disaster Supply Kit" (extra food, water, medications, batteries, first aid items, etc.)? | 86 |
| In the last year, has anyone in your household been trained in First Aid or CPR? | 22 |

5. Is your property located in or near a FEMA designated floodplain? 65 Do you carry flood insurance? 48

| Nonstructural | | Structural | |
|---|---|---|---|
| 61 | Anchor bookcases, cabinets to wall | 15 | Secure home to foundation |
| 31 | Secure water heater to wall | 22 | Brace inside of cripple wall with sheathing |
| 9 | Install latches on drawers/cabinets | 12 | Brace unreinforced chimney |
| 28 | Fit gas appliances with flexible connections | 3 | Brace unreinforced masonry & concrete walls |
| 16 | Flood proof | 11 | Elevate home |
| | Other _____ | 14 | Install flood vents in crawl space walls |

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

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 | 14 |
| Development should be restricted in these zones. | 21 |
| Development should be restricted only where "severe risk" exists | 52 |
| Development should NOT be restricted in hazard zones | 4 |
| I don't know. | 32 |

8. Please rank how prepared you feel you and your household are for the probable impacts of natural hazard events.
Rank on a scale of 1 to 5 with 5 being the most prepared. Averaged out to: 2.92

# Appendix E
# Meeting Handouts

| Risk Categories for State of Nevada Hazards | | |
|---|---|---|
| **High Risk** | **Medium/Significant Risk** | **Low Risk** |
| Earthquake | Terrorism/ WMD | Tsunami/ Seiche |
| Flood | Hazardous Materials | Hail and thunderstorm |
| Wildfire | Drought | Avalanche |
| | Severe winter storm and extreme snowfall | Epidemic |
| | | Windstorm |
| | | Landslide |
| | | Heat, extreme |
| | | Tornado |
| | | Infestation |
| | | Land Subsidence |
| | | Volcano |
| | | Expansive Soil |

## State Enhanced Hazard Mitigation Plan 2013 Update

| HAZARD PRIORITIZATION CRITERIA | | | |
|---|---|---|---|
| Criterion | Value | Category | Description |
| Probability/Frequency | 1 | Very Low | Occurs less than once in 1000 years. |
| | 2 | Low | Occurs less than once in 100 to once in 1000 years. |
| | 3 | Medium | Occurs less than once in 10 to once in 100 years. |
| | 4 | High | Occurs less than once in 5 to once in 100 years. |
| | 5 | Very High | Occurs more frequently than once in 5 years. |
| Magnitude/Severity (includes Economic Impact, Area Affected and Vulnerability) | 1 | Very Low | • Negligible property damages (less than 5% of all buildings and infrastructure).<br>• No deaths and injuries/illnesses treatable with first aid and do not require hospitalization.<br>• Negligible loss of quality of life.<br>• Economic and geographic effects are localized. |
| | 2 | Low | • Slight property damages (5% to 15%) of all buildings and infrastructure).<br>• No deaths and few injuries/illnesses require hospitalization.<br>• Slight loss of quality of life.<br>• Economic and geographic effects felt at the city or community. |
| | 3 | Medium | • Moderate property damages (15% to 30% of all buildings and infrastructure).<br>• Fewer than 5 deaths and multiple injuries/illnesses require hospitalization.<br>• Some loss of quality of life.<br>• Economic and geographic effects felt countywide. |
| | 4 | High | • Moderate property damages (30% to 50% of all buildings and infrastructure).<br>• More than 5 deaths and considerable injuries/illnesses require hospitalization in multiple facilities with some resulting in permanent disability.<br>• Moderate loss of quality of life.<br>• Economic and geographic effects felt statewide. |
| | 5 | Very High | • Moderate property damages (30% to 50% of all buildings and infrastructure).<br>• Significant number of deaths and injuries/illnesses requiring hospitalization in multiple facilities with some resulting in permanent disability.<br>• Significant loss of quality of life.<br>• Economic and geographic effects felt at the Region IX level. |
| Warning Time | 1 | Very Low | Greater than 48 hrs |
| | 2 | Low | 24 to 48 hrs |
| | 3 | Medium | 12 to 24 hrs |
| | 4 | High | 6 to 12 hrs |
| | 5 | Very High | Less than 6 hrs |
| Duration of Loss of Critical Facilities and Services | 1 | Very Low | 1 to 3 days |
| | 2 | Low | 4 to 7 days |
| | 3 | Medium | 8 to 14 days |
| | 4 | High | 15 to 20 days |
| | 5 | Very High | More than 20 days |

