

Hazard Mitigation Plan

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Acronyms

BLM - U.S. Bureau of Land Management
CCHD - Clark County Health District
CDC - Center for Disease Control
CFR - Code of Federal Regulations
CIA - Central Intelligence Agency
DEC - Department of Environmental Conservation
DMA - Disaster Mitigation Act of 2000
DOE - Department of Energy
DOJ - Department of Justice
DOT - Department of Transportation
EHS - Extremely Hazardous Substances
EPCRA - Emergency Planning and Community Right to Act
EPA - Environmental Protection Agency
FEMA - Federal Emergency Management Agency
FBI - Federal Bureau of Investigation
FIRM - Flood Insurance Rate Map
HMP - Hazard Mitigation Plan
MSHA - Mine Safety and Health Administration
NNSS - Nevada National Security Site
NPS - National Park Service
NCDC - National Climatic Data Center
NFIP - National Flood Insurance Program
NSHD - Nevada State Health Division
NRS - Nevada Revised Statutes
OOE - Office of Epidemiology
OSHA - Occupational Safety and Health Administration
PDM - Pre-Disaster Mitigation
POC - Point of Contact
SFHA - Special Flood Hazard Area
USFS - U.S. Forest Service
WMD - Weapons of Mass Destruction

1.0 EXECUTIVE SUMMARY

The purpose of this multi-jurisdictional Hazard Mitigation Plan (HMP) for Nye County (County) and the Duckwater Shoshone Tribe (Duckwater) is to better understand the existing hazards affecting the various communities and regions. The plan prioritizes and outlines the many possible hazards that can affect the safety of community members. The plan also provides mitigation goals and strategies that can reduce the level of risk and mitigate hazards.

Nye County is unique. As the third largest County in the continental United States there are a wide range of hazards the County must plan for. The County is located in central Nevada and is also the largest County in the State. It has two Indian Reservations including the Duckwater Reservation and two military bases. There are no incorporated cities in the County. The government seat is located in Tonopah. The largest community in the County is Pahrump.

This HMP identifies, profiles, ranks, and provides action items for mitigation of the various hazards in the County and on the Duckwater Reservation. Table 1 is a summary of the hazards identified and evaluated in this HMP. The hazard profiles are detailed in Section 5.3. The hazard mitigation strategies, goals, and potential mitigation actions are found in Section 7.

Table 1: Summary of Hazards

Hazard	Nye County Rank	Duckwater Rank
Wildland Fires	High	High
Drought	High	Medium
Floods	Medium	Low
HAZMAT	Medium	Low
Windstorms	Medium	Medium
Infrastructure Disruption	Medium	High
Earthquakes	Medium	Low
Mining	Medium	Low
Winter Storms	Medium	Medium
WMD/Terrorism	Medium	Low
Epidemic	Low	Low
Civil Disturbance	Low	Low
Land Subsidence	Low	Low
Thunderstorms	Low	Medium
Infestations	Low	Low
Landslides	Low	Low
Flooding by Dam	Low	Low

Nye County and the Duckwater Reservations Critical Infrastructure are summarized in Tables 2 and 3 respectively. These items have been deemed critical for the well-being of persons in the

jurisdictions. The HMP details the critical facilities and their estimated replacement cost in Section 5.4.

Table 2: Nye County Critical Facilities.

Category	Type	Number
Critical Facilities	Police Stations	5
	Fire Stations	15
	EOCs	2
	Public Primary and Secondary Schools	17
	Urgent Care Facilities	8
	Hospitals	2
	Ambulance Facilities	8
	Government Buildings	25
	Senior Centers	4
	Propane Storage Facilities	4
	Communication Facilities	2
Infrastructure	State and Federal Highways (miles)	1,058
	Airport Facilities	5
	Bridges	6
	Culverts	15

Source: FEMA-HAZUS

Table 3: Duckwater Critical Facilities.

Category	Type	Number
Critical Facilities	Police Stations	1
	Fire House	1
	Public Primary and Secondary Schools	1
	Health Clinic	1
	Government Buildings	4
	Senior Center	1
	Tribal Shop	1
Infrastructure	Tribal Roads (miles)	26
	Bridges	6
	Culverts	4

Source: FEMA-HAZUS

A final action plan was created utilizing the information in this HMP, details on the action plan are found in section 7.4. The items in the action plan were developed with the well-being of community members at the core of the creation process. Potential action items for all the hazards identified in this HMP are found in section 7.3.

Obtaining public input was part of the process for the creation of the plan, extensive efforts were made to ensure the public and stakeholders were able to participate in developing the content of the HMP.

Table 4 and Table 5 are a summary of the Final Action Plan to be implemented by the County and Duckwater Tribe respectively.

Table 4: Nye County Action Items.

Ref Goal #	Action Item	Department / Division	Economic Justification	Priority Level
1.A.1	Enforce the most current versions of the Urban-Wildland Interface Code.	<ul style="list-style-type: none"> • Fire Department • BLM • USFS 	These regulations are important to the safety of each community and most importantly high-risk areas.	High
3.A.1	Implement studies pertaining to the construction of retention basins, including Wheeler Wash, Carpenter Canyon Basin, and Crystal which would reduce storm water runoff.	<ul style="list-style-type: none"> • Emergency Management • Public Works 	The construction of retention basins will reduce the amount of flooding and mitigation required due to said flooding.	High
9.A.1	Train, prepare, and equip County resources to handle winter storm hazards in a timely and efficient manner.	<ul style="list-style-type: none"> • Public Works • Emergency Management 	Timely response will improve quality of life and save lives.	High
9.A.2	Develop a list of high-risk residents who may need assistance during any type of emergency situation.	<ul style="list-style-type: none"> • Health and Human Services • Utilities • Emergency Management 	Monitoring high-risk individuals will save lives.	High
11.A.2	Develop a close working relationship with the State Health Office and State Health representative.	<ul style="list-style-type: none"> • Emergency Management 	State Health officials are very important to successfully managing health issues in the County.	High

Table 5: Duckwater Action Items.

Ref Goal Number	Action Item	Department / Division	Economic Justification	Priority Level
1.A.1	Develop MOU's with the County to share resources to help mitigate hazards.	<ul style="list-style-type: none"> • Emergency Management 	The tribe will benefit from the knowledge and resources of the County.	High
1.A.2	Implement wildland fire fuel reduction strategies.	<ul style="list-style-type: none"> • Emergency Management 	Fuel reduction will save lives and property.	High

Ref Goal Number	Action Item	Department / Division	Economic Justification	Priority Level
1.A.3	Educate and prepare community members to prepare for extreme weather events.	<ul style="list-style-type: none"> Emergency Management 	Proper education of severe weather events will save lives and property.	High

2.0 INTRODUCTION

This section provides an overview of the Disaster Mitigation Act of 2000 (“DMA 2000”; Public Law 106-390), the adoption of this HMP by the local governing bodies; Nye County, and the Duckwater Shoshone Tribe, as well as supporting documentation for the adoption.

From this point, the “planning area” is to include County, Town, and Tribal stakeholders.

2.1 DISASTER MITIGATION ACT OF 2000 & JURISDICTION ADOPTION

The Disaster Mitigation Act of 2000 (DMA) was passed by Congress to emphasize the need for mitigation planning to reduce vulnerability to natural and human-caused hazards. The DMA amended the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act; 42 United States Code [USC] 5121 et seq.) by repealing the act’s previous Mitigation Planning section (409) and replacing it with a new Mitigation Planning section (322).

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 (FEMA 2002a). 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. In addition, a review tool documenting compliance with 44 CFR is included as Appendix G.

2.2 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 updated plan?
- Is supporting documentation, such as a resolution, included?

Source: FEMA, July 2008.

This 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 County and Duckwater. Participating in this planning process were various departments within the County representing the unincorporated communities of the County. There are no incorporated jurisdictions within the planning area.

This HMP has been prepared by the Duckwater and County Hazard Mitigation Planning Task Forces (Planning Task Force) and adopted by the Duckwater Tribal Council and Nye County Board of County Commissioners via resolution, which are presented in Appendix D. The adoption process will begin upon receiving FEMA's conditional approval of the plans final draft.

2.3 HAZARD MITIGATION 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 purpose of the DMA is to amend the Stafford Act, establish a national program for pre-disaster mitigation, and streamline administration of disaster relief.

This HMP meets the requirements of the DMA 2000, which calls for all communities to prepare hazard mitigation plans. By preparing this HMP, the jurisdictions are eligible to receive Federal mitigation funding after disasters and to apply for mitigation grants before disasters strike. This HMP starts an ongoing process to evaluate the risks different types of hazards pose to Duckwater and the County, and to engage the governing bodies and the community in dialogue to identify the steps that are most important in reducing these risks. This continuous planning cycle for disasters will make the jurisdictions, including 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.

A local jurisdiction must have an approved HMP to be eligible for Hazard Mitigation Assistance grants (HMA) and HMGP funding for presidentially declared disasters after November 1, 2004. Plans approved at any time after November 1, 2004, will allow communities to be eligible to receive HMA 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 HMP and authorizes responsible agencies to execute their responsibilities. Following adoption by the Nye County Board of Commissioners and the Duckwater Tribal Council, the plan was reviewed by

the Nevada Division of Emergency Management (NDEM) and approved by FEMA. The resolution adopting this HMP is included in Appendix D.

3.0 COMMUNITY DESCRIPTION

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

3.1 HISTORY, LOCATION, AND GEOGRAPHY

Nye County is located in the south-central portion of the State of Nevada (State). Nye County is the largest of the State's 17 counties and the third-largest County in the continental United States, totaling 18,159 square miles (16 percent of Nevada's total surface area). Nye County is bordered by Churchill, Lander, Eureka, and White Pine counties to the north; Mineral and Esmeralda Counties to the west; Lincoln and Clark Counties to the east; and Inyo County, California, to the south (Appendix B, Figure B-1).

Nye County was established in 1864. Founded on mineral wealth, the County was named to honor James Warren Nye, a former U.S. Senator and Governor of the Nevada Territory. The first mining boom in the County began in the Big Smoky Valley with silver found in Austin in 1862. As a result of this find, numerous mining towns appeared, including Bunker Hill, Geneva, Santa Fe, Ophir Canyon, and Jefferson. Mining continued throughout the 1870s but dramatically declined with the state's Great Depression between 1880 and 1900. With the discovery of gold and silver in Tonopah in 1900, mining surged throughout the County again and remained strong until the 1920s.

Mining is an important part of Nye County history and economic growth and sustainability. There are currently 141 active mines in the County according to the 2010 Directory of Nevada Mining Operations (maintained by the Nevada Division of Industrial Relations). These 141 mining operations employ 1,528 workers. Three of the mines are major production mines for metal and other minerals.

The County is situated in the mountains and valleys of the Great Basin region. In the north, the mountains and valleys run north to south, with elevations of 5,000 to 11,000 feet above sea level. In the south, the mountains have elevations of 4,500 to 12,000 feet above sea level. As such, creosote and saltbrush are the dominant vegetation in the south, giving way to sagebrush and junipers in the north.

The area has an arid climate, with over 200 days of sunshine and an average annual precipitation of 1 to 10 inches. In winter, the average high temperatures range from 40° to 50°F, with lows between 20° and 30°F at night. In summer, the average daily highs range from 90° to 100°F, with nights cooling to between 60° and 70°F.

In May 1905, Tonopah became the county seat. Tonopah is located in the northwest part of the County. Tonopah was a key settlement for many of the mining operations. The town has since become a tourist destination and a jumping off point for visiting many of the ghost towns in

Nevada. The town has some of the oldest buildings in Nevada including the Mizpah Hotel, the oldest archive library in the state, and the Nye County Court House.

Pahrump is the largest community in the County. It is located near the southeastern corner, and adjacent to the border of Clark County and Inyo County, California.

Amargosa Valley follows the southern border of Nye County through the town of Beatty. Amargosa Valley is home to several unique plants and a variety of animal life. The Amargosa River flows seasonally and in several places only after a large rare rainfall. Agriculture is a key contributor to the communities around the Amargosa Valley.

Solar energy potential is high in both Pahrump and Amargosa Valleys; numerous renewable energy companies have filed rights-of-way applications with the US Bureau of Land Management for projects on Federal lands. Additionally, Solar Reserve is currently constructing the Crescent Dunes Solar Energy Project (a 110 megawatt solar generating plant) near Tonopah. One oil refinery is located 11 miles south of Currant, Nevada. In 1954, oil exploration in Railroad Valley began with Shell Oil Co. drilling and completing the Eagle Springs Well. The refinery produces petroleum products that could potentially be spilled or involved in other hazardous incidents not only in the immediate area, but also as products are transported across county highways and roads. There are numerous hazards associated with the oil refinery and transportation of products to and from the refinery.

The Nevada National Security Site (NNSS) was established by President Harry Truman on December 18, 1950. The site was used for 100 atmospheric and 828 underground nuclear detonations (Department of Energy [DOE] 2011). Since the 1992 Comprehensive Nuclear Test Ban, no nuclear tests have been conducted at the NNSS; however, the site remains one of the most radioactively contaminated places in the US due to the number of tests conducted there. This unique facility, wholly located within Nye County, is now used for low-level radioactive waste disposal, nuclear weapons stockpile verifications, weapons of mass destruction/First Responder training, chemical testing, and a number of other activities (DOE 2011). In addition, environmental characterization and restoration are ongoing at the site.

Approximately 98 percent of land in Nye County is federally owned and not available for private or County use. The remaining land consists of the unincorporated towns of Amargosa, Beatty, Gabbs, Pahrump, Round Mountain, and Tonopah (Appendix B, Figure B-1). Additionally, there are the unincorporated communities of Manhattan, Mercury, Crystal, Belmont, Ione, and Carvers.

A five-member Board of Commissioners elected by district governs Nye County. Other prominent elected officials include the District Attorney, Sheriff, Treasurer, Assessor, Recorder, and Clerk. The Board of County Commissioners appoints a County Manager who is responsible

for the general direction, supervision, administration, and coordination of all affairs for the County.

3.2 DEMOGRAPHICS

According to the U.S. Census Bureau, the County's population was 43,946 in 2010, with 83 percent of the total population residing in the Town of Pahrump. According to the 2010 Census data, 21.0 percent of the total population was under 18 years, 55.2 percent was between 18 and 64 years, and 23.8 percent was 65 years and over. While the County experienced a 35.5 percent growth rate from 2000 to 2010, it is expected to slow between 2010 and 2020.

Nye County's labor force included 18,186 persons in 2010 with a record unemployment rate of 16.3 percent. The economic base of the County primarily consists of mining, trade, agriculture, service, and government. The unemployment rate has been historically low, but in recent years there has been significant out-migration due to the lack of jobs. In 2009, the per capita income was \$21,283, and the median family income was \$43,215.

3.3 TRIBAL LANDS

Two Native American reservations are within the County boundaries. The reservations are sovereign nations and have their own set of challenges and hazard mitigation issues. The Duckwater Reservation is located in northeastern Nye County on approximately 3,815 acres and had approximately 288 tribal members living on the reservation in 1990. The tribe is currently seeking to expand the boundaries of their reservation to 235,000 through a possible court order. The Yomba Reservation is located in northwestern Nye County and occupies 4,718-acres of land. Organized since 1939, approximately 146 tribal members live on the reservation.

The tribes have many of the same challenges as the County; however, the hazards the tribes face have some increased concern due to their limited access to mitigation resources. The tribes are also in the remote areas of the northern parts of the County and have limited access to County facilities. Wildland fires, infrastructure disruption, and extreme weather are considered the hazards most likely to affect the tribes. The County works closely with both tribes. However, only Duckwater Tribe participated in the planning process. The County strongly recommends that the tribes should seek to work closely with the County in developing memorandums of understanding and action plans for events and hazard mitigation on the reservations.

3.3.1 Duckwater Shoshone Reservation

The Duckwater Shoshone Tribe of the Duckwater Reservation is located in northeastern Nye County. The reservation was established in 1940, when the tribe purchased the 3,272-acre Florio Ranch and 21 families moved onto the land. The reservation is now comprised of approximately 3815 acres of land (Appendix B, Figure B-9). Today there are 146 tribal members living on the reservation.

The Duckwater Reservation is a participating jurisdiction in this multi-jurisdictional plan. The tribe received funding to provide information for the Hazard Mitigation plan. Details of the hazards on the Duckwater Reservation are included where they differ from the entire planning area in various sections throughout the plan. The tribe's Emergency Manager served as a member of the hazard mitigation planning committee, and was able to provide input for the county-wide HMP. The Emergency Manager was also the lead for hazard information in her jurisdiction. The tribe completed a Hazard Vulnerability Assessment, and a Hazard Assessment Worksheet, which were transmitted to the consultant for integration into the County HMP. As stated above, the tribe faces many of the same county-wide challenges as other remote county communities; however, the tribe's access to the mitigation resources has increased lead time, due to the location of the resources. In the Duckwater Tribe's evaluation of the hazards on the reservation they found wild land fires and various critical infrastructures to be among the greatest concerns. These are issues that usually require quick response and access to resources.

Data from the Duckwater Hazard Vulnerability Assessment as provided by the Tribe is shown in Section 5.1.1.

3.4 FEDERAL LANDS

U.S. Bureau of Land Management (BLM), U.S. Forest Service (USFS), and the National Park Service (NPS) are responsible for managing over 74 percent of the land within Nye County (Appendix B, Figure B-2). The Lunar Crater Volcanic Field, a zone of volcanism covering 100 square miles, includes the 430-foot-deep Lunar Crater. Designated as a National Natural Landmark, one of six in Nevada, the crater is located 75 miles east of Tonopah. Natural features vary widely from Death Valley National Park in the southwest to the high country of the Humboldt-Toiyabe National Forest and Alta Toiyabe Wilderness Areas in the north, with peaks exceeding 11,000 feet in elevation.

In addition, the Department of Defense and Department of Energy manage 23 percent of the County land. The NNSS, a massive outdoor laboratory larger than the state of Rhode Island, is located in the southern portion of the County, bordering Clark County. Covering approximately 1,375 square miles, this site is one of the largest restricted access areas in the United States. Thousands of acres of Federal land used as a protected wildlife range and a military bombing and gunnery range for Nellis Air Force Base touches the site on three sides, creating an unpopulated buffer zone totaling over 5,470 square miles. Originally established to serve as the Atomic Energy Commission's on-continent proving ground for nuclear weapons testing in the 1950s, the NNSS has diversified since the nuclear weapons testing moratorium in 1992. Current uses for the site include hazardous chemical spill testing, emergency response training, conventional weapons testing, and waste management and environmental technology studies. The suspended controversial Yucca Mountain Nuclear Waste Repository is proposed for this area. If licensed, this site will store radioactive waste generated throughout the nation in deep underground tunnels.

3.5 DEVELOPMENT TRENDS

Due to current economic conditions, growth is anticipated in the northern regions of the County as a result of the demand for gold and other precious minerals increases. Construction of a new solar field is also likely to temporarily increase the population of the northern regions of the County. The Southern part of the County including Pahrump has significant renewable energy projects being considered for development. These have the potential to become economic drivers in the region. The Yucca Mountain Project (if constructed) is expected to generate thousands of jobs during construction.

Populations and demographics are not anticipated to change rapidly within Duckwater. The tribe is looking to expand both North and East, up to approximately 235,000. This land is not expected to be developed.

4.0 PLANNING PROCESS

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

DMA 2000 Requirements: Planning Process

Planning Process

§201.6(b): An open public involvement process is essential to the development of an effective plan.

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:

- An opportunity for the public to comment on the plan during the drafting stage and prior to plan approval;
- 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
- 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 updated plan provide a narrative description of the process followed to prepare the plan?
- Does the 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 Task Force, provided information, reviewed drafts, etc.?)
- Does the 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 updated plan discuss the opportunity for neighboring communities, agencies, businesses, academia, nonprofits, and other interested parties to be involved in the planning process?
- Does the planning process describe the review and incorporation, if appropriate, of existing plans, studies, reports, and technical information?
- Does the updated plan document how the planning team reviewed and analyzed each section of the plan and whether each section was revised as part of the update process?

Source: FEMA, July 2008.

4.1 OVERVIEW OF PLANNING PROCESS

Nye County hired Dyer Engineering and Consultants (DEC), Inc. to update the existing HMP last updated in 2005. A Task Force was established in order to identify the areas of the existing HMP that needed to be updated or revised. The Director of the County's Emergency Management Department served as the primary Point of Contact (POC) for the County. The tribe's Emergency Manager served as the primary point of contact for Duckwater.

Once the Planning Task Force was formed, the following five-step planning process took place during the 6-month period from May 2011 to December 2011.

- **Organize resources:** The Planning Task Force identified resources, including County staff, agencies, local community members, and tribal members, which could provide technical expertise and historical information needed in the development of the HMP.
- **Assess risk:** The Planning Task Force identified the hazards specific to the Jurisdictions, and developed the risk assessment for the identified hazards. The Planning Task Force worked with the DEC to develop of the mitigation strategies. The Duckwater Shoshone Tribe performed a hazard vulnerability assessment with members of the tribe and public input, the tribe contributed to the planning of the entire planning area as a member of the Planning Task Force. They also generated mitigation strategies that where specific to the tribe.
- **Assess capability:** DEC and the Planning Task Force 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, DEC with the Planning Task Force, developed a comprehensive range of potential mitigation goals, objectives, and actions. Subsequently, the Planning Task Force identified and prioritized the actions to be implemented.
- **Monitor progress:** The Planning Task Force developed a process to monitor and evaluate the HMP and its strategy.

4.2 HAZARD MITIGATION PLANNING TASK FORCE

The Planning Task Force was assembled by the Nye County Emergency Management Director. The advisory body known as the Planning Task Force utilized staff from relevant County agencies. The Planning Task Force members are listed in Table 6. The Duckwater Planning Task Force was assembled by the Emergency Manager, and its members are listed in Table 7. The Planning Task Force meetings are described in section 4.3. Additional meeting descriptions are provided in Appendix A.

Table 6: Nye County & Duckwater Mitigation Planning Task Force.

Name	Department	Participation
Vance Payne	Emergency Management Director	Attended meetings, reviewed drafts and provided input for sections including the risk assessment, vulnerability analysis, mitigation strategies, action items, and select hazards.
Missy Molt	Administrative Assistant	Attended meetings and provided input.
Dave Fanning	Public Works	Gave input via phone calls. Provided input for sections including the risk assessment, vulnerability analysis, mitigation strategies, action items, and select hazards.
Jim Medici	Workplace Safety/Training Officer	Attended meetings, reviewed drafts and provided input for sections including the risk assessment, vulnerability analysis, mitigation strategies, action items, and select hazards.
Levi Kryder	Nuclear Waste Repository Project Office	Attended meetings, provided input, reviewed drafts.
Maureen Budahl	County Health Nurse	Attended meeting and provided input.
Patty Winters	Ambulance Coordinator	Attended meetings and provided input.
Shane K. Dyer	Dyer Engineering Consultants	Key preparer of the updated HMP and all sections of the report, attended meetings, gathered information and provided input.
Timothy Simpson	Dyer Engineering Consultants	Key preparer of the updated HMP and all sections of the report, attended meetings, gathered information.
Lori Williams	Trisage Consulting	Attended meetings, reviewed drafts and provided input.
Ron Browning	Browning and Associates (Safety & Hazard Consultant)	Attended meetings, reviewed drafts and provided input.

Debbie O'Neil	Duckwater Emergency Manager	Primary point of contact with Duckwater, attended meetings, provided info for various Duckwater tables, reviewed drafts and provided input.
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Table 7: Duckwater Mitigation Planning Members.

Name	Department	Participation
Debbie O'Neil	Duckwater Emergency Manager	Primary point of contact with Duckwater, attended meetings, provided info for various Duckwater tables, reviewed drafts and provided input.
Patricia Knight	Tribal Manager	Provided input.
Virginia Sanchez	Tribal Chairman/ Council Member/Planning Division	Provided input.
Annette George-Harris	Tribal Council Member/Natural Resource Division	Provided input.
Ruby Sam	Tribal Council Member	Provided input.
Nye Penoli	Tribal Council Member	Provided input.
Alissa Thompson	Tribal Council Member	Provided input.
Kim Townsend	Planning Division	Provided input.

4.3 PLANNING TASK FORCE MEETINGS

May 2011

An initial meeting was held between all members of the Planning Task Force. Preparatory materials were provided to the members of the Planning Task Force to help encourage premeditation on the potential hazards, and dialogue with community members and colleagues in their respective communities and places of work. The materials and a planning work sheet are found in Appendix A. The Existing HMP was evaluated by the Planning Task Force members and various hazards were noted as needing to be added to the plan. Various Planning Task Force members were assigned to consult with DEC on hazards discussed in the meeting. These individuals were contacted on a regular basis regarding various aspects of the HMP.

June 2011

Various communications (via e-mail) with members of the Planning Task Force were performed during the month of June. Information was gathered utilizing the Planning Task Force. Suggestions and data were collected from Task Force members. Meeting led by Dyer Engineering.

July 2011

Added hazards to the plan as discussed in the May meeting. These hazards were researched and existing hazards were updated to include current information. HAZUS, FEMA's geographical information system, was used to develop replacement cost estimates for the report. New figures were developed. Data was finalized for running HAZUS models. Dyer Engineering led the meeting.

August 2011

Mailed letters to stakeholders and neighboring counties by Dyer Engineering. Notices for public input on county hazards were posted in the *Tonopah Times* and the *Pahrump Valley Times*. A 50% draft of the plan was sent to the County for review and comments. In addition the hazards were ranked during an extended internal meeting, and sent to the Planning Task Force for comment and approval.

Little input was received from stakeholders and the public. A specific comment focused on the needs in the northern regions of the County with regard to winter storms and access. Each stakeholder was individually called to verify receipt of the letter requesting comment, and comments were solicited over the phone. No comments were made that were outside the scope of hazards already addressed in the plan.

September 2011

A draft of the plan was prepared for review by the team. Internal comments were made by team members. The planning area representatives were given an opportunity to make comments on the current status of the report.

October 2011

Another draft of the HMP was prepared and sent out for review by the County, the State of Nevada, and Duckwater. Planning meetings with Duckwater and the integration of their specific data took place.

November 2011

A meeting with the County regarding the old actions plan status and new actions for the update took place. The State of Nevada returned comments on the HMP, and requested some revisions. Work on the Duckwater Reservation and dialogue with the Planning Task Force and the Duckwater emergency manger was performed. Duckwater provided additional details regarding the reservation.

December 2011

A Draft HMP was posted on the Nye Counties website for public review and comment. A draft HMP was also sent to the State for review.

January 2012

A meeting between Nye County Emergency Management and Dyer Engineering making final revision to the HMP. Additional information received by Nye County Public Works Department, the plan was updated accordingly. A draft HMP was also sent to the State for review. Meeting minutes attached.

February 2012

A brief meeting took place between Nye County Emergency Management and Dyer Engineering regarding additional information needed from Public Works.

April 2012

Most currently updated plan distributed to Planning Task Force for thorough review and input. Brief conference call between Nye County Emergency Management and Dyer, no formal documentation.

June 2012

Planning Task Force is submitting changes to HMP for review at next meeting. Brief meeting with Task Force held to discuss staff changes within Emergency Management and Planning Task Force. Vance Payne is now Director.

August 2012

Several meetings with newly revised Planning Task Force. Discussion that plan needs some work and changes made. Meetings lasted 2 hrs, and minutes are attached.

September 2012

Final changes noted on plan. Approved by Nye County Board of County Commissioners for submission to State and FEMA.

November 2012

Conference call with Vance Payne, Missy Molt, DEM, and Duckwater Tribe member regarding DEM suggested changes to HMP. Meeting lasted 2 hrs, and minutes attached.

January 2013

Final changes made to plan and it was submitted to DEM for approval, and further submission to FEMA.

4.4 PUBLIC INVOLVEMENT

The Planning Task Force was compiled by the Emergency Management Director and Emergency Manager for Nye County and Duckwater. The Planning Task Force members represented various areas and expertise throughout the County and Duckwater, The Planning Task Force was a wealth of knowledge and information that represented a great deal of public knowledge and input.

A press release regarding the preparation of the HMP was prepared and distributed. The press release was sent to the local newspapers, the *Pahrump Valley Times* and the *Tonopah Times* to cover the broadest readership in the County. See Appendix C. In addition, DEC mailed letters regarding the preparation of the HMP requesting input to the following entities:

- FEMA
- State DEM
- Yomba Indian Reservation and Duck Water Indian Reservation
- Nellis Air Force Base
- Nevada National Security Site
- Death Valley National Park
- Humboldt-Toiyabe National Forest
- Counties:
 - Churchill
 - Clark
 - Esmeralda
 - Eureka
 - Lander
 - Lincoln
 - Mineral
 - White Pine
 - and Inyo, California

The team provided an e-mail address, telephone number, and a physical mailing address requesting interested citizens to participate in the planning and adoption processes. In general, requests for public input had a low response by the agencies contacted and by the public via the published press releases. The press release and notification letter are included in Appendix C.

Due to the low response of input received from the mailings and public postings, each stakeholder was called individually in an attempt to ensure receipt of the letter and to extract comments and input for the plan.

The Planning Task Force was comprised of both civil servants and private personnel that interact publicly with the community in emergency response situations, trainings, or through public

works. The Planning Task Force was specifically designed due to the members' understanding of the public hazards in the county, and their ability to represent the public.

Historically during the creation of the plan there was almost no public input from the communities. Therefore an effort was made to involve people with a working knowledge of the communities and extensive interaction with community members. In addition individual stakeholders were called as mentioned above.

As a result of these efforts, the team believes that the plan is a good representation of the hazards in the County with input from the public, either directly or through civil servants.

Mr. Ron Browning of Browning and Associates was specifically selected as a team member due to his individual interaction with the public during safety trainings. Mr. Browning provides OSHA and MSHA safety training all over the County. He has extensive input from people working throughout the County in high hazard situations. His contribution and understanding of the hazards is another addition to the public voice heard throughout this document.

4.5 REVISIONS DURING THE 2012 UPDATE

During the update the HMP was changed to a multi-jurisdictional plan. As a result every section of the plan had revisions. Table 8 shown below is a summary of the changes during the update to the plan.

Table 8: Sections of the HMP Revised in the Update Process.

Description	Updated Y/N?	What Was Changed?
Executive Summary	Y	Summary lengthened to give readers more information quickly.
Section One - Official Record of Adoption	Y	The plan was newly adopted by the County and Duckwater Shoshone Tribe.
Section Two - Introduction	Y	Background information regarding the uniqueness of the County was added.
Section Three - Community Description	Y	Updated to include detailed descriptions of the unique areas of the County.
Section Four - Planning Process	Y	Completely revised to represent efforts during the 2012 HMP update.
Section Five - Risk Assessment	Y	A new format was utilized. New ranking was generated.
Section Six - Capability Assessment	Y	Minor changes; Duckwater data included.
Section Seven - Mitigation Strategy	Y	Updated to include new hazards and make modifications to existing.
Section Eight - Plan Maintenance	Y	Minor changes; Determination of group involvement that HMP needs to be reviewed and updated regularly, on yearly basis.
Section Nine - References	Y	Updated to reflect new references used to update the current plan.
Appendix A - Hazard Mitigation Communications	Y	Adoption changed to Appendix D. Communications added to Appendix A.
Appendix B - Figures	Y	New figures added to include Duckwater and newly identified risks and hazards.
Appendix C - Stakeholders Letters and Public Outreach	Y	Included in section 4.3 and Appendix C Changed to Stakeholder Letter.
Appendix D - Resolution of Adoption	Y	Changed to Resolution of Adoptions New notices made for the County news outlets and stakeholders.
Appendix E - Previous Potential Action Items Status	Y	New
Appendix F – Review Tool	Y	New Review Tool included.

4.6 INCORPORATION OF EXISTING PLANS AND OTHER RELEVANT INFORMATION

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

Plans

Pahrump Regional Planning District: Master Plan Update (Nye County and Tri-Core Engineering 2003) and Duckwater Comprehensive Plan 2001 lists goals, objectives, and policies to guide land use planning and recommendations for amending the existing zoning code. This plan is divided into 21 sections, including: geotechnical; water; flood control and drainage; seismic; and safety.

Pahrump Regional Planning District: Drainage and Flood Control Capital Improvement Plan FY 2006–2015 (Nye County and Tri-Core Engineering 2005) - Provides flood hazard identification, regulation, remediation, and education to Nye County residents about floods and flood hazards. Enables County to prioritize flood control and infrastructure needs.

Programs

National Flood Insurance Program

Nye County 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 in Nye County.

Ordinances and Policies

Nye County Code Title 17 - Outlines regulations within zoning districts, variances, and general development standards within the Pahrump Regional Planning District.

