

Taos County

Hazard Mitigation Plan

October 2018



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1 INTRODUCTION

1.1 Purpose

Taos County and the incorporated municipalities therein prepared this Hazard Mitigation Plan (HMP) in 2016-2017 to better protect the people and property of the County from the effects of hazard events. This plan demonstrates the County and participating jurisdictions' commitment to reducing risks from hazards and serves as a tool to help decision makers direct mitigation activities and resources. This plan was also developed, among other things, to ensure Taos County's and its municipalities eligibility for certain federal disaster assistance; specifically, the FEMA Hazard Mitigation Grant Program (HMGP), Pre-Disaster Mitigation Program (PDM), and the Flood Mitigation Assistance Program (FMA). Mitigation planning can also earn credits for the National Flood Insurance Program's Community Rating System (CRS) which provides for lower flood insurance premiums in CRS communities.

1.2 Background and Scope

Each year in the United States, natural disasters take the lives of hundreds of people and injure thousands more. Nationwide, taxpayers pay billions of dollars annually to help communities, organizations, businesses, and individuals recover from disasters. These monies only partially reflect the true cost of disasters, because additional expenses incurred by insurance companies and nongovernmental organizations are not reimbursed by tax dollars. Many natural disasters are predictable and much of the damage caused by these events can be reduced or even eliminated.

Hazard mitigation is defined by FEMA as "any sustained action taken to reduce or eliminate long-term risk to human life and property from a hazard event." The results of a three-year, congressionally mandated independent study to assess future savings from mitigation activities provides evidence that mitigation activities are highly cost-effective. On average, each dollar spent on mitigation saves society an average of \$4 in avoided future losses in addition to saving lives and preventing injuries (National Institute of Building Science Multi-Hazard Mitigation Council 2005).

Hazard mitigation planning is the process through which hazards are identified, likely impacts determined, mitigation goals set, and appropriate mitigation strategies determined, prioritized, and implemented. This plan documents Taos County's hazard mitigation planning process and identifies relevant hazards and vulnerabilities and strategies the County will use to decrease vulnerability and increase resiliency and sustainability in the community.

This plan was prepared pursuant to the requirements of the Disaster Mitigation Act of 2000 (Public Law 106-390) and the implementing regulations set forth by the Interim Final Rule published in the Federal Register on February 26, 2002, (44 CFR §201.6) and finalized on October 31, 2007. (Hereafter, these requirements and regulations will be referred to collectively as the Disaster

Mitigation Act (DMA) or DMA 2000.) While the act emphasized the need for mitigation plans and more coordinated mitigation planning and implementation efforts, the regulations established the requirements that local hazard mitigation plans must meet in order for the County to be eligible for certain federal disaster assistance and hazard mitigation funding under the Robert T. Stafford Disaster Relief and Emergency Act (Public Law 93-288). This planning effort also follows FEMA's *Local Mitigation Planning Handbook* (March 2013). Because the Taos County Planning Area is subject to many kinds of hazards, access to FEMA's Hazard Mitigation Assistance programs is vital.

Information in this plan will be used to help guide and coordinate mitigation activities and decisions for local land use policy in the future. Proactive mitigation planning will help reduce the cost of disaster response and recovery to communities and their residents by protecting critical community facilities, reducing liability exposure, and minimizing overall community impacts and disruptions. This plan is a multi-jurisdictional plan that includes the unincorporated areas of Taos County, Town of Taos, Town of Red River, Village of Questa, and Village of Taos Ski Valley.

The planning area has been affected by hazards in the past and is thus committed to reducing future impacts from hazard events and establishing eligibility for mitigation-related federal funding.

Plan Organization

The Taos County Hazard Mitigation Plan is organized as follows:

- Chapter 1: Introduction
- Chapter 2: Community Profile
- Chapter 3: Planning Process
- Chapter 4: Risk Assessment
- Chapter 5: Mitigation Strategy
- Chapter 6: Plan Adoption
- Chapter 7: Plan Implementation and Maintenance
- Appendices
 - Appendix A Planning Process
 - Appendix B Hazard Mitigation Planning Committee
 - Appendix C Adoption
 - Appendix D Asset Inventory

2 COMMUNITY PROFILE

2.1 Community Profile

Taos County is located in north-central New Mexico. As of the 2010 census, the population was 32,937. The county was formed in 1852 as one of the original nine counties in New Mexico.

Location and Geography

The County has a total area of 2,204 square miles. The County is bordered by Rio Arriba County to the west, Costilla County in Colorado to the north, Colfax County to the east, and Mora County to the south. The Rio Grande gorge cuts through the county and divides the area with the Taos Plateau to the west, and the Costilla Plains and the Sangre de Cristo Mountains to the east. The Taos Plateau is a basalt-capped mesa with numerous extinct volcanoes. The Costilla Plains are composed of alluvial and valley sediments from the Sangre de Cristo Mountains. The Sangre de Cristo Mountains are the southernmost subrange of the Rocky Mountains. The highest point in the county and in the state is Wheeler Peak, in the Sangre de Cristo Mountains. Taos county contains 17 of New Mexico's highest 25 peaks.

Land Ownership and Population

The County covers approximately 2,204 square miles, of which nearly 37% is owned by the US Forest Service. The rest of the county is owned by private entities (31.6%), Bureau of Land Management (17.7%), tribal governments (8.3%) the state (4.4%). The remaining 1.2% is owned by State Game & Fish, see Table 2.1.

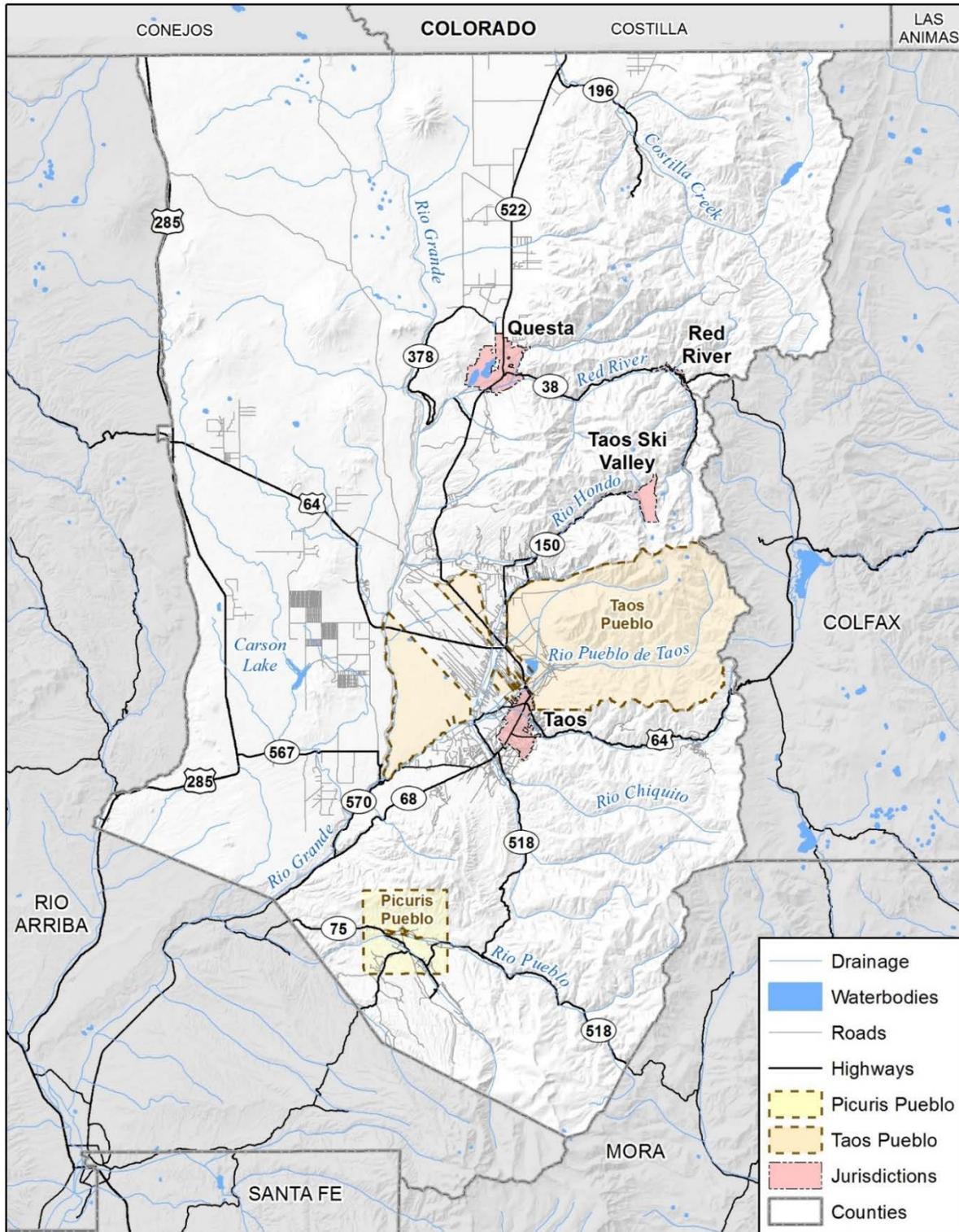
Population density per square mile of land area was: 14 people/sq. mi. in the 2000 Census and 15 people/sq. mi. in the 2010 Census. Total population for the County was 29,979 in 2000 and reached 32,937 in 2010.

Table 2.1. Taos County Land Ownership

Owner	Acres	% of Total Area
U.S. Forest Service	519,026	36.8%
Private	446,184	31.6%
Bureau of Land Management	250,066	17.7%
Tribal	116,902	8.3%
State Owned	61,574	4.4%
State Game & Fish	16,926	1.2%
Total	1,410,681	100.0%

Source: Amec Foster-Wheeler analysis done with data from University of New Mexico data portal: <http://rgis.unm.edu/getdata/#map>

Figure 2.1 Taos County Basemap



Map compiled 10/2016;
intended for planning purposes only.
Data Source: Taos County,
HSIP Freedom 2015, RGIS

0 5 10 Miles



History

Taos County was established in 1852 with nine other counties making up New Mexico Territory. The Taos Pueblo has been occupied for nearly 1,000 years and is considered to be one of the oldest continuously inhabited communities in the United States. Many of the villages in the County of Taos were established following the Spanish conquest. Initially, relations of the Spanish settlers with Pueblos were amicable, but resentment led to revolts. Mexico ceded the region to the U.S. in the Treaty of Guadalupe Hidalgo in 1848 after the Mexican-American War. After the U.S. takeover of New Mexico in 1847, Hispanics and American Indians in Taos staged a rebellion, known as the Taos Revolt. New Mexico was a territory of the United States in 1850 and became a state in 1912.

Economy

U.S. Census estimates show economic characteristics for the County. These are shown in 0. Accommodation and food services, retail trade, and health care make up the largest sectors of the local economy.

Table 2-1: Taos County Business Patterns, 2014

Meaning of 2012 NAICS code	Number of establishments	Paid employees for pay period including March 12 (number)	Percent
Total for all sectors	1,071	8,418	55.29%
Accommodation and food services	155	1,949	12.80%
Retail trade	196	1,548	10.17%
Health care and social assistance	97	1,440	9.46%
Construction	144	436	2.86%
Other services (except public administration)	81	336	2.21%
Professional, scientific, and technical services	99	296	1.94%
Real estate and rental and leasing	62	230	1.51%
Finance and insurance	44	212	1.39%
Manufacturing	35	132	0.87%
Educational services	18	108	0.71%
Transportation and warehousing	14	63	0.41%
Wholesale trade	21	56	0.37%
Total	2,037	15,224	100.00%
Arts, entertainment, and recreation	33	f	
Mining, quarrying, and oil and gas extraction	3	e	
Utilities	7	c	
Information	15	c	
Administrative and support and waste management and remediation services	42	c	
Agriculture, forestry, fishing and hunting	2	a	
Management of companies and enterprises	2	a	
Industries not classified	1	a	
a: 0-19 employees			
c: 100-249 employees			
e: 250-499 employees			
f: 500-999 employees			

Source: American Fact Finder; U.S. Census Bureau (2013)

County Assets

County assets potentially exposed to hazards are described further in Chapter 4 Risk Assessment in Section 4.2. Assets include buildings, critical facilities, cultural, historical, and natural resources; and population growth and land use/development trends.

Municipality Profiles

The following are short profiles for the participating municipalities including the Town of Taos, Town of Red River, Village of Taos Ski Valley, and Village of Questa. Assets potentially exposed to hazards

are described further in Chapter 4 Risk Assessment in Section 4.2. For additional specifics on assets including critical facilities within the municipalities, please refer to Appendix D.

Town of Taos

Taos is a town of 5,716 (2010 census) in the Sangre de Cristo Mountains close to Taos Pueblo, the Native American village and tribe from which it takes its name. Taos is a community known for its art and recreation. The town has three art museums and more than eighty art galleries. The surrounding mountains provide opportunities for fly fishing, hiking, biking, hot air ballooning, rafting, and hot springs. In the winter, Taos is within close proximity to four ski areas- Taos Ski Valley, Red River Ski Area, Sipapu, and Angel Fire Ski Area.