# the hazard mitigation planning process

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

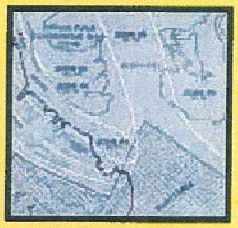
For illustration purposes, this diagram portrays a process that appears to proceed sequentially. However, the mitigation planning process is rarely a linear process. It is not unusual that ideas developed while assessing risks should need revision and additional information while developing the mitigation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

## organize resources

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

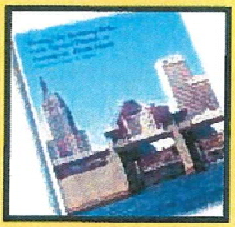
## assess risks

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



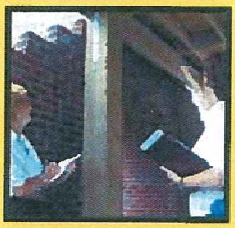
## develop a mitigation plan

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



## implement the plan and monitor progress

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



# foreword

STATE AND LOCAL MITIGATION PLANNING *how-to guide*: ***Getting Started***

## Funding Impacted by the Plan

| | | |
|---|---|---|
| **Individual Assistance**<br>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 |
| **Public Assistance**<br>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. |
| **Mitigation**<br>Hazard Mitigation Grant Program (HMGP): 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.<br>Pre-Disaster Mitigation Program (PDM): 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. |
| **Wildfire**<br>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. |
| **Flood Management Assistance Grants**<br>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. |

FEMA

Below is the STAPLE+E evaluation criteria developed by FEMA. Each of the potential actions will be scored by using rankings of 1 for the lowest and 5 for the highest priority, acceptance, feasibility, etc.

Please insert your numeric ranking in the separate STAPLE+E form and calculate the priority totals.

**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 FEMA Benefit Cost Analysis | Benefit/cost of action; Contributes to other economic goals; Outside funding required; FEMA Benefit Cost Analysis |
| Environmental | The impact on the environment because of public desire for a sustainable and environmentally healthy community | Effect on local flora and fauna; Consistent with community environmental goals; Consistent with local, State and Federal laws |

# Appendix F
# Plan Maintenance Documents

Sample Press Release for

Annual Maintenance Meeting

Lincoln County, Nevada is meeting to review and maintain its Hazard Mitigation Plan to assess risks posed by natural and human caused 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 website address.

Public comments and participation are welcomed. For additional information or to request to participate, or to submit comments, please contact _____:

# Annual Review Questionnaire

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

# Mitigation Action Progress Report



Progress Report Period:_____ to _____

(date) (date)

Project Title:_____ Project ID#_____

Responsible Agency:

Address:_____

City:_____

Contact Person:_____

Phone # (s): _____ email address:_____

List Supporting Agencies and Contacts:

_____

_____

Total Project Cost: _____

Anticipated Cost Overrun/Underrun: _____

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

Anticipated completion date: _____

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

_____

_____

| Milestones | Complete | Projected Date of Completion |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

Plan Goal(s) Address

Goal: _____

Indicator of Success: _____

Project Status

☐ Project on schedule

☐ Project completed

☐ Project delayed*

*explain _____

_____

☐ Project Cancelled

Project Cost Status

☐ Cost unchanged

☐ Cost overrun*

*explain_____

_____

☐ Cost underrun*

*explain_____

_____

Summary of progress on project for this report:

A. what was accomplished during this reporting period?

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

C. How was each problem resolved?

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

Other Comments:

# Appendix G
# Previous Plan Goals & Actions

| Goal | Action | Action Description | Status 2014 & 2015<br>All Actions Continued in Update |
|---|---|---|---|
| Development | 1.A | Ensure the *City of Caliente Master Plan* and the *Lincoln County Master Plan* are consistent with the hazard area maps, and goals, objectives, and implementation strategies developed in the HMP. | Ongoing.<br>Caliente MP updated.<br>LC In the next 5 years |
| | 1.B.1 | Develop County-wide GIS hazard maps with information on hazard areas, and critical facilities and infrastructure. | Contracted however budget constraints. |
| | 1.B.2 | Seek new data from other government, academic, and private organizations that can be used for hazard mitigation and emergency response. | Ongoing |
| | 1.B.3 | Share hazard information between the City and County, private and public organizations, and the general public | CWPP update<br>Drill – Hazmat 2013<br>Articles in local paper<br>WUI week – Month in 2014<br>Embers Awareness<br>Home Assessments<br>School & HOA public awareness of all hazards<br>Ongoing |
| | 1.B.4 | Develop a database with an inventory of hazard areas that can be used for passive recreation. | Funding constraints<br>2012 Meadow Valley Wash<br>Linear Park along Hwy 93<br>Storm Drain Study in 2015 |
| | 1.C.1 | Review FEMA's grant application procedures and establish internal procedures to streamline the application process. | Caliente lost grants administrator. |
| | 1.C.2 | Apply for Pre-Disaster Mitigation (PDM) and Hazard Mitigation Grant Program (HMGP) grants to fund mitigation actions identified in this HMP. The City has submitted one PDM and it has been selected for further review. In addition the State has submitted 1 PDM within the City and it has been selected for | Currently Caliente has 1 PDM grant selected for further review. |

| | | | |
|---|---|---|---|
| | | further review. | |
| Respond/Recover | 2.A.1 | Establish a budget and identify funding sources for mitigation outreach. | Budget Constraints |
| | 2.A.2 | Work with school district to develop a public outreach campaign that teaches children how to avoid danger and behave during an emergency. | Ongoing<br>School has emergency campaign |
| | 2.A.3 | Support the efforts and education of people with disabilities to prepare for disasters. | Emergency Management has ongoing effort currently working in Alamo<br>List of oxygen users completed |
| | 2.A.4 | Develop a joint City-County public outreach campaign about hazard risks and hazard mitigation efforts that homeowners can initiate and implement to enhance natural hazard safety in their own community. | Mt. Wilson Fire Safe Council gone.<br>County website updated w/info. |
| Drought | 3.1 | Develop and adopt a water conservation ordinance that may stipulate landscaping requirements, hours for irrigation, retro-fitting motels and households for low-flow toilets and showers, and penalties for wasting water. | LEPC doesn't want this<br>Currently no water issues at this time<br>IBC is used for new construction |
| | 3.2 | Pursue the creation of a water conservation and public awareness program. | Not at this time<br>NRCS Soil conservation District for Ag |
| Earthquake | 4.1 | Enforce the International Building Code (IBC) provisions pertaining to grading and construction relative to seismic hazards, with special emphasis regarding construction of any building in close proximity to existing known fault lines. | LC & Caliente - IBC adopted – 2009 Version |
| | 4.2 | Seismically retrofit critical facilities that are in close proximity to a fault line. | Need to ID<br>State to email Rick Stevers URM list<br>Continue to review |
| | 4.3 | Implement an Unreinforced Masonry (URM) building program that determines the structural safety of critical facilities, this to be a high priority item. Inspect the identified URM buildings to evaluate safety issues, (28 | State to email Rick Stevers URM list<br>County and City to review list and let State know of any corrections |