Duckwater

Plans

Master Plan 2005 - Lists goals, objectives, and policies to guide land use planning and recommendations for amending the existing zoning code. Includes policy on flood zones and earthquake.

Emergency Operations Plan (Draft) - Provides preparedness information. Includes Hazardous Materials and Mitigation Planning information.

Ordinances and Policies

Requirement to comply with the Nye County Code Title 17 - Outlines regulations within zoning districts, variances, and general development standards within the Pahrump Regional Planning District.

5.0 RISK ASSESSMENT

This section identifies and profiles the hazards that could affect the jurisdictions, assesses the risk of such hazards, describes the vulnerabilities, and estimates potential losses from the hazards. Each of these tasks is described in detail below.

In compliance with the DMA 2000, the requirements for the risk assessment are described below.

DMA 2000 Requirements: Risk Assessment – Overall

Risk Assessment

§201.6(c)(2): The plan **shall** include a risk assessment that provides the factual basis for activities proposed in the strategy to reduce losses from identified hazards. Local risk assessments must provide sufficient information to enable the jurisdiction to identify and prioritize appropriate mitigation actions to reduce losses from identified hazards.

Source: FEMA, July 2008.

A risk assessment requires the collection and analysis of hazard-related data to enable local communities to identify and prioritize appropriate mitigation actions that will reduce losses from potential hazards. There are five risk assessment steps in the hazard mitigation planning process, as outlined below and described in detail throughout the remainder of Section 5.

- ***Step 1: Identify and Screen Hazards***

Hazard identification is the process of recognizing natural and human-caused events that threaten an area. Natural hazards result from unexpected or uncontrollable natural events of sufficient magnitude to cause damage. Human-caused hazards result from human activity and include technological hazards and terrorism. Technological hazards are generally accidental or result from events with unintended consequences (for example, an accidental hazardous materials release). Terrorism is defined as the calculated use of violence (or threat of violence) to attain goals that are political, religious, or ideological in nature. Even though a particular hazard may not have occurred in recent history in the study area, all hazards that may potentially affect the study area are considered; hazards that are unlikely to occur, or for which the risk of damage is accepted as very low, are then eliminated from consideration. Once the hazards were screened, a vulnerability rating was assigned to each identified hazard that would continue on to the profiling process.

- ***Step 2: Profile Hazards***

Hazard profiling is accomplished by describing hazards in terms of history, magnitude, duration, frequency, location, and probability. Hazards are identified through 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 areas at risk.

- ***Step 3: Identify Assets***

Assets are defined as the population, buildings, and critical facilities and infrastructure that may be affected by hazard events. Asset information may be obtained from participating communities, the U.S. Census Bureau, and FEMA's HAZUS-MH software. Asset information is organized and categorized for analysis using Geospatial Information System (GIS).

- ***Step 4: Assess Vulnerabilities***

A vulnerability analysis predicts the extent of exposure that may result from a hazard event of a given intensity in a given area. The assessment 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.

- ***Step 5: Analyze Future Development Trends***

The final stage of the risk assessment process provides a general overview of development and population growth that is forecasted to occur within the study area. This information provides the groundwork for decisions about mitigation strategies in developing areas and locations in which these strategies should be applied.

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

5.1 HAZARD IDENTIFICATION AND SCREENING

DMA 2000 Requirements: Risk Assessment – Identifying Hazards

Identifying Hazards

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

Source: FEMA, July 2008.

The risk assessment process is the identification and screening of hazards, as shown in Table 9. An initial meeting was held with all members of the Task Force. During the meeting, the Task Force discussed possible hazards affecting the County.

The risk assessment process is the identification and screening of hazards, as shown in Table 9. During the first HMP meeting, the Planning Task Force identified 20 possible hazards with potential to affect the County. The Planning Task Force evaluated and screened the comprehensive list of potential hazards based on a range of factors, including prior knowledge or occurrence in the county, perception of the relative risk presented by each hazard, the ability to mitigate the hazard, and the known or expected availability of information on the hazard (see Table 9).

Table 9: Identification and Screening of Hazards.

Hazard	Should It Be Profiled?	Explanation
Avalanche	No	Nye County is not located in an area prone to frequent avalanches.
Civil Disturbance	Yes	Prisons within Nye County, drug raids, Yucca Mountain protests, and Las Vegas to Reno Race.
Drought	Yes	Statewide drought declarations were issued in 2002 and 2004.
Earthquake	Yes	Nye County contains several active fault zones.
Epidemic	Yes	Brucellosis and West Nile Virus outbreaks.
Extreme Heat	Yes	Extreme temperatures are known to occur, including heat waves with high humidity.
Flood	Yes	Flash floods and other flood events occur regularly during rainstorms.
Flood by Dam Failure	Yes	There are currently 52 active dams registered in the County and all have received a low hazard rating by the State of Nevada, Division of Water Resources.
Hailstorm	No	No significant historic events have occurred in the County.
Hazardous Material Event	Yes	Nye County has several facilities that handle or process hazardous materials. All preparedness, planning, response, and mitigation efforts pertaining to the Yucca Mountain Project are addressed separately from this plan.
Infestation	Yes	Africanized bees, mosquitoes, and crickets have been identified through various regions of the Nye County.
Infrastructure Disruption	Yes	Power outages, transportation interruptions, limited infrastructure.
Landslide	Yes	Limited access roads.
Land Subsidence	Yes	Local occurrences have been recorded.
Public Mining	Yes	Major mining operations and numerous abandoned mines.
Thunderstorm	Yes	Nye County is susceptible to thunderstorms. Previous events have caused damage to property.
Tornado	No	No significant historic events have occurred in the County.
Volcano	No	Nye County was historically very volcanically active, and many of the mountain ranges in the County comprise volcanic rocks. However, current volcanic activity is very low..
Wildland Fire	Yes	The terrain, vegetation, and weather conditions in the region are favorable for the ignition and rapid spread of wildland fires.
Windstorms	Yes	Nye County is susceptible to strong and severe winds. Previous events have caused damage to property.
Winter Storm	Yes	Nye County is susceptible to winter storms due to its mountainous environment in the north. Previous events have caused damage to property.
WMD / Terrorism	Yes	Nye County may become the evacuation site for Las Vegas, NV because of its proximity.

5.1.1 Duckwater Reservation Hazard ID and Screening

The Duckwater Shoshone Tribe completed a Hazard Vulnerability Assessment Worksheet (see Table 10). The ranking was performed by the Duckwater Tribe and the relative threat of the hazards in the worksheet was returned as a percentage. The hazards are shown in Table 10 below.

Table 10: Duckwater Hazard Vulnerability Assessment.

Hazard	Relative Threat
Wild Fire	83%
Electrical Failure	67%
Severe Thunderstorm	61%
Temperature Extremes	61%
Snow Fall	56%
Transportation Failure	44%
Sewer Failure	41%
Water Failure	41%
Blizzard	33%
Ice Storm	20%
Communications Failure	19%
Earthquake	17%
Flood, External	17%
Fuel Shortage	17%
Mass Casualty Event (medical/infectious)	13%
Fire Alarm Failure	11%
Epidemic	6%
Small Casualty Hazmat Event (<i>historic events with < 5 victims</i>)	6%
Civil Disturbance	4%

The Hazard Vulnerability Assessment from the Duckwater was utilized as input during the ranking of the hazards. Duckwater has natural spring water and do not feel drought effects in their area. A table detailing the correlation between Duckwater identified hazards and the County hazards is included in Table 11.

Table 11: Duckwater Hazard Comparison.

Duckwater Hazard Name	HMP Hazard Name
Wild Fire	Wild land fires
Electrical Failure	Infrastructure Disruption
Severe Thunderstorm	Thunderstorms
Temperature Extremes	Winter Storms
Snow Fall	Winter Storms
Transportation Failure	Infrastructure Disruption
Sewer Failure	Infrastructure Disruption

Duckwater Hazard Name	HMP Hazard Name
Water Failure	Infrastructure Disruption
Blizzard	Winter Storms
Ice Storm	Winter Storms
Communications Failure	Infrastructure Disruption
Earthquake	Earthquake
Flood, External	Floods
Fuel Shortage	Infrastructure Disruption
Mass Casualty Event (medical/infectious)	Terrorism / Epidemic
Fire Alarm Failure	Note**
Epidemic	Epidemic
Small Casualty Hazmat Event (<i>historic events with < 5 victims</i>)	HAZMAT
Civil Disturbance	Civil Disturbance

** This is addressed as an education goal under section 7.3, Goal 1.A.4.

5.2 ASSIGNING HAZARD RATINGS

The following criteria for prioritizing hazards likely to affect communities were utilized in the plan. Six criteria were used to evaluate each hazard. The six criteria are magnitude, duration, economic impact, area affected, frequency, and vulnerability.

DEC assigned the values given below for each criterion and performed an initial numerical analysis based on these values to arrive at the ranking used to categorize the screened hazards as Very High, High, Medium, Low, or Very Low risk.

5.2.1.1 Criterion One: Magnitude

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

- Size of event
- Life threatening nature of the event
- Economic impact of the event
- Threat to property including the following sectors: public; private; business and manufacturing; tourism; and agriculture.

Value:

1. Very Low - handled by community
2. Low - handled at Town level
3. Medium - handled at County level
4. High - State must be involved
5. Very High - Federal declaration needed

5.2.1.2 Criterion Two: Duration

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

- Length of physical duration during emergency phase
- Length of threat to life and property
- Length of physical duration during recovery phase
- Length of time affecting individual citizens and community recovery
- Length of time affecting economic recovery, tax base, business and manufacturing recovery, tourism, threat to tax base and threat to employment

Value:

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

5.2.1.3 Criterion Three: Economic impact

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

Distribution factors include the following:

- How widespread across the County are the effects of the disaster?
- Are all sectors of the community affected equally or disproportionately?
- How will the distribution of the effects prolong recovery from the disaster event?

Value:

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

5.2.1.4 Criterion Four: Area affected

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

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

To aid in the assessment of this criterion, hazard maps of some areas were prepared and used to determine the geographic extent of hazards and to define the approximate boundaries of areas at risk.

Value:

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

5.2.1.5 Criterion Five: Frequency

The frequency of the risk refers to the likelihood of recurrence of a hazardous event, based on historic occurrence and scientific data.

Value:

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

5.2.1.6 Criterion Six: Vulnerability

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

- History of the impact of similar events
- Mitigation steps taken to lessen impact
- Community and State preparedness to respond to and recover from the event

Value:

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

Planning Task Force members assigned a value of 1 through 5 for each hazard criterion and performed a follow-up numerical analysis based on these values to arrive at a ranking of the risk posed by each of the profiled hazards to the state. The Planning Task Force member rankings were discussed and compared with the DEC initial ranking to reach a consensus for each hazard ranking. The score given to the hazard by the county can be seen in Table 12 and ranking of Nye County and Duckwater can be seen in Table 13.

Table 12: Nye County Hazard Score

Hazard	Score
Wildland Fires	23
Drought	20
Floods	17
HAZMAT	16
Windstorms	15
Infrastructure Disruption	14
Earthquakes	13
Mining	13
Winter Storms	13
WMD/Terrorism	13
Epidemic	12
Civil disturbance	11
Land Subsidence	11
Thunderstorms	10
Infestations	9
Landslides	9
Flooding by dam	7

Table 13: Hazards and Ranking

Hazard	Nye County Rank	Duckwater Rank*
Wildland Fires	High	High
Drought	High	Medium
Floods	Medium	Low
HAZMAT	Medium	Low
Windstorms	Medium	Medium
Infrastructure Disruption	Medium	High
Earthquakes	Medium	Low
Mining	Medium	Low
Winter Storms	Medium	Medium
WMD/Terrorism	Medium	Low
Epidemic	Low	Low
Civil disturbance	Low	Low
Land Subsidence	Low	Low
Thunderstorms	Low	Medium
Infestations	Low	Low
Landslides	Low	Low
Flooding by dam	Low	Low

*Duckwater Ranking = Low < 33.3% , 33.3% < Medium < 66.6% , High > 66.6%
See Table 10: Duckwater Hazard Vulnerability Assessment

5.3 HAZARD PROFILES

The requirements for hazard profiles, 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, July 2008.

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

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

The hazards profiled for Nye County are presented in Section 5.3 from highest hazard potential to lowest hazard potential.

5.3.1 Wildland Fires

5.3.1.1 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. Nye County has particular issues with the wildland-urban interface.

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.

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

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

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

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

5.3.1.2 History

As shown in Table 14, there have been a number of small to moderate wildland fires recorded in Nye County over the past five years. Approximately half of these fires were due to lightning, while humans and unknown causes make up the remaining fifty percent of ignition sources.

Table 14: Summary of Fire History Data (in planning area), 2006-2010.

Year	Number of Fire Ignitions	Total Fire Acreage
2006	35	35,688
2007	11	104
2008	12	6,256
2009	11	2
2010	6	34

Source: Western Great Basin 2011.

5.3.1.3 Location, Extent, Probability of Future Events

The communities located in the northern portion of the County are generally at greater risk to wildland fires due to the fuel loading, ignition risk and topography. These communities include Ione, Manhattan, Amargosa Valley and Belmont. Extensive research on wildland fires in Nye County has been prepared by Resource Concepts Inc. (RCI). This research is referenced in the references section of this HMP. In addition an Ignition History, Fire History, and potentially at risk resources map has been included in Appendix B that was prepared by RCI.

Table 15: Community Risk and Hazard Assessment Results.

Community	Interface Classification	Interface Fuel Hazard Condition	Ignition Risk Rating	Community Hazard Rating
Amargosa Valley	Intermix	Low	Low	Moderate
Beatty	Intermix	Low	Low	Moderate
Belmont	Intermix	High to Extreme	High	High
Carvers	Intermix	Low to High	High	Moderate
Gabbs	Classic Interface, Intermix	Low to Moderate	Low	Moderate
Hadley (Round Mountain)	Classic Interface	Low	Low	Low
Ione	Intermix	Moderate to Extreme	High	Extreme
Manhattan	Intermix	High to Extreme	High	Extreme
Pahrump	Intermix	Low	Moderate	Low
Tonopah	Classic Interface	Low to Moderate	Low	Low

Source: RCI 2004

The extent, or severity, of wildland fires in each community in Nye County has been determined by RCI using a hazard ranking system of low to extreme seen in Table 15 above. 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, Ione and Manhattan have extreme fire hazard ratings, Amargosa Valley and Belmont have high hazard ratings, and Beatty, Carvers, and Gabbs have moderate hazard ratings.

The Duckwater Reservation will experience the same level of risk as the rest of Nye County with respect to wildland fires. The Duckwater area has the greatest threat of wildfire in the Railroad Valley area due to the refinery. No specific data is available to determine higher risk areas within the reservation than is outlined for the entirety of Nye County.

5.3.2 Drought

5.3.2.1 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:

1. 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.
2. Hydrological drought is related to the effects of precipitation shortfalls on stream flows and reservoir, lake, and groundwater levels.
3. Agricultural drought is defined principally in terms of soil moisture deficiencies relative to water demands of plant life, usually crops.
4. 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.

5.3.2.2 History

Nye County lies mostly within Nevada's South Central climate division 3. The very southern portion of the County is in division four. The drought data are reported from 1895 to the present by the National Climatic Data Center (NCDC). In the South Central division there were 31 observed months in the time span from 1895—2006 that were rated as Extreme Drought, -4 or less. The major drought years in this division were 1928, 1934, 1959, 1960, and 2002. The worst years were 1928 and 1934, in which seven out of twelve months were below -4, with May 1934 peaking out at -6.3. In 2012, Duckwater experienced a decline in their water tables and the availability of domestic water. Some of the springs dried up as well. There was no mitigation to this issue.

5.3.2.3 Location, Extent, and Probability of Future Events

Drought conditions are likely to continue to be an issue in Nye County. The areas that are most affected by drought conditions include agricultural and wildland areas in the central region of the County. Moderate to Severe drought conditions are likely to continue in the future.

The Duckwater Reservation is susceptible to drought like the rest of the County.

Climate change may be expected to lead to more frequent, longer duration and more extreme drought conditions in the future. Nevada's desert climate characterized by hot summers and low humidity may become more extreme. In addition, higher snow levels would lead to lower mountain snowpack and less spring and summer runoff, lessening water availability for farmland, ranchland, and natural vegetation.

5.3.3 Floods

5.3.3.1 *Nature*

This hazard affects the entire planning area. Flooding is the accumulation of water where there usually is none or the overflow of excess water from a stream, river, lake, reservoir, or 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:

1. Inundation of structures, causing water damage to structural elements and contents.
2. Erosion or scouring of stream banks, roadway embankments, foundations, footings for bridge piers, and other features.
3. 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.
4. Destruction of crops, erosion of topsoil, and deposition of debris and sediment on croplands.
5. 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 Nye County, 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.

Flow depths with alluvial fan flooding are generally shallow with damage resulting from inundation, variable flow paths, localized scour, and the deposition of debris. However, there are

numerous examples in Nye County where well-defined washes routinely channel flash flood waters (i.e., Wheeler Wash in Pahrump, Fortymile Wash in Amargosa Valley, etc.).

5.3.3.2 History

Historic floods are primarily associated with Wheeler Wash in the Pahrump Valley. FEMA flood maps of this area are included in Appendix B, Figure B-10 and B-11. The National Climate Data Center recorded eight significant flooding events that affected Nye County between 1995 and 2010. These flooding events are described below.

On March 12, 1995, a flash flood swept down the normally dry Fortymile Wash after up to 3 inches of rain fell during the night and early morning. A Department of Energy worker was carried 50 feet down the rain-swollen wash near Yucca Mountain before he was rescued.

On June 23, 1997, persistent thunderstorms over the Shoshone Mountains in northwest Nye County produced flash flooding along the washes traversing State Route (SR) 844. A culvert and part of the overlying road were washed out early in the day and then again while repairs were being made.

Heavy rain-producing thunderstorms rolled into the Pahrump Valley during the evening of September 2, 1997, and started a deluge that inundated the area for two straight days. Several state routes, including SR 160 and SR 372, were closed.

On September 3, 1997, a second day of heavy rain-producing thunderstorms led to more flash flooding in the Pahrump Valley. A state of emergency had been declared for Pahrump due to numerous road closures and damage caused by flooding. Property damages from this event were recorded at \$2.7 million.

On September 25, 1997, a considerably weakened Hurricane Nora reached southern Nevada. It produced over an inch of rain in many southern Nevada locations even though the core of the storm tracked across Arizona. Access to some outlying homes in Pahrump was cut off as flooded dirt roads became impassable.

On June 8, 1999, flash flooding closed several roads around the Pahrump Valley from mid to late morning. Flood depths were reported at 3–4 feet.

On June 19, 2003, flash flooding was observed in and around the Town of Pahrump. Nye County declared a disaster from this event, with \$250,000 in property damages reported.

On September 9, 2003, flash floods in Pahrump washed out some Nye County roads.

On October 20, 2004, Heavy rain caused some minor flash flooding in Pahrump. A trained spotter reported water to curb high on some streets.

On February 18, 2005, Heavy rains caused flooding along Highway 160 in Pahrump along with several other roads in the area.

On August 14, 2005, Streets flooded, including 1.5 feet of water over Highway 160.

On October 18, 2005, Streets flooded 2-3 feet deep.

On September 21, 2007, several roads were washed out in Pahrump. The co-op observer reported 2.7 inches of rain for the day. A strong low pressure system brought thunderstorms and heavy rain to the Mojave Desert.

On December 22, 2010, numerous roads were flooded. There was significant damage to one road and portions of the sewer system. A series of storms fueled by a tropical moisture tap produced heavy precipitation in the Mojave Desert and southern Great Basin for several days. Extremely heavy snow and widespread flooding resulted. Property damage from this event was recorded and is still being assessed.

There were no significant flood events that took place during 2011 and 2012 within the planning area.

5.3.3.3 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 gages, to determine the probability of occurrence for floods of different magnitudes. The probability of occurrence is expressed as a percentage for the chance of a flood of a specific extent occurring in any given year. However, climate change models often predict more extreme events of precipitation or droughts in which case, Nye County might expect changes in frequency, duration and magnitude from what has been seen historically.

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

1. Rainfall intensity and duration
2. Antecedent moisture conditions
3. Watershed conditions, including steepness of terrain, soil types, amount and type of vegetation, and density of development
4. The existence of attenuating features in the watershed, including natural features such as swamps and lakes and human-built features such as dams
5. The existence of flood control features, such as levees and flood control channels
6. Velocity of flow
7. 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.

The three major areas of flooding sources within Nye County are as follows:

1. Amargosa River, with a drainage area of 459 square miles and a 100-year peak discharge of 18,400 cubic feet per second (cfs). No current FEMA maps are available.
2. Areas to the east and west of Pahrump Valley, with sheetflows of 3 feet or less. Flooding problems in Pahrump are aggravated by alluvial fans and lack of flood control infrastructure through the town center.
3. Wheeler Wash, with a drainage area of 78.6 square miles and a 100-year peak discharge of 13,080 cfs. Refer to figures B-14a & B-14b.

Nye County tends to receive the most rainfall (and therefore has the greatest chance for flooding) between July and September, when convective monsoonal storms over southern Nevada are most prevalent.

Other than the great flood in the 1970's (due to snow melt), no significant flooding has occurred in the Duckwater Reservation. There is currently no FEMA identified flood map available.

5.3.4 Hazardous Materials Events

5.3.4.1 Nature

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

Hazardous material releases may occur from any of the following:

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

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

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

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

5.3.4.2 History

The NRC web-based query system of non-Privacy Act data shows that since 1999, 47 oil and chemical spills have occurred within the planning area. Of these spills, over half occurred at fixed locations, such as a leach pad or drums at a landfill. Twelve events, considered to be “controlled releases” at the NNSS occurred in closed, sealed underground vessels.

Table 16: EPA-Regulated Facilities in the Planning Area

Location	Permitted Discharges to Water	Toxic Releases Reported	Hazardous Waste Handler	Active or Archived Superfund	Air Releases Reported
Amargosa	3	0	2	1	0
Beatty	1	3	10	0	0
Gabbs	0	0	2	1	0
Pahrump	3	3	14	1	0
Round Mountain	0	1	3	0	1
Tonopah	1	3	18	0	1

In addition to oil and chemical spills, the EPA has recorded four airborne hazardous material releases and eight toxic releases within the planning area (see Table 16). These releases occurred in every town in the planning area, except Amargosa Valley.

As previously discussed, the underground nuclear weapons testing conducted at the NNSS has left contaminated significant water resources in Nye County. Although treatment of this radioactively contaminated groundwater is not currently feasible, and access to the water resources is restricted by virtue of the controlled access to the NNSS, it is important the contamination be recognized. Buqo (2004) states that an estimated five million acre-feet (or more) of groundwater is contaminated at the NNSS and lost to Nye County in perpetuity.

5.3.4.3 Location, Extent, and Probability of Future Events

The EPA regulates 57 facilities within the County that are permitted to discharge to water or handle hazardous waste; have reported toxic releases or air releases; or are active and/or archived Superfund sites. Thirty-nine of the fifty-seven EPA-regulated facilities handle hazardous waste. However, while several of the small, fixed facilities (e.g., body shops) have varying uses of hazardous chemicals, in general these facilities do not pose a significant risk to the County.

In addition to fixed facilities, hazardous material events have the potential to occur along Interstate 95, SR 160, SR 372, and SR 373. The trucks that use these transportation arteries commonly carry a variety of hazardous materials including gasoline, cyanide, other crude oil derivatives, and other chemicals known to cause human health problems.

Comprehensive information on the probability and magnitude of hazardous material events from all types of sources (such as fixed facilities or transport vehicles) is not available. Wide variations among the characteristics of hazardous material sources and among the materials themselves make such an evaluation difficult. The HMP will discuss the exposure of population, buildings, and critical facilities should an event occur. Of the facilities that were required to file

an annual EPA Tier II Material Inventory Report in Nye County because of the presence of hazardous materials, one was identified as having EHSs. The substances recorded at these facilities include common hazardous substances, mainly sulfuric acid. EHSs, as shown in Appendix B, Figure B-3, pose the greatest risk for causing catastrophic emergencies. Areas at risk for hazardous material events include any area within a 1-mile radius of Interstate 95, SR 160, SR 372, SR 373, and EHS fixed facilities.

Duckwater Tribe is at moderate risk to Hazardous Materials along Highway/roadway 379. Although this is a dirt road, it is used by hazardous material transporters to shorten the route between Highway 50 and Highway 6.

5.3.5 Windstorms

5.3.5.1 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.

5.3.5.2 History

Between 1994 and 2011, a total of 111 severe windstorms and 4 strong windstorms were reported in Nye County by the National Center Data Center. The severe winds reported were independent or in advance of thunderstorm activities. These storms caused over a million dollars in property damage. In addition, five people were report injured from severe windstorms. Windstorms have been common events in the Great Basin Region. These storm events have been the cause of many damaged power lines, roof top damage, poor visibility, structural damage, and crop damage in the planning area. Winds are usually strongest in the afternoon and evenings.

5.3.5.3 Location, Extent, and Probability of Future Events

Severe wind events in Nye County 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 Nye County. However, Nye County has recorded severe winds speeds of 80–100 mph during a Nevada low event.

In addition to the Nevada low, the southern portion of Nye 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.

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

Similar windstorm events are likely to occur in the Duckwater Reservation.

5.3.6 Earthquakes

5.3.6.1 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).

5.3.6.2 History

The first recorded earthquake in planning area occurred on December 20, 1932, at Cedar Mountain. This earthquake was recorded as a severe MMI XII event. Over 20 years later, a moderate MMI VI earthquake was recorded on July 6, 1954, in Gabbs. Only six months later, on December 16, 1954, an MMI IX earthquake was felt in Beatty. Refer to appendix B for specific maps.

In recent years, the M 5.6 Little Skull Mountain earthquake occurred at the NNSS on June 29, 1992. This earthquake, the largest ever recorded at the site, is thought to have been triggered by an M 7.0 earthquake that occurred in Landers, California, 24 hours earlier. On August 1, 1999, an M 5.7 earthquake occurred near Scotty's Junction, 34 miles northwest of Beatty. Although it was reported that the epicentral area shook quite hard, no reports of significant damage or injuries were reported in this relatively unpopulated area. It should be noted that repeated, clustered, low-magnitude (< M 4.0) earthquakes are often recorded along the Rock Valley fault zone in the NNSS. See Figure B-8, Earthquakes in Nevada 1840 – 2008 (Nevada Seismology Laboratory).

The Duckwater Reservation has no record of any earthquakes greater than M 5.0 occurring within several miles of the reservation.

5.3.6.3 Location, Extent, and Probability of Future Events

The planning area 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 and around the planning area. Although relatively small in size, these fault zones are capable of delivering M 6.0–7.0 earthquakes. Well-documented faults in this area include Rocky Valley, Pahrnat, Cane Spring, Timpahute, Frenchman Mountain, Whitney Mesa, Cashman, Decatur, Eglington, and West Charleston. In addition, larger faults, such as the 60-mile Pahrump Valley fault (potential M 6.9–7.2) located in southern Pahrump Valley and the 71-mile Death Valley Fault (potential 6.5–7.3) and 111-mile Furnace Creek Fault (potential M 6.8–7.6) in Death Valley, pose as great seismic hazards to the planning area. Table 17 details the probability of earthquakes likely to occur in the following County Communities.

Table 17: Probability of Earthquakes

	% of Probability of magnitude greater than				
Nye County	5.0	5.5	6.0	6.5	7.0
Tonopah	70-80	~50	20-30	5-10	<1
Beatty	70-80	~55	30-40	20-30	10-12
Gabbs	90	~65	40-50	20-25	6-8
Pahrump	30-40	~25	5-10	3	<1
Duckwater (Eureka Data best available)	40-50	~30	10-15	4-6	<0.5

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

Additionally, Nye 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.

Although the planning area has not been a priority for seismic monitoring, FEMA’s “HAZUS 99 Estimated Annualized Earthquake Losses for the United States” suggests that a Northridge-sized M 6.5 or greater earthquake will occur in the Las Vegas metro area (including Nye County) once every 300 years.

5.3.7 Winter Storms

5.3.7.1 Nature

Winter storms can bring heavy rain or snow, high winds, extreme cold, and ice storms. In Nevada, winter storms begin with cyclonic weather systems in the North Pacific Ocean or the Aleutian Islands that can cause massive low-pressure storm systems to sweep across the western states. Winter storms plunge southward from arctic regions and drop heavy amounts of snow and ice. The severity of winter storms is generally minor. However, a heavy accumulation of ice can create hazardous conditions. Additionally, a large winter storm event can also cause exceptionally high rainfall that persists for days, resulting in heavy flooding.

5.3.7.2 History

The National Climate Data Center identified 36 major winter storms in Nye County between 1996 and 2011. Outlined below are a few of the major events that have occurred in the past five years:

An El Nino-enhanced storm hit south-central and southern Nevada on February 23, 1998. Much of northern Nye County above 6,000 feet saw a foot or more of snow in 18 hours. Manhattan (7,100 feet), 50 miles north of Tonopah, reported 14 inches of new snow. The Spring Mountains of extreme southern Nevada were blanketed with heavy snow. Mount Charleston received 20 inches of new snow, and the Lee Canyon ski area received around 30 inches. In Nye County, the 24-hour snowfall at the 6,000-foot level, near Pioche, was 20 inches. Many power poles were downed, and several tractor-trailers jackknifed on the summit of Highway 93 between Panaca and Pioche. Reported property damages from this storm totaled \$50,000.

On January 1, 2006, Dyer received 8 inches of snow. During the early morning hours of January 3rd, icy roads contributed to three separate car crashes on Highways 95 and 6 in Esmeralda County, within one fatality (indirect) and six injuries. This resulted in the declaration of a Federal emergency (FEMA 3202, 3204).

On January 19, 2010, a triple-trailer 18-wheeler rolled on icy U.S. Highway 95 at Esmeralda County milepost 19. A series of four Pacific storms pounded the Mojave Desert and southern Great Basin between January 18th and 21st with heavy rain and snow (which led to river flooding), locally high winds, and isolated severe thunderstorms. Reported property damages from this storm totaled \$50,000.

On January 21, 2010, three separate one-vehicle crashes occurred on U.S. Highway 95 in Esmeralda County due to icy road conditions. A series of four Pacific storms pounded the Mojave Desert and southern Great Basin between January 18th and 21st with heavy rain and snow (which led to river flooding), locally high winds, and isolated severe thunderstorms. Reported property damages from this storm totaled \$75,000.

5.3.7.3 Location, Extent, and Probability of Future Events

Winter storms in Nye County generally occur at higher elevations, such as the numerous northern mountain ranges including the Toiyabe Range, Monitor Range, Hot Creek Range, and the Grant Range. As shown in Appendix B, Figure B-5, areas with elevations between 5,000 – 7,999 feet are at moderate risk to winter storms while areas with elevations of 8,000 feet and above are at high risk to winter storms. Snowfall accumulation in the northern parts of the County can often be between 8-24 inches over a 24-hour period. Heavy snowfall events are generally associated with a strong-frontal system or El Nino event.

The Duckwater Reservation is likely to experience strong winter storms that are likely to occur in the northern regions of Nye County.

5.3.8 Epidemic

5.3.8.1 Nature

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

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

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

In 2010 the CDC contributed over \$7 million to the state of Nevada for the control of infectious diseases and over \$54 million in total funds for other health related programs. The main infectious diseases incorporated in the funds include: HIV/AIDS, influenza, section 317 immunization program, sexually transmitted diseases, tuberculosis, vector-borne disease, and viral hepatitis.

5.3.8.2 History

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

West Nile Virus (WNV), a seasonal infection transmitted by mosquitoes, caused an epidemic which grew from an initial U.S. outbreak of 62 disease cases in 1999 to 4,156 reported cases, including 284 deaths, in 2002 (Centers for Disease Control and Prevention, July 8, 2003).

Severe acute respiratory syndrome (SARS), which is estimated to have killed 916 and infected 8,422 worldwide by mid-August 2003 (World Health Organization, August 15, 2003). In the U.S., there were 175 suspect cases and 36 probable cases, although no reported deaths (Centers for Disease Control and Prevention, July 17, 2003).

Although most cases go unrecognized, Norovirus is believed to affect over 20 million persons in the U.S. each year. Norovirus accounts for 96 percent of all non-bacterial outbreaks of gastroenteritis (Arizona Department of Health Services, March/April 2003).

Although there are no reported epidemics in the planning area, Table 18 provides historical outbreaks in the State of Nevada.

Table 18: Historic Occurrences of Epidemics Registered in Nevada.