The Taos Pueblo, which borders the town of Taos on the north, has a rich history. The Pueblo has been occupied for nearly a millennium, making it one of the oldest continuously inhabited communities in the United States. In 1680 the Taos Pueblo joined the Pueblo Revolt against the Spanish settlers. After the Spanish Reconquest of 1692, Taos Pueblo continued resistance to the Spanish until 1696. Taos was established between 1780 and 1800. In 1796, the Don Fernando de Taos Land Grant gave land to 63 Spanish families in the Taos Valley. Fur trappers began populating the town of Taos in the early 1800s. After the Mexican-American War, Mexico ceded the region to the U.S. in the Treaty of Guadalupe Hidalgo. Hispanics and American Indians staged the Taos Revolt after the U.S. takeover. Taos became a well-known area for artists to settle around the early 1900s. The Taos Art Colony developed over time and became a home to many influential later 20th-century artists.

Taos Ski Valley

Taos Ski Valley is a village and alpine ski resort of 69 (2010 census) in the Sangre de Cristo Mountains at an elevation of 9,207 feet, making it the highest municipality in the US. Wheeler Peak, the tallest mountain in New Mexico, overlooks the village.

The area now known as Taos Ski Valley was once the site of the small copper mining town of Twining. Taos Ski Valley was founded in 1955 by Ernie and Rhoda Blake. In 1957, the resort installed their second ski lift. Louis Bacon purchased Taos Ski Valley from the Blake family in 2013.

Tourism is the village's main industry. As of 2012, the Taos Ski Valley Corporation employed about 700 people during winter months. On average, about \$47 million are spent in the local economy of Taos Ski Valley, 25% of that from ski operations alone.

Red River

Red River is a town of 477 (2010 census) located in the Sangre de Cristo Mountains. The town is named after the river that runs through it and is surrounded by Carson National Forest.

Fur trappers and prospectors first discovered the area of Red River, formerly referred to as River City. Gold, silver, and copper mines were quickly established in the surrounding mountains and the population boomed to three thousand. Soon, homesteaders outnumbered prospectors. The town gained new momentum by renting abandoned mining cabins to visitors. Red River became a reputable place for trout fishing and a getaway from the hot weather.

The main industry in Red River is tourism. The town is located at the base of the Red River Ski Area and provides many winter activities. In the summer, activities include hiking, biking, and fishing.

Village of Questa

Questa is a village of 1,767 (2010 census) at the western base of the Taos Mountains in the Sangre de Cristo Mountains. To the west of Questa lies the Rio Grande del Norte National Monument and to the East is Carson National Forest. Northwest of the village is the Rio Grande Gorge, which cuts through a volcanic plateau.

Questa was previously known as San Antonio del Rio Colorado. The Kowa trail is an ancient Native American trade route nearby Questa which connected the Ute, Kiowa, and Comanche tribes to the north with the Pueblo tribes to the south. By the 1590s, mining activity increased in the area and continued until the Pueblo Revolt of 1680. Resource-based conflict between American Indian cultures and the Spanish, Mexican, French-Canadian and American soldiers ensued and lead to the village being repeatedly abandoned. The nearby peaks, Flag Mountain and Sentinel Mountain were named due to their practice of stationing watchmen on these high points to warn the village of approaching war parties.

Historically, the main industry in Questa has been agriculture. The traditional economy based on agriculture, livestock, handicrafts, and wood gathering is failing to meet the financial needs of the community. Tourism has played a larger role in the economy in recent years with the Historic San Antonio del Rio Colorado Church, Eagle Rock Lake, and Carson national Forest. The Chevron Questa molybdenum mine was the largest private employer in Taos County until 2014 when Chevron Mining announced the immediate and permanent closure of the mine due to low molybdenum prices and high operating costs.

2.2 Mitigation Capability Assessment

During the development of this plan the participating jurisdictions completed a mitigation capability assessment. When combined with the risk assessment the mitigation capability assessment results in the County's net vulnerability to disasters, and more accurately focuses the goals and proposed actions of this plan.

The Hazard Mitigation Planning Committee (HMPC) used a two-step approach to conduct this assessment for the County and participating jurisdictions. First, an inventory of common mitigation activities was made through the use of a matrix. The purpose of this effort was to identify policies and programs that were either in place, needed improvement, or could be undertaken if deemed appropriate. Second, the HMPC conducted an inventory and review of existing policies, regulations, plans, and programs to determine if they contributed to reducing hazard-related losses or if they inadvertently contributed to increasing such losses.

Similar to the HMPC's effort to describe hazards, risks, and vulnerability of Taos County, this mitigation capability assessment describes the County's and the municipalities' existing capabilities, programs, and policies currently in use to reduce hazard impacts or that could be used to implement hazard mitigation activities. This assessment is divided into four sections: regulatory mitigation

capabilities, administrative and technical mitigation capabilities, fiscal mitigation capabilities, and mitigation outreach and partnerships. There is an assessment for each participating jurisdiction.

Taos County Regulatory Mitigation Capabilities

Table 2-2 lists planning and land management tools typically used by local jurisdictions to implement hazard mitigation activities, and indicates those that are in place in Taos County. Excerpts from applicable policies, regulations, and plans and program descriptions follow to provide more detail on existing mitigation capabilities.

Table 2-2: Taos County Regulatory Mitigation Capabilities

Regulatory Tool (plans ordinances codes,)	Yes/No	Comments/ Enforcement and Administration Notes
Plans		
Comprehensive/Master Plan	Yes 2004	Undergoing update in 2016 with inclusion of Hazard Mitigation Element
Capital Improvements Plan	No	
Economic Development Plan	Yes 2006-5	Undergoing update in 2016
Local Emergency Operations Plan	Yes 2005	
Continuity of Operations Plan	No	
Transportation Plan	No	
Stormwater Management Plan	No	
Community Wildfire Protection Plan	Yes 2016	Includes mitigation projects
Other special plans (i.e., disaster recovery, climate change adaptation)	Yes Yes	Enchanted Circle Mobilization Guide (Mo-Guide) Law Enforcement Response Guide Taos County Growth Management Plan, 2007 Taos Regional Water Plan Dam Emergency Action Plans
Building Code, Permitting and Inspections		
Building Code	Yes	Yes; 2009 IBC, IRC and NMAC
Building Code Effectiveness Grading Schedule (BCEGS) Score	No	Score (if applicable):NA
Fire department ISO rating	8	Rating: (1-10, 1 being the best); See table with detail by fire department
Site plan review requirements	Yes	Land Use regulations; Subdivision Regulations; Floodplain Ordinance.
Land Use Planning and Ordinances		
Zoning ordinance	Yes 2015-2	
Subdivision ordinance	Yes 2005-8	Terrain Management; Agency Review

Floodplain ordinance	Yes 2009-1	regulates development in designated flood hazard areas
Natural hazard-specific ordinance (stormwater, steep slope, wildfire)	Yes 2015-2	
Flood insurance rate maps	Yes 2010	
Acquisition of land for open space and public recreation uses	No	
	No	

As indicated in the table above, Taos County has several plans and programs that guide the County’s growth and development. In some cases these plans and programs address mitigation of development of hazard-prone areas.

Floodplain Management Regulations and NFIP Participation

Ordinance No. 2009-01 and Resolution 2010-46 detail the floodplain management regulations for the County. The purpose of these regulations is to promote the public health, safety, and general welfare and to minimize public and private losses due to flood conditions in specific areas. These regulations apply to all areas of special flood hazards within the jurisdiction of Taos County identified in FEMA’s October 6, 2010, flood insurance study and accompanying maps. Taos County has participated in the National Flood Insurance Program (NFIP) since January 5, 1989, by administering floodplain management regulations that meet the minimum requirements of the NFIP. Much of the Special Flood Hazard Area (SFHA, base flood, 100 year flood or 1% annual chance flood) in the unincorporated county is mapped as Zone A (Approximate) and lack detailed studies with base flood elevations. In A zones the County requires for new development or substantial improvements to have the first finished floor elevation to be a minimum of 3 feet above highest adjacent grade. Where base flood elevation (BFE) data is available, the first finished floor elevation must be 1 foot above the BFE. The county maintains a file of elevation certificates.

Floodplain management is administered by the Planning Department. The current floodplain manager is a Certified Floodplain Manager (CFM) and also the Rural Addressing Coordinator and GIS Specialist.

The County has an interactive floodplain map available on its website for people to see the SFHA and properties in the floodplain.

Taos County Growth Management Plan, 2007

The Taos County Growth Management Plan is a comprehensive, long-term framework for the protection of the County’s resources and for development in the County. The plan includes land use goals such as maintaining surface and groundwater quality and quantity, developing building standards and restoring and protecting rivers. The need for a Growth Management Plan was a priority identified in the Taos County Comprehensive Plan. The Growth Management Plan is being developed in three phases; Future Land Use, Implementation, and Funding Strategies. In Phase I: Future Land Use, was the culmination of twelve months of research and data gathering as well as the diligent efforts of a 12 person citizen steering committee. Phase II: Implementation, builds upon the Future Land Uses by

defining new ordinances to implement Phase I, such as clustering options, Transfer of Development Rights (TDRs), and appropriate land use zoning codes for individual neighborhoods.

Taos County Comprehensive Plan, (2016)

State statutes and the County Code require that the County have and maintain a Comprehensive Plan, and give the responsibility for plan updates to the Planning and Zoning Commission subject to final approval by the County Council. The main elements of this plan include:

- Land and Water
- Economic Development
- Housing
- Transportation
- Infrastructure/Community Facilities
- Hazards Mitigation
- Implementation

A set of Goals and Implementation Strategies are established for each Element. Goals are statements of a desirable state or condition to be achieved in the future; Implementation strategies are action tasks such as policy statements, new regulations, or "next steps" needed to achieve the desired goal. The Implementation Strategies are prioritized in the Implementation Element. The Comprehensive Plan should also be used as a basis for reviewing and evaluating development projects that are proposed in the County. The Comprehensive Plan Guiding Principles were updated to reflect hazards in 2016 to include:

- Resiliency to natural and manmade hazards is important to the protection and security of the residents.

The plan underwent a comprehensive update in 2016 which included the development of the Hazards Mitigation Element. The Hazards Mitigation Element includes the following 5 goals; each goal has related implementation strategies that can be referenced in the plan.

- Goal 1. Upgrade and improve emergency services throughout the County to meet current and projected needs.
- Goal 2: Increase community resiliency from all hazards such as wildfires, flooding, drought, severe weather, landslide, avalanche and contaminants.
- Goal 3. Improve land-use planning and regulation of development in hazard zones such as floodplains and wildland-urban interface areas.
- Goal 4: Upgrade and enhance the County's emergency response system to ensure that all areas have adequate police, fire and emergency services.
- Goal 5: Propose new land use policies to support wildfire risk reduction in the wildland-urban interface.

More information about coordination between the Comprehensive Plan Update and the Hazard Mitigation Plan development can be referenced in Chapters 3 and 7.

Community Wildfire Protection Plan - 2016

The Taos County Community Wildfire Protection Plan (CWPP) addresses hazards and risks of wildland fire throughout Taos County (County) and makes recommendations for fuels reduction projects, public outreach and education, structural ignitability reduction, and fire response capabilities. Some of the recommendations for this plan include fuels reduction projects; public education and outreach directed at homeowners to help them prepare for wildland fire through events like preplanned triages; strategies for fire responders to improve their capabilities through improved communication, professional training, and equipment; and the reduction of structural ignitability by providing public education on defensible space. Goals for the CWPP are as follows:

- **Collaboration:** Local and state government representatives, in consultation with federal agencies or other interested groups, must collaboratively develop a CWPP (Society of American Foresters [SAF] 2004).
- **Prioritized Fuel Reduction:** A CWPP must identify and prioritize areas for hazardous fuels reduction and treatments and recommend the types and methods of treatment that will protect one or more at risk communities and their essential infrastructure (SAF 2004).
- **Treatments of Structural Ignitability:** A CWPP must recommend measures that communities and homeowners can take to reduce the ignitability of structures throughout the area addressed by the plan (SAF 2004).

To meet these stated goals, the CWPP recommends a series of actions that fall into 4 different categories: 1) fuels reduction projects, 2) public education and outreach, 3) reduction of structural ignitability, and 4) improved fire response capabilities.

Taos Regional Water Plan 2016

The Taos Water Planning region, which includes Taos County and a portion of the Embudo watershed in southeastern Rio Arriba County, is one of 16 water planning regions in the state of New Mexico. Between 1987 and 2008, each of the 16 planning regions developed a plan to meet regional water needs over the ensuing 40 years. The purpose of the document is to provide new and changed information related to water planning in the Taos region and to evaluate projections of future water supply and demand for the region using a common technical approach applied to all 16 planning regions. The methods to estimate supply and future demands are based on reports by the New Mexico Office of the State Engineer, data from historical droughts, and demographic and economic trends.