| | | | |
|---|---|---|---|
| | | commercial in County, 13 Commercial in City, 38 Residential in County and 10 residential in City). | |
| | 4.4 | Develop and provide managers of mobile home parks with information on how to improve the seismic performance of mobile homes. | Send Rick info from UNR BMNG |
| | 4.5 | Encourage utility companies to evaluate the seismic risk to their high-pressure transmission pipelines and implement mitigation measures, such as automatic shut-off valves. (Added) The only current high pressure lines are located in the extreme SE corner of Lincoln County. | Complete<br>Petroleum & Gas |
| Flood | 5.1 | Work with Lincoln County, the City of Caliente, and FEMA to update the remaining outdated FIRMs into new DFIRMs, (Added) and ensure any new developments address the need for FIRMs to be completed. | Complete and ongoing – Ken Dixon is working |
| | 5.2 | Work with the City and County to continue their participation in the NFIP and to enforce their respective floodplain ordinances. | Corrie Lyle is FPM for LC.<br>Caliente Ken Dixon |
| | 5.3 | Ensure that mobile home parks are not located within the 100-year floodplain or near a major earthquake fault. | This should be modified to read. Ensure that future mobile home parks are not located within the 100-year floodplain or near a major earthquake fault.<br>No current development |
| | 5.4 | Designate all floodways as Open Space, as it is done in Alamo | Caliente has some. BLM land acquisition will be for open space.<br>Ongoing |
| | 5.5 | Ensure that the Nevada State Engineers Office inspects high hazard dams in the planning area on a timely basis, per NRS 535.030. | Eagle Valley Dam and Pratigan Valley Lakes Dam. Provided Rick Stevers contact at NDWR. |
| Wildland Fire | 6.1 | Ensure that adequate fuels reduction treatments are in place and that all new development within the planning area meets the National Fire Code and Standards. | Ongoing north of Panache, Pioche, Castleton, Eagle Valley, BLM, NDF |

| | | | |
|---|---|---|---|
| | 6.2 | Complete providing street names and address signage so emergency responders can easily locate at risk structures in the planning area communities that may be affected by low visibility during a wildland fire event. | Ongoing – almost complete. Mapping system in dispatch almost complete.<br>Nearing completion would like more functionality. Rural areas need more signage. |
| | 6.3 | Develop and adopt defensible space measures for existing as well as any new master planned communities and subdivisions. | Ongoing – Need more in outling areas<br>Expect more $$ in 2015 |
| | 6.4 | Develop a public outreach campaign of the extreme wildland fire dangers and steps that can be taken to reduce these dangers. | Ongoing through newpapers<br>New master planned communities at Highland Knowles.<br>Schools |
| | 6.5 | Develop an annual free curb-side weed removal pick-up program. | Started at LC and Caliente<br>Some in communities. Alamo. |
| | 6.6 | Work with the Bureau of Land Management and the Nevada Division of Forestry to conduct fuel reduction projects on federal property surrounding any community within the planning area. | Ongoing –Echo Summit |
| Windstorm | 7.1 | Develop restrictions on planting large or rapidly-growing trees near power lines and major arterials. | Public Awareness<br>Caliente - Arbor Schools – Tree City USA |
| | 7.2 | Develop a program to assist property owners in selecting trees that are power-line friendly. | Budget constraints |
| | 7.3 | Improve the safety and reliability of overhead lines through improved design, maintenance, right-of-way management, and inter-utility cooperation. | LC & Caliente tying to get power underground<br>Free power district inspection |
| | 7.4 | Ensure all new construction is in compliance with wind design standards shown in Section 16 of the IBC. | Ongoing. 90 mph for new construction. |
| | | Additional Mitigation Actions completed in 2012-2013 | Countywide reverse 911 EM notification system. |
| | | Spring St. Flood Project | Spring St. 2014 complete |
| | | Caliente River Dredging | Fall 2015 Spring 2016, Ongoing |

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