Date	Details
February 1992	Cholera outbreak confirmed. At least 26 passengers from Aerolineas Argentinas Flight 386 that brought a cholera outbreak to Los Angeles traveled on to Las Vegas, where 10 showed symptoms of the disease. Cholera or cholera-like symptoms developed in 67 passengers of Flight 386.
Spring 2000	Five cases of the measles confirmed. Outbreak identified and confirmed, Clark County Health District (CCHD) Office of Epidemiology (OOE) worked with the Immunization Clinic and the media to alert the community about the prevention of the spread of the disease.
October 2004	Norovirus confirmed at a major public accommodation facility on the Strip. Details regarding the spread of this disease and the exact number affected are still under investigation and pending at time of print of this plan.
2004	During October 13-19, a total of 200 cases of human West Nile Virus were reported in 20 states, which included Nevada. During 2004, 40 states including Nevada reported a total of 2,151 cases of human West Nile Virus.
Fall 2004	Chickenpox (varicella) outbreak in Clark County, Nevada elementary school. 32 students from all grades were infected.
Spring 2005	Southern Nye County, West Nile Virus Outbreak. Due to this outbreak the Nye County Mosquito Vector Control Program was implement.

Date	Details
April 2006	Norovirus outbreak at a Reno, Nevada daycare, Noah's Ark. 30 Norovirus cases were confirmed. 2 additional people were infected after the daycare had been cleaned and sanitized.
March 2007	A norovirus outbreak in Las Vegas, Nevada sickened at least 215 inmates and 41 staff members at the Clark County Detention Center. Most of those sickened complained of stomach-related distress such as diarrhea, vomiting and cramps. None were hospitalized.
2009 - 2010	The novel H1N1 influenza virus became a global pandemic and in Nevada thousands of people were infected leading to 40 deaths in the state and 1 death in the planning area.
2011	There has been a significant outbreak of whooping cough "pertussis" in the planning area.

Source: Nevada State Health Division

5.3.8.3 Location, Extent, and Probability of Future Events

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

Epidemics constitute a significant risk to the population of Southern Nevada, particularly as it relates to the frequency in which the Nye County population travels to and around neighboring Clark County. Of highest concern is along the Las Vegas Strip, in various entertainment venues, and McCarran International Airport. Clark County has ten of the largest hotels in the world, showrooms and arenas that can accommodate from a few hundred to more than 17,000 people, a motor speedway that seat over 130,000 race fans, and thousands of food establishments (Las Vegas Convention and Visitor's Authority, 2005). The transient nature of the Clark County population, coupled with dense population gatherings increase the potential for an epidemic as well as for its spread into neighboring counties.

An epidemic in Clark County or the planning area would affect a regional response requiring coordination among local, county, state and federal agencies. Segments of the population at highest risk for contracting an illness from a foreign pathogen are the very young, the elderly, or

individuals who currently experience respiratory or immune deficiencies. These segments of the population are present throughout both the planning area and Clark Counties.

The Duckwater Tribe has a minimal chance of a serious outbreak occurring on the reservation due to the remote nature of the tribe. If such an outbreak were to occur within the County and spread to the tribe it would be at a high risk due to the limited amount of fully trained medical personnel and medical equipment available.

5.3.8.4 *Warning Time*

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

The NSHD Office of Epidemiology (OOE) conducts surveillance of communicable disease occurrences in Nye County. They also implement control measures and develop reports as mandated by Nevada Revised Statutes (NRS), as well as receive and investigate complaints from the public regarding possible food borne illness.

5.3.9 Land Subsidence

5.3.9.1 *Nature*

In the southwestern United States, agricultural and urban areas that depend on groundwater pumping are prone to land subsidence. Non-recoverable land subsidence occurs when declining water levels lead to inelastic water compaction. A lesser amount of subsidence occurs with the recoverable compression of coarse-grained sands and gravel deposits. A common feature that accompanies subsidence is earth fissures, which are tension cracks in the sediment above the water table.

5.3.9.2 *History*

Land subsidence has been documented in Nye County since the early 1980s, when fissures in the Town of Pahrump were first observed and mapped. However, land subsidence most likely began to occur in the mid to late 1950s, when pumpage rates for irrigated land began to exceed the perennial yield of the aquifer. Land subsidence has been documented at 14 USGS and Nevada Department of Transportation Pahrump Valley monument stations from 1981 to 2004. During

this period, many homes in the Pahrump Valley have displayed subsidence failure, including cracked and uneven foundations and cement pads.

5.3.9.3 Location, Extent, and Probability of Future Events

In Nye County, land subsidence has been documented in the Pahrump Valley (see Appendix B, Figure B-4). Four large fissures (approximately 1 mile long) are present to the south and southeast of the Town of Pahrump. Moreover, interferometric synthetic aperture radar (InSAR) evidence indicates that the greatest degree of subsidence has occurred in three major areas of Pahrump: the southern portion of town, along SR 160, and in the area of the western fissure zone.

The 14 monument stations placed around the valley have shown subsidence to range from 1 inch to 18 inches over the past 24 years. InSAR data suggest a maximum subsidence rate in the near future of 1.5 inches to 2.0 inches a year. However, because there is no source of artificial recharge for the Pahrump Valley aquifer, this problem may become more severe if overdrafting as a practice continues or grows.

5.3.10 Thunderstorms

5.3.10.1 Nature

Thunderstorms are formed from a combination of moisture, rapidly rising warm air, and a force capable of lifting air, such as warm and cold fronts or a mountain. A thunderstorm can produce lightning, thunder, and rainfall and may also lead to the formation of tornados, hail, downbursts, and microbursts of wind. Thunderstorms may occur singly, in clusters, or in lines. As a result, it is possible for several thunderstorms to affect one isolated location in the course of a few hours.

Most commonly associated with thunderstorms are thunder and lightning. Lightning occurs when the rising and descending motion of air within clouds produce a separation of positively and negatively charged particles. This separation produces an enormous electrical potential both within the cloud and between the cloud and the ground. Lightning results as the energy between the positive and negative charge areas is discharged. As the lightning channel moves through the atmosphere, heat is generated by the electrical discharge to the order of 20,000 degrees (three times the temperature of the sun). This heat compresses the surrounding clear air, producing a shock wave that then decays to an acoustic wave as it moves away from the lightning channel, resulting in thunder.

In addition, hail can occur as part of a severe thunderstorm. Hail develops within a low-pressure front as warm air rises rapidly in the upper atmosphere and is subsequently cooled, leading to the formation of ice crystals. This cycle continues until the hailstone is too heavy to be lifted by the updraft winds and falls to the earth. The higher the temperature at the earth's surface, the stronger the updraft, thereby increasing the amount of time the hailstones are developed. As hailstones are suspended longer within the atmosphere, they become larger. Other factors

impacting the size of hailstones include storm scale wind profile, elevation of the freezing level, and the mean temperature and relative humidity of the downdraft air.

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

5.3.10.2 History

Historically, scattered and isolated thunderstorms develop in the southern portion of the County during the summer months. The National Climate Data Center has recorded 25 major thunderstorms in the planning area since 1959. However, the number of recorded thunderstorms is low due to the sparse population witnessing these events. Fifteen of these severe events were recorded during the months of July and August. Lightning caused the death of a sixteen year old trying to replace the tire of the family's vehicle on July 7, 2006.

5.3.10.3 Location, Extent, and Probability of Future Events

Within Nye County there are three weather stations available that reported thunderstorm events during the time frame of 1942 - 2006. The reporting stations are Yucca Flats, Tonopah and Mercury Desert Rock AP, with Tonopah spanning the entire time frame. These events were recorded hourly, so some days could have several readings for thunderstorm activity. A summary of the two stations events by type break down as follows:

- Dry Thunderstorms - 1753
- Thunderstorms w/o Hail - 872
- Thunderstorms w/ Hail - 3
- Heavy Thunderstorms w/o Hail - 28
- Total Hourly recordings – 2656

The majority of these observations were made at the Elko AP station. These numbers equate to nearly **42 thunderstorms per year**, with roughly **66% being reported as dry thunderstorms**; which are a great concern for fire ignition.

The potential for thunderstorms occurs throughout the year in Nye County, but most commonly during the summer months, from late July through mid-September, in the afternoon and evening (see Table 19). It is during this time, known as the summer monsoon season, when flows of warm, moist air from Mexico collide with high-pressure systems over the Four Corners and low-pressure systems over southern Nevada, including the Pahrump Valley. As a result, intense thunderstorms can develop in southern Nye County. These monsoon-driven events are capable of producing severe winds, thunder and lightning, hail, tornadoes, heavy rains, and accompanying flash flooding. In Nye County, thunderstorms have been known to produce .75- to 1.5-inch

hailstones, tornadoes with 40–70 mph gusts, lightning, and intense rain that can cause flash flooding 3–4 feet deep.

Table 19: Mean Monthly and Annual Number of Thunderstorms in Nye County.

	J	F	M	A	M	J	J	A	S	O	N	D	Total
Nellis Air Force Base	*	1	1	1	1	1	4	4	2	1	1	*	17
Tonopah Test Range	*	1	1	2	3	4	5	7	2	1	1	1	28

Note: * indicates less than 1 average

Source: Western Regional Climate Center 2011

Climate change may be expected to lead to more severe weather conditions in the future.

5.4 ASSET INVENTORY

The third step in the risk assessment process is the identification of assets that may be affected by hazard events. Assets identified for the risk assessment include population, buildings, and critical facilities and infrastructure that may be affected by hazards or events. The assets identified are discussed in detail below. Sections 5.4.1 and 5.4.2 provide a complete list of assets and insurance or replacement values where applicable.

5.4.1 Population and Building Stock

Population data was obtained from the 2010 U.S. Census. Data were collected at the census block level for the planning area, and the total population for 2010 was 43,946, as shown in Table 20. Population density throughout the planning area is shown in Appendix B, Figure B-6.

Table 20: Planning Area Population and Building Inventory.

	Population	Residential Buildings		Nonresidential Buildings	
	2010 Census Population Count	Total Building Count	Total Value of Buildings (x\$1000)	Total Building Count	Total Value of Buildings (x\$1000)
Nye County	43,946	15,924	1,890,108	926	667,219
Duckwater	143	86	3,440	8	965

Estimated numbers of residential and nonresidential buildings and replacement values for those structures, shown in Table 20, were obtained from HAZUS-MH by census block. A total of 15,924 residential buildings 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 926 nonresidential buildings were also analyzed, including industry, retail and wholesale trade, personal and repair services, professional and technical services, religious centers, entertainment and recreational facilities, theaters, and parking facilities.

5.4.2 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 planning area and fulfilling important public safety, emergency response, and disaster recovery functions. The critical facilities are listed in Table 21 and shown in Appendix B, Figure B-7.

Table 21: Critical Facilities and Infrastructure.

Category	Type	Number	Estimated Replacement Cost
Critical Facilities	Police Stations	5	\$7,630,000
	Fire Stations	15	\$19,838,000
	EOCs	2	\$692,571,000
	Public Primary and Secondary Schools	17	\$107,201,000
	Urgent Care Facilities	6	\$22,890,000
	Hospitals	2	\$7,030,000
	Ambulance Facilities	8	\$7,630,000
	Government Buildings	7	\$1,400,000
	Senior Centers	4	\$300,000
	Propane Storage Facilities	4	\$200,000
	Communication Facilities	2	\$109,000
Infrastructure	State and Federal Highways (miles)	1,058	\$5,292,000
	Airport Facilities	5	\$85,208,000
	Bridges	6	\$3,326,000
	Culverts	15	\$1,663,000

Source: FEMA HAZUS-MH

Table 22: Duckwater Critical Facilities and Infrastructure.

Category	Type	Number	Estimated Replacement Cost
Critical Facilities	Police Stations	1	\$75,000
	Fire House	1	\$10,000
	Public Primary and Secondary Schools	1	\$80,000
	Health Clinic	1	\$300,000
	Government Buildings	4	\$380,000
	Senior Center	1	\$75,000
	Tribal Shop	1	\$45,000
Infrastructure	State and Federal Highways (miles)	26	\$138,463
	Bridges	6	\$3,326
	Culverts	4	\$440

Source: FEMA HAZUS-MH

Similar to critical facilities, critical infrastructure are defined as infrastructure that is essential to preserving the quality of life and safety in the County. Critical infrastructure identified within the planning area is shown in Table 21 and Appendix B, Figure B-7.

5.5 VULNERABILITY ASSESSMENT

The fourth step of the risk assessment and its primary intent is the vulnerability assessment. This section includes an overview of the vulnerability assessment, methodology, data limitations, and exposure analysis.

5.5.1 Overview of a Vulnerability Assessment

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

- A summary of the community's vulnerability to each hazard that addresses the impact of each hazard on the community.

DMA 2000 Requirements: Risk Assessment, Assessing Vulnerability, Overview

Assessing Vulnerability: Overview

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

Element

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

Source: FEMA, July 2008.

- An identification of the types and numbers of existing vulnerable buildings, infrastructure, and critical facilities and, *if possible*, the types and numbers of vulnerable future development.

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

Assessing Vulnerability: Identifying Structures

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

Element

Does the 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 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, July 2008.

- Estimate of potential dollar losses to vulnerable structures and the methodology used to prepare the estimate.

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

Assessing Vulnerability: Estimating Potential Losses

Requirement §201.6(c)(2)(ii)(B): [The plan **should** describe vulnerability in terms of an] estimate of the potential dollar losses to vulnerable structures identified in paragraph (c)(2)(i)(A) of this section and a description of the methodology used to prepare the estimate.

Element

- Does the plan estimate **potential dollar losses** to vulnerable structures?
- Does the plan describe the **methodology** used to prepare the estimate?

Source: FEMA, July 2008.

5.5.2 Methodology

The methodology used to prepare the dollar estimates for vulnerability is described below. Potential dollar losses are summarized in Table 23 and Table 24 in Section 5.5.4.

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 HAZUS-MH. 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.

For the Duckwater Reservation, infrastructure and corresponding replacement costs were provided by the Tribe.

5.5.3 National Flood Insurance Program

Nye County is a participant of the National Flood Insurance Program (NFIP) and has passed a resolution requiring new construction to conform to building standards set by the NFIP. In order to insure the continued participation of the program the County and Duckwater will be required to review the FEMA guidelines for participation and insure that these communities address the requirements outlined in the future.

5.5.4 Repetitive Loss Properties

State officials were contacted regarding the existence of repetitive loss properties in the jurisdictions. There are no reported repetitive loss properties in the County or the Duckwater reservation, and no National Flood Insurance Program (NFIP) defined repetitive loss properties.

5.5.5 Unreinforced Masonry Buildings

University of Nevada, Reno has a contract with Advanced Data Solutions to inventory the unreinforced masonry buildings within the State. During the writing of this update the data was made available. The report showed that 22 Commercial Buildings (283K sq ft) and 228 residential buildings (923K sq ft) were constructed of un-reinforced masonry. These buildings would have significantly more damage during an earthquake than other buildings. Unreinforced masonry buildings accounted for 283K square feet or \$49M (using \$175/sqft) in commercial buildings and 923K square feet or \$107M (using \$116/sqft) in residential buildings. The data from the report can be used by the County to identify and target structures for reinforcement. UNR will be using the data to up-grade information for the HAZUS runs and it is recommended that the County incorporate the information for the next plan update.

5.5.6 Data Limitations

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.

At the time of this writing Nye County did not possess a GIS database of hazards. The resulting analysis was compiled to the highest degree possible with the hardware, software and data availability limitations discovered during plan preparation. There are situations in which the data returned by the HAZUS program was known to be incorrect or had an analysis failure. When HAZUS data was unavailable, best available data was 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.

5.5.7 Exposure Analysis

The results of the exposure analysis are summarized in Table 23 and Table 24 and in the discussion below. The results in this exposure analysis were greatly affected by the hardware, software and data availability limitations described above.

Table 23: Potential Hazard Vulnerability Assessment – Population and Buildings.

Hazard	Population	Buildings			
		Residential		Nonresidential	
	Number	Number	Value (\$) ¹	Number	Value (\$) ¹
Nye County					
Earthquake – 100yr Magnitude 5	7,100	1,900	5,943	78	1,980
Flood - 100-Year Flood Zone ²	3,445	1,378		101	
Flood – Dam Failure					
Hazardous Materials Event – 1-mile radius EHS facilities	0	0	0	0	0
Hazardous Materials Event – 1-mile radius hazardous facilities	20	9	740.25	0	0
Hazardous Materials Event – 1-mile buffer transport corridors	6,611	2,757	227,452	12	32,400
Land Subsidence	24,631	10,216	840,226	38	102,577
Thunderstorms	24,631	10,216	840,226	38	102,577
Wildland Fires - High	103	75	6,168.75	0	0
Wildland Fires - Extreme	63	71	5,839.75	2	5,400
Windstorms	43,946	15,924	1,89,108	926	667,219
Winter Storms - Moderate	5,559	2,336	192,136	20	54,000
Winter Storms - High	313	196	16,121	1	2,700
Duckwater Tribe					
Earthquake – 100yr Magnitude 5		0		2	
Flood - no FIRM maps available	0	1	40,000	0	0
Flood – Dam Failure	0	0	0	0	0
Hazardous Materials Event – 1-mile radius EHS facilities	n/a				
Hazardous Materials Event – 1-mile buffer transport corridors		86		8	
Land Slide		1	40,000		
Thunderstorms	0	0	0	0	0
Wildland Fires - High					
Wildland Fires - Extreme		86		8	
Windstorms		86		8	
Winter Storms - Moderate	0	0	0	0	0
Winter Storms - High					

¹ Value = Estimated value (x1000)² Pahrump Valley only

Table 24: Potential Hazard Vulnerability Assessment – Critical Facilities.

	Police Stations		Fire Stations		EOCs		Urgent Care Facilities		Schools		Communication Facilities		Ambulance Facilities	
Hazard	Number	Value (\$) ¹	Number	Value (\$) ¹	Number	Value (\$) ¹	Number	Value (\$) ¹	Number	Value (\$) ¹	Number	Value (\$) ¹	Number	Value (\$) ¹
Nye County														
Earthquake - 100yr Magnitude 5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Flood - 100-Year Flood Zone ²	0	0	0	0	0	0	0	0	1	1,336	0	0	0	0
Hazardous Materials Event – 1-mile radius EHS facilities	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hazardous Materials Event – 1-mile buffer transport corridors	2	3,052	3	1962	1	923.4	4	33,040	6	8,016.3	2	218	4	1,962
Land Subsidence	1	1,526	1	654	1	923.4	3	24,780	7	9,352.3	0	0	4	1,962
Thunderstorms	1	1,526	1	654	1	923.4	3	24,780	7	9,352.3	0	0	0	0
Windstorms	3	4,578	3	1,962	2	1,846.8	7	57,820	18	24048.9	2	218	0	0
Winter Storms - Moderate	2	3,052	6	3,924	1	923.4	2	16,520	10	13,360	2	218	5	2,452.5
Duckwater Tribe	Police Stations		Fire House		Government Bldgs		Health Clinic		Schools		Tribal Shop		Senior Center	
Earthquake - 100yr Magnitude 5	0	0	0	0	1	40	0	0	1	80	0	0	0	0
Flood - No Firm Maps	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hazardous Materials Event – 1-mile buffer transport corridors	1	75	1	10	4	380	1	300	1	80	1	45	1	75
Thunderstorms	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Windstorms	1	75	1	10	4	380	1	300	1	80	1	45	1	75
Winter Storms - Moderate	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Wildland Fire	1	75	1	10	4	380	1	300	1	80	1	45	1	75

¹ Value = Estimated value (x1000)

² Pahrump Valley only

5.5.7.1 Civil/Social Disturbance

Civil disorder is a human caused phenomenon. All communities are susceptible to civil disturbances. Due to the variable occurrence of civil disturbances, it is difficult to determine when and where they might happen in the future. Considering historical events, this hazard has a low probability of occurring.

5.5.7.2 Drought

According to the U.S. Seasonal Drought Monitor, the entire area of Nye County is at equal risk to a drought event. Therefore, all people located within the County are equally susceptible to this hazard.

5.5.7.3 Earthquakes

Using HAZUS's earthquake perimeters of a 100-year 5.0 magnitude event, could affect 22% of the population or approximately 7,100 people. The damage sustained could be 2,934 residential buildings (worth \$241.3 million), and 7 non-residential buildings (worth \$18.9 million) within high or moderate ground shaking zones. There are no critical facilities identified by HAZUS to be within a minimum moderate damage range. All facilities have at least 50% 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.

5.5.7.4 Epidemic

Due to the variable nature of epidemics and other outbreaks it is difficult to determine the level of impact this risk poses to the communities of Nye County. It is likely that health care facilities would become inundated with people in the event a serious outbreak was to occur. The spread of infectious diseases can be slow or quick. Pahrump's proximity to Las Vegas increases the chance the community may develop an outbreak.

5.5.7.5 Floods

No digital FIRMs exist for Nye County. Therefore, using HAZUS, a vulnerability analysis was limited to the Pahrump Valley only, which is also the area most susceptible to flooding. Within the Pahrump Valley, the risk posed by the 100-year flood is moderate at 8 percent of the Pahrump Valley population, with 1,378 homes within or immediately adjacent to the 100-year floodplain. The exposure to the 1,378 residential buildings are \$145.3 million, exposure to the 78 nonresidential buildings is \$102.6 million, as well as exposure to 1 critical facility – a school, is \$1.3 million. 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.

5.5.7.6 Flooding by Dam Failure

No dam in Nye County poses a major risk to infrastructure or loss of life. A small percentage of agricultural land may be affected by sediment deposits and flooding in case any of the existing dams do fail.

5.5.7.7 Hazardous Materials Events

Within the 1-mile buffer around the identified hazardous sites, exposed are 20 people, 9 residential buildings (worth \$740,250), no nonresidential buildings and no critical facilities. These figures are for all hazardous facilities (Figure B-3) and, therefore, may overstate the exposure since the probability of multiple adjacent facilities having an event simultaneously is very low.

Within the 1-mile buffer around the transportation corridors are 6,611 people, 2,757 residential buildings (worth \$227.5 million), 12 nonresidential buildings (worth \$32.4 million), and 22 critical facilities (worth \$49.2 million) per HAZUS-MH-R1 data Census 2000. These figures are for the entirety of the transportation corridors. Therefore, these figures overstate the exposure since a hazardous materials event along the corridors is unlikely to affect all of the area within the 1-mile buffer. 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.

The NNSS is the only Extremely Hazardous Substance (EHS) facility within Nye County given its location within the County there are no residential, non-residential or critical facilities within a 1-mile radius.

5.5.7.8 Infestation

The entire County is at risk of the spread of mosquitoes and Africanized honey bees. These impacts are not likely to impact the communities to any significant degree. Abatement services are conducted each year throughout the county.

5.5.7.9 Infrastructure Disruption

Telecom and power outages have caused hazards to health, safety, economical growth and business operations. It is likely that the more rural areas of Nye County are most at risk of such disruptions. However, it is not unlikely for the more populated communities to experience them also. Such events happen randomly and are often caused by many of the other hazards discussed in this report. These events do not cause any significant damage to the communities. However, these occurrences do require the repair of damaged infrastructure and have been known to leave communities without service for some time.

5.5.7.10 Landslides

The areas of most concern are the Wheeler Wash area and some of the northern parts of the County near highways and roadways. It is a considerable cost to the County to clear areas affected by landslides, due to the size of the County. The County operates a cleanup of the affected areas as needed. These are workers that are often required to work extended hours in order to get cleanup done in a timely manner as to not disrupt daily activities of the County and travelers through the County.

5.5.7.11 Land Subsidence

Within the land subsidence areas identified by InSAR for Nye County (Figure B-4), the risk posed by land subsidence is high within the Pahrump Valley, with 100 percent of the total population residing in the hazard area. The greatest at risk within the land subsidence hazard area

are 24,631 people, 10,216 residential buildings (worth \$840.2 million), 38 nonresidential buildings (worth \$102.6 million), and 17 critical facilities (worth \$40 million). 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.

5.5.7.12 Public Mining

The safety of Nye County's citizens is paramount when considering mining operations. Abandoned mines pose a serious risk to people exploring the region. Active mining operations also pose a hazard of air and water contamination. The deaths of youths and adults have been recorded in the State of Nevada as being caused by abandoned marked and unmarked mine shafts.

5.5.7.13 Thunderstorms

Using thunderstorm data provided by the National Weather Service (NWS), the risk posed by thunderstorms is greatest within the southern portion of the County. Exposed within the thunderstorm hazard area are 24,361 people, 10,216 residential buildings (worth \$840.2 million), 38 nonresidential buildings (worth \$102.6 million), and 13 critical facilities (worth \$37.2 million). 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.

5.5.7.14 Wildland Fires

According to the Nevada Community Wildfire Risk/Hazard Assessment Project for Nye County, the risk posed by wildland fire is rated extreme in the communities of Ione and Manhattan. Exposed within this extreme wildland fire hazard area, are 63 people, 71 residential buildings (worth \$5.8 million), 2 nonresidential buildings (worth \$5.4 million), and no critical facilities. Exposed within the high wildland fire hazard area, are the communities of Amargosa Valley and Belmont, there are 103 people, 75 residential buildings (worth \$6.2 million), no nonresidential buildings, and no critical facilities. 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.

5.5.7.15 Windstorms

According to the NWS, the entire area of Nye County is at equal risk to a windstorm event. Therefore, all people residing and all structures located within in the County are equally susceptible to this hazard.

5.5.7.16 Winter Storms

Using winter storm data provided by the NWS, risk posed by winter storms were calculated for the County areas with elevations above 5,000 feet. Exposed within the moderate winter storm hazard area (5,000 feet to 7,999 feet) are 5,559 people, 2,336 residential buildings (worth \$192.1 million), 20 nonresidential buildings (worth \$54 million), and 28 critical facilities (worth \$40.5 million). Exposed within the high winter storm hazard area (8,000 feet and above) are 313 people, 196 residential buildings (worth \$16.1 million), 1 nonresidential buildings (worth \$2.7

million), and no critical facilities. 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.

5.5.7.17 WMD/Terrorism/Gangs/Arson

No WMD or Terrorist activity has been identified in Nye County. The communities closest to Las Vegas such as Beatty and Pahrump are at the highest risk of such types of attacks, due to their vicinity to such a highly touristic city. It is safe to assume that 85% of the population is at a high risk of these events. Population density is major contributing factor to the likelihood of terrorist activity.

5.5.7.18 Future Development

The greatest amount of future growth is expected in the Northern rural areas of the County. The major areas of growth in the County include solar and mining near Tonopah. People and structures in this area will be highly susceptible to all hazards. In addition, as growth continues to occur and water from the aquifer continues to be depleted, the chances of land subsidence occurring in and around the valley will increase.

6.0 CAPABILITY ASSESSMENT

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

6.1 Legal and Regulatory Capabilities

The County currently supports hazard mitigation through its regulations, plans, and programs. The Nye County Code Title 17 outlines hazard mitigation-related ordinances. Additionally, the Pahrump Regional Planning District Master Plan identifies goals, objectives, and actions for natural hazards, including floods, drought, and earthquakes. In addition to policies and regulations, the County carries out hazard mitigation activities by participating in the National Flood Insurance Program (NFIP).

The following table, Table 25, summarizes the County's hazard mitigation legal and regulatory capabilities.

Table 25: Legal and Regulatory Resources Available for Hazard Mitigation.

Regulatory Tool	Title	Effect on Hazard Mitigation
Nye County		
Plans	Pahrump Regional Planning District: Master Plan Update (Nye County and Tri-Core Engineering 2003) November 2003	Lists goals, objectives, and policies to guide land use planning and recommendations for amending the existing zoning code. This plan is divided into 21 sections, including: geotechnical; water; flood control and drainage; seismic; and safety.
	Pahrump Regional Planning District: Drainage and Flood Control Capital Improvement Plan FY 2006–2015 (Nye County and Tri-Core Engineering 2005) Draft July 2005	Provides flood hazard identification, regulation, remediation, and education to Nye County residents about floods and flood hazards. Enables County to prioritize flood control and infrastructure needs.
Programs	National Flood Insurance Program	Nye County 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 in Nye County.
Ordinances and Policies	Nye County Code Title 17	Outlines regulations within zoning districts, variances, and general development standards within the Pahrump Regional Planning District.
Duckwater		
Plans	Master Plan 2005	Lists goals, objectives, and policies to guide land use planning and recommendations for amending the existing zoning code. Includes policy on flood zones and earthquake.

Regulatory Tool	Title	Effect on Hazard Mitigation
	Emergency Operations Plan	Provides preparedness information. Includes Hazardous Materials and Mitigation Planning information.
Programs	none	
Ordinances and Policies	Requirement to comply with the Nye County Code Title 17	Outlines regulations within zoning districts, variances, and general development standards within the Pahrump Regional Planning District.

6.2 ADMINISTRATIVE AND TECHNICAL CAPABILITIES

The administrative and technical capability assessment identifies the staff and personnel resources available within the County to engage in mitigation planning and carry out mitigation projects. The administrative and technical capabilities of the County are listed in Table 26.

Table 26: Administrative and Technical Resources for Hazard Mitigation.

Staff/Personnel Resources	Department / Agency
Nye County	
Planner(s) or engineer(s) with knowledge of land development and land management practices	Planning, Nuclear Waste Repository Project Office, National Resources, Public Health Officer
Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	Public works
Planner(s) or engineer(s) with an understanding of manmade or natural hazards	Public Works, Nuclear Waste Repository Project Office, National Resources, Public Health Officer
Floodplain manager	Planning
Personnel skilled in GIS	Yes
Emergency Management Services	Emergency Management, Health and Human Services, Sheriff's Office
Finance (grant writers, purchasing)	Yes
Public Information Officers	Emergency Planning , Sheriff's Office
Duckwater	
Planning(s) with knowledge of land development and land management practices understanding of manmade and natural hazards	Planning
Public Works employees trained in water & sewer services and infrastructure	Public Works
Personnel skilled in GIS	Public Works
Emergency Management Services	Emergency Management
Police Chief	Police
Finance (grant writers, purchasing)	Yes
Public Information Officer	Tribal Chair

6.3 FINANCIAL CAPABILITIES

The fiscal capability assessment lists the specific financial and budgetary tools that are available to the County for hazard mitigation activities. These capabilities, which are listed in Table 27, include both local and Federal entitlements.

Table 27: Financial Resources for Hazard Mitigation.

Financial Resources	Effect on Hazard Mitigation
Nye County	
Authority to levy taxes for specific purposes	Yes. Upon approval of the Nye County Board of County Commissioners, staying within the stipulations set forth in the Nevada Revised Statutes.
Capital Improvement Plans and Impact Fees, Pahrump Regional Planning District	Assigns impact development fees to finance fire and flood control capital improvement programs.
Incur debt through general obligation bonds	Yes. Upon approval of the Nye County Board of County Commissioners, staying within the stipulations set forth in the Nevada Revised Statutes.
Incur debt through special tax and revenue bonds	Yes. Upon approval of the Nye County Board of County Commissioners, staying within the stipulations set forth in the Nevada Revised Statutes.
Incur debt through private activity bonds	Yes. Upon approval of the Nye County Board of County Commissioners, staying within the stipulations set forth in the Nevada Revised Statutes.
FEMA HMPG and 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.
Duckwater	
General Fund (provided through rents)	Yes. Upon approval of the Council.
FEMA HMPG and 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.

7.0 HAZARD MITIGATION STRATEGIES

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.

7.1 MITIGATION GOALS AND OBJECTIVES

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

DMA 2000 Requirements: Mitigation Strategy – Local Hazard Mitigation Goals

Local Hazard Mitigation Goals

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

Element

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

Source: FEMA, July 2008.

The Planning Task Force reviewed the hazard profiles and initial risk assessment results as a basis for developing mitigation goals and objectives. 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. Objectives are statements that detail how a community's goals will be achieved. Typically, objectives define strategies or implementation steps to attain identified goals. Using the local planning documents as guidelines, the Planning Team developed eleven goals with associated objectives to reduce or avoid long-term vulnerabilities to the identified hazards.

7.2 POTENTIAL 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

Identification and Analysis of Mitigation Actions

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

Element

- Does the updated 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?

Source: FEMA, July 2008.

In addition to developing goals and objectives, the Planning Task Force created a list of potential mitigation actions. Mitigation actions are activities, measures, or projects that help achieve the goals and objectives of a mitigation plan. Mitigation actions are usually grouped into six broad categories: prevention, property protection, public education and awareness, natural resource protection, emergency management, and structural projects.

The Planning Task Force reviewed the County's hazard mitigation capabilities and 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.

7.3 MITIGATION GOALS, OBJECTIVES, AND ACTION ITEMS

Listed below in Table 28 are the specific hazard mitigation goals and objectives for the jurisdictions as well as related potential actions. For each goal, one or more objectives have been identified that provide strategies to attain the goal. Where appropriate a range of specific actions to achieve the objective and goal. A list of previous potential actions can be found in Appendix F along with the status of each action.