Taos County Emergency Operations Plan

Taos County has a comprehensive Emergency Operations Plan (EOP) prepared in 2005. This EOP covers countywide response to all hazards including natural, technological, and man-caused. The purpose of the Taos County All Hazards Emergency Operations Plan is to provide for the organized, coordinated response to emergency situations by the incorporated communities of Taos County, Taos County, the State of New Mexico and the federal government that occur within Taos County and to provide for the safety of life, property, and the environment, in that order.

Taos Dam Emergency Action Plans

Having an effective Emergency Action Plan at all high and significant hazard potential dams in the county is critical to reducing the risks of loss of life and property damage from dam failures. An EAP is a written document that identifies potential emergency conditions at a dam and specifies pre-planned actions to be followed to minimize property damage or loss of life as a result of failure or mid-operation of the plan. The dam owner is responsible for development, maintenance and exercise of the EAP. The current status of dam EAPs can be found in Chapter 4 of this plan. The majority of high hazard dams have EAPs but according to the National Inventory of Dams there are four noted as not having an EAP in place.

Taos County Administrative/Technical Mitigation Capabilities

Table 2-3 identifies the County personnel responsible for activities related to mitigation and loss prevention in Taos County.

Table 2-3: Taos County Administrative/Technical Mitigation Capabilities

Committees and commissions/programs	Yes/No	Comments
Planning Commission	Yes	Hear, review and approve/deny zoning apps
Mitigation Planning Committee	Yes	CWPP Core Team; LEPC and HMPC formed for development of 2017 County HMP
Maintenance programs to reduce risk, e.g., tree trimming, clearing drainage systems	Yes	Mutual Aid; Solid Waste Ord.; Land Use Regs; Floodplain Ord.; Acequia Assoc.
Mutualaid agreements	Yes	
Personnel Resources	Yes/No/Full or Part time	Department/Position
Building Official	Yes	Planning; Chief Building. Official.
Floodplain Administrator	Yes	Planning
Emergency Manager	Yes	Office of Emergency Management
Community Planner	Yes	Planning; Planning Director
Civil Engineer	Yes	Contractual Engineering Services
GIS Coordinator	Yes	Planning
Other personnel with a hazards management aspect	Yes	Risk Manager; Fleet/Public Works; CWPP; Taos Regional Water Plan
Technical	Yes/No	Describe capability Has capability been used to assess/mitigate risk in the past?
Grant Writing	No	

GIS Data Resources (Hazard areas, critical facilities, land use, building footprints, etc.)	Yes	Anchor Point Maps; LIDAR Imagery; FEMA FIRM Maps; Aerial Imagery
Warning Systems/Services (Reverse 9-11, cable override, outdoor warning, text messages)	Yes	Direct Dial Radio Broadcasting; LMNOC Broadcasting and KTAOS
Other	Yes	Amateur Radio Club (AMC)
Other personnel with a hazards management aspect	Yes	Risk Manager; Fleet/Public Works; CWPP; Taos Regional Water Plan
Grant Writing	No	
GIS Data Resources (Hazard areas, critical facilities, land use, building footprints, etc.)	Yes	Anchor Point Wildfire Risk Maps; LIDAR Imagery; FEMA FIRM Maps; Aerial Imagery

County Departments/Agencies

Taos County has structured its governmental organization to mitigate and respond to natural hazards. The discussion below highlights offices that have either direct or indirect responsibility for planning for or responding to natural hazards.

Taos County Office of Emergency Management

The mission of the Taos County Office of Emergency Management is to educate the citizens of this community in emergency preparedness and protection, to mitigate dangers through comprehensive coordination and planning with both the public safety and public service agencies, and to respond to and recover from all hazards natural and human-caused.

OEM leads the Local Emergency Planning Committee (LEPC) whose purpose is to minimize damage and loss of life resulting from natural or man-made disasters through careful planning and identification of natural hazards and hazardous materials, to provide the public with information regarding hazardous chemicals within the County and to assist local emergency management.

Taos County Economic Development Corporation

Taos County Economic Development Corporation (TCEDC) focuses on community-based economic development work through value-added and educational opportunities. In all of their activities, they emphasize protection of the regional environment.

Some results of the TCEDC’s efforts include:

- A 24,000 square foot business park and community center
- 5,000 square foot commercial food processing facility (the Taos Food Center)
- Operation of a community garden and greenhouse which links numerous community groups and individuals to opportunities within the agricultural value-added sector
- Operation of a small business direct services program serving over 200 individual clients each year
- Development and operation of a 14,000 square foot small business incubator
- Creation and implementation of the Food Sector Opportunities Program and “Oso Good Foods” cause marketing campaign

Division of Planning

The County Planning Department provides long term and current planning support services to the citizens of Taos County. These services are provided for growth management, the preservation of the quality of life and to ensure safe, orderly and sustainable development.

Responsibilities include:

- To provide staff reports to the Planning Commission and Board of Commissioners on all regulations and plans
- To provide technical assistance on the grants currently being implemented
- To respond to citizen complaints and citizen requests
- To enforce compliance with Regulations and Ordinances
- To provide adequate staff and training programs to properly serve Taos County Citizens
- To inform and educate citizens about code compliance and cooperation

Taos County Public Works Department

The mission of the Public Works Department is to design, construct, operate, maintain and repair County roads, bridges, flood control and water conservation facilities.

Firewise, Fire Protection and Emergency Medical Services

The Firewise Communities/USA Recognition Program empowers neighbors to work together in reducing their wildfire risk. There are more than 1,200 recognized Firewise communities from across the nation taking action and ownership in preparing and protecting their homes against the threat of wildfire. Taos County is involved in and actively promotes the Firewise Communities program that encourages local solutions for safety by involving homeowners in taking individual responsibility for preparing their homes from the risk of wildfire. Firewise communities in Taos County include El Salto (2013), Gallina Canyon (2014), Valle Escondido, Taos Canyon, and Town of Taos Ski Valley (2014). To maintain the recognition status over time, communities must continue to conduct annual Firewise Day events and document their local investments.

Below is a list of all the County Fire Districts and their ISO classification.

Table 2-4 Taos County Fire Department ISO Ratings

Fire Department	ISO Class
Amalia Fire Department	9
Carson Fire Department	9
Cerro Fire Department	9
Costilla Fire Department	7
Hondo-Secco Fire Department	6
La Lama Fire Department	9
Latir Fire Department	8B
Penasco Fire Department	7
Rio Fernando Fire Department	9
San Cristobal Fire Department	10
Tres Piedras Fire Department	9
Wheeler Peak Fire Department	8B

Taos County Fiscal Mitigation Capabilities

Table 2-5 identifies financial tools or resources that the County could potentially use to help fund mitigation activities.

Table 2-5: Taos County Fiscal Mitigation Capabilities

Financial Resources	Accessible/Eligible to Use (Yes/No)	Comments/ Could the resource be used to fund future mitigation actions?
Capital improvements project funding	Yes	Potentially
Authority to levy taxes for specific purposes	Yes	Potentially
Fees for water, sewer, gas, or electric services	No	
Impact fees for new development	No	
Stormwater utility fee	No	
Incur debt through general obligation bonds	Yes	Potentially
Incur debt through special tax bonds	No	
Incur debt through private activities	No	
Community Development Block Grants	Yes	Potentially
Other federal or state funding programs used	Yes	Yes

Mitigation Outreach and Partnerships Capabilities

Other state, federal, and private/non-profit agencies have been involved in mitigation actions in the County. A few examples are noted here:

- Taos County Search and Rescue has an ongoing information program.
- The USDA Forest Service performs fuel mitigation work on federal land. The work is accomplished by staff from the Carson National Forest.
- NMDOT has done rockfall and debris flow mitigation on highways in the County
- The Nature Conservancy is working to develop the Rio Grande Water Fund, which if funded, will generate sustainable income for a 10- to 30-year forest restoration program through a multi-party effort. Models of debris flow risk after high-severity fire indicate that key water sources are at risk, and the goal of the program is to reduce the risk of catastrophic wildfire and subsequent sedimentation and localized water quality degradation to protect the region's water supply. Details of the program plan are included in the Rio Grande Fund, Comprehensive Plan for Wildfire and Water Source Protection (Nature Conservancy, 2015).

- Taos Soil and Water Conservation District.** The Taos Soil and Water Conservation District is a taxpayer funded resource that provides technical and financial assistance to local landowners to develop defensible space areas around homes and structures located in the wildland urban interface. Utilizing a professional forestry consultant, the District implements fire prevention strategies as well as overall improvement of forest health in critical areas of Taos County. The District provides for professional terrain risk assessment and private landowners can apply for Fire Prevention Program grants that provide cost share assistance for up to three acres of defensible space work. The District is also called on to assist in the deployment of Non Federal Land Grants (NFL) that may be available for properties adjacent to Carson National Forest.

Taos Ski Valley Capabilities

Regulatory, administrative, and fiscal capabilities as they relate to hazard mitigation are captured in the following tables, based on a capability assessment worksheet completed by municipal personnel on the HMPC.

Table 2-6: Taos Ski Valley Regulatory Mitigation Capabilities

Regulatory Tool (plans, ordinances, codes,)	Yes/No/Year	Comments/ Enforcement and Administration Notes
Comprehensive/Master Plan	Yes	
Capital Improvements Plan	Yes	
Economic Development Plan	Yes	
Local Emergency Operations Plan	Yes	
Continuity of Operations Plan	No	
Transportation Plan	Yes	
Stormwater Management Plan	No	
Community Wildfire Protection Plan	Yes	
Other special plans (i.e., disaster recovery, climate change adaptation)	Yes	Evacuation Plan
Building Code, Permitting and Inspections	Yes/No	Comments/ Enforcement and Administration Notes
Building Code	Yes	
Building Code Effectiveness Grading Schedule (BCEGS) Score	No	
Fire department ISO rating	6	
Site plan review requirements	No	
Land Use Planning and Ordinances	Yes/No	Comments/ Enforcement and Administration Notes
Zoning ordinance	Yes	
Subdivision ordinance	Yes	
Floodplain ordinance	No	Not Required - No Special Flood Hazard Area
Natural hazard-specific ordinance (stormwater, steep slope, wildfire)	No	
Flood insurance rate maps	No	
Acquisition of land for open space and public recreation uses	Yes	

Table 2-7: Taos Ski Valley Administrative/Technical Mitigation Capabilities

Administration	Yes/No	Comments
Planning Commission	Yes	VTSV Staff
Mitigation Planning Committee	Yes	As participant on County HMPC
Maintenance programs to reduce risk, e.g., tree trimming, clearing drainage systems	Yes	Firewise Community Board of Directors
Mutual aid agreements	Yes	
Personnel Resources	Yes/No/Full or part time	Department/Position
Building Official	Yes/Full time	VTSV Staff
Floodplain Administrator	No	Not required - No Special Flood Hazard Area
Emergency Manager	No	
Community Planner	Yes/Full time	VTSV Staff
Civil Engineer	No	
GIS Coordinator	Yes	VTSV Staff
Other personnel with a hazards management aspect	No	
Technical	Yes/No	Describe capability Has capability been used to assess/mitigate risk in the past?
Grant Writing	Yes	Yes
GIS Data Resources (Hazard areas, critical facilities, land use, building footprints, etc.)	Yes	Yes
Warning Systems/Services (Reverse 9-11, cable override, outdoor warning, text messages)	Yes	Yes
Other		

Table 2-8: Taos Ski Valley Fiscal Mitigation Capabilities

Financial Resources	Accessible/Eligible to Use (Yes/No)	Comments/ Could the resource be used to fund future mitigation actions?
Capital improvements project funding	Yes	
Authority to levy taxes for specific purposes	Yes	
Fees for water, sewer, gas, or electric services	No	
Impact fees for new development	No	(Not in place)
Stormwater utility fee	Yes	
Incur debt through general obligation bonds	Yes	
Incur debt through special tax bonds	Yes	
Incur debt through private activities	Yes	
Community Development Block Grants	Yes	
Other federal or state funding programs used	Yes	
Other: Taos Soil and Water Conservation District	Yes	Funding has been used for wildfire mitigation for homeowners

The village noted that they have access to many of the above fiscal sources but have not been used for mitigation in the past to fund mitigation activities.

Taos Ski Valley Floodplain Management Regulations and NFIP Participation

Taos Ski Valley does not have any Special Flood Hazard Areas mapped within its jurisdiction and thus does not participate, and is not required to participate, in the NFIP.

Town of Taos Capabilities

Regulatory, administrative, and fiscal capabilities as they relate to hazard mitigation are captured in the following tables, based on a capability assessment worksheet completed by municipal personnel on the HMPC.

Table 2-9: Town of Taos Regulatory Mitigation Capabilities

Regulatory Tool (plans, ordinances, codes,)	Yes/No/Year	Comments/ Enforcement and Administration Notes
Plans		
Comprehensive/Master Plan	Yes/1999	Vision 2020
Capital Improvements Plan	Yes/2016	2017-2021 ICIP. The Town ICIP is an annually adopted document that discusses the town's capital improvements. In the 2016-2020 ICIP, there are proposals for infrastructure improvements, police capital purchases, road improvements, and fire capital purchases.
Economic Development Plan	Yes/2010	
Local Emergency Operations Plan	Yes/2016	for Water System
Continuity of Operations Plan	No	
Transportation Plan	Yes	
Stormwater Management Plan	Yes	This is dealt with during planning and development review. Currently any commercial project is required to provide a storm water management plan. In addition, residential projects may be required to submit a storm water plan as determined by the code administrator.
Community Wildfire Protection Plan	Yes/2016	The town is a partnering agency in the Taos County CWPP.
Other special plans (i.e., disaster recovery, climate change adaptation)		
Building Code, Permitting and Inspections		
Building Code	Yes – Planning Department	Yes, building codes are currently implemented by the State Construction Industry Division CID.
Building Code Effectiveness Grading Schedule (BCEGS) Score	Unknown	
Fire department ISO rating	Yes	
Site plan review requirements	Yes	Site Plan
Land Use Planning and Ordinances		
Zoning ordinance	Yes	Planning
Subdivision ordinance	Yes	
Floodplain ordinance	Yes	Ord. 10-24
Natural hazard-specific ordinance (stormwater, steep slope, wildfire)	No	
Flood insurance rate maps	Yes	
Acquisition of land for open space and public recreation uses	No	

Table 2-10: Town of Taos Administrative/Technical Mitigation Capabilities

Administration	Yes/No	Comments
Planning Commission	Yes	Meets once a month
Mitigation Planning Committee	Yes	As participant on County HMPC
Maintenance programs to reduce risk, e.g., tree trimming, clearing drainage systems	No	
Mutual aid agreements	Yes	Interconnection agreements with Taos Pueblo, El Prado Water and Sanitation District, Canon Mutual Domestic Water

		Association, and El Valle de los Ranchos Water and Sanitation District
Personnel Resources	Yes/No/Full or part time	Department/Position
Building Official	Yes	CID/State of New Mexico
Floodplain Administrator	Yes	Town Planning Department
Emergency Manager	No	Taos County
Community Planner	Yes	Town Planning Department
Civil Engineer	Yes	Public Works
GIS Coordinator	Yes/Full Time	Public Works/GIS Technician
Other personnel with a hazards management aspect		
Technical	Yes/No	Describe capability Has capability been used to assess/mitigate risk in the past?
Grant Writing	Yes	
GIS Data Resources (Hazard areas, critical facilities, land use, building footprints, etc.)	Yes	
Warning Systems/Services (Reverse 9-11, cable override, outdoor warning, text messages)	No	
Other		

Table 2-11: Town of Taos Fiscal Mitigation Capabilities

Financial Resources	Accessible/Eligible to Use (Yes/No)	Comments/ Could the resource be used to fund future mitigation actions?
Capital improvements project funding	Yes	Yes, as long as it meets the definition of Capital Improvements
Authority to levy taxes for specific purposes	Possibly	
Fees for water, sewer, gas, or electric services	Yes – Water and Waste Water	Yes
Impact fees for new development	No	
Stormwater utility fee	No	
Incur debt through general obligation bonds	No	
Incur debt through special tax bonds	No	
Incur debt through private activities	No	
Community Development Block Grants	Yes	Yes
Other federal or state funding programs used	Yes	Yes

Town of Taos Floodplain Management Regulations and NFIP Participation

Taos has participated in the National Flood Insurance Program (NFIP) since August 4, 1987, by administering floodplain management regulations that meet the minimum requirements of the NFIP. Ordinance No. 10-24 details the floodplain management regulations for the Town of Taos. The purpose of these regulations is to promote the public health, safety, and general welfare and to minimize public and private losses due to flood conditions in specific areas. These regulations apply to all areas of special

flood hazards within the jurisdiction of Taos identified in FEMA’s October 6, 2010, flood insurance study and accompanying maps. The town requires for new development or substantial improvements to have the first finished floor elevation to be at or above the base flood elevation. The town maintains a file of elevation certificates.

Floodplain management is administered by the Planning Department. The current floodplain manager is the Town Planner who is also a CFM.

Town of Red River Capabilities

Regulatory, administrative, and fiscal capabilities as they relate to hazard mitigation are captured in the following tables, based on a capability assessment worksheet completed by municipal personnel on the HMPC.

Table 2-12: Red River Planning & Regulatory Mitigation Capabilities

Tool	Yes/No/Year	Comments/ Enforcement and Administration Notes
Comprehensive Master Plan	2013	Addresses some specific hazards and mitigation projects, especially WUI projects and infrastructure projects
Capital Improvement Plan	2016	5 year implementation plan for years 2018- 2022, addresses funding of some specific hazard mitigation projects
Economic Development Plan	Yes	Included in the Comprehensive Master Plan
Local EOP	2001	
Transportation Plan	Yes	Included in the Comprehensive Master Plan.
Stormwater Management	Yes	Plan originally developed by Gannet Fleming Engineering, but needs updating
Community Wildfire Protection	Yes	Local plan developed in the aftermath of the Hondo Fire, which was prior to the federal legislation that created the formal CWPP process. We are currently part of the Enchanted Circle Regional Fire Protection Plan and to a more limited degree the Taos County CWPP.
Other Plans	2015	The water conservation/drought management plan addresses some specific vulnerabilities of water infrastructure and climactic drought.
	2016	The Evacuation Plan is specifically maintained on a yearly basis
Codes & Enforcement	Yes/No	Comments/ Enforcement and Administration Notes
Building Code	No	The Town has not adopted or enforce building, electrical or mechanical codes. We rely on the State CID, which is currently enforcing the International Code Council (ICC) 2009 suite of building codes. Our fire inspectors and P&Z administrators have an effective working relationship with the State Inspectors.
Fire Code	Yes	The Town has adopted and is enforcing with two part time inspectors the ICC's International Fire Code, 2003 edition, which specifically dovetails with the ICC Building Code. This is also the same Fire Code being enforced by the State Fire Marshal's Office. We also have adopted a few of the NFPA codes to address specific hazards. Code enforcement is effective.
Fire Department ISO Rating		1S0 Class 4
Site Plan Review	Yes	Reviewed by both P&Z and Fire Department

Land Use Planning Ordinances	Yes/No	Comments/ Enforcement and Administration Notes
Planning & Zoning Ordinance	2000	Current ordinance first adopted in 2000 with multiple amendments, most recently in 2016 with several more amendments pending. Overseen by Planning & Zoning Commission and staffed by P&Z Administrator.
Subdivision Ordinance		Covered in the P&Z Ordinance
Floodplain Ordinance	2010	Adopted and provides for a Floodplain Manager (Russell)
Floodplain Maps	Yes	Most recent maps were produced in 2010 and reflect current federal standards
Land Acquisition		Function of the Town Council

Table 2-13: Red River Administrative/Technical Mitigation Capabilities

Administration	Yes/No	Comments
Planning Commission	Yes	
Mitigation Planning Committee	Yes	Would fall under the Public Safety Committee and as participant on County HMPC.
Maintenance Programs	Yes	This function falls to the various Town Departments
Mutual Aid Agreements	Yes	Provided as part of both the Enchanted Circle Fire and Enchanted Circle EMS Associations. Actively updated and maintained annually. Includes "Automatic Aid", which is an important distinction from "Mutual Aid". The Town also maintains a number of other cooperative agreements that address hazard response and mitigation.
Personnel	Yes/No	Department/Position
Building Official		No building code or building official, but does provide a P&Z Administrator and Fire Inspector
Flood Plain Administrator	Yes	Part time function of the Town Planner - Russell Church
Emergency Manager	No	
Community Planner	Yes	Town Planner - Russell Church
Civil Engineer	Yes	Contractual relationship with Dennis Engineering, Inc.
GIS Coordinator	Yes	
Others	Yes	Town Marshal - responsible for civil unrest, etc. Fire Department EMS Chief - responsible for Mass Casualty Response and Special Needs population support Fire Chief - responsible for urban interface fire planning, urban conflagration planning, and technical rescue planning (SAR, technical ropes, confined space)
Technical	Yes/No	Capability
Grant Writing	Yes	Falls to individual Department Heads. Successful track record in multiple department of obtaining grants targeted at specific Hazards
GIS Data Resources	Limited	Part of Town Planner function, but more and more of this capability is being handed off to County Planning.
Warning Systems/Services	Yes	The Town subscribes to "One Call Now" program, which has been used multiple times in recent years to advise citizens of emergencies, evacuations or interruption of services.

Table 2-14: Red River Fiscal Mitigation Capabilities

Administration	Accessible	Comments
Capital Improvement Projects	Yes	This program already has a track record of funding mitigation and certain mitigation projects are listed in the current ICIP.
Authority to levy taxes	Yes	
User fees for utilities	Yes	User fees in place for water and sewer.
Impact Fees	No	No impact fee structure in place
Stormwater utility fee	No	No fees in place
Debt w/ GO Bonds	Yes	Current in place to fund water system improvements
CDBG Grants	Yes	Current and past history of funding projects
Other State & Federal Programs	Yes	Multiple, including AFG, VFA, State Fire Special Projects, State EMS special projects and others

Floodplain Management Regulations and NFIP Participation

Red River has participated in the National Flood Insurance Program (NFIP) since July 1, 1987, by administering floodplain management regulations that meet the minimum requirements of the NFIP. The purpose of these regulations is to promote the public health, safety, and general welfare and to minimize public and private losses due to flood conditions in specific areas. These regulations apply to all areas of special flood hazards within the jurisdiction of Red River identified in FEMA’s October 6, 2010, flood insurance study and accompanying maps. Red River has participated in the National Flood Insurance Program (NFIP) since July 1, 1987, by administering floodplain management regulations that meet the minimum requirements of the NFIP.

Floodplain management is administered by the Planning Department. The current floodplain manager is the Town Planner.

Village of Questa Capabilities

Regulatory, administrative, and fiscal capabilities as they relate to hazard mitigation are captured in the following tables, based on a capability assessment worksheet completed by municipal personnel on the HMPC.

Table 2-15: Village of Questa Regulatory Mitigation Capabilities

Regulatory Tool (plans, ordinances, codes,)	Yes/No/Year	Comments/ Enforcement and Administration Notes
Plans		
Comprehensive/Master Plan	No	
Capital Improvements Plan	No	
Economic Development Plan	No	
Local Emergency Operations Plan	Yes	
Continuity of Operations Plan	No	
Transportation Plan	No	
Stormwater Management Plan	No	
Community Wildfire Protection Plan	No	
Other special plans (i.e., disaster recovery, climate change adaptation)	No	
Building Code, Permitting and Inspections	Yes/No	Comments/ Enforcement and Administration Notes
Building Code	No	
Building Code Effectiveness Grading Schedule (BCEGS) Score	No	
Fire department ISO rating	5	
Site plan review requirements		
Land Use Planning and Ordinances	Yes/No	Comments/ Enforcement and Administration Notes
Zoning ordinance	Yes	
Subdivision ordinance	No	
Floodplain ordinance	Yes	
Natural hazard-specific ordinance (stormwater, steep slope, wildfire)	No	
Flood insurance rate maps	Yes	
Acquisition of land for open space and public recreation uses	No	

Table 2-16: Village of Questa Administrative/Technical Mitigation Capabilities

Administration	Yes/No	Comments
Planning Commission	No	
Mitigation Planning Committee	Yes	Participation in County led HMPC
Maintenance programs to reduce risk, e.g., tree trimming, clearing drainage systems	No	
Mutual aid agreements	No	
Personnel Resources	Yes/No/Full or part time	Department/Position
Building Official	No	
Floodplain Administrator	Yes	administered by Taos County Floodplain Manager through agreement
Emergency Manager	No	
Community Planner	No	
Civil Engineer	No	
GIS Coordinator	No	
Other personnel with a hazards management aspect	No	
Technical	Yes/No	Describe capability Has capability been used to assess/mitigate risk in the past?
Grant Writing	No	
GIS Data Resources (Hazard areas, critical facilities, land use, building footprints, etc.)	No	
Warning Systems/Services (Reverse 9-11, cable override, outdoor warning, text messages)	No	
Other		
Administration	Yes/No	Comments
Planning Commission	No	
Mitigation Planning Committee	Yes	As participant on County HMPC
Maintenance programs to reduce risk, e.g., tree trimming, clearing drainage systems	No	

Table 2-17: Village of Questa Fiscal Mitigation Capabilities

Financial Resources	Accessible/Eligible to Use (Yes/No)	Comments/ Could the resource be used to fund future mitigation actions?
Capital improvements project funding	Yes	Possibly
Authority to levy taxes for specific purposes	Yes	Possibly
Fees for water, sewer, gas, or electric services	Yes	No
Impact fees for new development	No	
Stormwater utility fee	No	
Incur debt through general obligation bonds	Yes	Possibly
Incur debt through special tax bonds	No	
Incur debt through private activities	No	
Community Development Block Grants	Yes	Possibly
Other federal or state funding programs used	Yes	

Floodplain Management Regulations and NFIP Participation

Questa has participated in the National Flood Insurance Program (NFIP) since October 21, 2010, by administering floodplain management regulations that meet the minimum requirements of the NFIP. The purpose of these regulations is to promote the public health, safety, and general welfare and to minimize public and private losses due to flood conditions in specific areas. These regulations apply to all areas of special flood hazards within the jurisdiction of Questa identified in FEMA’s October 6, 2010, flood insurance study and accompanying maps. The Special Flood Hazard Area (SFHA, base flood, 100 year flood or 1% annual chance flood) in the town is mapped as Zone A (Approximate) and lack detailed studies with base flood elevations.