Table 28: Mitigation Goals, Objectives, and Action Items

<i>Goal 1. Reduce the possibility of damage and losses due to wildland fires.</i>				
Objective	Co./Tribe	Action #	New or Existing Bldgs.	Description
Objective 1.A Protect existing assets, as well as new development, from wildland fires.	Both	1.A.1	Both	Continue to coordinate with BLM, NDF, USFS current fuel management programs (i.e., weed abatement programs) and investigate and apply new and emerging fuel management techniques.
	Both	1.A.2	Exist	Develop a public outreach campaign of the extreme wildland fire dangers and steps that can be taken to reduce these dangers.
	Both	1.A.3	Exist	Work with BLM and USFS to conduct fuel reduction projects on federal property surrounding each community.

<i>Goal 2. Reduce the possibility of damage and losses due to drought.</i>				
Objective	Co./Tribe	Action #	New or Existing Bldgs.	Description
Objective 2.A Protect existing assets, as well as any future development, from the effects of drought by the Nye County Water District.	County	2.A.1	Both	Develop and adopt a water conservation ordinance that may stipulate landscaping requirements, hours for irrigation, retro-fitting hotels and households for low-flow toilets and showers, and penalties for wasting water. Ordinance should establish drought, and severe drought parameters and operations as well.
	County	2.A.2	Exist	Pursue the creation of a water conservation and public awareness program as suggested by the Nye County Water Resources Plan.
	County	2.A.3	Both	Develop and implement incentive programs to promote outdoor conservation, including drought-resistant landscaping programs.
	County	2.A.4	Both	Support legislation to update and secure new water rights for Nye County.

<i>Goal 3. Reduce the possibility of damage and losses due to floods.</i>				
Objective	Co./Tribe	Action #	New or Existing Bldgs.	Description
Objective 3.A Protect existing assets and new development from floods.	County	3.A.1	Exist	Construct basins, including Wheeler Wash and Carpenter Canyon which would reduce/delay storm water runoff entering into the Pahrump Valley.
	Both	3.A.2	New	Require engineered floodplain and hydrologic analysis to be prepared for all new development projects within the 100-year floodplain.
	County	3.A.3	New	Require development of any level to provide flood planning, retention, and maintenance of flood facilities (etc.) for the development area disturbed as well as downstream areas.
	County	3.A.4	Both	Join the Community Rating System
	County	3.A.5	Both	Develop flood control facility for Winery Road & Basin Road.
	Tribe	3.A.6	Exist	Relocate, demolish, and issue deed restriction for structures with repeated flooding issues.
	Tribe	3.A.7	Exist	Develop flood facilities to protect irrigation pipeline.
<i>Goal 4. Reduce the possibility of damage and losses due to hazardous materials events.</i>				
Objective	Co./Tribe	Action #		Description
Objective 4.A Protect existing assets, as well as new development, from hazardous materials events.	County	4.A.1	Exist	Use the County's web site to post information regarding the safe handling and disposal of household chemicals. Provide public outreach programs to educate, collect and dispose of household items properly.
	County	4.A.2	Both	Review known hazardous materials sites within County boundaries and within well-head protection sites.

<i>Goal 5. Reduce the possibility of damage and losses due to windstorms.</i>				
Objective	Co./Tribe	Action #	New or Existing Bldgs.	Description
Objective 5.A Protect existing assets, as well as new development, from severe winds.	County	5.A.1	Both	Develop a program to assist property owners in selecting trees that are power line friendly and placement options to protect lines.
	Both	5.A.2	Both	Develop a public awareness program for high wind standards for private signage.

<i>Goal 6. Reduce the possibility of damage and losses due to earthquake.</i>				
Objective	Co./Tribe	Action #	New or Existing Bldgs	Description
Objective 6.A Protect existing assets, as well as any future development, from the effects of earthquakes.	Both	6.A.1	New	Continue to enforce the International Building Code (IBC) provisions pertaining to grading and construction relative to seismic hazards.
	Both	6.A.2	Exist	Develop an infrastructure inventory of unreinforced masonry buildings. And potential mitigation actions.
	Both	6.A.3	Both	Develop public awareness program for non-structural earthquake retrofits.

<i>Goal 7. Reduce the possibility of damage and losses due to winter storms.</i>				
Objective	Co./Tribe	Action #	New or Existing Bldgs.	Description
Objective 7.A Protect existing assets, as well as new development, from winter storms.	Both	7.A.1	Exist	Prepare a list of high risk residents who will need assistance in the event of a major snow storm to ensure that they are checked on and have their situation mitigated for access purposes as soon as possible.
	Both	7.A.2	New/Exist	Develop a public outreach campaign that teaches people how to winterize a house, barn, shed or any other structure that may provide shelter for family members, neighbors, livestock or equipment.

<i>Goal 8. Reduce the possibility of damage and losses due to epidemics.</i>				
Objective	Co./Tribe	Action #	New or Existing Bldgs.	Description
Objective 8.A Protect Nye County and its citizens from the possibility of epidemic outbreaks.	Both	11.A.1	N/A	Continued public awareness of potentially dangerous diseases, historic outbreaks, and the transmission of such between communities.
	Both	11.A.2	N/A	Develop and educate public regarding action plan in case of large scale outbreak.
<i>Goal 9. Reduce the possibility of damage and losses due to land subsidence.</i>				
Objective	Co./Tribe	Action #	New or Existing Bldgs.	Description
Objective 9.A Protect existing assets, as well as new development, from land subsidence.	County	13.A.1	New/Existing	Develop and adopt setbacks from mapped faults to help mitigate future fissure losses.

<i>Goal 10. Reduce the possibility of damage and losses due to thunderstorms.</i>				
Objective	Co./Tribe	Action #	New or Existing Bldgs.	Description
Objective 10.A Protect existing assets, as well as new development, from thunderstorms	Both	10.A.1	Exist	Obtain lightning detection systems for public outdoor venues.

<i>Goal 11. Promote disaster-resistant development.</i>				
Objective	Co./Tribe	Action #	New or Existing Bldgs.	Description
Objective 11.A Develop a GIS database to include the most recent hazard data	County	11.A.1	Both	Continue to develop and update County-wide GIS hazard maps with information on hazard areas, and critical facilities and infrastructure.
	Both	11.A.2	Both	Seek new data from other government, academic, and private organizations that can be used for hazard mitigation and emergency response.
	Both	11.A.3	Both	Share hazard and risk information with nearby jurisdictions, private and public organizations, and the general public.
<i>Goal 12. Build and support local capacity to enable the public to prepare for, respond to, and recover from disasters.</i>				
Objective	Co./Tribe	Action #	New or Existing Bldgs.	Description
Objective 12.A Improve upon existing capabilities to warn the public of emergency situations.	Both	12.A.1	Exist	Develop and provide public education for emergency evacuation programs for neighborhoods in flood prone areas and wildland fire areas.
	Both	12.A.2	Exist	Develop and provide public education regarding emergency preparations and recovery options; make materials available, including children/school districts, people with disabilities, elderly,

7.4 ACTION PLAN

As listed above, the Planning Task Force identified potential mitigation actions that will assist the County in mitigating the impact of natural and human-caused hazards. The DMA 2000 requires the evaluation, selection, and prioritization of the potential mitigation actions, as 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, July 2008.

The Planning Task Force reviewed the following questions to help identify the actions that would best help the County fulfill its mitigation goals and objectives, thereby reducing or avoiding long-term vulnerabilities to the identified hazards.

- Does the action mitigate assets identified as vulnerable in the HMP's Risk Assessment?
- Does the action mitigate hazards identified as either high or extremely high in categories rated?
- Is the action economically feasible (either through a grant or current funding sources)?
- Are proper laws, ordinances, and resolutions in place to implement the action?
- Is there enough political and public support to implement the action and ensure its success?
- Does the action enforce and/or enhance current mitigation actions, as identified in HMP's Capability Assessment?

Through this process, the Planning Task Force identified mitigation actions to be included in the HMP action plan. Once selected, the Planning Task Force prioritized the actions based on a ranking system of high, medium, and low. The following considerations for this ranking process included:

- Benefits versus costs
- Ease of implementation
- Multi-objective actions
- Time

Additionally, the Planning Task Force identified how the action will be implemented and administered, including which departments or agencies would be responsible, existing and potential funding sources, and time frame. In the 2005 version of the HMP there was a list of priority actions compiled for the action plan these priority action items and their status are shown in Table 29, in addition all previous action items and there status can be found in Appendix F. Table 30 is the new updated action plan .

Table 29: Previous Nye County Action Plan Items

Action #	Previous Action Item	Description	Current Status
1.A.1	Update the <i>Pahrump Regional Planning District Master Plan and Nye County Title 17</i> to be consistent with the hazard area maps and implementation strategies developed in the HMP.	Updated plans reflecting the extreme increase in population, particularly to the Pahrump Valley area, will benefit all County departments to provide the highest level of services to Nye County residents and visitors	Nye County Title 17 has been revised.
1.B.1	Continue to develop County-wide GIS hazard maps with information on hazard areas, and critical facilities and infrastructure.	Digitized hazards maps will enhance development efforts and day-to-day services of nearly all County departments.	Nye County has implemented a County GIS database.
2.C.3	Support the efforts and education of people with disabilities to prepare for disasters.	Provides self-help guidance to individuals within the community who may be at a higher risk during a disaster event.	8.0 Disabled list of where they are, distributed flyers and handouts at major public venues.
3.A.2	Pursue the creation of a water conservation and public awareness program as suggested by the Nye County Water Resources Plan.	Prudent action to support the Nye County Water Resources Plan as well as the State Drought Plan.	Water board elected to handle major water resource plan and pumping requirements in Pahrump.
6.A.2	Work with Nevada Department of Transportation to require all transport of hazardous materials to follow approved routes.	Any effort to ensure vehicles transporting hazardous materials not travel through residential areas will save lives.	Action item continues to be a joint effort between Nye County and NDOT.
7.A.2	Support an ordinance that will ensure effective withdrawal of groundwater that will not precede or exacerbate subsidence.	This is just one step to halt subsidence in Nye County, and particularly in the Pahrump Valley area.	Water board elected to handle major water resource plan and pumping requirements in Pahrump.

Action #	Previous Action Item	Description	Current Status
9.A.6	Work with BLM and USFS to conduct fuel reduction project on federal property surrounding each community.	Those communities that have a high or extreme wildfire hazard rating, to include: Amargosa Valley, Belmont, Ione and Manhattan, this coordinated effort will save lives and property.	Fire abatement is being done in Manhattan and Belmont. These are major areas of concern in Nye County.

Table 30: Updated Nye County Action Plan Items

Ref Goal #	Action Item	Department / Division	Potential Funding Source	Implementation Timeline	Economic Justification	Priority Level
1.A.1	Continue to coordinate with BLM, NDF, and USFS current fuel management programs (i.e., weed abatement programs) and investigate and apply new and emerging fuel management techniques.	<ul style="list-style-type: none"> Emergency Mgmt Tribe 	Existing Staff; NDF	On-going	The benefit cost ratio is high for wildland fire	High
1.A.2	Develop a public outreach campaign with NVFSC regarding the extreme wildland fire dangers and steps that can be taken to reduce these dangers.	<ul style="list-style-type: none"> Emergency Mgmt Tribe 	General Fund	Ongoing	Getting homeowners and business owners to perform mitigation	High
1.A.3	Work with BLM, USFS & NDF to conduct fuel reduction projects on federal property surrounding each community.	<ul style="list-style-type: none"> Emergency Mgmt Tribe 	General Fund; BLM USFS	Ongoing	Fuels reduction projects will reduce wildland fire severity	High
2.A.1	Develop and adopt a water conservation ordinance that may stipulate landscaping requirements, hours for irrigation, retro-fitting hotels and households for low-flow	<ul style="list-style-type: none"> Nye County Water District Governing Board 	General Fund	24-36 Months	Water conservation will help the County to allow additional growth.	High

Ref Goal #	Action Item	Department / Division	Potential Funding Source	Implementation Timeline	Economic Justification	Priority Level
	toilets and showers, and penalties for wasting water. Ordinance should establish drought, and severe drought parameters and operations as well.					
2.A.2	Pursue the creation of a water conservation and public awareness program as suggested by the Nye County Water Resources Plan.	<ul style="list-style-type: none"> Nye County Water District Governing Board 	General Fund	24-36 Months	Water conservation will help the County to allow additional growth.	High
2.A.3	Develop and implement incentive programs to promote outdoor conservation, including drought-resistant landscaping programs	<ul style="list-style-type: none"> Nye County Water District Governing Board 	General Fund	24-36 Months	Water conservation will help the County to allow additional growth.	Low
2.A.4	Support legislation to update and secure new water rights for Nye County.	<ul style="list-style-type: none"> Nye County Water District Governing Board 	General Fund	Ongoing	Water conservation will help the County to allow additional growth.	Moderate
3.A.1	Implement studies with USACE pertaining to the construction of retention basins, including Wheeler Wash, Carpenter Canyon Basin, and Crystal which would reduce storm water runoff.	<ul style="list-style-type: none"> Code Compliance Public Works 	USACE, General Fund	Ongoing	The studies will provide direction of flood facilities to reduce flooding..	High
3.A.2	Require engineered floodplain and hydrologic analysis to be prepared for all new development projects within the 100-year floodplain.	<ul style="list-style-type: none"> Planning Building Dept. 	Private	Ongoing	Maintained by planning within the Pahrump Regional Planning District. Protection of Property	High

Ref Goal #	Action Item	Department / Division	Potential Funding Source	Implementation Timeline	Economic Justification	Priority Level
3.A.3	Require development of any level to provide flood planning, retention, and maintenance of flood facilities (etc.) for the development area disturbed as well as downstream areas.	<ul style="list-style-type: none"> Planning Building Dept. 	Private	24-36 Months	Protection of Property	High
3.A.4	Join the Community Rating System	<ul style="list-style-type: none"> Building Dept. 	General Fund	18 months	Discount to citizens on flood insurance	High
3.A.5	Develop flood control facility for Winery Road and Basin Road	<ul style="list-style-type: none"> Public Works 	General Fund, PDM	18 months	Protect residential and community structures	Moderate
3.A.6	Relocate, demolish & do deed restriction for structures with repeated flooding	<ul style="list-style-type: none"> Tribe 	PDM	18 months	Protect residential and community structures	Moderate
3.A.7	Develop flood facilities to protect irrigation pipeline	<ul style="list-style-type: none"> Tribe 	PDM	18 months	Protection of infrastructure	Moderate
4.A.1	Use the County's web site to post information regarding the safe handling and disposal of household chemicals. Provide public outreach programs to educate, collect and dispose of household items properly.	<ul style="list-style-type: none"> Emergency Management Fire Department 	Existing Staff, General Fund	24-36 Months	Public awareness, protection of property & health	Moderate
4.A.2	Review known hazmat sites within the County boundaries and within well-head protection sites.	<ul style="list-style-type: none"> Emergency Mgmt 	SERC	Ongoing	Well-head protection	High
5.A.1	Develop a public awareness program to assist property	<ul style="list-style-type: none"> Planning Building Dept. 	Existing Staff, General Fund	24-36 Months	Public Awareness; Safety	Low

Ref Goal #	Action Item	Department / Division	Potential Funding Source	Implementation Timeline	Economic Justification	Priority Level
	owners in selecting trees that are power line friendly and placement options to protect lines.					
5.A.2	Develop a public awareness program for high wind standards for private signage.	<ul style="list-style-type: none"> Planning 	Existing Staff	24-36 Months	Public awareness, Safety	Low
6.A.1	Continue to enforce the International Building Code (IBC) provisions pertaining to grading and construction relative to seismic hazards.	<ul style="list-style-type: none"> Planning Building & Safety Dept. 	Existing Staff	Ongoing	Building safety	High
6.A.2	Ground truth unreinforced masonry buildings list. And develop potential mitigation actions.	<ul style="list-style-type: none"> Building & Safety Dept. Emergency Management Fire Dept's 	Existing Staff	24 months	Prioritizes damage assessment	High
6.A.3	Develop public awareness for non-structural earthquake retrofits	<ul style="list-style-type: none"> Building and Safety 				High
7.A.1	Prepare a list of high risk residents who will need assistance in the event of a major snow storm to ensure that they are checked on and have their situation mitigated for access purposes as soon as possible.	<ul style="list-style-type: none"> Emergency Management Fire & Ambulance Dept's 	Existing Staff	On-going	Monitoring high risk individuals will save lives.	High
7.A.2	Develop a public outreach campaign that teaches people how to winterize a house, barn, shed or any other	<ul style="list-style-type: none"> Emergency Management 	Existing Staff	24-36 months	Public Awareness, Life Safety	Low

Ref Goal #	Action Item	Department / Division	Potential Funding Source	Implementation Timeline	Economic Justification	Priority Level
	structure that may provide shelter for family members, neighbors, livestock or equipment.					
8.A.1	Continue public awareness of potentially dangerous diseases, historic outbreaks and the transmission of such between communities.	<ul style="list-style-type: none"> Public Health Emergency Mgmt 	Existing Staff	Ongoing	Awareness will save lives	High
8.A.2	Develop and educate public regarding action plan in case of large scale outbreak.	<ul style="list-style-type: none"> Emergency Management State Health Nurse 	Existing Staff	On-going	State Health officials are very important to success of all health issues in the County.	High
9.A.1	Develop and adopt setbacks from mapped faults to help mitigate future fissure losses.	<ul style="list-style-type: none"> Planning Building & Safety Dept. 	Existing Staff	Ongoing	Property protection	Medium
10.A.1	Obtain lightning detection systems for public outdoor venues.	<ul style="list-style-type: none"> Public Works 	General Fund	24-36 Months	Save lives	Medium
11.A.1	Continue to develop and update County-wide GIS hazard maps with information on hazard areas, and critical facilities and infrastructure.	<ul style="list-style-type: none"> Public Works Staff Emergency Mgmt 	General Fund	Ongoing	Public Awareness, protection of property	High
11.A.2	Seek new data from other government, academic, and private organizations that can be used for hazard mitigation and emergency response.	<ul style="list-style-type: none"> Emergency Management Public Works 	General Fund	Ongoing	Public Awareness, protection of property	Medium
11.A.3	Share hazard and risk information with nearby jurisdictions, private and	<ul style="list-style-type: none"> Emergency Management 		Ongoing	Public Awareness, protection of property	High

Ref Goal #	Action Item	Department / Division	Potential Funding Source	Implementation Timeline	Economic Justification	Priority Level
	public organizations, and the general public.					
12.A.1	Develop and provide public education for emergency evacuation programs for neighborhoods in flood prone areas and wildland fire areas.	<ul style="list-style-type: none"> Emergency Management 	General Fund	Ongoing	Public Awareness, protection of property	Moderate
12.A.2	Develop and provide public education regarding emergency preparations and recovery options; and at-risk populations (including disabled, children and elderly).	<ul style="list-style-type: none"> Emergency Mgmt 	General Fund		Public Awareness, protection of property	Moderate

Table 31: Duckwater Action Plan

Ref Goal Number	Action Item	Department / Division	Potential Funding Source	Implementation Timeline	Economic Justification	Priority Level
1.A.1	Update MOU's with the County to share resources to help mitigate hazards.	<ul style="list-style-type: none"> Emergency Management 	Existing Staff	2013	The tribe will benefit from the knowledge and resources of the County.	High
1.A.2	Implement wildland fire fuel reduction strategies.	<ul style="list-style-type: none"> Emergency Management 	Grants, Existing Staff	On-going	Fuel reduction will save lives and property.	High
1.A.3	Educate and prepare community members to better prepare for extreme weather events.	<ul style="list-style-type: none"> Emergency Management 	Grants, General Funding	On-going	Proper education of severe weather events will save lives and property.	High

8.0 PLAN MAINTENANCE

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 area and the Planning Task Force intend to organize their 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

8.1 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 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 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 plan describe the method and schedule for **updating** the plan within the five-year cycle?

Source: FEMA, July 2008.

The HMP update was prepared as a collaborative effort between the public involvement, Planning Task Force, and Dyer Engineering Consultants, LLC. To maintain momentum and build upon previous hazard mitigation planning efforts and successes, the planning area will use the Planning Task Force to continually monitor, evaluate, and update the HMP. In addition to the original members of the Planning Task Force, other parties may be delegated responsibility to implement sections of the action plan based on direction from the task force including members of the County Council, Planning Commission, and any other department representative, the Planning Task Force Emergency Manager's (Nye County and Duckwater), will serve as the primary point of contact and will coordinate all local efforts to monitor, evaluate, and revise the HMP.

The Planning Task Force will conduct an annual review of the progress in implementing the HMP, particularly the action plan. The annual review will provide the basis for possible changes in the HMP's 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 Planning Task Force leader will initiate the annual review one month prior to the date of adoption. The findings from this review will be presented annually to the Board of Commissioners and Tribal Council. The review will include an evaluation of the following:

- Notable changes in the planning areas risk of natural or human-caused hazards.
- Impacts of land development activities and related programs on hazard mitigation.
- Progress made with the HMP action plan (identify problems and suggest improvements as necessary).
- The adequacy of resources for implementation of the HMP.
- Participation of the planning areas agencies and others in the HMP implementation.

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

- Thoroughly analyze and update the planning areas 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 Board of Commissioners and Tribal Council for adoption.
- Submit an updated HMP to the Nevada DEM.

Previously the HMP was not updated regularly due to staff levels, accessibility, and other issues.

8.2 IMPLEMENTATION THROUGH EXISTING PLANNING MECHANISMS

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

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

Incorporation into Existing Planning Mechanisms

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

Element

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

Source: FEMA, July 2008.

After the adoption of the HMP, the Planning Task Force will ensure that the HMP, in particular the action plan, is incorporated into existing planning mechanisms. The Planning Task Force will achieve this by undertaking the following activities.

- Conduct a review of the regulatory tools in the planning area to assess the integration of the mitigation strategy. Specifically Master Planning documents, and other related planning documents such as; Pahrump Regional Planning District Master Plan, Pahrump Regional Planning District Zoning Ordinance, Nye County Code Title 17
- As a minimum review the action plan on an annual basis.
- 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.

8.3 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 plan explain how **continued public participation** will be obtained? (For example, will there be public notices, an ongoing mitigation plan Task Force, or annual review meetings with stakeholders?)

Source: FEMA, July 2008.

The Duckwater Shoshone Tribe and County are dedicated to involving the public directly in the continual reshaping and updating of the HMP. Hard copies of the HMP will be provided to each department. In addition, a downloadable copy of the plan and any proposed changes will be posted on the County's Web site. This site will also contain an e-mail address and phone number to which interested parties may direct their comments or concerns. The Duckwater Emergency Manager provides hazard mitigation planning information through their quarterly newsletter as well as at cultural events.

The Planning Team will also identify opportunities to raise community awareness about the HMP and the planning areas hazards. This could include attendance and provision of materials at County and Tribal sponsored events. Any public comments received regarding the HMP will be collected by the Planning Task Force leader, included in the annual report to the Board of Commissioners and Tribal Council, and considered during future HMP updates.

9.0 REFERENCES

- Anderson, J., and J. Price. 2000. *New FEMA Study Estimates U.S. Losses From Earthquakes At \$4.4 Billion Per Year*. <http://www.seismo.unr.edu/htdocs/pressreleases/fema.html>. Accessed September 20.
- Bell, J., and G. Blewitt. 2005. Development and Transfer of InSAR and GPS Applications to Local Government in Nevada: Groundwater Management and Land Subsidence Mitigation.
- Buquo, T. 2004. Nye County Water Resources Plan. http://www.nyecounty.com/documents/plans/2004_Nye_WaterResourcesPlan.pdf. Accessed September 2012.
- County of Nye. 2011. Nye County Code Title 17. http://www.sterlingcodifiers.com/codebook/index.php?book_id=648. Accessed October 17.
- Federal Aviation Administration. 2011. Airport Data & Contract Information. http://www.faa.gov/airports/airport_safety/airportdata_5010/. Accessed September.
- FEMA. 1998. Flood Insurance Study: Nye County, Nevada. Accessed June 8, .
- FEMA. 2001. How-To Guide #2: Understanding Your Risks – Identifying Hazards and Estimating Loss Potential. U.S. Department of Homeland Security, Federal Emergency Management Agency. FEMA 386-2. http://www.fema.gov/fima/planning_toc3.shtm. Accessed August, .
- FEMA. 2002a. 44 CFR Parts 201 and 206, RIN 3067-AD22, Hazard Mitigation Planning and Hazard Mitigation Grant Program, Interim Final Rule. In Federal Register 67, No. 38. U.S. Department of Homeland Security, Federal Emergency Management Agency. http://www.fema.gov/pdf/fima/fr02_4321.pdf. Accessed February 26,.
- FEMA. 2002b. State and Local Plan Interim Criteria Under the Disaster Mitigation Act of 2000 – Final Draft. U.S. Department of Homeland Security, Federal Emergency Management Agency. http://www.fema.gov/fima/planning_toc4.shtm. Accessed July 11,.
- FEMA. 2002c. How-To Guide #1: Getting Started: Building Support For Mitigation Planning. U.S. Department of Homeland Security, Federal Emergency Management Agency. FEMA 386-1. http://www.fema.gov/fima/planning_toc5.shtm. Accessed September, .

- FEMA. 2002d. How-To Guide #7: Integrating Human-Caused Hazards Into Mitigation Planning. U.S. Department of Homeland Security, Federal Emergency Management Agency. FEMA 386-7. Accessed September, .
- FEMA. 2002e. 44 CFR Parts 201 and 206, RIN 3067-AD22, Hazard Mitigation Planning and Hazard Mitigation Grant Program, Interim Final Rule. In Federal Register 67, no. 190. U.S. Department of Homeland Security, Federal Emergency Management Agency. http://www.fema.gov/pdf/fima/fr02_24998.pdf. October 1.
- FEMA. 2003a. How-To Guide #3: Developing The Mitigation Plan; Identifying Mitigation Actions And Implementing Strategies. U.S. Department of Homeland Security, Federal Emergency Management Agency. FEMA 386-3. April.
- FEMA. 2003b. How-To Guide #4: Bringing the Plan to Life: Implementing the Hazard Mitigation Plan. U.S. Department of Homeland Security, Federal Emergency Management Agency. FEMA 386-4. August.
- National Climatic Data Center. 2011. Storm Events. <http://www4.ncdc.noaa.gov/cgi-win/wwcgi.dll?wwevent~storms>. Accessed September.
- National Weather Service. 2005. What is the Monsoon? <http://www.wrh.noaa.gov/fgz/science/monsoon.php?wfo=fgz>. Accessed September 9.
- Nevada Seismological Laboratory. 2005. Earthquakes & Yucca Mountain. <http://seismo.unr.edu/htdocs/ns1-ym.html>. Accessed September 22.
- Nevada Bureau of Mines and Geology. 2000. Living With Earthquakes: A Nevadan's Guide to Preparing for, Surviving, and Recovering from an Earthquake. Special Publication.
- Nevada Bureau of Mines and Geology. Map. Earthquakes in Nevada 1852-1908 www.nbmgs.unr.edu/docs/ml19.pdf
- Nye County Assessors. 2011. Assessor Data Searches. <http://asdb.co.nye.nv.us:1401/cgi-bin/aswmenu>. Accessed September.
- Nye County Department of Natural Resources and Federal Facilities. May 17, 1999. Groundwater Availability and Quality Issues. White Paper No. 7 www.nyeCounty.com/white_paper7.pdf
- Nye County and Tri-Core Engineering. 2003. Pahrump Regional Planning District: Master Plan Update. November 19.
- Nye County and Tri-Core Engineering. 2005. Pahrump Regional Planning District: Drainage and Flood Control Capital Improvement Plan FY 2006-2015. July 1.

Resource Concepts, Inc. 2004. Nevada Community Wildfire Risk/Hazard Assessment Project: Nye County. September.

The State of Nevada Hazard Mitigation Plan - 2010.
http://www.nbmng.unr.edu/nhmpc/NV_plan_2010/index.html. Accessed September.

US Census Bureau. 2000. American Fact Finder Fact Sheet. <http://factfinder.census.gov>. Accessed September 23.

US Department of Energy. 2011. Nevada National Security Site Overview Fact Sheet.
http://www.nv.doe.gov/library/factsheets/DOENV_705.pdf. Accessed August 2012.

US Drought Monitor. 2005. <http://www.drought.unl.edu/dm/monitor.html>. Accessed September 20.

US Environmental Protection Agency. 2011. Envirofacts, Topic Searches.
<http://www.epa.gov/enviro/facts/topicsearch.html>. Accessed September.

US Geological Survey. 2005. Quaternary Fault and Fold Database for the United States.
<http://earthquake.usgs.gov/qfaults/nv/>. Accessed September 29.

US Department of Transportation, Federal Highway Administration. April 6, 2011. National Bridge Inventory. <http://www.fhwa.dot.gov/bridge/nbi.htm>. Accessed September.

Western Great Basin Coordination Center. 2011. Fire Intelligence data from GIS department.
<http://gacc.nifc.gov/wgbc/>.

Western Regional Climate Center. 2005. Historical Climate Information.
<http://www.wrcc.dri.edu/CLIMATEDATA.html>. Accessed October 1.

Appendix A

HMP Communications

Hazard Mitigation Plan Meetings Summaries/Minutes

May 11, 2011: First HMP Committee meeting held. Committee members met with Dyer Engineering via conference call.

June 2011: No committee meetings held. Several conversations between Director Brent Jones and Dyer, but nothing formally documented.

July 2011: No committee meetings held. Several conversations between Director-in-charge Vance Payne and Dyer basically regarding press release and stakeholder letters, but nothing formally documented.

August 2011: Stakeholder letters mailed out by Dyer. Copies filed with HMP grant paperwork. Communications between Director Jones and Dyer, but nothing formally documented.

November 2011: Copy of plan possibly reviewed by Director Jones.

December 2011: Possible meeting with Director Jones and Dyer Engineering. Nothing formally documented for minutes. Plan posted to website and copy sent to State for review. State responded with suggested changes.

January 2012: Dyer made changes to HMP and resubmitted to Nye County and State. Conference call held between Director Jones, Vance Payne, Missy Molt and Dyer Engineering. Director Jones offered his own changes. Vance Payne also offered some suggestions. Meeting lasted 2 hrs, and minutes are attached.

February 2012: Director Jones directed Dyer Engineering to contact Public Works Director Dave Fanning for input on the plan, and to answer some questions. Dyer updated plan per previous meeting suggestions.

April 2012: Most currently updated plan submitted to HMP committee for their review and input. Brief conf call with Dyer, no formal documentation of meeting.

June 2012: Changes for HMP starting to come in from committee members. Brief meeting w/committee. Due to changes in staff with Nye County Emergency Management, the HMP committee was slightly revised with Vance Payne taking over as Director.

August 1, 2012: Meeting with committee held with new committee. Discussion that plan is lacking in several areas. Meeting lasted 1.25 hrs, and minutes attached.

August 29, 2012: Meeting with committee. Changes noted on copy of plan. Meeting lasted 1 hr, and minutes attached.

September 18, 2012: Final changes recorded on plan. Received Board of County Commissioner's approval to submit to State for review and input. Plan sent to DEM for review.

November 26, 2012: Meeting with Vance Payne, Missy Molt, Elizabeth Ashby, Debbie O'Neil re DEM suggested changes. Meeting lasted 2 hrs, and minutes attached.

February 2013: Final changes made and plan submitted to DEM for approval to send to FEMA.

MINUTES

Nye County Hazard Mitigation Plan Task Force Meeting

May 11, 2011

1. Introductions – all members introduced themselves and gave a brief description/overview of their involvement with the Hazard Mitigation Plan. It was noted at the meeting that none of the current members were involved with the previous plan. Dyer indicated they are very eager to work with Nye County in the revisions of this plan.

Members include:

Brent Jones – Director Nye County Emergency Management
Missy Molt – Nye County Emerg. Svcs. Administrative Assistant
Vance Payne – Nye County Workplace Safety/Training Officer
Levi Kryder – Nuclear Waste Repository Project Office
Patty Winters – Nye County Ambulance Coordinator
Debbie O'Neil – Duckwater Emergency Manager
Ron Browning – Dyer Engineering
Shane Dyer – Dyer Engineering
Lori Williams – Dyer Engineering

Unable to attend: Dave Fanning – Director of Nye County Public Works

2. Overview – Hazard Mitigation Plans are required by the State. Our 2005 plan is missing many details/key points. Goal is to get those details/key points into the revised plan to make it more accurate. HMP opens us up to available funding sources. Received FEMA funds to revise our current plan. Discussion ensued re process for notifying public of meetings, requesting input, etc. Decision - Public Notice will be posted when plan is on a Board of County Commissioner agenda to be approved.
3. Plan Updates – This is the area Nye County will have the most input. Nye County's goal is to identify hazards seen over the years and tackle them, and to also get some mitigation funding to resolve some of the mitigation issues. Dyer's goal is to get the plan updates completed within 3-5 months.
4. Updates to County Community – Current plan does not address our community accurately. Several areas are missing – agriculture, refinery's, mining issues, Test Site, Solar Energy, seismic issues, radiological waste, wildland fires, bees/mosquitos, flu pandemic, and so forth. As we identify hazards, we can

incorporate our Memorandum of Agreements with other entities (ie BLM, Test Site, Division of Forestry) and also realize who we still need MOU's with.