Floodplain management is administered through an agreement with Taos County. Taos County maintains records of elevation certificates for the Village of Questa and the NFIP is administered by Taos County’s Floodplain Manager.

3 PLANNING PROCESS

Requirements §201.6(b) and §201.6(c)(1): An open public involvement process is essential to the development of an effective plan. In order to develop a more comprehensive approach to reducing the effects of natural disasters, the planning process shall include:

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

[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.

3.1 Background on Mitigation Planning in Taos County

This multi-hazard, multi-jurisdictional Hazard Mitigation Plan (HMP) is the first plan of its kind for Taos County and its municipalities. The County, with the Taos County E911 - Office of Emergency Management (OEM) as the lead agency, recognized the need and importance of this plan and was responsible for initiating its development. The County contracted with Amec Foster Wheeler in 2016 to facilitate and develop the plan. Amec Foster Wheeler's role was to:

- Assist in establishing the Hazard Mitigation Planning Committee (HMPC) as defined by the Disaster Mitigation Act (DMA);
- Meet the DMA requirements as established by federal regulations and following FEMA's planning guidance;
- Facilitate the entire planning process;
- Identify the data requirements that HMPC participants could provide and conduct the research and documentation necessary to augment that data,
- Assist in facilitating the public input process;
- Produce the draft and final plan documents; and
- Coordinate New Mexico Department of Homeland Security and Emergency Management (NMDHSEM) and FEMA Region VI plan reviews.

The remainder of this chapter provides a narrative description of the steps taken to prepare the hazard mitigation plan (HMP).

3.2 Local Government Participation

This HMP is a multi-jurisdictional plan that covers unincorporated Taos County and four municipalities. The municipalities include the Town of Taos, Town of Red River, Village of Taos Ski Valley and Village of Questa. The DMA planning regulations and guidance stress that local governments seeking FEMA approval of their mitigation plan must participate in the planning effort in the following ways:

- Participate in the process as part of the Hazard Mitigation Planning Committee (HMPC);
- Identify potential mitigation actions; and
- Formally adopt the plan.

For the Taos County Planning Area’s jurisdictions, “participation” was defined at the outset of the planning process as the following:

- Providing facilities for meetings;
- Attending and participating in the HMPC meetings;
- Completing and returning the Amec Foster Wheeler Data Collection Guide;
- Collecting and providing other requested data (as available);
- Identifying mitigation actions for the plan;
- Reviewing and providing comments on plan drafts
- Informing the public, local officials, and other interested parties about the planning process and providing opportunity for them to comment on the plan;
- Coordinating, and participating in the public input process; and
- Coordinating the formal adoption of the plan by each governing board.

The County and the four municipalities met all of these participation requirements. In most cases one or more representatives for each agency attended the HMPC meetings described in Table 3.2 and also brought together department staff to help collect data, identify mitigation actions and implementation strategies, and review and provide data on plan drafts. Appendix A provides additional information and documentation of the planning process and Appendix B provides more details on the staff representation of the jurisdictions on the HMPC.

3.3 The 10-Step Planning Process

The process for developing the Taos County Hazard Mitigation Plan followed the DMA 2000 planning requirements and FEMA’s associated guidance. This guidance is structured around a four-phase process:

- 1) Organize Resources;
- 2) Assess Risks;
- 3) Develop the Mitigation Plan; and

4) Implement the Plan and Monitor Progress.

Into this process, Amec Foster Wheeler integrated a more detailed 10-step planning process used for FEMA’s Community Rating System (CRS) and Flood Mitigation Assistance programs. Thus, the modified 10-step process used for this plan meets the requirements of the Hazard Mitigation Assistance grants (HMA, including Hazard Mitigation Grant Program - HMGP, Pre-Disaster Mitigation program - PDM, Flood Mitigation Assistance - FMA), Community Rating System, and the flood control projects authorized by the U.S. Army Corps of Engineers (USACE). FEMA’s March 2013 *Local Mitigation Planning Handbook* recommends a nine step process within the four phase process. Table 3.1 summarizes the four-phase DMA process, the detailed CRS planning steps and workplan used to develop the plan, the nine handbook planning tasks from FEMA’s 2013 *Local Mitigation Planning Handbook*, and where the results are captured in the Plan. The sections that follow describe each planning step in more detail.

Table 3.1. Mitigation Planning Processes Used to Develop the Taos County Hazard Mitigation Plan

FEMA 4 Phase Guidance	Community Rating System (CRS) Planning Steps (Activity 510) and Amec Foster Wheeler Workplan Tasks	FEMA Local Mitigation Planning Handbook Tasks (44 CFR Part 201)	Location in Plan
Phase I: Organize Resources	Task 1. Organize Resources	1: Determine the Planning Area and Resources	Chapters 1, 2 and 3
		2: Build the Planning Team 44 CFR 201.6(c)(1)	Chapter 3, Section 3.3.1
	Task 2. Involve the public	3: Create an Outreach Strategy y 44 CFR 201.6(b)(1)	Chapter 3, Section 3.3.1
	Task 3. Coordinate with Other Agencies	4: Review Community Capabilities 44 CFR 201.6(b)(2) & (3)	Chapter 2, Section 2.2 Chapter 3, Section 3.3.1 and
Phase II: Assess Risks	Task 4. Assess the hazard	5: Conduct a Risk Assessment 44 CFR 201.6(c)(2)(i) 44 CFR 201.6(c)(2)(ii) & (iii)	Chapter 4, Sections 4.1-4.3
	Task 5. Assess the problem		Chapter 4, Sections 4.1-4.3
Phase III: Develop the Mitigation Strategy	Task 6. Set goals	6: Develop a Mitigation Strategy 44 CFR 201.6(c)(3)(i); 44 CFR 201.6(c)(3)(ii); and 44 CFR 201.6(c)(3)(iii)	Chapter 5, Section 5.2
	Task 7. Review possible activities		Chapter 5, Section 5.3
	Task 8. Draft an action plan		Chapter 5, Section 5.4
Phase IV: Adopt and Implement the Plan	Task 9. Adopt the plan	8: Review and Adopt the Plan	Chapter 6, Appendix C
	Task 10. Implement, evaluate, revise	7: Keep the Plan Current	Chapter 7
		9: Create a Safe and Resilient Community 44 CFR 201.6(c)(4)	Chapter 7

Phase 1: Organize Resources

Planning Step 1: Organize the Planning Effort

With the County's commitment to develop the plan, Amec Foster Wheeler worked with OEM to establish the framework and organization for the process. Organizational efforts were initiated with the County to inform and educate the plan participants of the purpose and need for the countywide, multi-jurisdictional hazard mitigation plan. The planning consultant held an initial call to discuss the organizational aspects of this planning process with County OEM, who took the lead on this project. Invitations to the kickoff meeting were extended to key county departments, municipalities and key stakeholders. Using FEMA planning guidance representatives from the HMPC base membership was established with representatives from the participating jurisdictions. The list of agencies and individuals invited to participate is included in Appendix B with documentation of participation included in Appendix A.

The HMPC was established as a result of this effort, as well as through interest generated through outreach conducted for this project. The HMPC collectively developed the plan with leadership from the County OEM and facilitation by Amec Foster Wheeler. The HMPC meetings also had participation from other agency stakeholders with an interest in hazard mitigation which are described in Planning Step 3. The following participated on the HMPC:

Taos County

- Public Safety - Office of Emergency Management
- Public Safety – E911
- Public Safety – Sheriff's Office
- Public Safety - Fire
- Administration - County Management
- Administration - Risk Management
- Planning
- Public Works
- Sheriff

Incorporated Jurisdictions

- Town of Taos
- Town of Red River
- Village of Taos Ski Valley
- Village of Questa

A list of participating HMPC representatives with staff titles and names is included in Appendix B. Each jurisdiction also utilized the support of many other staff in order to collect and provide requested data and to conduct timely reviews of the draft documents.

The planning process officially began with a kick-off meeting held on September 14, 2016. The meeting covered the scope of work and an introduction to the DMA planning requirements. Participating jurisdictions were provided with a Data Collection Guide, which included worksheets to facilitate the collection of information necessary to support development of the plan. Using FEMA guidance, Amec Foster Wheeler designed these worksheets to capture information on past hazard events, identify hazards of concern, quantify values at risk to identified hazards, inventory existing capabilities, and record possible mitigation actions. Copies of Amec Foster Wheeler’s Data Collection Guide for this project are included in Appendix A. The County and each municipality completed and returned the worksheets to supply Amec Foster Wheeler information for incorporation into the plan document.

During the planning process, the HMPC communicated through face-to-face meetings, email, and telephone conversations. Draft documents were also posted on the County website so that the HMPC members and the public could easily access and review them. A broader HMPC and stakeholder email list included 220 email addresses on the distribution. A second email group consisting of the key County and municipal staff was used to share communication specific to targeted input to the plan during the planning process.

The HMPC held three primary planning meetings during the planning period (August 2016-March, 2017). The purposes of these meetings are described in Table 3.2. Agendas for each of the meetings are included in Appendix A. Additional focus meetings of the HMPC were held as follow up to the meetings noted in the table below. For example Taos County met on October 4th, 2016 to prepare input to Amec Foster Wheeler’s data collection guide.

Table 3.2. HMPC Meetings

Meeting Type	Meeting Topics	Meeting Date(s)
HMPC #1 Kick-off Meeting	1) Introduction to DMA and the planning process	September 14, 2016
	2) Organize Resources: the role of the HMPC, planning for public involvement, coordinating with other agencies/stakeholders	
	3) Hazard Identification	
HMPC #2	1) Hazard Identification and Risk assessment results overview	October 21, 2016
	2) Initial development of hazard mitigation goals	
HMPC #3	1) Finalize mitigation goals	December 8, 2016
	2) Identification and prioritization of mitigation actions	

Planning Step 2: Involve the Public

Early discussions with County OEM established the initial plan for public and stakeholder involvement. At the kick-off meeting, the HMPC discussed additional strategies for public involvement and agreed to an approach using established public information mechanisms and resources within the county. Public involvement activities for this plan included: notices on County and municipal websites, development of a backgrounder handout for public meetings; development of an on-line and hardcopy survey/questionnaire; a public workshop and the collection of public and stakeholder comments on the draft plan.

Public Survey

During the planning process and drafting stage, a web-based public survey was developed as a tool to gather public input. The survey was for the public to provide feedback to the HMPC on topics related to hazard concerns and reducing hazard impacts. The survey provided an opportunity for public input during the planning process, prior to finalization of the plan. The survey gathered public feedback on concerns about wildfires, floods, winter storms and other hazards and solicited input on strategies to reduce their impacts. The survey was released as both an online tool and a hardcopy form on October 11 and closed on December 22nd, 2016. The HMPC provided links to the public survey by distributing it using social media, email, and posting the link on websites. The link was available on the County website home page. Eighty-eight responses were received and shared with the HMPC to inform the process.

The survey included a question on ranking hazard significance. The results generally track with the significance levels noted in Chapter 4 of this plan, with drought, winter storm, and wildfire being considered the most significant. Extreme cold and thunderstorm also ranked highly in significance based on the public input. Question 4 read: *The following types of mitigation actions may be considered in this plan. Please indicate all the types of mitigation actions that you think should have the highest priority in the Regional Multi-Hazard Mitigation Plan. These results will be considered during the planning process.* The results indicate that wildfire fuels treatment, defensible space, public education/awareness, and evacuation planning were popular with the public. The full results of the survey are included in Appendix C Planning Process Documentation.

A public meeting was held to solicit public and stakeholder input prior to finalizing the plan. The public meeting is detailed in Table 3.3. Public outreach included an email distribution with a notice of the public meeting to the broader HMPC with direction to share with other associations, boards and committees and postings around the work place. The meeting notice was also posted on the homepage of the Taos County website and the Local Emergency Planning Committee (LEPC) website. Fifteen persons attended the meetings and documented on a sign in sheet. The planning process scope and schedule were discussed, along with the list of hazards addressed in the plan, followed by a presentation that summarized hazard vulnerability. The group was asked what hazards presented the greatest concern. This led to further discussion that was summarized and

distributed via email to the HMPC. Meeting advertisements and a sign in sheet and summary are documented in Appendix A.

Where appropriate, stakeholder and public comments and recommendations were incorporated into the final plan, including the risk assessment and sections that address mitigation goals and strategies. A summary of the meeting was shared with the HMPC and are included in Appendix A.

Prior to finalization of the plan a draft was made available on the County website for a three week public comment period in March 2017. An electronic form was posted with the plan to capture comments. The form was visited by at least three persons, but no comments were received on the plan.

Table 3.3. Public and Stakeholder Meetings

Meeting Topic	Meeting Date	Location
Public workshop	December 8, 2016	County Commission Chambers

Tribal Coordination

Two Pueblos are present within the county boundaries. The Pueblos of Taos and Picuris were invited to attend HMPC meetings as stakeholders. Taos Pueblo was in the process of developing a tribal hazard mitigation plan specific to them. While not present at meetings, coordination included inclusion of both Pueblos on the broader HMPC email distribution and invitations to participate in HMPC and public meetings.

Planning Step 3: Coordinate with Other Departments and Agencies

Early in the planning process, the HMPC determined that data collection, mitigation strategy development, and plan approval would be greatly enhanced by inviting other local, state and federal agencies and organizations to participate in the process. The following groups were invited to participate or provide input into the planning process based on their involvement in hazard mitigation planning, knowledge of hazards, their status as a land manager in the County, and/or their interest as a neighboring jurisdiction.

State Agencies

- New Mexico Division of Homeland Security and Emergency Management
- New Mexico State Forestry
- New Mexico State Police
- New Mexico State Hazardous Materials
- New Mexico Department of Transportation
- New Mexico Department of Health

Local Agencies

- Volunteer Fire Protection Districts:
 - Rio Fernando
 - Angelfire
 - Dixon
 - Arroyo Hondo
 - Latir
 - Lama
 - San Cristobal
 - Cerro
 - Amalia
 - Tres Piedras
 - Ojo Caliente
 - Wheeler Peak
 - Costilla
 - Penasco
- Taos Municipal Schools
- Taos Search and Rescue
- Taos Soil and Water Conservation District
- Rio Arriba County Emergency Management (neighboring County)
- Angel Fire, Village of (in neighboring Colfax County)
- Colfax County Emergency Management (neighboring County)
- Conejos County Colorado Emergency Management (neighboring County)
- Costilla County Colorado Emergency Management (neighboring County)

Tribal Agencies

- Picuris Pueblo
- Taos Pueblo

Federal Agencies

- United States Forest Service – Carson National Forest and Carson Hotshots
- Bureau of Land Management – Fire Management

Universities

- University of New Mexico - Earth Data Analysis Center

Business and Industry

- Chevron
- Code 3 Service
- Kit Carson Energy
- Taos Net
- TECO Energy
- Ski Taos

Nonprofit/Other

- American Red Cross
- Big Brothers Big Sisters – Mountain Region
- Rivera Funeral Home
- Rocky Mountain Youth Corps
- Holy Cross Hospital
- Southern Methodist
- The Nature Conservancy
- Forest Guild

Coordination with key agencies, organizations, and advisory groups throughout the planning process allowed the HMPC to review common problems, development policies, and mitigation strategies as well as identifying any conflicts or inconsistencies with regional mitigation policies, plans, programs and regulations. They often provided a resource for information on potential hazards in the County. The HMPC also used technical data, reports, and studies from the following agencies and groups, just to name a few:

- New Mexico State Forestry Service
- U.S. Geological Survey
- National Weather Service

Phone calls and emails were used during plan development to directly coordinate with key individuals representing other agencies or regional programs. The County Emergency Manager also worked as the liaison to this plan and other planning efforts to ensure successful coordination and input with other ongoing plans.

As part of the public review and comment period for the draft plan, key agencies and were again specifically solicited to provide any final input to the draft plan document. This input was solicited both through membership on the HMPC and by direct emails to key groups and associations to review and comment on the plan. As part of this targeted outreach, these key stakeholders were also specifically invited to attend the public meeting to discuss any outstanding issues and to provide input on the draft document and final mitigation strategies.

Other Community Planning Efforts and Hazard Mitigation Activities

Coordination with other community planning efforts is also paramount to the success of this plan. Hazard mitigation planning involves identifying existing policies, tools, and actions that will reduce a community’s risk and vulnerability to hazards. Integrating existing planning efforts and mitigation policies and action strategies into this plan establishes a credible and comprehensive plan that ties into and supports other community programs. The development of this plan incorporated information from the following existing plans, studies, reports, and initiatives listed in Table 3.4. Other related planning efforts were inventoried by jurisdiction in the capability assessment in Chapter 2.

Table 3.4. Incorporated Planning Mechanisms

Plan	How Incorporated
County Community Wildfire Protection Plan 2016	Incorporated into Risk and Vulnerability Assessment and Mitigation Strategy; Incorporated wildfire risk study.
County Comprehensive Plan, 2016 update	Incorporated by reference in Mitigation Strategy and discussed in 2.2 Capabilities Assessment; related goals and implementation strategies referenced during HMP mitigation strategy development. Informed growth and development trends.
Taos Regional Water Plan 2016	Informed growth and development trends. Informed drought hazard profile.
Taos County Emergency Operations Plan	Informed Hazard Identification
2013 State of New Mexico Natural Hazard Mitigation Plan	Used as reference for Risk and Vulnerability Assessment. Goals referenced during mitigation goals development.

An example of coordinating with other planning efforts that occurred during the development of this plan was coordination with the County Comprehensive Plan update. Taos County’s Comprehensive Plan includes policies and guiding principles related to growth and development. This plan was being updated while the Hazard Mitigation Plan was in development. The County Planning Director was involved in both planning efforts during the fall of 2016 and help facilitate communication and coordination between the consultants working on both plans. The planning consultant leading the Comprehensive Plan update provided a draft of the updated goals and implementation strategies of the Hazard Mitigation Element. The Hazard Mitigation Element was a new addition to the Comprehensive Plan in 2016. Amec Foster Wheeler was invited to provide comments on the draft element. The draft Hazard Mitigation Element goals and strategies were also shared with the HMPC during the development of goals for this Hazard Mitigation Plan. A strategy under Goal 2 (*Increase community resiliency from all hazards such as wildfires, flooding,*

drought, severe weather, landslide, avalanche and contaminants) of the Hazard Mitigation Element provides a direct reference to this HMP:

“Implement the projects identified in the forthcoming Taos County Hazard Mitigation Plan.”

The HMP backgrounder and survey was provided so it could be shared at public meetings associated with the Comprehensive Plan or other public meetings.

Other documents were reviewed and considered, as appropriate, during the collection of data to support Planning Steps 4 and 5, which include the hazard identification, vulnerability assessment, and capability assessment. Specific references used in the development of this plan are sourced throughout the document as appropriate.

Phase 2: Assess Risks

Planning Steps 4 and 5: Identify the Hazards and Assess the Risks

Amec Foster Wheeler led the HMPC in a data discovery and research effort to identify, document, and profile all the hazards that have, or could have, an impact in the planning area. Data collection worksheets were developed and used in this effort to aid in identifying hazards and vulnerabilities. Geographic Information Systems (GIS) data were used to display, analyze, and quantify hazards and vulnerabilities. The HMPC also conducted a capability assessment to review and document the planning area’s current capabilities to mitigate risk from and vulnerability to hazards.

By collecting information about existing government programs, policies, regulations, ordinances, and emergency plans, the HMPC could assess those activities and measures already in place that contribute to mitigating some of the risks and vulnerabilities identified. A more detailed description of the risk assessment process, methodologies, and results are included in Chapter 4 Risk Assessment.

Phase 3: Develop the Mitigation Plan

Planning Steps 6 and 7: Set Goals and Review Possible Activities

Amec Foster Wheeler facilitated brainstorming and discussion sessions with the HMPC that included a description of the purpose and process of developing planning goals, as well as discussion of a comprehensive range of mitigation alternatives, and a method of selecting and defending recommended mitigation actions using a series of selection criteria. Additional details of the process to develop goals and actions is included in Chapter 5 Mitigation Strategy. Additional documentation on the process the HMPC used to develop the goals and strategy is in Appendix A.

Planning Step 8: Draft an Action Plan

Based on input from the HMPC regarding the draft risk assessment and the goals and activities identified in Planning Steps 6 and 7, Amec Foster Wheeler produced a complete first draft of the plan. This complete draft was distributed electronically to the HMPC for review and comment. Comments were integrated into a public review draft, which was advertised and distributed to collect public input. Other agencies were invited to comment on this draft as well. Amec Foster Wheeler integrated comments and issues from the public, as appropriate, along with additional internal review comments and produced a final draft for the NMDHSEM and FEMA Region VI to review and approve prior to final adoption by the Taos County Commissioners and the participating jurisdictions.

Phase 4: Implement the Plan and Monitor Progress

Planning Step 9: Adopt the Plan

In order to secure buy-in and officially implement the plan, the plan was adopted by the County and municipalities using the sample resolution contained in Appendix C.

Planning Step 10: Implement, Evaluate, and Revise the Plan

The true worth of any mitigation plan is in the effectiveness of its implementation. In the previous steps of the planning process the HMPC's efforts have been directed at researching data, gathering information for the plan, and developing appropriate mitigation actions. Each recommended action includes key descriptors, such as a lead entity and possible funding sources, to help initiate implementation. An overall implementation strategy is described in Chapter 7 Plan Implementation and Maintenance.

Finally, there are numerous organizations within the Taos County Planning Area whose goals and interests interface with hazard mitigation. Coordination with these other planning efforts, as addressed in Planning Step 3, is key to the ongoing success of this plan and mitigation in Taos County and is addressed further in Chapter 7. A plan update and maintenance schedule and a strategy for continued public involvement are also included in Chapter 7.

4 RISK ASSESSMENT

Requirement §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.

As defined by the Federal Emergency Management Agency (FEMA), risk is a combination of hazard, vulnerability, and exposure. It is the impact that a hazard would have on people, services, facilities, and structures in a community and refers to the likelihood of a hazard event resulting in an adverse condition that causes injury or damage.

The risk assessment process identifies and profiles relevant hazards and assesses the exposure of lives, property, and infrastructure to these hazards. The process allows for a better understanding of the County's potential risk to natural hazards and provides a framework for developing and prioritizing mitigation actions to reduce risk from future hazard events.

This risk assessment builds upon the methodology described in the 2013 FEMA *Local Mitigation Planning Handbook*, which recommends a four-step process for conducting a risk assessment:

- 1) Describe Hazards
- 2) Identify Community Assets
- 3) Analyze Risks
- 4) Summarize Vulnerability

Data collected through this process has been incorporated into the following sections of this chapter:

Section 4.1: Hazard Identification - identifies the natural hazards that threaten the Planning Area and describes why some hazards have been omitted from further consideration.

Section 4.2: Asset Summary - describes the methodology for determining vulnerability of the planning area to the identified hazards.

Section 4.3: Hazard Analysis and Risk Assessment - discusses the threat to the Planning Area and describes previous occurrences of hazard events and the likelihood of future occurrences (2013 FEMA Local Mitigation Planning Handbook Risk Assessment Step 1). It also includes an assessment of the Planning Areas' exposure to natural hazards; considering assets at risk, critical facilities, and future development trends (2013 FEMA Local Mitigation Planning Handbook Risk Assessment Steps 2, 3 and 4).

This risk assessment covers the entire geographical extent of the Taos County Planning Area (Planning Area), including the county and the unincorporated communities of Taos County. Where applicable, risk is differentiated between the unincorporated areas and the municipalities of the Town of Taos, Taos Ski Valley, the Village of Questa, and the Village of Red River.

4.1 Hazard Identification

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.

The Taos County HMPC conducted a hazard identification process to determine the hazards that threaten the Planning Area. This section details the methodology and results of this effort.

Using existing natural hazards data and input gained through planning meetings, the HMPC agreed upon a list of hazards that could affect Taos County. Hazards data from the New Mexico Department of Homeland Security and Emergency Management (DHSEM), FEMA, the National Oceanic and Atmospheric Administration (NOAA), and many other sources were examined to assess the significance of these hazards to the Planning Area. Significance of each identified hazard was measured in general terms and focused on key criteria such as frequency and resulting damage, which includes deaths and injuries as well as property and economic damage. The natural hazards evaluated as part of this plan include those that have occurred historically or have the potential to cause significant human and/or monetary losses in the future. In general, this plan goes into greater detail, depth, and analysis.