5. Updates to Risk Assessment – See attached worksheet
 - a. Thorough discussion of new hazards in Nye County and **numerous** areas were identified.
 - b. Asset Additions/Changes – List will be sent to Dyer reflecting the changes in Emergency Management.
 - c. Priorities/Treatment – Dyer will develop and send list to BJones.
6. Meeting adjourned. Discussion and decision to discuss remaining agenda items at future meeting. Next meeting date/time – to be determined.

Hazard Assessment Worksheet

Nye County Hazard Mitigation Plan Update 2012

Hazard / Info Type	Explanation	Response	NOTES
New Planning	Are there any local or existing plans that have been updated? I.e. New flood plan studies, emergency response plans?	YES NO UNKNOWN	
Civil Disturbance	Is there a new situation, social or economic etc. that may cause civil disturbance?	YES NO UNKNOWN	
Dam Failure	New hazard conditions at existing dams, unpermitted water impoundments?	YES NO UNKNOWN	
Disease	New disease outbreaks or reason for a potential outbreak?	YES NO UNKNOWN	
Hazardous Material Event	New or abandoned facilities, unpermitted operations?	YES NO UNKNOWN	
Land Subsidence	New developments or encroachments?	YES NO UNKNOWN	
Landslide	New man caused hazards?	YES NO UNKNOWN	
Radiological Incident	Yucca mountain news? Public perception hazards?	YES NO UNKNOWN	
Storm Water Detention Rain Events - Thunderstorm	Newly identified storm water issues, flooding	YES NO UNKNOWN	
WMD / Terrorism / Gangs / Arson	Is there a new situation, social or economic etc. that may cause various forms of terrorism.	YES NO UNKNOWN	
Woodland Fire / Industrial Fire	New conditions, new fire hazards?	YES NO UNKNOWN	
Unidentified Items	Items that may pose a reasonable treat to the public well being that may not fit into the categories list above.	YES NO UNKNOWN	

Committee Member Name: _____ Email: _____
 Phone: _____

Other Notes (Issues for consultants to explore, etc.):

Hazard Assessment Worksheet Nye County Hazard Mitigation Plan Update 2011

Nye County

Committee Member Name: _____

Email: _____

Phone: _____

Hazard / Info Type	Explanation	Response	NOTES
New Planning	Are there any local or existing plans that have been updated? i.e. New flood plan studies, emergency response plans?	YES NO UNKNOWN	Flood plan, Army Corp of Eng (Wheeler Wash) Emer Resp Plan, Flooding-Crystal
Civil Disturbance	Is there a new situation, social or economic etc. that may cause civil disturbance?	YES NO UNKNOWN	Protests, Trans/shipment issues Yucca Mtn
Dam Failure	New hazard conditions at existing dams, unpermitted water impoundments?	YES NO UNKNOWN	Significant issues/conditions in Hadley; Dairy dams
Disease	New disease outbreaks or reason for a potential outbreak?	YES NO UNKNOWN	New info from CDC-epidemiology; Mosquitoes/bees; Cattle; Dairy's/animals
Hazardous Material Event	New or abandoned facilities, unpermitted operations?	YES NO UNKNOWN	US Ecol (receiver of haz. waste); Drug busts; Trans corridor; Mine chemicals; TNT
Land Subsidence	New developments or encroachments?	YES NO UNKNOWN	Sinkholes/homes
Landslide	New man caused hazards?	YES NO UNKNOWN	
Radiological Incident	Yucca mountain news? Public perception hazards?	YES NO UNKNOWN	See Haz Mat Events; Water monitoring (Test Site towards Beatty)
Storm Water Detention Rain Events - Thunderstorm	Newly identified storm water issues, flooding	YES NO UNKNOWN	Snow in North part of County; Floods of 12/2010 - pump failures;
WMD / Terrorism / Gangs /Arson	Is there a new situation, social or economic etc. that may cause various forms of terrorism.	YES NO UNKNOWN	Arson issues-2005(random acts); Issues in Vegas might result in evac's to Pahrump
Woodland Fire / Industrial Fire	New conditions, new fire hazards?	YES NO UNKNOWN	Refinery's; Rural Wildland Fires; Propane facilities
Unidentified Items	Items that may pose a reasonable treat to the public well being that may not fit into the categories list above.	YES NO UNKNOWN	Infrastructure disruption-power/energy loss (ie2007); Water resources; Renew energy

Other Notes (Issues for consultants to explore, etc.):

Hazard Assessment Worksheet Nye County Hazard Mitigation Plan Update 2011

Committee Member Name: Debbie Ontel Duckwater Email: Debbie.Ontel@nyegov Phone: 775/863-0222

Hazard / Info Type	Explanation	Response	NOTES
New Planning	Are there any local or existing plans that have been updated? I.e. New flood plan studies, emergency response plans?	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO UNKNOWN	Hazard Vulnerability Analysis
Civil Disturbance	Is there a new situation, social or economic etc. that may cause civil disturbance?	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/> UNKNOWN	
Dam Failure	New hazard conditions at existing dams, unpermitted water impoundments?	YES <input checked="" type="checkbox"/> NO UNKNOWN	No dams in Duckwater
Disease	New disease outbreaks or reason for a potential outbreak?	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO UNKNOWN	Preparedness for Mass Vaccination (POD)
Hazardous Material Event	New or abandoned facilities, unpermitted operations?	YES <input checked="" type="checkbox"/> NO UNKNOWN	N/A
Land Subsidence	New developments or encroachments?	YES <input checked="" type="checkbox"/> NO UNKNOWN	No new developments
Landslide	New man caused hazards?	YES <input checked="" type="checkbox"/> NO UNKNOWN	
Radiological Incident	Yucca mountain news? Public perception hazards?	YES <input checked="" type="checkbox"/> NO UNKNOWN	
Storm Water Detention Rain Events - Thunderstorm	Newly identified storm water issues, flooding	YES <input checked="" type="checkbox"/> NO UNKNOWN	
WMD / Terrorism / Gangs / Arson	Is there a new situation, social or economic etc. that may cause various forms of terrorism.	YES <input checked="" type="checkbox"/> NO UNKNOWN	
Woodland Fire / Industrial Fire	New conditions, new fire hazards?	YES <input checked="" type="checkbox"/> NO UNKNOWN	
Unidentified Items	Items that may pose a reasonable threat to the public well being that may not fit into the categories list above.	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO UNKNOWN	See Haz. Vul. Analysis

Other Notes (Issues for consultants to explore, etc.):

Minutes
Nye County Hazard Mitigation Plan
Task Force Meeting
1/24/12

Attendees: Dyer Engineering – Tim Simpson, Shane Dyer
Nye County – Vance Payne, Brent Jones, Missy Molt

1. Meeting called to order at 10am.
2. Introductions made.
3. Discussion of updates to plan and need to address/change certain areas. Dyer Engineering took lead on these changes and will incorporate them.
4. Meeting concluded approximately 12pm.

Minutes
Nye County Hazard Mitigation Plan
Task Force Meeting
8/1/12

Attendees: Nye County – Debbie O’Neil; Vance Payne, Levi Kryder, Jim Medici, Maureen Budahl, Missy Molt

1. Meeting called to order at 9am.
2. Introductions of new committee made (due to staffing changes within Emergency Mgmt).
3. Discussion that plan is lacking in several areas. Decision to distribute electronic copy of current plan to new committee members and have each person track their suggestions/changes to be discussed at a later meeting.
4. Next meeting scheduled for August 28, 2012.
5. Meeting concluded approximately 11:15am.

Minutes
Nye County Hazard Mitigation Plan
Task Force Meeting
8/29/12

Attendees: Nye County – Levi Kryder, Kevin Kleinworth; Jim Medici, Maureen Budahl, Missy Molt

1. Meeting called to order at 9am.
2. Introductions made.
3. Discussion that plan is lacking input/direction of Public Health Info. Further discussion to have committee members continue to make their changes to their electronic copies and they would all be incorporated into one master copy.
4. Discussion of next meeting, but no date set.
5. Meeting concluded approximately 10am.

Minutes
Nye County Hazard Mitigation Plan
Task Force Meeting
11/27/12

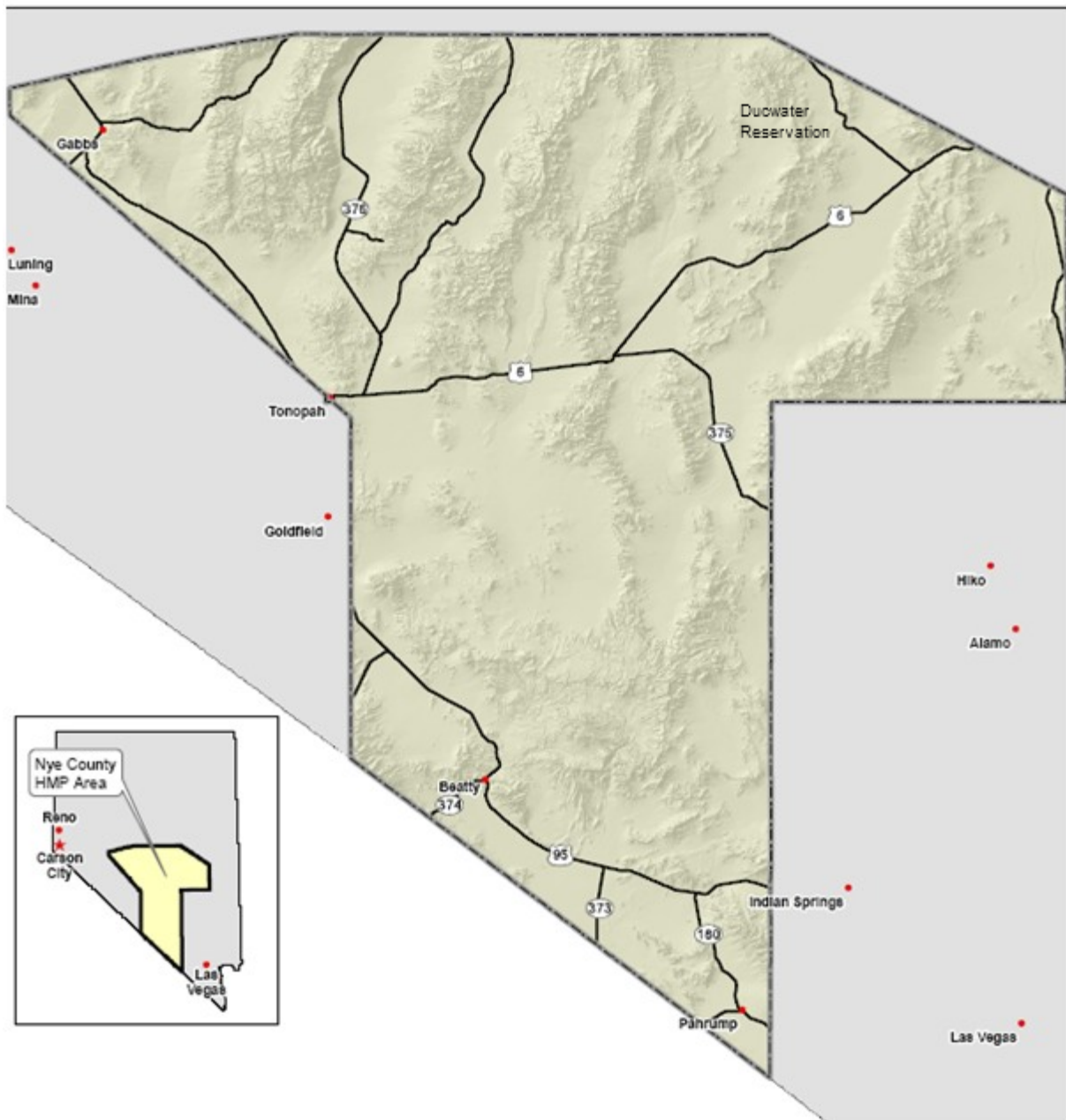
Attendees: Nye County – Vance Payne, Missy Molt, Debbie O'Neil
DEM – Elizabeth Ashby

1. Meeting called to order at 2:30pm.
2. Introductions made.
3. DEM suggested meeting yearly with committee to discuss changes/updates to plan. Nye County agreed – this will insure updates are captured and done accurately, making the plan more suitable for the planning area.
4. Discussed DEM suggested changes to plan. Missy Molt if NCES will make changes on electronic copy, and send back to DEM for submission to FEMA. NCES will then distribute and review the plan to/with County staff personnel throughout the county. Time, travel costs, copy/printing costs will then make up the remainder of our match for this grant.
5. DEM requested Nye County submit minutes of meetings. Missy Molt will add to plan.
6. Duckwater advised the Tribal Council had not yet approved the plan, but were hoping to.
7. Meeting concluded approximately 4:30pm.

Appendix B

Figures

Appendix B Figures



Legend

-  Nye County
-  Cities & Towns
-  Highway

Project Location

Nye County Hazard Mitigation Plan



Figure B-1

Appendix B Figures

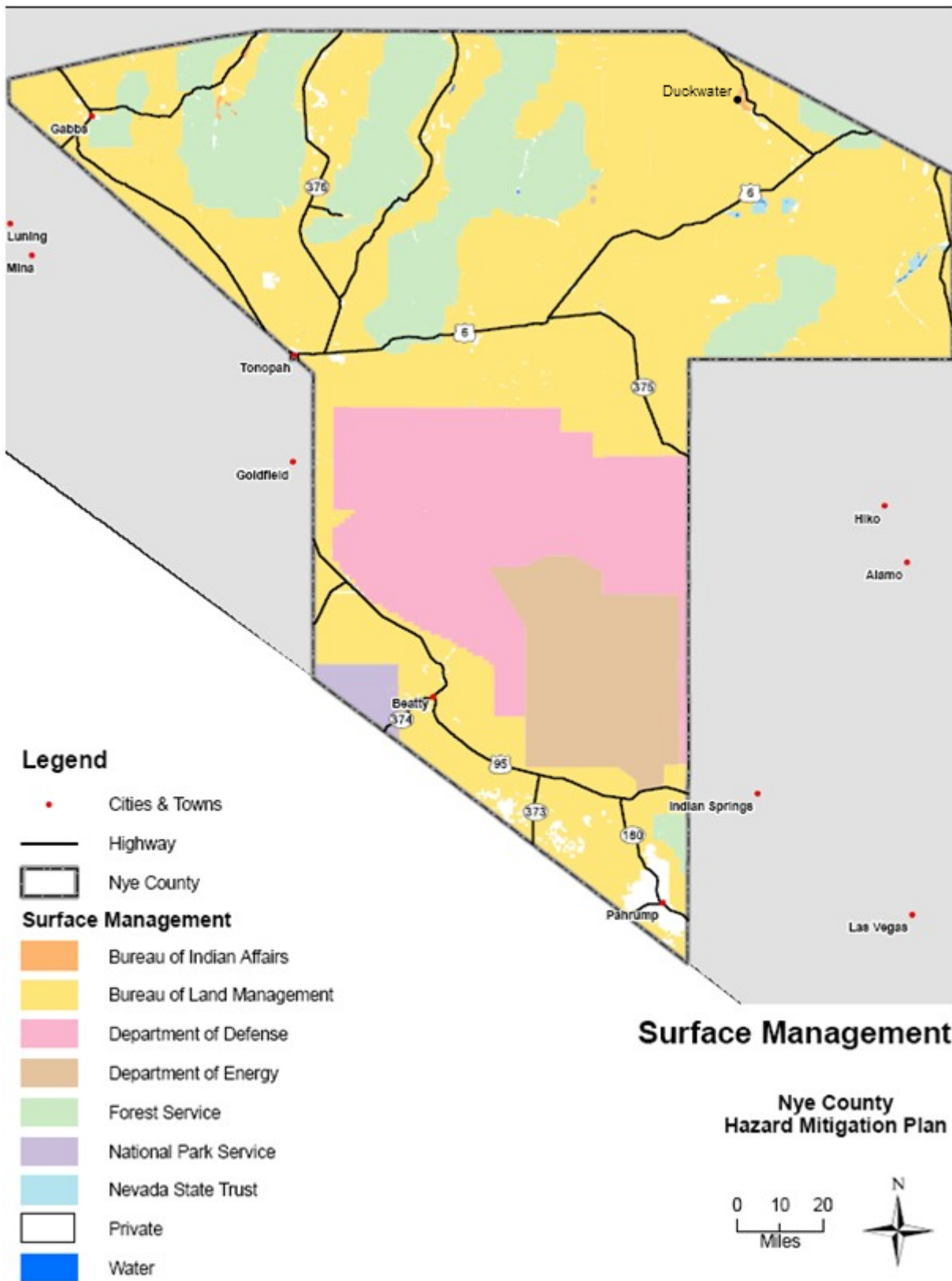
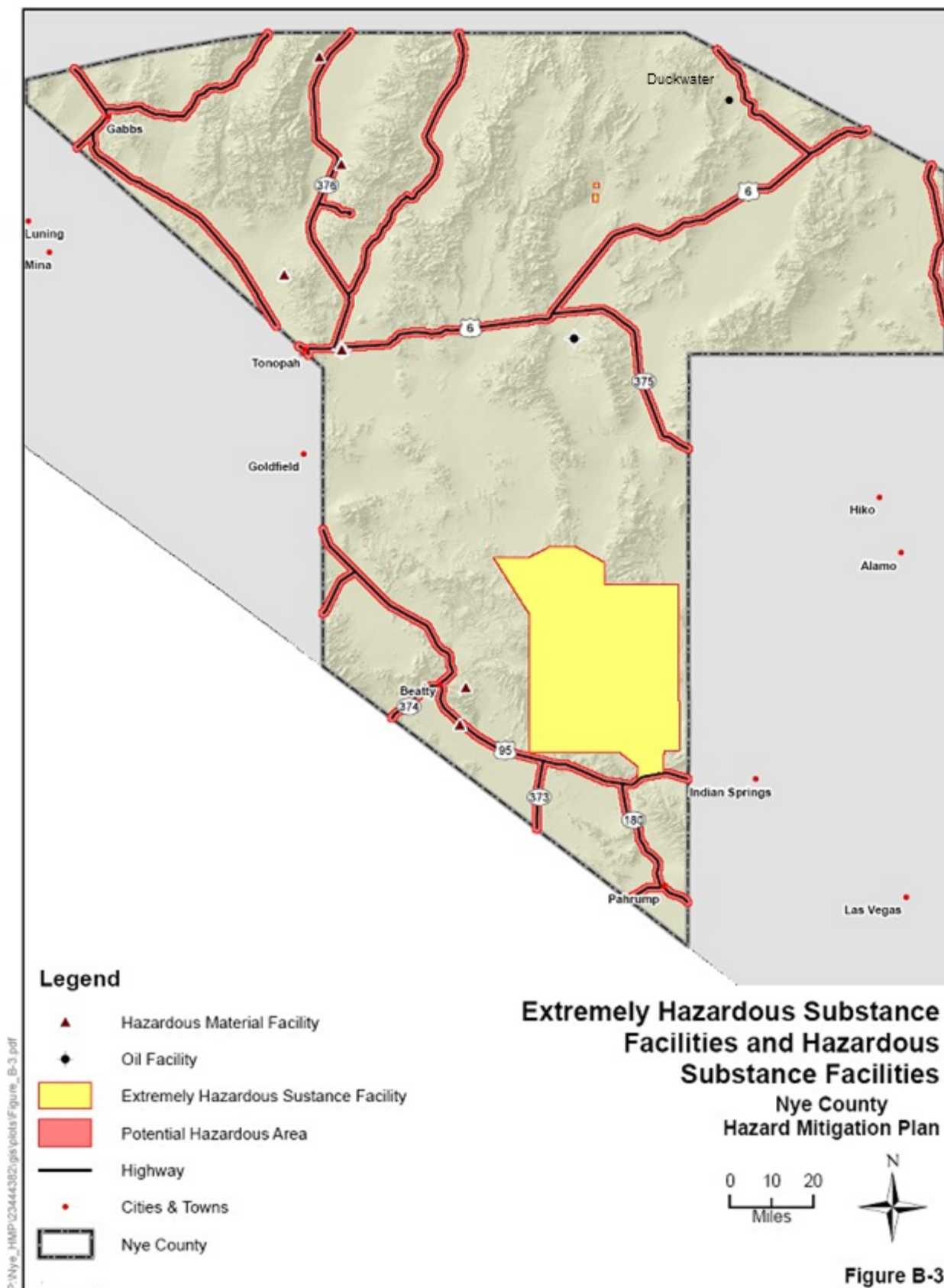
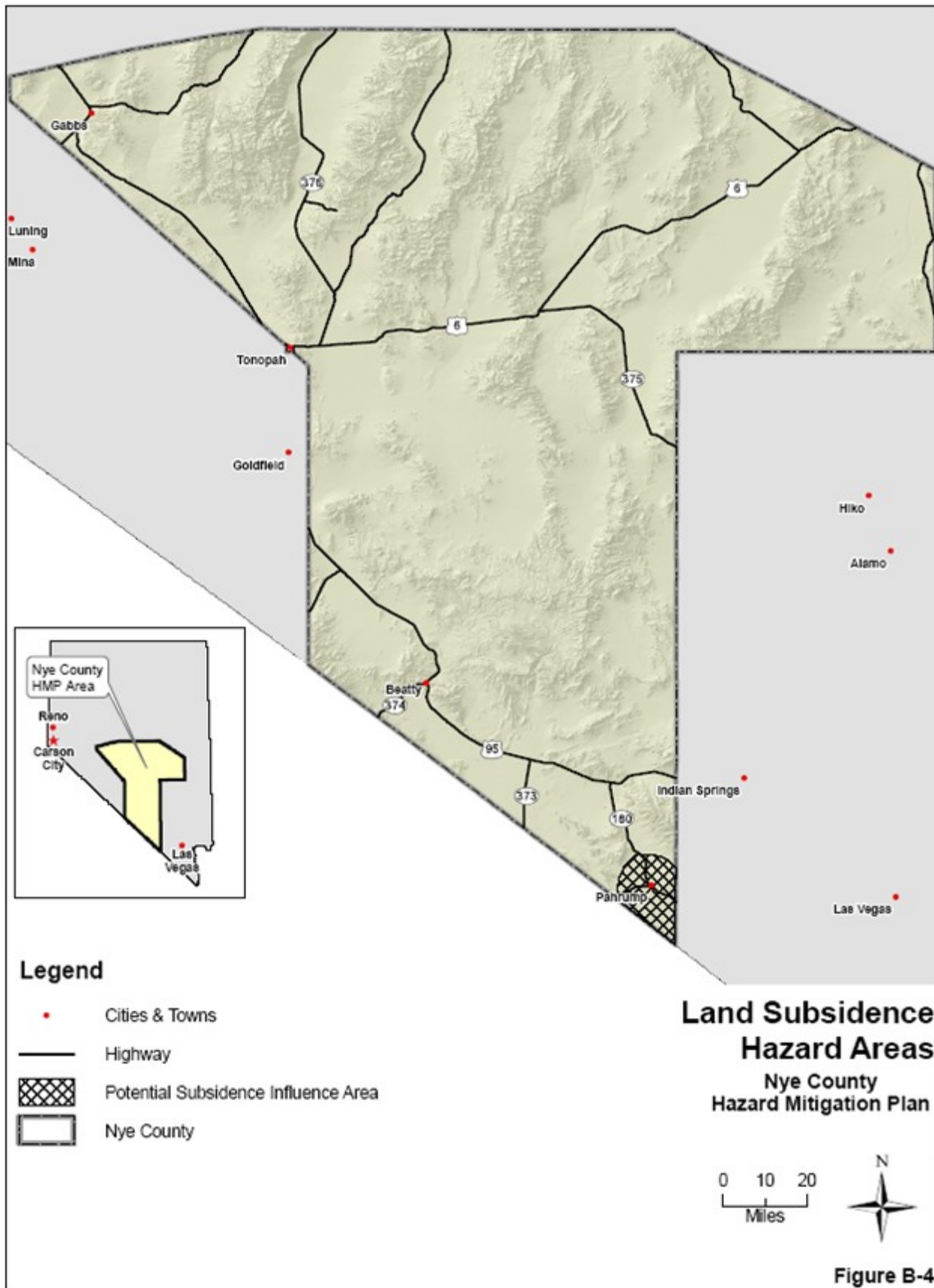