Table 4-1 below was initially completed by the County with input from the HMPC to identify, profile, and rate the significance of identified hazards. In some cases the initial ratings were revised to reflect the result of the hazards analysis. The specific ratings reflect the county in general and in some cases vary by jurisdiction. All hazards are analyzed further in the Hazard Analysis and Risk Assessment section, with tables noting the specifics for each jurisdiction at the end of each hazard section.

Table 4-1: Taos County Hazard Identification and Significance Summary

Hazard	Spatial Extent	Probability of Future Occurrences	Magnitude/Severity	Overall Significance
Dam Failure	Limited	Unlikely	Limited	Low
Drought	Extensive	Likely	Negligible	Medium
Earthquake	Extensive	Unlikely	Limited	Low
Flood	Limited	Occasional	Limited	Medium
High Wind	Significant	Likely	Limited	Medium
Landslide/Mudslide/Rockfall	Limited	Likely	Limited	Medium
Severe Winter Weather	Significant	Likely	Limited	Medium
Thunderstorm (including Lightning and Hail)	Significant	Likely	Negligible	Medium
Wildfire	Significant	Highly Likely	Critical	High
Hazardous Materials	Limited	Likely	Limited	Medium

Geographic Extent
Negligible: Less than 10 percent of planning area or isolated single-point occurrences
Limited: 10 to 25 percent of the planning area or limited single-point occurrences
Significant: 25 to 75 percent of planning area or frequent single-point occurrences
Extensive: 75 to 100 percent of planning area or consistent single-point occurrences

Potential Magnitude/Severity
Negligible: Less than 10 percent of property is severely damaged, facilities and services are unavailable for less than 24 hours, injuries and illnesses are treatable with first aid or within the response capability of the jurisdiction.
Limited: 10 to 25 percent of property is severely damaged, facilities and services are unavailable between 1 and 7 days, injuries and illnesses require sophisticated medical support that does not strain the response capability of the jurisdiction, or results in very few permanent disabilities.
Critical: 25 to 50 percent of property is severely damaged, facilities and services are unavailable or severely hindered for 1 to 2 weeks, injuries and illnesses overwhelm medical support for a brief period of time, or result in many permanent disabilities and a few deaths.
Catastrophic: More than 50 percent of property is severely damaged, facilities and services are unavailable or hindered for more than 2 weeks, the medical response system is overwhelmed for an extended period of time or many deaths occur.

Probability of Future Occurrences
Unlikely: Less than 1 percent probability of occurrence in the next year, or has a recurrence interval of greater than every 100 years.
Occasional: Between a 1 and 10 percent probability of occurrence in the next year, or has a recurrence interval of 11 to 100 years.
Likely: Between 10 and 90 percent probability of occurrence in the next year, or has a recurrence interval of 1 to 10 years
Highly Likely: Between 90 and 100 percent probability of occurrence in the next year, or has a recurrence interval of less than 1 year.

Overall Significance
Low: Two or more of the criteria fall in the lower classifications or the event has a minimal impact on the planning area. This rating is also sometimes used for hazards with a minimal or unknown record of occurrences/impacts or for hazards with minimal mitigation potential.
Medium: The criteria fall mostly in the middle ranges of classifications and the event's impacts on the planning area are noticeable but not devastating. This rating is also sometimes utilized for hazards with a high impact rating but an extremely low occurrence rating.
High: The criteria consistently fall along the high ranges of the classification and the event exerts significant and frequent impacts on the planning area. This rating is also sometimes utilized for hazards with a high psychological impact or for hazards that the jurisdiction identifies as particularly relevant.

Source: Amec Foster Wheeler Data Collection Guide, Taos County

Excluded State Identified Hazards

The following hazards were identified as possible hazards to the County, as they are included in the State Hazard Mitigation Plan (2013). After further investigation they were not profiled further due to either no evidence of significant past events, minimal impacts, lack of geologic conditions, or extremely low probability of occurrence. A summary is provided below by hazard.

Avalanche

Avalanches are usually associated with severe winter storms and wind events in the higher elevations of the county. The HMPC noted that no roadways or developed areas are impacted, only certain areas near Taos Ski Valley which are mostly mitigated with active control by the ski resort. The HMPC did not recall any instances of backcountry travellers being impacted. This hazard is not profiled on its own, but discussed in the severe winter storm profile as avalanches are usually associated with winter storms.

Extreme Heat

Extreme heat is rarely an issue as highest temperatures only reach upper 90's due to the higher elevation setting of county. The HMPC did note that periods of excessive heat occur which often result in drought and higher wildfire risk, thus extreme heat is discussed with the drought profile. It was also noted by the HMPC that many buildings are not equipped for air conditioning. This hazard should be re-evaluated during future updates if changing climate conditions exacerbates this hazard.

Expansive Soils

The HMPC did not know of any past impacts or current concerns with expansive soils. Generalized mapping of this hazard in the New Mexico Hazard Mitigation Plan did not indicate soils with clays having much potential for swelling in the Taos County region. If expansive soils are encountered they are typically mitigated in modern construction practices.

Land Subsidence

The HMPC did not know of any past impacts or current concerns with land subsidence, sinkholes or collapsible soils. A generalized assessment of this hazard in the New Mexico Hazard Mitigation Plan did not indicate risk in the Taos County region, though a noted data limitation is adequate mapping of this hazard statewide.

Volcanoes

The State Hazard Mitigation Plan does identify volcanic activity in the geologic time in Taos County and adjacent counties in the region, notably Los Alamos, Rio Arriba and Santa Fe counties to the west and southwest, Colfax and Mora counties to the east, and Costilla County Colorado to the north. These include the Taos Plateau volcanic field, Brazos volcanoes, Valles Caldera, Cienega, Ocate and Cerros del Rio volcanic fields. Many of these areas contain volcanic deposits younger than 5 million years old, and some younger than 15,000 years.

The Taos Plateau volcanic field is an area of extensive volcanism in Taos County and is the second largest volcanic field in the Rio Grande Rift. The age of most of the vents and associated lava flows in the field is estimated to be between 1.8 and 4 million years, with a few 22-million-year-old vents.

Based on the State Hazard Mitigation Plan there are no estimates of future occurrence of volcanic eruptions in New Mexico in recent history. Volcanism in New Mexico is not "extinct," but is dormant. The last volcanic episode in the state occurred approximately 3,000 years ago. Based on past occurrence of volcanism in the state it can be roughly estimated that there is a 1% chance that some type of volcanic eruption could occur somewhere in New Mexico in the next 100 years, and a 10% chance that an eruption will occur in the next 1,000 years. Due to this extremely low probability of occurrence, this hazard will not be discussed in further detail. Mitigation actions would not be cost effective or practical given the low probability and nature of the hazard. If circumstances change and volcanic activity resumes somewhere in the state, future versions of the plan will elaborate.

Disaster Declaration History

One method to identify hazards based upon past occurrence is to look at what events triggered federal disaster declarations within the Planning Area. Disaster declarations are granted when the severity and magnitude of the event’s impact surpass the ability of the local government to respond and recover. Disaster assistance is supplemental and sequential. When the local government’s capacity has been surpassed, a state disaster declaration may be issued, allowing for the provision of state assistance. Should the disaster be so severe that both the local and state government’s capacity is exceeded, a federal disaster declaration may be issued allowing for the provision of federal disaster assistance.

Taos County has experienced six federal disaster declarations and two emergency declarations since 1950. The disaster declarations were associated with wildfire and flood events. Of the emergency declarations, one was for wildfire and one was for the evacuation from Hurricane Katrina. A summary of federal declarations is shown in Table 4-2.

Table 4-2: Taos County Federal Disaster Declaration History

Disaster Declaration	Hazard Type	Incident Period	Declaration Date	Declaring Agency
DR-4152	Severe Storms, Flooding, and Mudslides	9/9/2013	10/29/2013	Federal
DR-1962	Severe Winter Storm and Extreme Cold Temperatures	2/1/2011-2/5/2011	3/24/2011	Federal
DR-1659	Severe Storms & Flooding	7/26/2006-9/18/2006	8/30/2006	Federal
DR-1329	Wildfire	5/5/2000-6/9/2000	5/13/2000	Federal
DR-589	Severe Storms, Snowmelt, Flooding	6/23/1979	6/23/1979	Federal
DR-380	Severe Storms, Snow Melt, Flooding	5/11/1973	5/11/1973	Federal
EM-3229	Hurricane Katrina Evacuation	8/29/2005-10/1/2005	9/7/2005	Emergency Declaration
EM-3154	New Mexico Fire	5/5/2000-7/7/2000	5/10/2000	Emergency Declaration

Source: FEMA

4.2 Asset Summary

Assets Exposure

As a starting point for analyzing the Planning Area’s vulnerability to identified hazards, the HMPC used a variety of data to define a baseline against which all disaster impacts could be compared. If a catastrophic disaster was to occur in the Planning Area, this section describes significant assets exposed or at risk in the Planning Area. Data used in this baseline assessment included:

- Total assets at risk;
- Critical facility inventory;
- Cultural, historical, and natural resources; and
- Population growth and land use/development trends.

Total Assets at Risk

Parcel data was provided by the Taos County Assessor’s Office. This data presents an inventory of the total exposure of developed properties within the county. It is important to note that depending on the nature and type of hazard event or disaster, it is generally the value of the infrastructure or improvements to the land that is of concern or at risk. Generally, the land itself is not a total loss, but may see a reduction in value. Thus the parcel analysis excludes land value.

Parcel Exposure and Preparations for Analysis

Building counts and valuations in this plan are based on data from the County Assessor’s Office. The county’s parcel layer was joined to the assessor’s database in GIS, using only parcels with improved values. For the purposes of this plan ‘improved’ includes parcels that have an improvement value greater than zero. The parcel layer was then converted into centroids for this analysis to represent buildings. The table below shows a summary of the total improved property inventory grouped by jurisdiction. Contents values were estimated as a percentage of building value based on their property type, using FEMA/HAZUS estimated content replacement values. This includes 100% of the structure value for non-residential structures and 50% for residential structures.

Table 4-3: Taos County Total Exposure by Jurisdictions and Pueblos

Jurisdiction	Property Type	Improved Parcel Count	Improved Value	Content Value	Total Value
Unincorporated	Non-Residential	1,683	\$380,836,538	\$380,836,538	\$761,673,076
	Residential	6,653	\$1,094,856,606	\$547,428,303	\$1,642,284,909
	Total	8,336	\$1,475,693,144	\$928,264,841	\$2,403,957,985
Questa	Non-Residential	167	\$38,373,129	\$38,373,129	\$76,746,258
	Residential	516	\$46,960,678	\$23,480,339	\$70,441,017
	Total	683	\$85,333,807	\$85,333,807	\$170,667,614
Red River	Non-Residential	135	\$31,962,513	\$31,962,513	\$63,925,026
	Residential	478	\$79,798,236	\$39,899,118	\$119,697,354
	Total	613	\$111,760,749	\$111,760,749	\$223,521,498
Taos	Non-Residential	743	\$407,665,985	\$407,665,985	\$815,331,970
	Residential	1,782	\$325,922,597	\$162,961,299	\$488,883,896
	Total	2,525	\$733,588,582	\$733,588,582	\$1,467,177,164
Taos Ski Village	Non-Residential	33	\$20,260,358	\$20,260,358	\$40,520,716
	Residential	126	\$35,796,045	\$17,898,023	\$53,694,068
	Total	159	\$56,056,403	\$56,056,403	\$112,112,806
Pueblo – Taos Pueblo	Non-Residential	4	\$3,687,467	\$3,687,467	\$7,374,934
	Residential	3	\$264,220	\$132,110	\$396,330
	Total	7	\$3,951,687	\$3,951,687	\$7,903,374
Pueblo – Picuris Pueblo	Non-Residential	126	\$25,451,494	\$25,451,494	\$50,902,988
	Residential	400	\$37,430,673	\$18,715,337	\$56,146,010
	Total	526	\$62,882,167	\$62,882,167	\$125,764,334
	Grand Total	12,849	\$2,529,266,539	\$1,981,838,236	\$4,511,104,775

Source: Amec Foster Wheeler analysis based on Assessor’s Office data 2016

Critical Facility Inventory

For the purposes of this plan, a critical facility is defined as one that is essential in providing utility or direction either during the response to an emergency or during the recovery operation. FEMA’s HAZUS-MH loss estimation software uses the following three categories of critical assets:

- *Essential facilities* are those that if damaged would have devastating impacts on disaster response and/or recovery;
- *High potential loss facilities* are those that would have a high loss or impact on the community;
- *Transportation and lifeline facilities* are a third category of critical assets, consisting of transportation systems and utilities.