Figure B-2

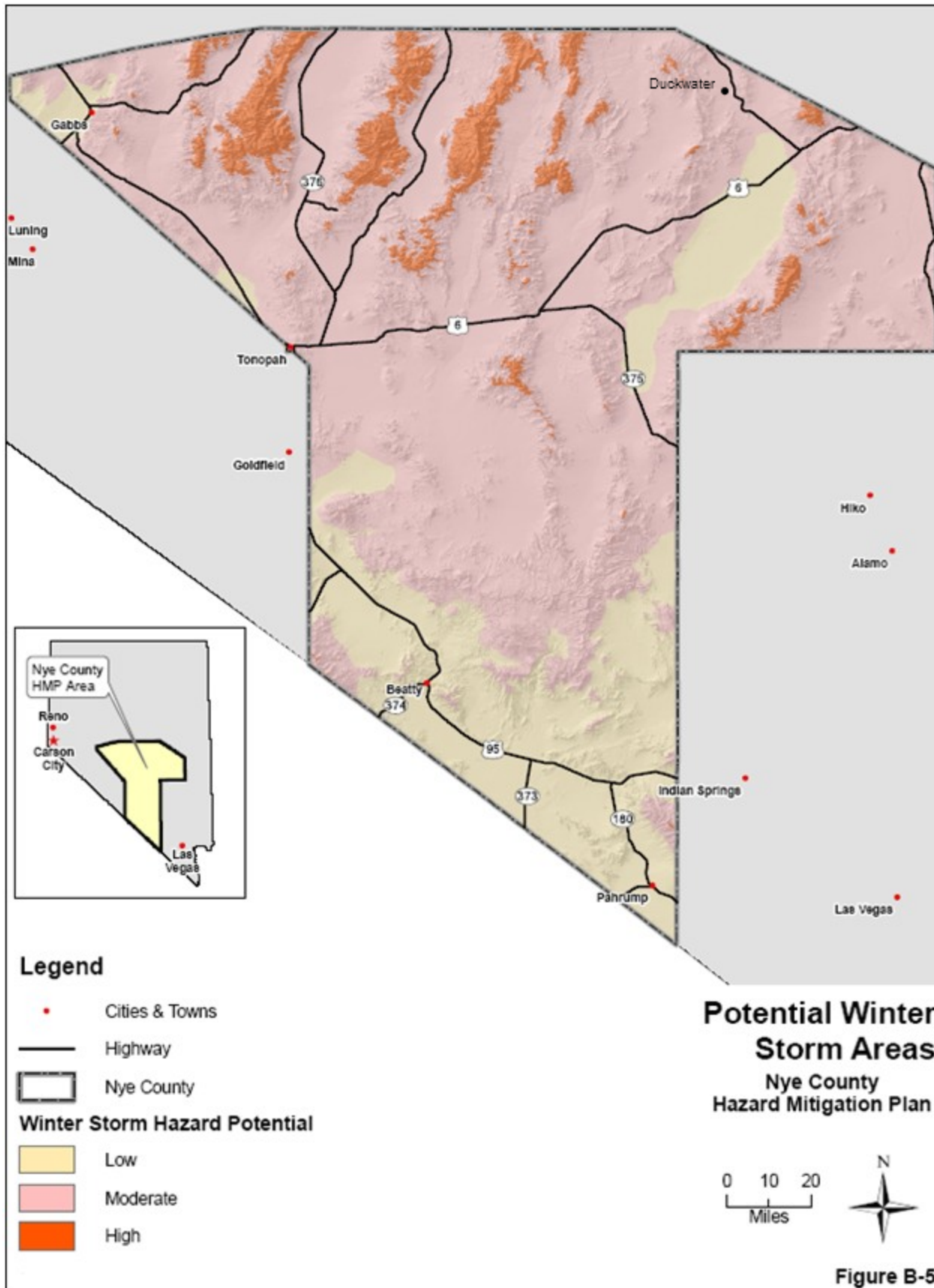
Appendix B Figures



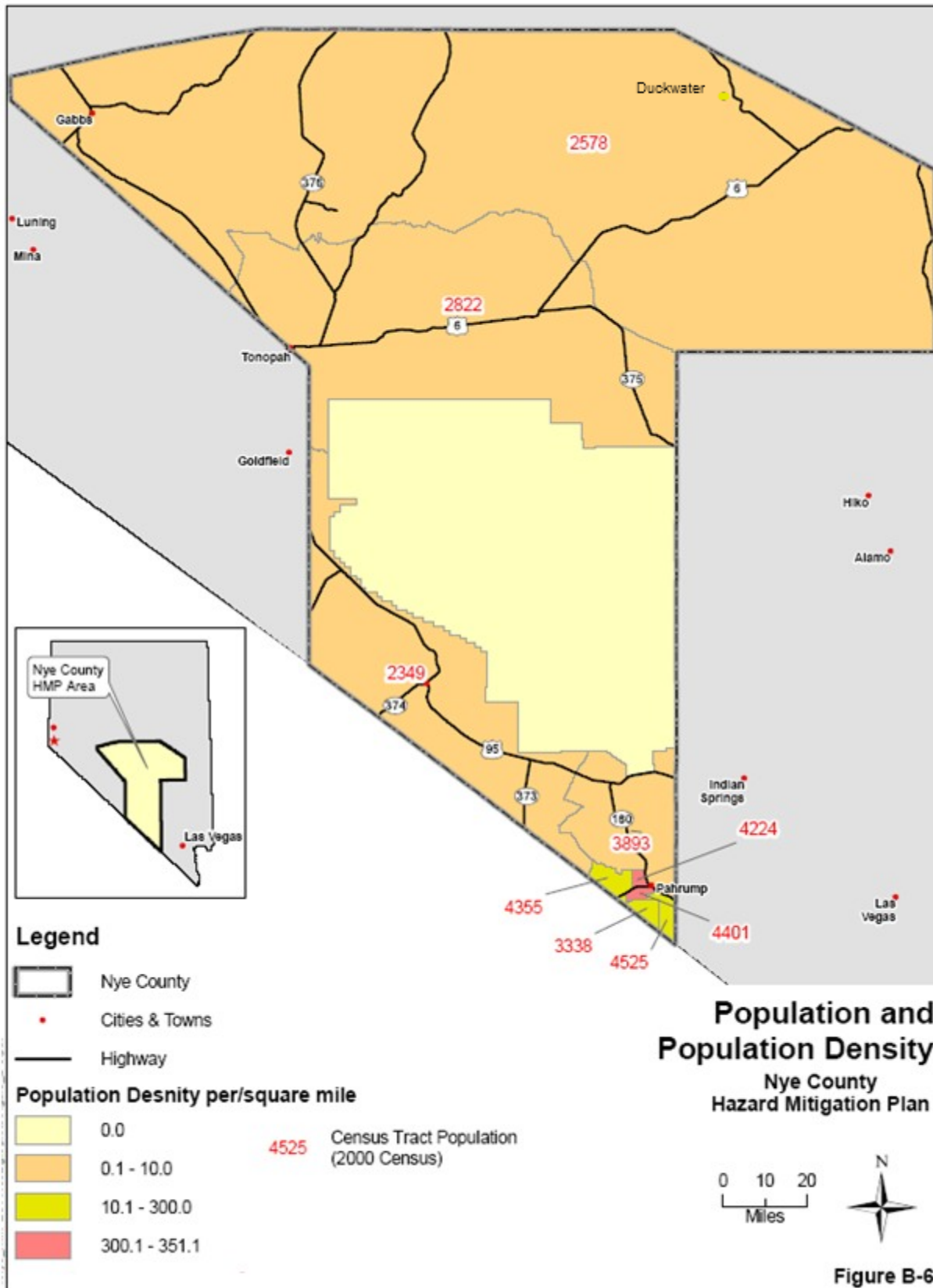
Appendix B
Figures



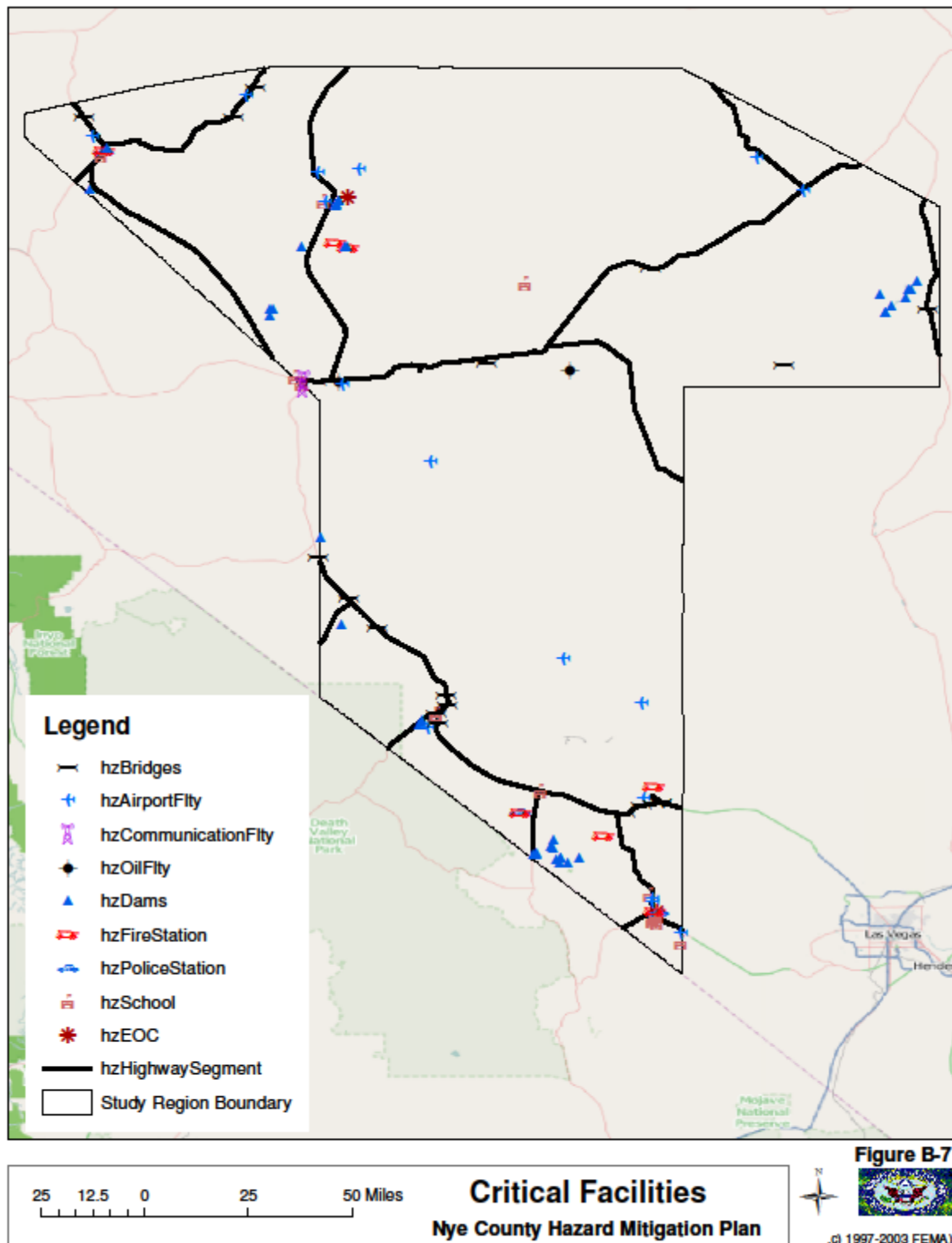
Appendix B
Figures



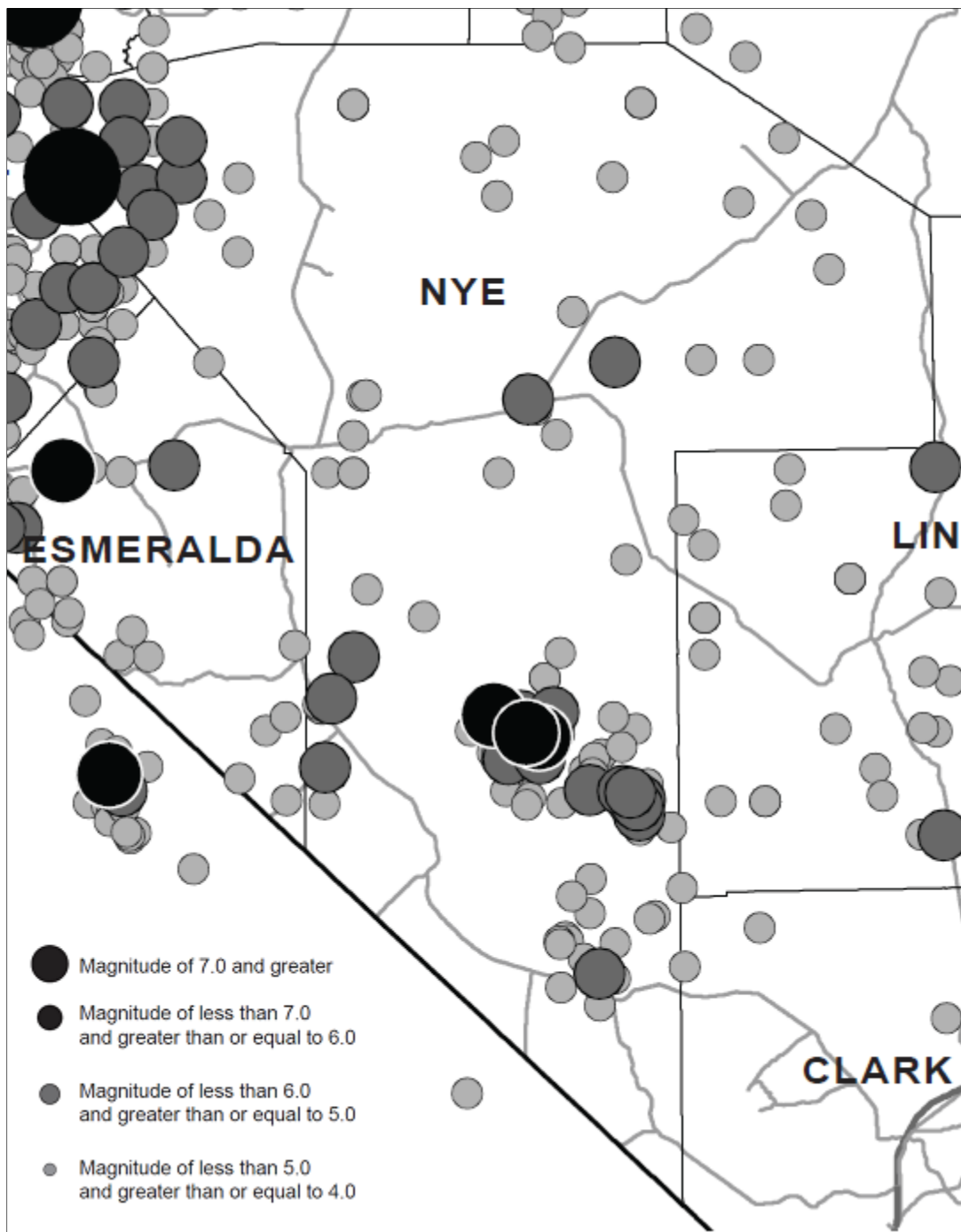
Appendix B Figures



Appendix B Figures



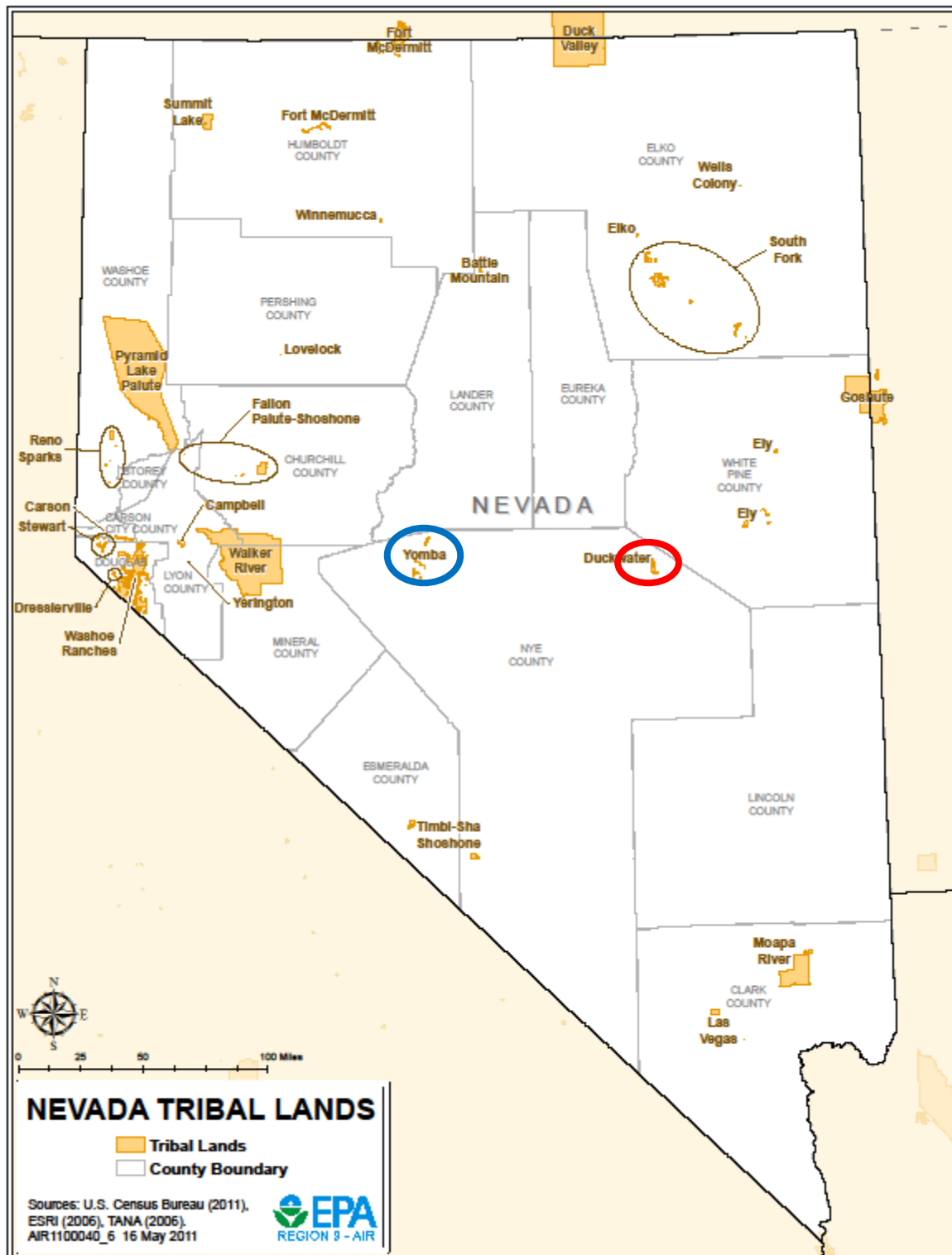
Appendix B
Figures



Earthquakes in Nevada
1840-2008
Nevada Seismology Laboratories

Figure B-8

Appendix B Figures



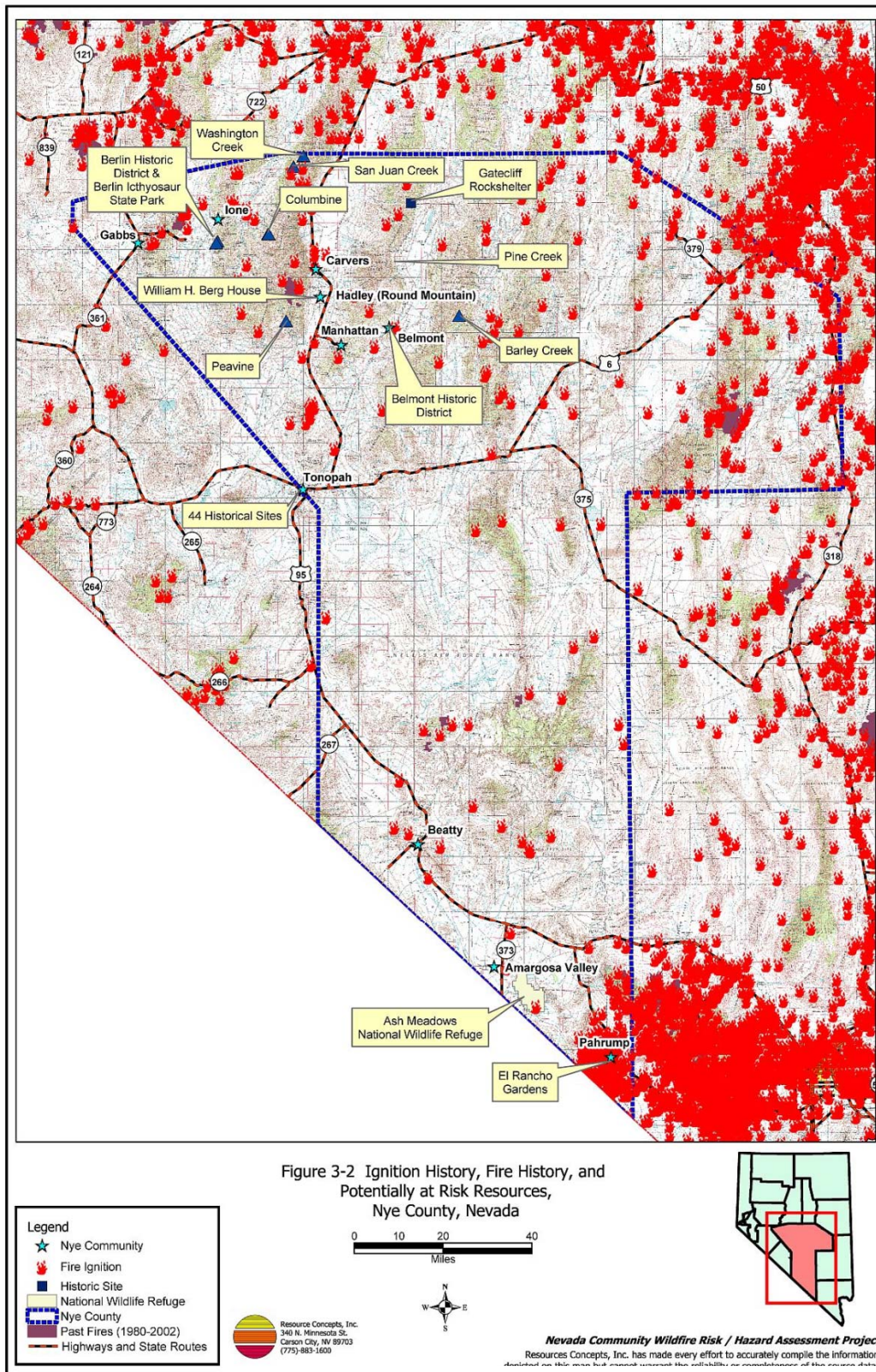
Tribal Lands in Nevada
EPA Region 9 Map
— Duckwater
— Yomba

Figure B-9

Duckwater Map
Figure B-10



Appendix B Figures



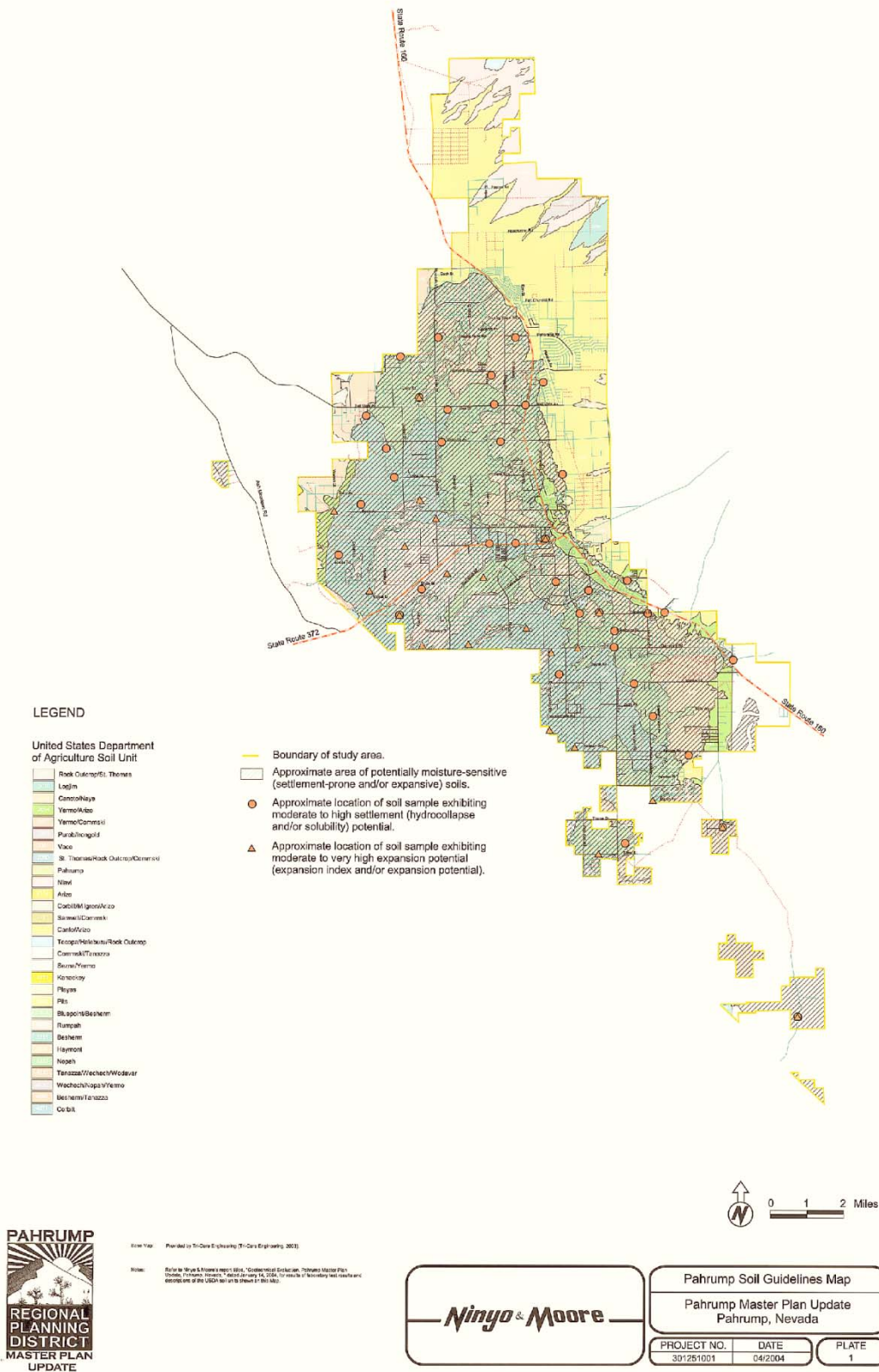
For a blown up image of this map go to:
<http://www.rci-nv.com/reports/nye/images/fig3-2-xl.jpg>
 Figure B-11

Appendix B Figures



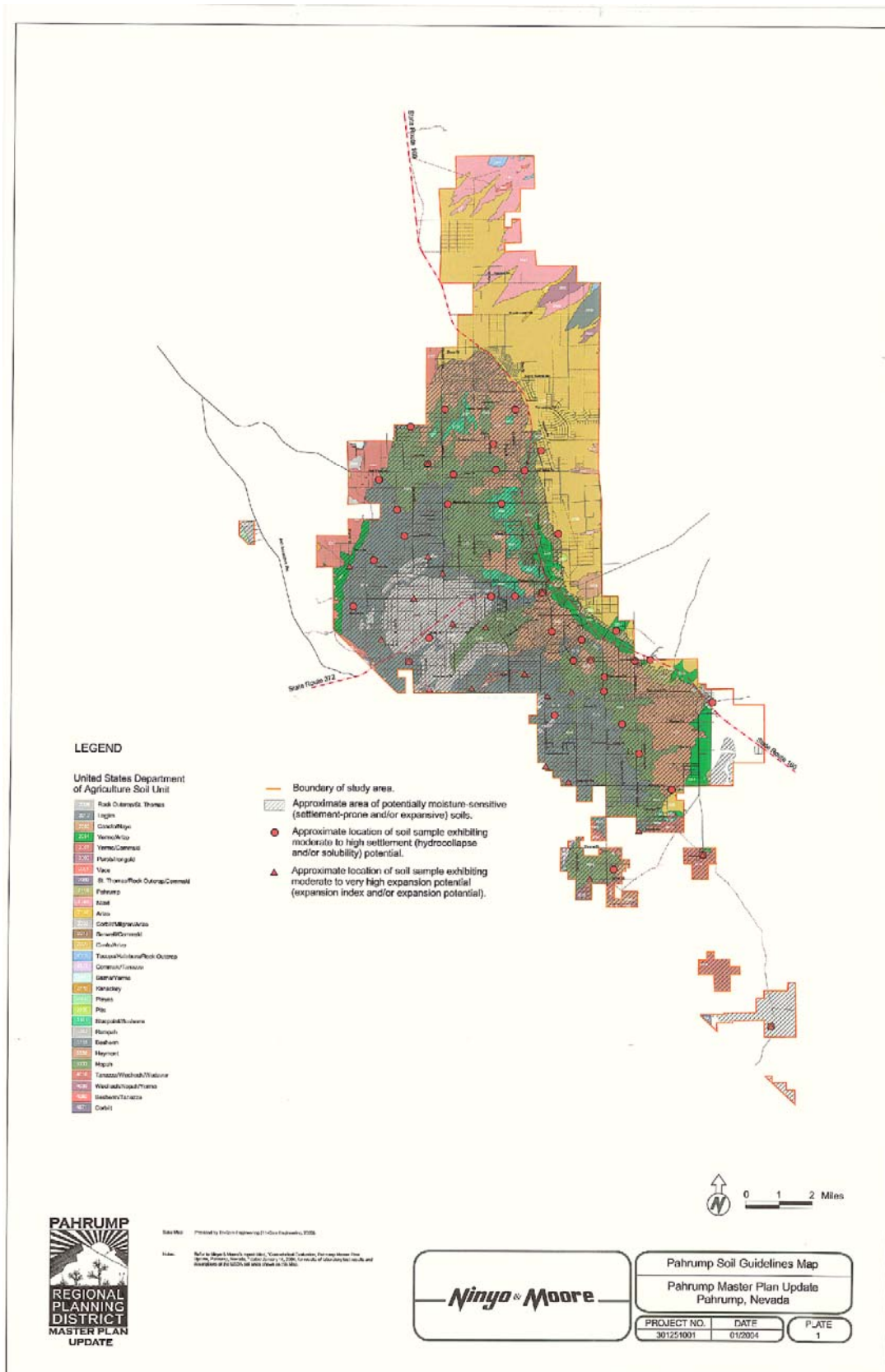
**Nye County GIS Map
Figure B-12**

Appendix B Figures



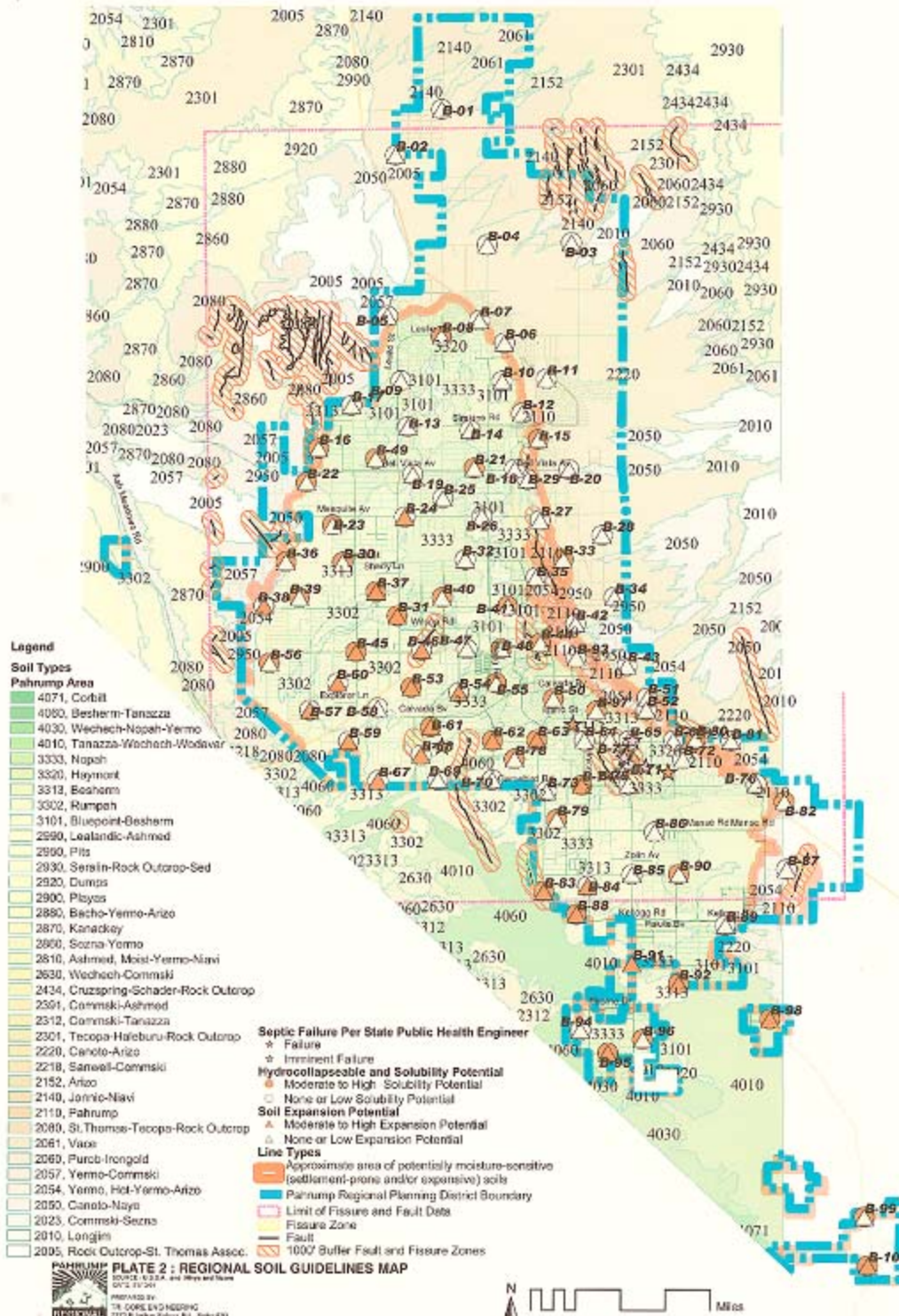
**Pahrump Soils Map
Figure B-13a**

Appendix B Figures



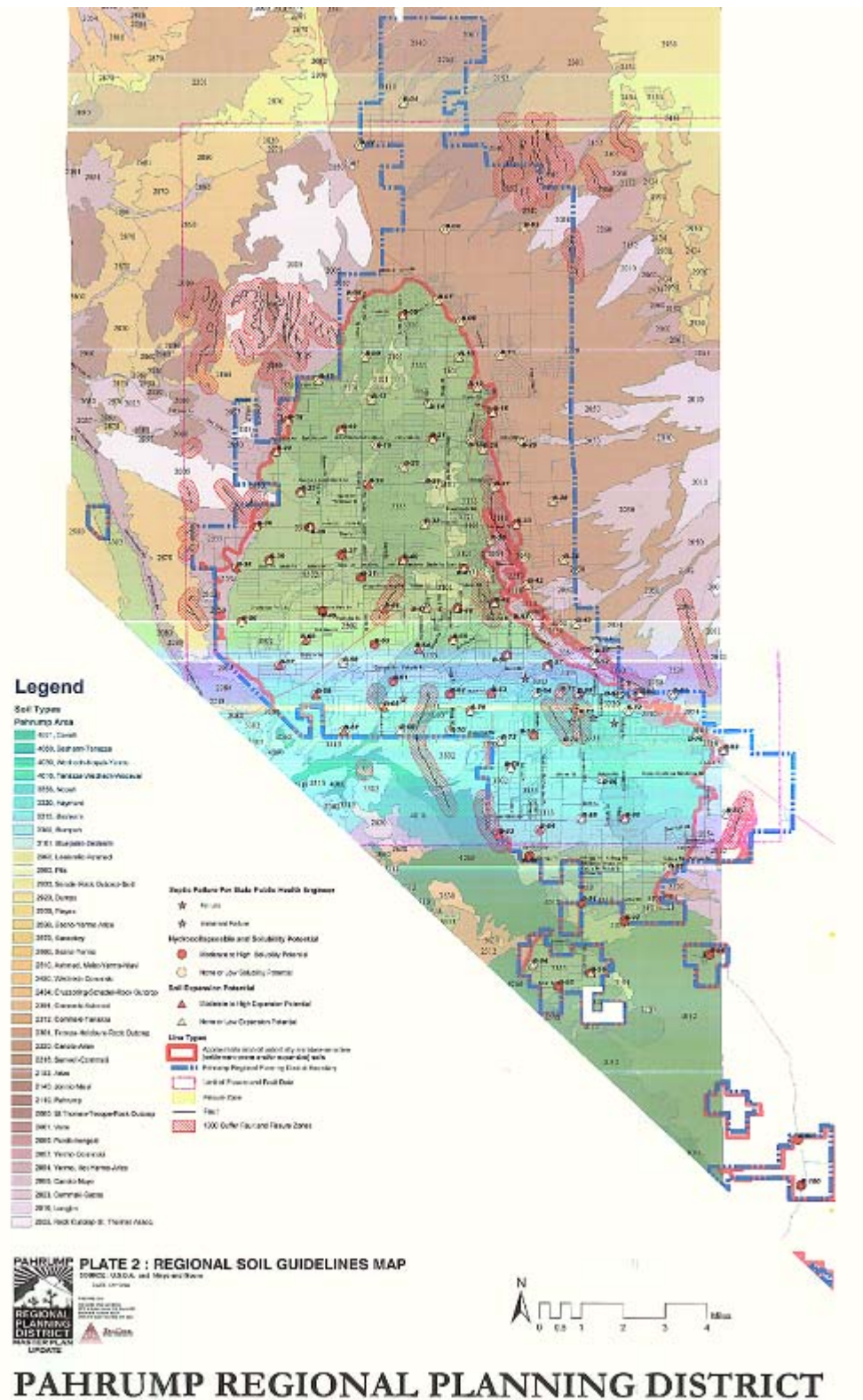
**Pahrump Soils Map
Figure B-13b**

Appendix B Figures



Pahrump Soils Map
Figure B-13c

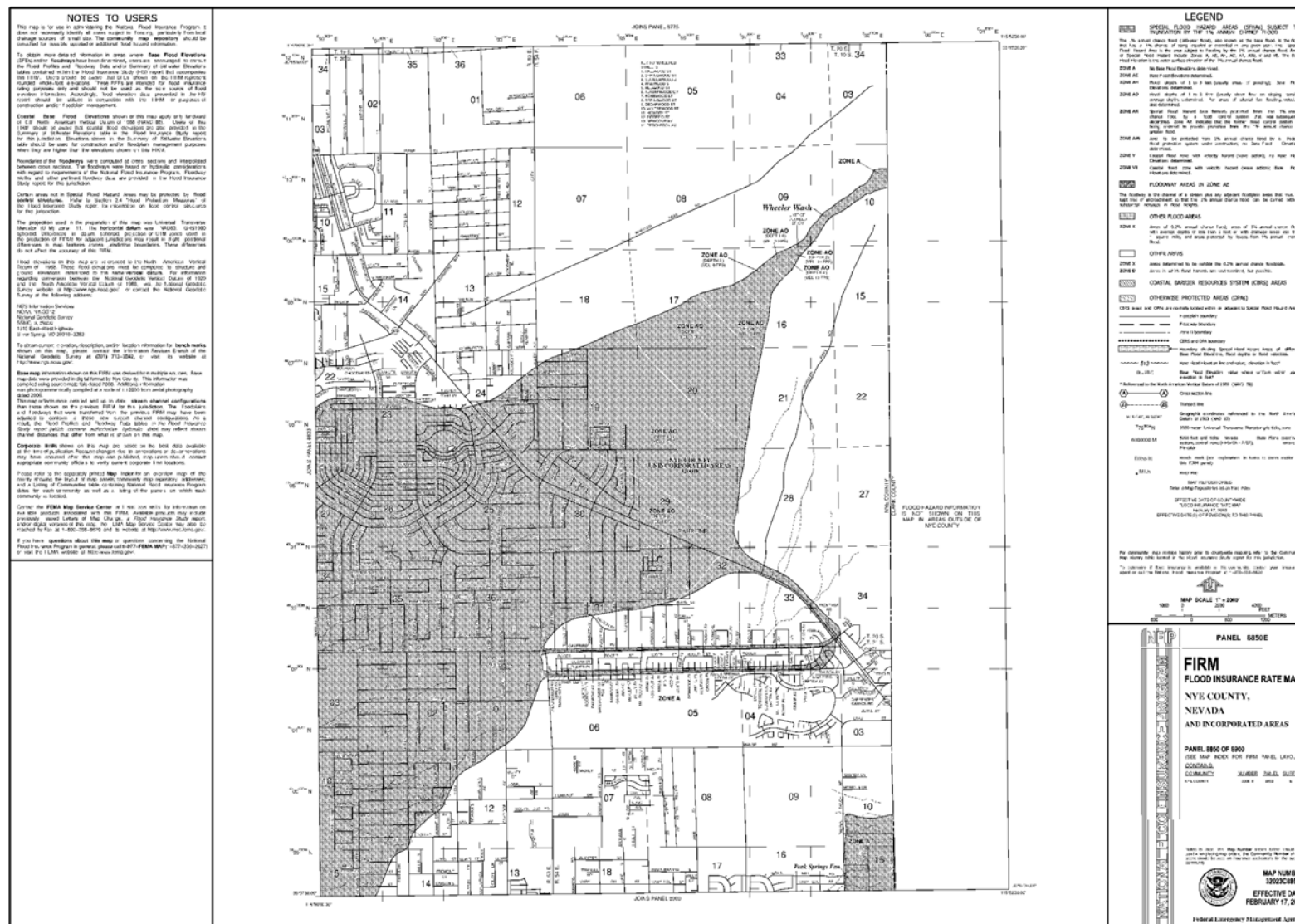
Appendix B Figures



Pahrump Soils Map
Figure B-13d

Appendix B

Figures

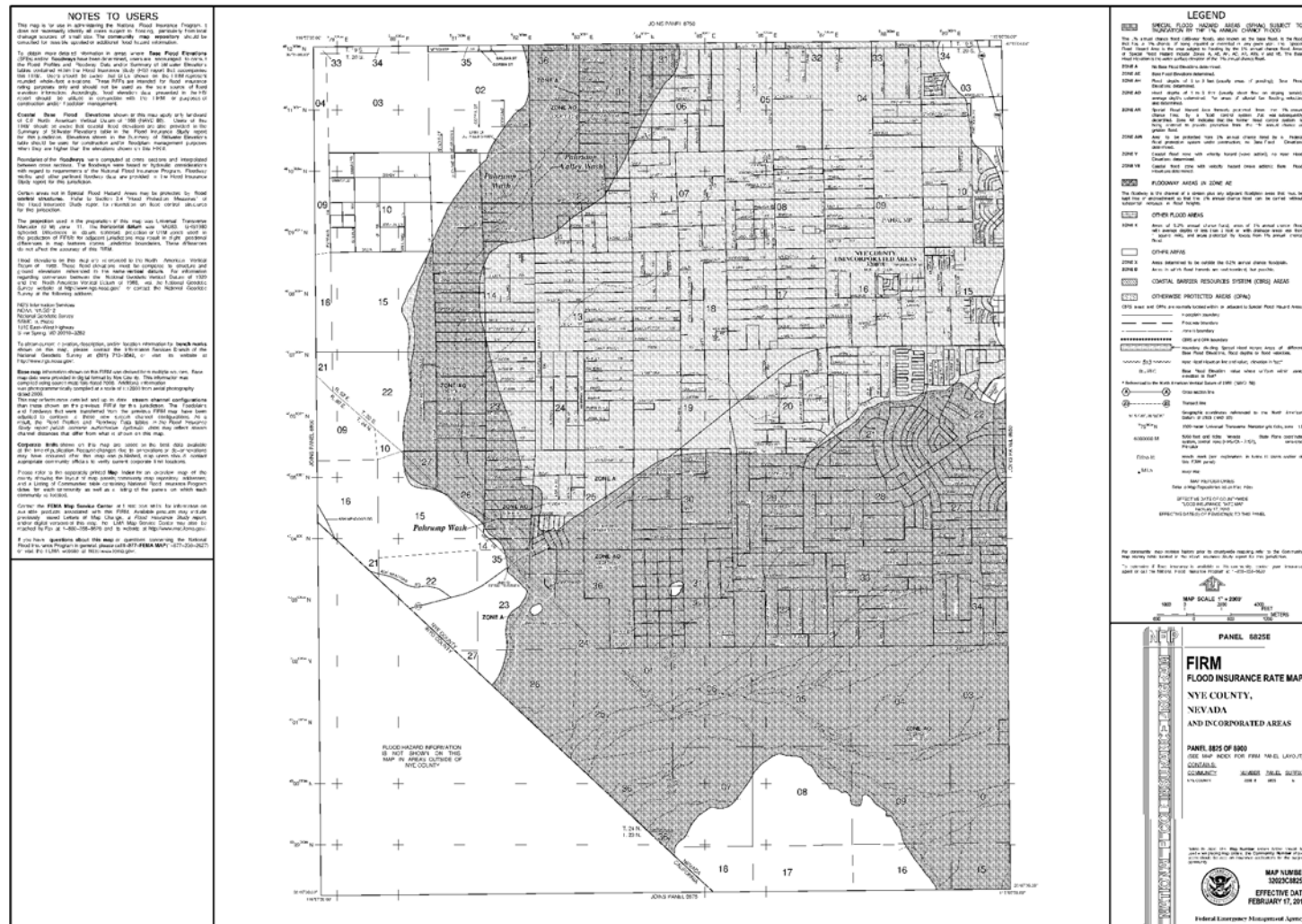


Wheeler Wash Flood Map
FEMA FIRM MAP

Figure B-14a

Appendix B

Figures



Wheeler Wash Flood Map
FEMA FIRM MAP

Figure B-14b

Appendix C

Stakeholders Letter



DYER ENGINEERING CONSULTANTS, INC

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Fax: (775) 852-1441

August 8, 2011

James Wright, Interim Chief
Division of Emergency Management
2478 Fairview Dr.
Carson City, Nevada 89701

RE: Nye County Hazard Mitigation Plan Update

Dear Mr. Wright,

Nye County Nevada has begun the process of updating the *Nye County, Nevada- Hazard Mitigation Plan* that was adopted in December 2005. This update is a federal requirement and provides information to government agencies which helps properly allocate funds for hazard mitigation efforts (44 CFR Part 201).

The County has formed a Hazard Mitigation Planning Task Force which has been working with Dyer Engineering Consultants, Inc. (Nye County's consultant), to update the plan document. The Plan Update will include the addition of key details and hazards to the plan as identified by the Task Force that were overlooked in the initial plan document. In addition the Update will incorporate the most current local and regional plans and the latest information available regarding potential hazards. Planning efforts will focus on both natural and manmade hazards, the potential impacts and mitigation measures that can be undertaken to reduce or eliminate the hazard and/or the impacts. Nye County will develop an action plan for hazard mitigation as one outcome of this Update which may include such components as public education, structural improvements, modifications to management practices, new agreements or enhancements to services.

The draft plan will be made available to the public in fall 2011.

You have been identified as a potential interested party in the *Nye County Hazard Mitigation Plan Update* and by this letter, Nye County invites you to participate in the planning process and/or provide any input you may have to the plan document once it is released for review. For further information regarding the Update and participation in the process or review, please contact Nye County's Consultant: Mr. Shane Dyer, Dyer Engineering Consultants, Inc. at (775) 852-1440 or hmp@dyerengineering.com.

Sincerely,

DYER ENGINEERING CONSULTANTS, INC.

Shane K. Dyer, P.E., W.R.S.
Vice President



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2478 Fairview Dr.
Carson City, Nevada 89701

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August 8, 2011

Irene Navis, Manager
Clark County - Office of Emergency Management
500 South Grand Central Parkway, 6th Floor
Las Vegas, Nevada 89155-4502

RE: Nye County Hazard Mitigation Plan Update

Dear Ms. Navis,

Nye County Nevada has begun the process of updating the *Nye County, Nevada- Hazard Mitigation Plan* that was adopted in December 2005. This update is a federal requirement and provides information to government agencies which helps properly allocate funds for hazard mitigation efforts (44 CFR Part 201).

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Sincerely,

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Shane K. Dyer, P.E., W.R.S.
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August 8, 2011

Kenneth Elgan
Esmeralda County NV - Emergency Management
PO Box 457
Goldfield, NV 89013

RE: Nye County Hazard Mitigation Plan Update

Dear Mr. Elgan,

Nye County Nevada has begun the process of updating the *Nye County, Nevada- Hazard Mitigation Plan* that was adopted in December 2005. This update is a federal requirement and provides information to government agencies which helps properly allocate funds for hazard mitigation efforts (44 CFR Part 201).

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Sincerely,

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Shane K. Dyer, P.E., W.R.S.
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August 8, 2011

Rob Mignard
U.S. Department of Energy - Nevada Site Office
P.O. Box 98518
Las Vegas, NV 89193-8518

RE: Nye County Hazard Mitigation Plan Update

Dear Mr. Mignard,

Nye County Nevada has begun the process of updating the *Nye County, Nevada- Hazard Mitigation Plan* that was adopted in December 2005. This update is a federal requirement and provides information to government agencies which helps properly allocate funds for hazard mitigation efforts (44 CFR Part 201).

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Sincerely,

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August 8, 2011

Ron Damele, Public Works Director
Eureka County Nevada
P.O. Box 714
Eureka, NV 89316

RE: Nye County Hazard Mitigation Plan Update

Dear Mr. Damele,

Nye County Nevada has begun the process of updating the *Nye County, Nevada- Hazard Mitigation Plan* that was adopted in December 2005. This update is a federal requirement and provides information to government agencies which helps properly allocate funds for hazard mitigation efforts (44 CFR Part 201).

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Fax: (775) 852-1441

August 8, 2011

Ron Juliff, Emergency Manager
Churchill County Nevada
155 N Taylor St, Ste 153
Fallon, NV 89406

RE: Nye County Hazard Mitigation Plan Update

Dear Mr. Juliff,

Nye County Nevada has begun the process of updating the *Nye County, Nevada- Hazard Mitigation Plan* that was adopted in December 2005. This update is a federal requirement and provides information to government agencies which helps properly allocate funds for hazard mitigation efforts (44 CFR Part 201).

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Fax: (775) 852-1441

August 8, 2011

Ron Unger, Sheriff/Fire Chief
Office of Emergency Management - Lander County Sheriff's Office
P.O. Box 1625
Battle Mountain, Nevada 89820

RE: Nye County Hazard Mitigation Plan Update

Dear Mr. Unger,

Nye County Nevada has begun the process of updating the *Nye County, Nevada- Hazard Mitigation Plan* that was adopted in December 2005. This update is a federal requirement and provides information to government agencies which helps properly allocate funds for hazard mitigation efforts (44 CFR Part 201).

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Sincerely,

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Reno, Nevada 89511

Phone: (775) 852-1440

Fax: (775) 852-1441

August 8, 2011

Rick Stever, Emergency Manager
Office of Emergency Management - Lincoln County Nevada
P.O. Box 90
Pioche, Nevada 89043

RE: Nye County Hazard Mitigation Plan Update

Dear Mr. Stever,

Nye County Nevada has begun the process of updating the *Nye County, Nevada- Hazard Mitigation Plan* that was adopted in December 2005. This update is a federal requirement and provides information to government agencies which helps properly allocate funds for hazard mitigation efforts (44 CFR Part 201).

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Phone: (775) 852-1440

Fax: (775) 852-1441

August 8, 2011

Craig Nixon, Fire Chief
Office of Emergency Management - Mineral County Nevada
P.O. Box 1095
Hawthorne, Nevada 89415

RE: Nye County Hazard Mitigation Plan Update

Dear Mr. Nixon,

Nye County Nevada has begun the process of updating the *Nye County, Nevada- Hazard Mitigation Plan* that was adopted in December 2005. This update is a federal requirement and provides information to government agencies which helps properly allocate funds for hazard mitigation efforts (44 CFR Part 201).

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Sincerely,

DYER ENGINEERING CONSULTANTS, INC.

Shane K. Dyer, P.E., W.R.S.
Vice President



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August 8, 2011

Russel Peacock, Director
Office of Emergency Management - White Pine County Nevada
P.O. Box 150342
Ely, Nevada 89315

RE: Nye County Hazard Mitigation Plan Update

Dear Mr. Peacock,

Nye County Nevada has begun the process of updating the *Nye County, Nevada- Hazard Mitigation Plan* that was adopted in December 2005. This update is a federal requirement and provides information to government agencies which helps properly allocate funds for hazard mitigation efforts (44 CFR Part 201).

The County has formed a Hazard Mitigation Planning Task Force which has been working with Dyer Engineering Consultants, Inc. (Nye County's consultant), to update the plan document. The Plan Update will include the addition of key details and hazards to the plan as identified by the Task Force that were overlooked in the initial plan document. In addition the Update will incorporate the most current local and regional plans and the latest information available regarding potential hazards. Planning efforts will focus on both natural and manmade hazards, the potential impacts and mitigation measures that can be undertaken to reduce or eliminate the hazard and/or the impacts. Nye County will develop an action plan for hazard mitigation as one outcome of this Update which may include such components as public education, structural improvements, modifications to management practices, new agreements or enhancements to services.

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August 8, 2011

Debbie O'Neil, Emergency Manager
Duckwater Shoshone Tribe of the Duckwater Reservation
P.O. Box 140087
Duckwater, Nevada 89314 -0087

RE: Nye County Hazard Mitigation Plan Update

Dear Ms. O'Neil,

Nye County Nevada has begun the process of updating the *Nye County, Nevada- Hazard Mitigation Plan* that was adopted in December 2005. This update is a federal requirement and provides information to government agencies which helps properly allocate funds for hazard mitigation efforts (44 CFR Part 201).

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August 8, 2011

David Brigham-Smith, Vice Chairman
Yomba Shoshone Tribe Reservation
HC 61 Box 6275
Austin, Nevada 89310

RE: Nye County Hazard Mitigation Plan Update

Dear Mr. Brigham-Smith,

Nye County Nevada has begun the process of updating the *Nye County, Nevada- Hazard Mitigation Plan* that was adopted in December 2005. This update is a federal requirement and provides information to government agencies which helps properly allocate funds for hazard mitigation efforts (44 CFR Part 201).

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Vice President



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August 8, 2011

Jeanne Higgins, Forest Supervisor
Humboldt-Toiyabe National Forest
1200 Franklin Way
Sparks, NV 89431

RE: Nye County Hazard Mitigation Plan Update

Dear Ms. Higgins,

Nye County Nevada has begun the process of updating the *Nye County, Nevada- Hazard Mitigation Plan* that was adopted in December 2005. This update is a federal requirement and provides information to government agencies which helps properly allocate funds for hazard mitigation efforts (44 CFR Part 201).

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Fax: (775) 852-1441

August 8, 2011

Nancy Ward, Regional Administrator, Region IX
Federal Emergency Management Agency
1111 Broadway, Suite 1200
Oakland, CA 94607-4052

RE: Nye County Hazard Mitigation Plan Update

Dear Ms. Ward,

Nye County Nevada has begun the process of updating the *Nye County, Nevada- Hazard Mitigation Plan* that was adopted in December 2005. This update is a federal requirement and provides information to government agencies which helps properly allocate funds for hazard mitigation efforts (44 CFR Part 201).

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August 8, 2011

Emergency Manager
Death Valley National Park
P.O. Box 579
Death Valley, CA 92328

RE: Nye County Hazard Mitigation Plan Update

To whom it may concern;

Nye County Nevada has begun the process of updating the *Nye County, Nevada- Hazard Mitigation Plan* that was adopted in December 2005. This update is a federal requirement and provides information to government agencies which helps properly allocate funds for hazard mitigation efforts (44 CFR Part 201).

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Phone: (775) 852-1440

Fax: (775) 852-1441

August 8, 2011

William Lutze, Sheriff
Inyo County Office of Emergency Services
PO Drawer N
Independence, CA 93526

RE: Nye County Hazard Mitigation Plan Update

Dear Mr. Lutze,

Nye County Nevada has begun the process of updating the *Nye County, Nevada- Hazard Mitigation Plan* that was adopted in December 2005. This update is a federal requirement and provides information to government agencies which helps properly allocate funds for hazard mitigation efforts (44 CFR Part 201).

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Shane K. Dyer, P.E., W.R.S.
Vice

President

Ad# 7412376R RunDate: 08/31/11 Customer Name: TRI SAGE CONSULTING
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NYE COUNTY HAZARD MITIGATION PLAN UPDATE

Nye County is vulnerable to many types of disasters that may be generated either from manmade hazards or from natural causes. As such, Nye County is committed to its citizens to update the *Nye County, Nevada – Hazard Mitigation Plan* at regular intervals to ensure the plan captures the most current information and the County is targeting mitigation of prevalent hazards.

Nye County has begun the process of updating the *Nye County, Nevada – Hazard Mitigation Plan* adopted in 2005. A Planning Task Force has been meeting to update key details and hazards for the County. An updated Hazard Mitigation Plan is critical to the County's eligibility for certain federal funding and disaster assistance.

The draft plan update is expected to be available in fall 2011.

The public is invited to participate in the plan update process. For information on participation opportunities, to submit comments, or to get process and plan updates, contact Nye County's Consultant: Mr. Shane Dyer, Dyer Engineering Consultants, Inc. at (775) 852-1440 or hmp@dyerengineering.com.



Appendix D
Resolution of Adoption

Appendix E
Previous Nye County HMP Action Item Status

<i>Goal 1. Promote disaster-resistant development.</i>		<i>Status</i>
Objective 1.A	Ensure that the County's planning tools to be consistent with the hazard information identified in the HMP.	Ongoing Objective.
Action 1.A.1	Update the <i>Pahrump Regional Planning District Master Plan and Nye County Title 17</i> to be consistent with the hazard area maps and implementation strategies developed in the HMP.	The Master Plan and Nye County Title 17 have been revised since the previous HMP.
Objective 1.B	Develop a GIS database to include the most recent hazard data.	Ongoing Objective.
Action 1.B.1	Develop County-wide GIS hazard maps with information on hazard areas, and critical facilities and infrastructure.	GIS department has been added to Nye County and is in the processes of updating data.
Action 1.B.2	Seek new data from other government, academic, and private organizations that can be used for hazard mitigation and emergency response.	This goal has been accomplished with this update of the plan.
Action 1.B.3	Share hazard information with nearby jurisdictions, private and public organizations, and the general public.	The Nye County website gives access to all public information and information related to hazard mitigation and this plan.
Objective 1.C	Pursue available grant funding to implement mitigation measures.	
Action 1.C.1	Review FEMA grant applications and establish internal procedures to streamline the application process.	Continued goal for this plan.
Action 1.C.2	Apply for PDM and HMGP grants to fund mitigation actions identified in this HMP.	Continued goal for this plan.
<i>Goal 2. Build and support local capacity to enable the public to prepare for, respond to, and recover from disasters.</i>		
Objective 2.A	Improve upon existing capabilities to warn the public of emergency situations.	Ongoing Objective.

Action 2.A.1	Develop emergency evacuation programs for neighborhoods in floodprone areas and wildland fire areas.	Ongoing goal.
Objective 2.B	Ensure that County officials and emergency response personnel are informed of and familiar with existing emergency preparedness procedures and their associated specific responsibilities and roles.	Ongoing Objective.
Action 2.B.1	Annually review the County's Emergency Operations Plan and identify needed plan updates.	Ongoing goal.
Action 2.B.2	Conduct a minimum of one disaster drill each year with relevant County agencies.	Goal has been successful and is ongoing.
Objective 2.C	Educate the public to increase their awareness of hazards, emergency response, and recovery.	Ongoing Objective
Action 2.C.1	Establish a budget and identify funding sources for mitigation outreach.	Ongoing goal.
Action 2.C.2	Work with school districts to develop a public outreach campaign that teaches children how to avoid danger and behave during an emergency.	Ongoing goal.
Action 2.C.3	Support the efforts and education of people with disabilities to prepare for disasters.	Ongoing goal.
Action 2.C.4	Distribute appropriate public information about hazard mitigation programs and projects at County-sponsored events.	Ongoing goal.
<i>Goal 3. Reduce the possibility of damage and losses due to drought.</i>		
Objective 3.A	Protect existing assets, as well as any future development, from the effects of drought.	Ongoing Objective.

Action 3.A.1	Develop and adopt a water conservation ordinance that may stipulate landscaping requirements, hours for irrigation, retro-fitting hotels and households for low-flow toilets and showers, and penalties for wasting water.	Water Board has been given responsibility of seeing this goal is continued to be met.
Action 3.A.2	Pursue the creation of a water conservation and public awareness program as suggested by the Nye County Water Resources Plan.	Water Board has been given responsibility of seeing this goal is continued to be met.
Action 3.A.3	Develop and implement incentive programs to promote outdoor conservation, including drought-resistant landscaping programs.	Water Board has been given responsibility of seeing this goal is continued to be met.
Action 3.A.4	Support legislation to update and secure new water rights for Nye County.	Water Board has been given responsibility of seeing this goal is continued to be met.
<i>Goal 4. Reduce the possibility of damage and losses due to earthquakes.</i>		
Objective 4.A	Protect existing assets, as well as any future development, from the effects of earthquakes.	Ongoing Objective.
Action. 4.A.1	Continue to enforce the Uniform Building Code (UBC) provisions pertaining to grading and construction relative to seismic hazards.	Ongoing goal.
Action 4.A.2	Continue to enforce UBC requirements for addressing liquefaction potential in the design of structures.	Ongoing goal.
Action 4.A.3	Implement an Unreinforced Masonry (URM) building program that determines the structural safety of critical facilities, and retrofit buildings, if necessary.	Goal removed with this update.
Action 4.A.4	Develop and provide managers of mobile home parks with information on how to improve the seismic performance of mobile homes.	Ongoing goal.

Action 4.A.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.	Ongoing goal.
<i>Goal 5. Reduce the possibility of damage and losses due to floods.</i>		
Objective 5.A	Protect existing assets and new development from floods.	Ongoing Objective.
Action 5.A.1	Construct basins, including Carpenter Canyon Basin, which would reduce stormwater runoff entering into the Pahrump Valley.	Ongoing goal.
Action 5.A.2	Discourage the disruption of natural flowage patterns and encourage the maximum use of natural drainage ways.	Ongoing goal.
Action 5.A.3	Require engineered floodplain and hydrologic analysis to be prepared for new large development projects within the 100-year floodplain.	Ongoing goal.
<i>Goal 6. Reduce the possibility of damage and losses due to hazardous materials events.</i>		
Objective 6.A	Protect existing assets, as well as new development, from hazardous materials events.	Ongoing Objective.
Action 6.A.1	Require businesses that use, store, or transport hazardous materials to ensure that adequate measures are taken to protect public health and safety.	Ongoing goal. Updated in new plan.
Action 6.A.2	Work with Nevada Department of Transportation to require all transport of hazardous materials to follow approved routes.	Ongoing goal. Updated in new plan.
Action 6.A.3	Use the County's Web site to post information regarding the safe handling and disposal of household chemicals.	Ongoing goal. Updated in new plan.
<i>Goal 7. Reduce the possibility of damage and losses due to land subsidence.</i>		
Objective 7.A	Protect existing assets, as well as new development, from land subsidence.	Ongoing Objective.

Action 7.A.1	Develop and adopt setbacks from mapped faults to help mitigate future fissure losses.	Ongoing goal.
Action 7.A.2	Support an ordinance that will ensure effective withdrawal of groundwater that will not precede or exacerbate subsidence.	Water Board has been given responsibility of seeing this goal is continued to be met.
<i>Goal 8. Reduce the possibility of damage and losses due to thunderstorms.</i>		
Objective 8.A	Protect existing assets, as well as new development, from thunderstorms.	Ongoing Objective.
Action 8.A.1	Install/maintain lightning detection systems for public outdoor venues.	Ongoing goal.
Action 8.A.2	Develop an annual free curb-side dead tree and branch removal pick-up program to protect structures from a thunderstorm event.	Ongoing goal.
Action 8.A.3	Install lightning rods near public outdoor venues and critical facilities to carry the electrical charge of lightning bolts safely to the ground.	Ongoing goal.
<i>Goal 9. Reduce the possibility of damage and losses due to wildland fires.</i>		
Objective 9.A	Protect existing assets, as well as new development, from wildland fires.	Ongoing Objective.
Action 9.A.1	Enforce the most current versions of the Urban-Wildland Interface Code.	Ongoing goal.
Action 9.A.2	Continue to conduct current fuel management programs (i.e., weed abatement programs) and investigate and apply new and emerging fuel management techniques.	Ongoing goal.
Action 9.A.3	Develop and adopt defensible space measures for new master planned communities and subdivisions.	Ongoing goal.
Action 9.A.4	Develop a public outreach campaign of the extreme wildland fire dangers and steps that can be taken to reduce these dangers.	Ongoing goal.
Action 9.A.5	Develop an annual free curb-side dead tree and weed removal pick-up program.	Ongoing goal.

Action 9.A.6	Work with BLM and USFS to conduct fuel reduction project on federal property surrounding each community.	Ongoing goal.
<i>Goal 10. Reduce the possibility of damage and losses due to windstorms.</i>		
Objective 10.A	Protect existing assets, as well as new development, from severe winds.	Ongoing Objective.
Action 10.A.1	Develop restrictions on planting large or rapidly-growing trees near power lines and major arterials.	Ongoing goal. Updated in new plan.
Action 10.A.2	Develop a program to assist property owners in selecting trees that are powerline friendly.	Ongoing goal. Updated in new plan.
Action 10.A.3	Improve the safety and reliability of overhead lines through improved design, maintenance, right-of-way management, and inter-utility cooperation.	Ongoing goal.
Action 10.A.4	Adopt prescriptive high wind design standards for new critical facilities.	Ongoing goal.
<i>Goal 11. Reduce the possibility of damage and losses due to winter storms.</i>		
Objective 11.A	Protect existing assets, as well as new development, from winter storms.	Ongoing Objective.
Action 11.A.1	In areas at risk to winter storms, retrofit public buildings to withstand snowloads and prevent roof collapse.	Ongoing goal.
Action 11.A.2	Develop a storm water management plan for snow melt.	Ongoing goal.
Action 11.A.3	Develop a public outreach campaign that teaches people how to winterize a house, barn, shed or any other structure that may provide shelter for family members, neighbors, livestock or equipment.	Ongoing goal.

Appendix F

Review Tool

APPENDIX A:

LOCAL MITIGATION PLAN REVIEW TOOL

The *Local Mitigation Plan Review Tool* demonstrates how the Local Mitigation Plan meets the regulation in 44 CFR §201.6 and offers States and FEMA Mitigation Planners an opportunity to provide feedback to the community.

- The Regulation Checklist provides a summary of FEMA’s evaluation of whether the Plan has addressed all requirements.
- The Plan Assessment identifies the plan’s strengths as well as documents areas for future improvement.
- The Multi-jurisdiction Summary Sheet is an optional worksheet that can be used to document how each jurisdiction met the requirements of the each Element of the Plan (Planning Process; Hazard Identification and Risk Assessment; Mitigation Strategy; Plan Review, Evaluation, and Implementation; and Plan Adoption).

The FEMA Mitigation Planner must reference this *Local Mitigation Plan Review Guide* when completing the *Local Mitigation Plan Review Tool*.

Jurisdiction:	Title of Plan:	Date of Plan:
Local Point of Contact:	Address:	
Title:		
Agency:		
Phone Number:	E-Mail:	

--	--

State Reviewer:	Title:	Date:

FEMA Reviewer:	Title:	Date:
Date Received in FEMA Region <i>(insert #)</i>		
Plan Not Approved		
Plan Approvable Pending Adoption		
Plan Approved		

SECTION 1:

REGULATION CHECKLIST

INSTRUCTIONS: The Regulation Checklist must be completed by FEMA. The purpose of the Checklist is to identify the location of relevant or applicable content in the Plan by Element/sub-element and to determine if each requirement has been ‘Met’ or ‘Not Met.’ The ‘Required Revisions’ summary at the bottom of each Element must be completed by FEMA to provide a clear explanation of the revisions that are required for plan approval. Required revisions must be explained for each plan sub-element that is ‘Not Met.’ Sub-elements should be referenced in each summary by using the appropriate numbers (A1, B3, etc.), where applicable. Requirements for each Element and sub-element are described in detail in this *Plan Review Guide* in Section 4, Regulation Checklist.

1. REGULATION CHECKLIST	Location in Plan	Met	Not Met
Regulation (44 CFR 201.6 Local Mitigation Plans)			
ELEMENT A. PLANNING PROCESS			
A1. Does the Plan document the planning process, including how it was prepared and who was involved in the process for each jurisdiction? (Requirement §201.6(c)(1))			
A2. Does the Plan document an opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, agencies that have the authority to regulate development as well as other interests to be involved in the planning process? (Requirement §201.6(b)(2))			
A3. Does the Plan document how the public was involved in the planning process during the drafting stage? (Requirement §201.6(b)(1))			
A4. Does the Plan describe the review and incorporation of existing plans, studies, reports, and technical information? (Requirement §201.6(b)(3))			
A5. Is there discussion of how the community(ies) will continue public participation in the plan maintenance process? (Requirement §201.6(c)(4)(iii))			
A6. Is there a description of the method and schedule for keeping the plan current (monitoring, evaluating and updating the mitigation plan within a 5-year cycle)? (Requirement §201.6(c)(4)(i))			

1. REGULATION CHECKLIST		Location in Plan	Met	Not Met
Regulation (44 CFR 201.6 Local Mitigation Plans)				
<u>ELEMENT A: REQUIRED REVISIONS</u>				
ELEMENT B. HAZARD IDENTIFICATION AND RISK ASSESSMENT				
B1. Does the Plan include a description of the type, location, and extent of all natural hazards that can affect each jurisdiction(s)? (Requirement §201.6(c)(2)(i))				
B2. Does the Plan include information on previous occurrences of hazard events and on the probability of future hazard events for each jurisdiction? (Requirement §201.6(c)(2)(i))				
B3. Is there a description of each identified hazard's impact on the community as well as an overall summary of the community's vulnerability for each jurisdiction? (Requirement §201.6(c)(2)(ii))				
B4. Does the Plan address NFIP insured structures within the jurisdiction that have been repetitively damaged by floods? (Requirement §201.6(c)(2)(ii))				
<u>ELEMENT B: REQUIRED REVISIONS</u>				
ELEMENT C. MITIGATION STRATEGY				
C1. Does the plan document each jurisdiction's existing authorities, policies, programs and resources and its ability to expand on and improve these existing policies and programs? (Requirement §201.6(c)(3))				
C2. Does the Plan address each jurisdiction's participation in the NFIP and continued compliance with NFIP requirements, as appropriate? (Requirement §201.6(c)(3)(ii))				
C3. Does the Plan include goals to reduce/avoid long-term vulnerabilities to the identified hazards? (Requirement §201.6(c)(3)(i))				

1. REGULATION CHECKLIST		Location in Plan	Met	Not Met
Regulation (44 CFR 201.6 Local Mitigation Plans)				
C4. Does the Plan identify and analyze a comprehensive range of specific mitigation actions and projects for each jurisdiction being considered to reduce the effects of hazards, with emphasis on new and existing buildings and infrastructure? (Requirement §201.6(c)(3)(ii))				
C5. Does the Plan contain an action plan that describes how the actions identified will be prioritized (including cost benefit review), implemented, and administered by each jurisdiction? (Requirement §201.6(c)(3)(iv)); (Requirement §201.6(c)(3)(iii))				
C6. Does the Plan describe a process by which local governments will integrate the requirements of the mitigation plan into other planning mechanisms, such as comprehensive or capital improvement plans, when appropriate? (Requirement §201.6(c)(4)(ii))				
<u>ELEMENT C: REQUIRED REVISIONS</u>				
ELEMENT D. PLAN REVIEW, EVALUATION, AND IMPLEMENTATION (applicable to plan updates only)				
D1. Was the plan revised to reflect changes in development? (Requirement §201.6(d)(3))				
D2. Was the plan revised to reflect progress in local mitigation efforts? (Requirement §201.6(d)(3))				
D3. Was the plan revised to reflect changes in priorities? (Requirement §201.6(d)(3))				
<u>ELEMENT D: REQUIRED REVISIONS</u>				
ELEMENT E. PLAN ADOPTION				
E1. Does the Plan include documentation that the plan has been formally adopted by the governing body of the jurisdiction requesting approval? (Requirement §201.6(c)(5))				
E2. For multi-jurisdictional plans, has each jurisdiction requesting approval of the plan documented formal plan adoption? (Requirement §201.6(c)(5))				
<u>ELEMENT E: REQUIRED REVISIONS</u>				
ELEMENT F. ADDITIONAL STATE REQUIREMENTS (OPTIONAL FOR STATE REVIEWERS ONLY; NOT TO BE COMPLETED BY FEMA)				

1. REGULATION CHECKLIST		Location in Plan	Met	Not Met
Regulation (44 CFR 201.6 Local Mitigation Plans)				
F1. Requirement §201.4(c)(3)(ii): [The local mitigation strategy shall include] a general description and analysis of the effectiveness of local mitigation policies, programs, and capabilities.				
F2.				
<u>ELEMENT F: REQUIRED REVISIONS</u>				

SECTION 2:

PLAN ASSESSMENT

INSTRUCTIONS: The purpose of the Plan Assessment is to offer the local community more comprehensive feedback to the community on the quality and utility of the plan in a narrative format. The audience for the Plan Assessment is not only the plan developer/local community planner, but also elected officials, local departments and agencies, and others involved in implementing the Local Mitigation Plan. The Plan Assessment must be completed by FEMA. The Assessment is an opportunity for FEMA to provide feedback and information to the community on: 1) suggested improvements to the Plan; 2) specific sections in the Plan where the community has gone above and beyond minimum requirements; 3) recommendations for plan implementation; and 4) ongoing partnership(s) and information on other FEMA programs, specifically RiskMAP and Hazard Mitigation Assistance programs. The Plan Assessment is divided into two sections:

1. Plan Strengths and Opportunities for Improvement
2. Resources for Implementing Your Approved Plan

Plan Strengths and Opportunities for Improvement is organized according to the plan Elements listed in the Regulation Checklist. Each Element includes a series of italicized bulleted items that are suggested topics for consideration while evaluating plans, but it is not intended to be a comprehensive list. FEMA Mitigation Planners are not required to answer each bullet item, and should use them as a guide to paraphrase their own written assessment (2-3 sentences) of each Element.

The Plan Assessment must not reiterate the required revisions from the Regulation Checklist or be regulatory in nature, and should be open-ended and to provide the community with suggestions for improvements or recommended revisions. The recommended revisions are suggestions for improvement and are not required to be made for the Plan to meet Federal regulatory requirements. The italicized text should be deleted once FEMA has added comments regarding strengths of the plan and potential improvements for future plan revisions. It is recommended that the Plan Assessment be a short synopsis of the overall strengths and weaknesses of the Plan (no longer than two pages), rather than a complete recap section by section.

Resources for Implementing Your Approved Plan provides a place for FEMA to offer information, data sources and general suggestions on the overall plan implementation and maintenance process. Information on other possible sources of assistance including, but not limited to, existing publications, grant funding or training opportunities, can be provided. States may add state and local resources, if available.

A. Plan Strengths and Opportunities for Improvement

This section provides a discussion of the strengths of the plan document and identifies areas where these could be improved beyond minimum requirements.

Element A: Planning Process

How does the Plan go above and beyond minimum requirements to document the planning process with respect to:

- *Involvement of stakeholders (elected officials/decision makers, plan implementers, business owners, academic institutions, utility companies, water/sanitation districts, etc.);*
- *Involvement of Planning, Emergency Management, Public Works Departments or other planning agencies (i.e., regional planning councils);*
- *Diverse methods of participation (meetings, surveys, online, etc.); and*
- *Reflective of an open and inclusive public involvement process.*

Element B: Hazard Identification and Risk Assessment

In addition to the requirements listed in the Regulation Checklist, 44 CFR 201.6 Local Mitigation Plans identifies additional elements that should be included as part of a plan's risk assessment. The plan should describe vulnerability in terms of:

- 1) *A general description of land uses and future development trends within the community so that mitigation options can be considered in future land use decisions;*
- 2) *The types and numbers of existing and future buildings, infrastructure, and critical facilities located in the identified hazard areas; and*
- 3) *A description of potential dollar losses to vulnerable structures, and a description of the methodology used to prepare the estimate.*

How does the Plan go above and beyond minimum requirements to document the Hazard Identification and Risk Assessment with respect to:

- *Use of best available data (flood maps, HAZUS, flood studies) to describe significant hazards;*
- *Communication of risk on people, property, and infrastructure to the public (through tables, charts, maps, photos, etc.);*
- *Incorporation of techniques and methodologies to estimate dollar losses to vulnerable structures;*
- *Incorporation of Risk MAP products (i.e., depth grids, Flood Risk Report, Changes Since Last FIRM, Areas of Mitigation Interest, etc.); and*
- *Identification of any data gaps that can be filled as new data became available.*

Element C: Mitigation Strategy

How does the Plan go above and beyond minimum requirements to document the Mitigation Strategy with respect to:

- *Key problems identified in, and linkages to, the vulnerability assessment;*
- *Serving as a blueprint for reducing potential losses identified in the Hazard Identification and Risk Assessment;*
- *Plan content flow from the risk assessment (problem identification) to goal setting to mitigation action development;*
- *An understanding of mitigation principles (diversity of actions that include structural projects, preventative measures, outreach activities, property protection measures, post-disaster actions, etc);*
- *Specific mitigation actions for each participating jurisdictions that reflects their unique risks and capabilities;*
- *Integration of mitigation actions with existing local authorities, policies, programs, and resources; and*
- *Discussion of existing programs (including the NFIP), plans, and policies that could be used to implement mitigation, as well as document past projects.*

Element D: Plan Update, Evaluation, and Implementation (*Plan Updates Only*)

How does the Plan go above and beyond minimum requirements to document the 5-year Evaluation and Implementation measures with respect to:

- *Status of previously recommended mitigation actions;*
- *Identification of barriers or obstacles to successful implementation or completion of mitigation actions, along with possible solutions for overcoming risk;*
- *Documentation of annual reviews and committee involvement;*
- *Identification of a lead person to take ownership of, and champion the Plan;*
- *Reducing risks from natural hazards and serving as a guide for decisions makers as they commit resources to reducing the effects of natural hazards;*
- *An approach to evaluating future conditions (i.e. socio-economic, environmental, demographic, change in built environment etc.);*
- *Discussion of how changing conditions and opportunities could impact community resilience in the long term; and*
- *Discussion of how the mitigation goals and actions support the long-term community vision for increased resilience.*

B. Resources for Implementing Your Approved Plan

Ideas may be offered on moving the mitigation plan forward and continuing the relationship with key mitigation stakeholders such as the following:

- *What FEMA assistance (funding) programs are available (for example, Hazard Mitigation Assistance (HMA)) to the jurisdiction(s) to assist with implementing the mitigation actions?*
- *What other Federal programs (National Flood Insurance Program (NFIP), Community Rating System (CRS), Risk MAP, etc.) may provide assistance for mitigation activities?*
- *What publications, technical guidance or other resources are available to the jurisdiction(s) relevant to the identified mitigation actions?*
- *Are there upcoming trainings/workshops (Benefit-Cost Analysis (BCA), HMA, etc.) to assist the jurisdictions(s)?*
- *What mitigation actions can be funded by other Federal agencies (for example, U.S. Forest Service, National Oceanic and Atmospheric Administration (NOAA), Environmental Protection Agency (EPA) Smart Growth, Housing and Urban Development (HUD) Sustainable Communities, etc.) and/or state and local agencies?*

SECTION 3:

MULTI-JURISDICTION SUMMARY SHEET (OPTIONAL)

INSTRUCTIONS: For multi-jurisdictional plans, a Multi-jurisdiction Summary Spreadsheet may be completed by listing each participating jurisdiction, which required Elements for each jurisdiction were ‘Met’ or ‘Not Met,’ and when the adoption resolutions were received. This Summary Sheet does not imply that a mini-plan be developed for each jurisdiction; it should be used as an optional worksheet to ensure that each jurisdiction participating in the Plan has been documented and has met the requirements for those Elements (A through E).

MULTI-JURISDICTION SUMMARY SHEET												
#	Jurisdiction Name	Jurisdiction Type (city/borough/ township/ village, etc.)	Plan POC	Mailing Address	Email	Phone	Requirements Met (Y/N)					
							A. Planning Process	B. Hazard Identification & Risk Assessment	C. Mitigation Strategy	D. Plan Review, Evaluation & Implementation	E. Plan Adoption	F. State Requirements
1												
2												
3												
4												
5												

MULTI-JURISDICTION SUMMARY SHEET												
#	Jurisdiction Name	Jurisdiction Type (city/borough/ township/ village, etc.)	Plan POC	Mailing Address	Email	Phone	Requirements Met (Y/N)					
							A. Planning Process	B. Hazard Identification & Risk Assessment	C. Mitigation Strategy	D. Plan Review, Evaluation & Implementation	E. Plan Adoption	F. State Requirements
6												
7												
8												
9												
10												
11												
12												
13												
14												
15												
16												
17												
18												

MULTI-JURISDICTION SUMMARY SHEET												
#	Jurisdiction Name	Jurisdiction Type (city/borough/ township/ village, etc.)	Plan POC	Mailing Address	Email	Phone	Requirements Met (Y/N)					
							A. Planning Process	B. Hazard Identification & Risk Assessment	C. Mitigation Strategy	D. Plan Review, Evaluation & Implementation	E. Plan Adoption	F. State Requirements
19												
20												

INSTRUCTIONS FOR USING THE PLAN REVIEW CROSSWALK FOR REVIEW OF LOCAL MITIGATION PLANS

Attached is a Plan Review Crosswalk based on the **Local Multi-Hazard Mitigation Planning Guidance**, published by FEMA in July, 2008. This Plan Review Crosswalk is consistent with the *Robert T. Stafford Disaster Relief and Emergency Assistance Act* (Stafford Act), as amended by Section 322 of the *Disaster Mitigation Act of 2000* (P.L. 106-390), the *National Flood Insurance Act of 1968*, as amended by the *National Flood Insurance Reform Act of 2004* (P.L. 108-264) and *44 Code of Federal Regulations 11(CFR) Part 201 – Mitigation Planning*, inclusive of all amendments through October 31, 2007.

SCORING SYSTEM

N – Needs Improvement: The plan does not meet the minimum for the requirement. Reviewer's comments must be provided.

S – Satisfactory: The plan meets the minimum for the requirement. Reviewer's comments are encouraged, but not required.

Each requirement includes separate elements. All elements of a requirement must be rated "Satisfactory" in order for the requirement to be fulfilled and receive a summary score of "Satisfactory." A "Needs Improvement" score on elements shaded in gray (recommended but not required) will not preclude the plan from passing.

When reviewing single jurisdiction plans, reviewers may want to put an N/A in the boxes for multi-jurisdictional plan requirements. When reviewing multi-jurisdictional plans, however, all elements apply. States that have additional requirements can add them in the appropriate sections of the *Local Multi-Hazard Mitigation Planning Guidance* or create a new section and modify this Plan Review Crosswalk to record the score for those requirements. Optional matrices for assisting in the review of sections on profiling hazards, assessing vulnerability, and identifying and analyzing mitigation actions are found at the end of the Plan Review Crosswalk.

The example below illustrates how to fill in the Plan Review Crosswalk.:

Assessing Vulnerability: Overview				
<i>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.</i>				
Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE	
			N	S
A. Does the new or updated plan include an overall summary description of the jurisdiction's vulnerability to each hazard?	Section 2, page 4-10	The plan describes the types of assets that are located within geographically defined hazard areas as well as those that would be affected by winter storms.		<input type="checkbox"/>
B. Does the new or updated plan address the impact of each hazard on the jurisdiction?	Section 2, page 10-20	The plan does not address the impact of two of the five hazards addressed in the plan. Required Revisions: • Include a description of the impact of floods and earthquakes on the assets. Recommended Revisions:	<input type="checkbox"/>	

		This information can be presented in terms of dollar value or percentages of damage.		
			SUMMARY SCORE	<input type="checkbox"/>

LOCAL MITIGATION PLAN REVIEW SUMMARY

The plan cannot be approved if the plan has not been formally adopted. Each requirement includes separate elements. All elements of the requirement must be rated "Satisfactory" in order for the requirement to be fulfilled and receive a score of "Satisfactory." Elements of each requirement are listed on the following pages of the Plan Review Crosswalk. A "Needs Improvement" score on elements shaded in gray (recommended but not required) will not preclude the plan from passing. Reviewer's comments must be provided for requirements receiving a "Needs Improvement" score.

Prerequisite(s) (Check Applicable Box)

1. Adoption by the Local Governing Body: §201.6(c)(5) OR

NOT MET	MET
<input type="checkbox"/>	<input type="checkbox"/>

2. Multi-Jurisdictional Plan Adoption: §201.6(c)(5)
AND

<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>

3. Multi-Jurisdictional Planning Participation: §201.6(a)(3)

Planning Process

4. Documentation of the Planning Process: §201.6(b) and §201.6(c)(1)

N	S
<input type="checkbox"/>	<input type="checkbox"/>

Risk Assessment

5. Identifying Hazards: §201.6(c)(2)(i)

N	S
<input type="checkbox"/>	<input type="checkbox"/>

6. Profiling Hazards: §201.6(c)(2)(i)

<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>

7. Assessing Vulnerability: Overview: §201.6(c)(2)(ii)

8. Assessing Vulnerability: Addressing Repetitive Loss Properties: §201.6(c)(2)(ii)

9. Assessing Vulnerability: Identifying Structures, Infrastructure, and Critical Facilities: §201.6(c)(2)(ii)(B)

10. Assessing Vulnerability: Estimating Potential Losses: §201.6(c)(2)(ii)(B)

11. Assessing Vulnerability: Analyzing Development Trends: §201.6(c)(2)(ii)(C)

12. Multi-Jurisdictional Risk Assessment: §201.6(c)(2)(iii)

N	S
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>

*States that have additional requirements can add them in the appropriate sections of the *Local Multi-Hazard Mitigation Planning Guidance* or create a new section and modify this Plan Review Crosswalk to record the score for those requirements.

SCORING SYSTEM

Please check one of the following for each requirement.

N – Needs Improvement: The plan does not meet the minimum for the requirement. Reviewer's comments must be provided.

S – Satisfactory: The plan meets the minimum for the requirement. Reviewer's comments are encouraged, but not required.

Mitigation Strategy

13. Local Hazard Mitigation Goals: §201.6(c)(3)(i)

14. Identification and Analysis of Mitigation Actions: §201.6(c)(3)(ii)

15. Identification and Analysis of Mitigation Actions: NFIP Compliance. §201.6(c)(3)(ii)

16. Implementation of Mitigation Actions: §201.6(c)(3)(iii)

17. Multi-Jurisdictional Mitigation Actions: §201.6(c)(3)(iv)

N	S
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>

Plan Maintenance Process

18. Monitoring, Evaluating, and Updating the Plan: §201.6(c)(4)(ii)

19. Incorporation into Existing Planning Mechanisms: §201.6(c)(4)(ii)

20. Continued Public Involvement: §201.6(c)(4)(iii)

N	S
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>

Additional State Requirements*

21. Capability Assessment Requirement §201.4(c)(3)(ii)

22. Assessing Vulnerability: §201.6(c)(2)(ii) Identification of URM properties

N	S
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>

LOCAL MITIGATION PLAN APPROVAL STATUS

PLAN NOT APPROVED

☐

See Reviewer's Comments

PLAN APPROVED

☐

Local Mitigation Plan Review and Approval Status

Jurisdiction: Nye County	Title of Plan: Nye County and Duckwater Hazard Mitigation Plan	Date of Plan: January 2012
Local Point of Contact:	Address:	
Title:		
Agency:		
Phone Number:	E-Mail:	

State Reviewer:	Title:	Date:
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FEMA Reviewer:	Title:	Date:
Date Received in FEMA Region [Insert #]		
Plan Not Approved		
Plan Approved		
Date Approved		

Jurisdiction:	NFIP Status*			
	Y	N	N/A	CRS Class
1.				
2.				
3.				
4.				
5. [ATTACH PAGE(S) WITH ADDITIONAL JURISDICTIONS]				

* Notes:

Y = Participating

N = Not Participating

N/A = Not Mapped

PREREQUISITE(S)

1. 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	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE	
			NOT MET	MET
A. Has the local governing body adopted new or updated plan?	Section 2-2, Page 2-1			
B. Is supporting documentation, such as a resolution, included?	Appendix D			
SUMMARY SCORE				

2. Multi-Jurisdictional Plan Adoption

Requirement §201.6(c)(5): *For multi-jurisdictional plans, each jurisdiction requesting approval of the plan **must** document that it has been formally adopted.*

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE	
			NOT MET	MET
A. Does the new or updated plan indicate the specific jurisdictions represented in the plan?	Section 3, page 3-1 to 3-4			
B. For each jurisdiction, has the local governing body adopted the new or updated plan?	Section 2.2, page 2-1			
C. Is supporting documentation, such as a resolution, included for each participating jurisdiction?	Appendix D			
SUMMARY SCORE				

3. Multi-Jurisdictional Planning Participation

Requirement §201.6(a)(3): Multi-jurisdictional plans (e.g., watershed plans) may be accepted, as appropriate, as long as each jurisdiction has participated in the process ... Statewide plans will not be accepted as multi-jurisdictional plans.

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE	
			NOT MET	MET
A. Does the new or updated plan describe how each jurisdiction participated in the plan's development?	Section 4, page 4-1			
B. Does the updated plan identify all participating jurisdictions, including new, continuing, and the jurisdictions that no longer participate in the plan?	Section 4, page 4-2			
SUMMARY SCORE				

PLANNING PROCESS: §201.6(b): *An open public involvement process is essential to the development of an effective plan.*

4. 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 non-profit 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	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE	
			N	S
A. Does the plan provide a narrative description of the process followed to prepare the new or updated plan?	Section 4.3, page 4-3			
B. Does the new or updated plan indicate who was involved in the current 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.?)	Section 4.2, page 4-2; 4-3			
C. 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?)	Section 4.4, page 4-4			
D. Does the new or updated plan discuss the opportunity for neighboring communities, agencies, businesses, academia, nonprofits, and other interested parties to be involved in the planning process?	Section 4.4, page 4-4			
E. Does the planning process describe the review and incorporation, if appropriate, of existing plans, studies, reports, and technical information?	Section 6, page 6-1			
F. Does the updated plan document how the planning team reviewed and analyzed each section of the plan and whether each section was revised as part of the update process?	Section 4.5, page 4-6			
SUMMARY SCORE				

RISK ASSESSMENT: §201.6(c)(2): *The plan shall include a risk assessment that provides the factual basis for activities proposed in the strategy to reduce losses from identified hazards. Local risk assessments must provide sufficient information to enable the jurisdiction to identify and prioritize appropriate mitigation actions to reduce losses from identified hazards.*

5. Identifying Hazards

Requirement §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	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE	
			N	S
A. Does the new or updated plan include a description of the types of all natural hazards that affect the jurisdiction?	Section 5.1, page 5-3			
SUMMARY SCORE				

6. 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	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE	
			N	S
A. Does the risk assessment identify the location (<i>i.e.</i> , geographic area affected) of each natural hazard addressed in the new or updated plan?	Section 5, page 5-1 to 5-50			
B. Does the risk assessment identify the extent (<i>i.e.</i> , magnitude or severity) of each hazard addressed in the new or updated plan?	Section 5, page 5-1 to 5-50			
C. Does the plan provide information on previous occurrences of each hazard addressed in the new or updated plan?	Section 5, page 5-1 to 5-50			
D. Does the plan include the probability of future events (<i>i.e.</i> , chance of occurrence) for each hazard addressed in the new or updated plan?	Section 5, page 5-1 to 5-50			
SUMMARY SCORE				

7. 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	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE	
			N	S

A. Does the new or updated plan include an overall summary description of the jurisdiction's vulnerability to each hazard?	Section 5, page 5-1 to 5-50			
B. Does the new or updated plan address the impact of each hazard on the jurisdiction?	Section 5, page 5-1 to 5-50			
SUMMARY SCORE				

8. Assessing Vulnerability: Addressing Repetitive Loss Properties

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

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE	
			N	S
A. Does the new or updated plan describe vulnerability in terms of the types and numbers of repetitive loss properties located in the identified hazard areas?	Section 5.5.4, Page 5-42	Note: This requirement becomes effective for all local plans approved after October 1, 2008.		
SUMMARY SCORE				

9. 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	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE	
			N	S
A. 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?	Section 5, page 5-40 to 5-50	Note: A "Needs Improvement" score on this requirement will not preclude the plan from passing.		
B. 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?	Section 5, page 5-40 to 5-50	Note: A "Needs Improvement" score on this requirement will not preclude the plan from passing.		
SUMMARY SCORE				

10. 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)(ii)(A) of this section and a description of the methodology used to prepare the estimate

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE	
			N	S
A. Does the new or updated plan estimate potential dollar losses to vulnerable structures?	Section 5, page 5-40 to 5-50	Note: A "Needs Improvement" score on this requirement will not preclude the plan from passing.		
B. Does the new or updated plan describe the methodology used to prepare the estimate?	Section 5, page 5-40 to 5-50	Note: A "Needs Improvement" score on this requirement will not preclude the plan from passing.		
SUMMARY SCORE				

11. Assessing Vulnerability: Analyzing Development Trends

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

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE	
			N	S
A. Does the new or updated plan describe land uses and development trends?	Section 3.5, page 3-4	Note: A "Needs Improvement" score on this requirement will not preclude the plan from passing.		
SUMMARY SCORE				

12. Multi-Jurisdictional Risk Assessment

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

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE	
			N	S
A. Does the new or updated plan include a risk assessment for each participating jurisdiction as needed to reflect unique or varied risks?	Section 5, page 5-1 to 5-9			
SUMMARY SCORE				

MITIGATION STRATEGY: §201.6(c)(3): *The plan shall include a mitigation strategy that provides the jurisdiction's blueprint for reducing the potential losses identified in the risk assessment, based on existing authorities, policies, programs and resources, and its ability to expand on and improve these existing tools.*

13. 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	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE	
			N	S
A Does the new or updated plan include a description of mitigation goals to reduce or avoid long-term vulnerabilities to the identified hazards?	Section 7, page 7-1 to 7-14			
SUMMARY SCORE				

14. Identification and Analysis of Mitigation Actions

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

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE	
			N	S
A. Does the new or updated plan identify and analyze a comprehensive range of specific mitigation actions and projects for each hazard?	Section 7, page 7-1 to 7-14			
B Do the identified actions and projects address reducing the effects of hazards on new buildings and infrastructure?	Section 7, page 7-1 to 7-14			
C. Do the identified actions and projects address reducing the effects of hazards on existing buildings and infrastructure?	Section 7, page 7-1 to 7-14			
SUMMARY SCORE				

15. Identification and Analysis of Mitigation Actions: National Flood Insurance Program (NFIP) Compliance

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

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE	
			N	S
A. Does the new or updated plan describe the jurisdiction (s) participation in the NFIP?	Section 5, page 5-43	<i>Note: This requirement becomes effective for all local mitigation plans approved after October 1, 2008.</i>		
B. Does the mitigation strategy identify, analyze and prioritize actions related to continued compliance with the NFIP?	Section 5, page 5-43	<i>Note: This requirement becomes effective for all local mitigation plans approved after October 1, 2008.</i>		
SUMMARY SCORE				

16. 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	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE	
			N	S
A. Does the new or updated mitigation strategy include how the actions are prioritized ? (For example, is there a discussion of the process and criteria used?)	Section 7, page 7-1 to 7-14			
B. Does the new or updated mitigation strategy address how the actions will be implemented and administered, including the responsible department , existing and potential resources and the timeframe to complete each action?	Section 7, page 7-1 to 7-14			
C. Does the new or updated prioritization process include an emphasis on the use of a cost-benefit review to maximize benefits?	Section 7, page 7-1 to 7-14			
D. Does the updated plan identify the completed, deleted or deferred mitigation actions as a benchmark for progress, and if activities are unchanged (i.e., deferred), does the updated plan describe why no changes occurred?	Section 7, page 7-1 to 7-14			
SUMMARY SCORE				

17. Multi-Jurisdictional Mitigation Actions

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

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE	
			N	S
A. Does the new or updated plan include identifiable action items for each jurisdiction requesting FEMA approval of the plan?	Section 7, page 7-1 to 7-14			
B. Does the updated plan identify the completed, deleted or deferred mitigation actions as a benchmark for progress, and if activities are unchanged (<i>i.e.</i> , deferred), does the updated plan describe why no changes occurred?	Section 7, page 7-1 to 7-14			
SUMMARY SCORE				

PLAN MAINTENANCE PROCESS

18. 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	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE	
			N	S
A. Does the new or updated plan describe the method and schedule for monitoring the plan, including the responsible department?	Section 8, page 8-1 to 8-3			
B. Does the new or updated plan describe the method and schedule for evaluating the plan, including how, when and by whom (<i>i.e.</i> the responsible department)?	Section 8, page 8-1 to 8-3			
C. Does the new or updated plan describe the method and schedule for updating the plan within the five-year cycle?	Section 8, page 8-1 to 8-3			
SUMMARY SCORE				

19. Incorporation into Existing Planning Mechanisms

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

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE	
			N	S
A. Does the new or updated plan identify other local planning mechanisms available for incorporating the mitigation requirements of the mitigation plan?	Section 7, page 7-15 to 7-16			
B. Does the new or updated plan include a process by which the local government will incorporate the mitigation strategy and other information contained in the plan (e.g., risk assessment) into other planning mechanisms, when appropriate?	Section 7, page 7-15 to 7-16			
C. Does the updated plan explain how the local government incorporated the mitigation strategy and other information contained in the plan (e.g., risk assessment) into other planning mechanisms, when appropriate?	Section 7, page 7-15 to 7-16			
SUMMARY SCORE				

20. 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	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE	
			N	S
A. Does the new or updated plan explain how continued public participation will be obtained? (For example, will there be public notices, an on-going mitigation plan committee, or annual review meetings with stakeholders?)	Section 8, page 8-1 to 8-3			
SUMMARY SCORE				

The “Local Capability Assessment” is a State of Nevada Requirement. **A “Needs Improvement” score on this requirement will not preclude the plan from passing.** The information provided will be incorporated into the State Multi-Hazard Mitigation Plan and used to complement Pre-Disaster Mitigation funding applications.

21. Local Capability Assessment - STATE OF NEVADA REQUIREMENT

Requirement §201.4(c)(3)(ii): [The State mitigation strategy **shall** include] a general description and analysis of the effectiveness of local mitigation policies, programs, and capabilities.

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE	
			N	S
A. Does the plan present a general description of the local mitigation policies, programs, and capabilities?	Section 6, page 6-1 to 6-2			
B. Does the plan provide a general analysis of the effectiveness of local mitigation policies, programs, and capabilities?	Section 6, page 6-1 to 6-2			
SUMMARY SCORE				

As part of the Vulnerability Assessment, the State of Nevada requires the identification of Unreinforced Masonry defined as: “A building constructed prior to 1973 with stone, brick, rubble, clay tile or concrete block bearing wall materials that contain no reinforcing rods”. **A “Needs Improvement” score on this requirement will not preclude the plan from passing.** The information provided will be incorporated into the State Multi-Hazard Mitigation Plan and used to complement Pre-Disaster Mitigation funding applications.

7. Assessing Vulnerability: STATE OF NEVADA REQUIREMENT

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.

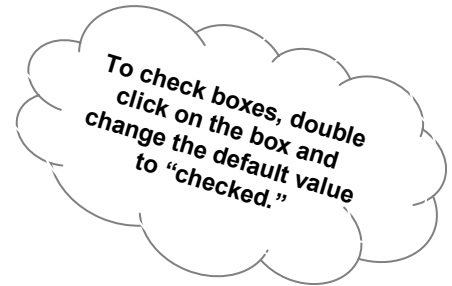
Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE	
			N	S
A. Does the new or updated plan describe vulnerability in terms of the types and numbers of Unreinforced Masonry properties located in the identified hazard areas?	Section 5, page 5-43, Goal 7.A.7	Note: This requirement becomes effective for all local plans approved after October 1, 2009.		
SUMMARY SCORE				

MATRIX A: PROFILING HAZARDS

This matrix can assist FEMA and the State in scoring each hazard. Local jurisdictions may find the matrix useful to ensure that their plan addresses each natural hazard that can affect the jurisdiction. **Completing the matrix is not required.**

Note: First, check which hazards are identified in requirement §201.6(c)(2)(i). Then, place a checkmark in either the N or S box for each applicable hazard. An “N” for any element of any identified hazard will result in a “Needs Improvement” score for this requirement. List the hazard and its related shortcoming in the comments section of the Plan Review Crosswalk.

Hazard Type	Hazards Identified Per Requirement §201.6(c)(2)(i)	A. Location		B. Extent		C. Previous Occurrences		D. Probability of Future Events	
	Yes	N	S	N	S	N	S	N	S
Avalanche	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Coastal Erosion	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Coastal Storm	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Dam Failure	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Drought	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Earthquake	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Expansive Soils	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Levee Failure	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Flood	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hailstorm	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hurricane	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Land Subsidence	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Landslide	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Severe Winter Storm	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tornado	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tsunami	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Volcano	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Wildfire	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Windstorm	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



Legend:

§201.6(c)(2)(i) Profiling Hazards

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

MATRIX B: ASSESSING VULNERABILITY

This matrix can assist FEMA and the State in scoring each hazard. Local jurisdictions may find the matrix useful to ensure that the new or updated plan addresses each requirement. **Completing the matrix is not required.**

*Note: First, check which hazards are identified in requirement §201.6(c)(2)(i). Then, place a checkmark in either the N or S box for each **applicable** hazard. An “N” for any element of any identified hazard will result in a “Needs Improvement” score for this requirement. List the hazard and its related shortcoming in the comments section of the Plan Review Crosswalk. Note: Receiving an N in the shaded columns will not preclude the plan from passing.*

To check boxes, double click on the box and change the default value to “checked.”

Hazard Type	Hazards Identified Per Requirement §201.6(c)(2)(i)		A. Overall Summary Description of Vulnerability		B. Hazard Impact			A. Types and Number of Existing Structures in Hazard Area (Estimate)		B. Types and Number of Future Structures in Hazard Area (Estimate)			A. Loss Estimate		B. Methodology	
	Yes		N	S	N	S		N	S	N	S		N	S	N	S
Avalanche	<input type="checkbox"/>	§201.6(c)(2)(ii) Assessing Vulnerability: Overview	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	§201.6(c)(2)(ii) Assessing Vulnerability: Identifying Structures	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	§201.6(c)(2)(ii) Assessing Vulnerability: Estimating Potential Losses	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Coastal Erosion	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Coastal Storm	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Dam Failure	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Drought	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Earthquake	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Expansive Soils	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Levee Failure	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Flood	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Hailstorm	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Hurricane	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Land Subsidence	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Landslide	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Severe Winter Storm	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Tornado	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Tsunami	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Volcano	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Wildfire	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Windstorm	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Other _____	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
Other _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			

Legend:

§201.6(c)(2)(ii) Assessing Vulnerability: Overview

- 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?

- 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?

§201.6(c)(2)(ii)(A) Assessing Vulnerability: Identifying Structures

- 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?

§201.6(c)(2)(ii)(B) Assessing Vulnerability: Estimating Potential Losses

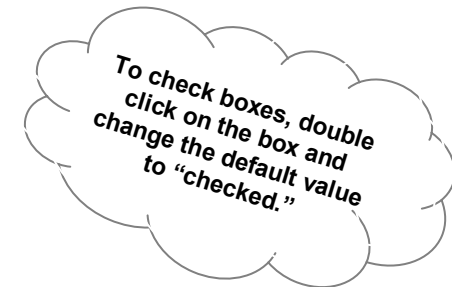
- Does the **new or updated** plan estimate potential dollar losses to vulnerable structures?
- Does the **new or updated** plan describe the methodology used to prepare the estimate?

MATRIX C: IDENTIFICATION AND ANALYSIS OF MITIGATION ACTIONS

This matrix can assist FEMA and the State in scoring each hazard. Local jurisdictions may find the matrix useful to ensure consideration of a range of actions for each hazard. **Completing the matrix is not required.**

*Note: First, check which hazards are identified in requirement §201.6(c)(2)(i). Then, place a checkmark in either the N or S box for each **applicable** hazard. An “N” for any identified hazard will result in a “Needs Improvement” score for this requirement. List the hazard and its related shortcoming in the comments section of the Plan Review Crosswalk.*

Hazard Type	Hazards Identified Per Requirement §201.6(c)(2)(i)	A. Comprehensive Range of Actions and Projects	
	Yes	N	S
Avalanche	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Coastal Erosion	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Coastal Storm	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Dam Failure	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Drought	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Earthquake	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Expansive Soils	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Levee Failure	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Flood	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hailstorm	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hurricane	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Land Subsidence	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Landslide	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Severe Winter Storm	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tornado	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tsunami	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Volcano	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Wildfire	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Windstorm	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



Legend:

§201.6(c)(3)(ii) Identification and Analysis of Mitigation Actions

A. Does the **new or updated** plan identify and analyze a comprehensive range of specific mitigation actions and projects for each hazard?