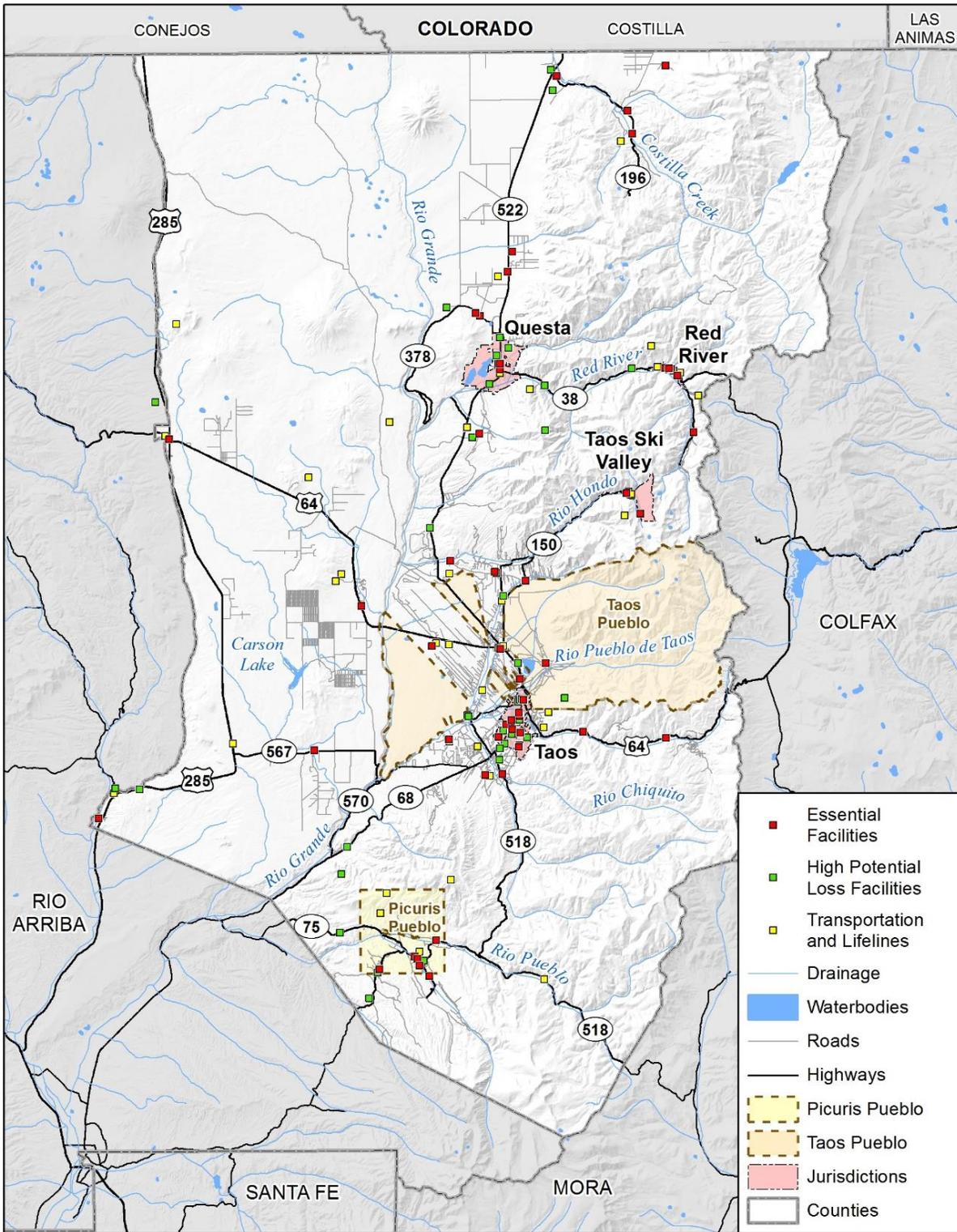
Examples of each are provided in Table 4-4 followed by a map and summary table of critical facilities by jurisdiction. Critical facilities data was provided by Taos County Planning; supplemental data from HAZUS was used to capture wastewater facilities; Homeland Security Infrastructure Program (HSIP) data was used for communications, emergency operations centers

and urgent care facilities. Each jurisdiction identified assets on a data collection guide worksheet which may capture additional facilities and additional details not within the GIS database. For a list of assets and vulnerabilities within specific jurisdictions, please refer to Appendix D.

Table 4-4: Critical Facilities Types and Examples

Essential Facilities	High Potential Loss Facilities	Transportation and Lifeline Facilities
Hospitals and medical facilities	Power Plants	Highways, Bridges, Tunnels
Police Stations	Dams and Levees	Railroads and Facilities
Fire Stations	Military Installations	Airports
Emergency Operations Centers	Hazardous Materials Sites	Water Treatment Facilities
	Schools	Natural Gas, Oil Facilities and Pipelines
	Shelters	Communications Facilities (including 911 and Repeater sites)
	Day Care Centers	
	Nursing Homes	
	Main Government Buildings	

Figure 4-1: Critical Facilities in Taos County



Map compiled 10/2016;
intended for planning purposes only.
Data Source: Taos County, RGIS,
HSIP Freedom 2015, Hazus

0 5 10 Miles



Table 4-5: Summary of Critical Facilities in Taos County by Jurisdiction

Jurisdiction	Category	Facility Type	Facility Count
Taos County	Essential Facilities	Community Center	7
		Earthship Biotec	1
		Fire Station	16
		Local EOC	1
		Public Works	3
		Total	28
	High Potential Loss Facilities	School	6
		Senior Center	1
		Tier II	5
		Transfer Station	7
		Wastewater Facility	3
		Total	22
	Transportation & Lifelines	Airport	3
		Communications Tower	81
		Total	84
		Grand Total	134
Questa	Essential Facilities	Fire Station	1
		Police Station	1
		Total	2
	High Potential Loss Facilities	School	4
		Tier II	2
		Total	6
	Transportation & Lifelines	Communications Tower	4
		Total	4
	Essential Facilities	EMS Depot	1
		Fire Station	1
		Local EOC	1
		Urgent Care Facility	1
	Total	4	
	High Potential Loss Facilities	School	1
		Tier II	1
Total		2	
Transportation & Lifelines	Helipad	1	
	Total	1	
		Grand Total	19
Taos	Essential Facilities	Administration	2
		Agricultural Center	1

		County Road Dept	1
		Courthouse	1
		Fire Station	2
		Hospital	1
		Jail	1
		Local EOC	1
		Park	1
		Police Station	2
		Public Health Dept	1
		YouthBuild House	1
		Total	15
	High Potential Loss Facilities	School	9
		Tier II	1
		Total	10
	Transportation & Lifelines	Communications Tower	29
Helipad		1	
Total		30	
		Grand Total	55
Taos Ski Valley	Essential Facilities	Fire Station	2
		Police Station	1
		Total	3
	Transportation & Lifelines	Communications Tower	2
		Total	2
		Grand Total	5

Source: Taos County Planning, HSIP and HAZUS

Cultural, Historical, and Natural Resources

Assessing Taos County’s vulnerability to disaster also involves inventorying the natural, historical, and cultural assets of the area. This step is important for the following reasons:

- The community may decide that these types of resources warrant a greater degree of protection due to their unique and irreplaceable nature and contribution to the overall economy.
- In the event of a disaster, an accurate inventory of natural, historical and cultural resources allows for more prudent care in the disaster’s immediate aftermath when the potential for additional impacts is higher.
- The rules for reconstruction, restoration, rehabilitation, and/or replacement are often different for these types of designated resources.
- Natural resources can have beneficial functions that reduce the impacts of natural hazards, for example, wetlands and riparian habitat which help absorb and attenuate floodwaters and thus support overall mitigation objectives.

Cultural and Historical Resources

Taos County has a large stock of historically significant homes, public buildings, and landmarks. To inventory these resources, the HMPC collected information from a number of sources. The New Mexico Historic Preservation Division (NMHPD) was the primary source of information. The Office of Historic Preservation (OHP) is responsible for the administration of federally and state mandated historic preservation programs to further the identification, evaluation, registration, and protection of New Mexico's irreplaceable archaeological and historical resources. NMHPD administers the National Register of Historic Places and the State Register of Cultural Properties. Each program has different eligibility criteria and procedural requirements.

- The **National Register of Historic Places** is the nation's official list of cultural resources worthy of preservation. The National Register is part of a national program to coordinate and support public and private efforts to identify, evaluate, and protect historic and archeological resources. Properties listed include districts, sites, buildings, structures, and objects that are significant in American history, architecture, archeology, engineering, and culture. The National Register is administered by the U.S. Department of the Interior National Park Service.
- **New Mexico State Register of Cultural Properties** are sites, buildings, features, or events that are of local (city or county) significance and have anthropological, cultural, military, political, architectural, economic, scientific or technical, religious, experimental, or other value.

Table 4-6: Taos County Historical Resources, National and State Register

Resource Name	Location	State Registered Date	National Registered Date
Blumenschein, Ernest L., House NHL	Taos	Not listed	10.15.1966
Carson, Kit, House NHL	Taos	Not listed	10.5.1966
Las Trampas Historic District NHL	Las Trampas	Not listed	5.28.1967
San Francisco de Assisi Mission Church NHL	Ranchos de Taos	Not listed	4.15.1970
San Jose de Gracia Church and Collections NHL	Las Trampas	Not listed	4.15.1970
Cordova, Laureano Mill	Vadito	3.21.1969	11.5.1974
Bent, Governor, House	Taos	3.21.1969	11.16.1978
Ranchos de Taos Plaza	Ranchos de Taos	3.21.1969	10.2.1978
Talpa Altar Screen	Talpa	23-May-69	Not listed
Martinez, Severino, House	Taos	25-Sep-70	23-Apr-73
Rogers, Millicent Foundation, Collections at the	Taos	21-May-71	
Santa Cruz de Ojo Caliente, Chapel of	Ojo Caliente	30-Dec-71	14-Apr-75
Picuris, Pueblo of	Picuris Pueblo	30-Dec-71	13-Aug-74
Taos, Pueblo of, NHL	Taos	13-Mar-72	15-Oct-66
Chapel of San Miguel del Valle (REMOVED SR)	El Valle	30-May-72	
Harwood Foundation of the University of New Mexico	Taos	28-Feb-75	22-Dec-76
La Morada de Nuestra Senora de Guadalupe	Taos	28-Feb-75	29-Jun-76
Molino de los Duranes	Ranchos de Taos	22-Aug-75	
Vigil Torreon	Ranchos de Taos	22-Aug-75	
Turley Mill and Distillery Site	Arroyo Hondo	21-Feb-69	16-Nov-78
Ojo Caliente Mineral Springs Barn	Ojo Caliente	07-May-77	06-Oct-03
Luhan, Mabel Dodge, House NHL	Taos	09-Dec-77	15-Nov-78
Harding Mine	Dixon	20-Jan-78	
Las Trampas Canoa	Las Trampas	20-Jan-78	
Tres Piedras Railroad Water Tower	Tres Piedras	20-Jan-78	02-Feb-79
Duran Chapel	Ranchos de Taos	01-Sep-78	
Gaspard, Leon, House and Collections	Taos	20-Oct-78	23-Feb-79
Fechin, Nicholai, House	Taos	22-Jun-79	31-Dec-79
Manby House	Taos	25-Jan-80	
San Ysidro Oratorio	Los Cordovas	16-Sep-80	05-Jan-84
Saint Vrain's Mill Site	Ranchos de Taos	31-Oct-80	
Taos Inn	Taos	03-Apr-81	05-Feb-82
Dasburg, Andrew, House and Studio	Ranchos de Taos	04-Sep-81	
Taos Downtown Historic District	Taos	15-Apr-82	08-Jul-82
La Loma Plaza National Register Historic District	Taos	15-Apr-82	08-Jul-82

Resource Name	Location	State Registered Date	National Registered Date
Red River Schoolhouse	Red River	16-Dec-83	23-Feb-84
Howiri-Ouinge	Ojo Caliente	14-Jan-83	07-Apr-83
Red River Miner's Hospital (Westoby House)	Red River	16-Dec-83	
Mallette, Orin, Cabin	Red River	16-Dec-83	23-Feb-84
Mallette, Sylvester M., Cabin	Red River	16-Dec-83	23-Feb-84
Melson-Oldham Cabin	Red River	16-Dec-83	23-Feb-84
Young, Brigham J., House	Red River	16-Dec-83	23-Feb-84
Westoby, Edward P., Cabin	Red River	16-Dec-83	
Pierce-Fuller House	Red River	16-Dec-83	23-Feb-84
Ojo Caliente Mineral Springs	Ojo Caliente	08-Mar-85	17-Nov-85
Carson School	Carson	22-Nov-85	13-Feb-86
Taos County Courthouse	Taos	09-May-86	
Howiri Archeological District (LA 71)	Ojo Caliente	17-Jul-87	
Hennings, E. Martin, House & Studio National Register Historic District	Taos	18-May-90	05-Jul-90
San Ignacio de Loyola Morada	Arroyo Seco	21-Feb-97	
Rio Grande Gorge Bridge	Taos	09-May-97	15-Jul-97
Red River Multiple Resource Area	Red River		23-Feb-84
Tres Piedras Administrative Site, Old	Tres Piedras		05-Aug-93
Hacienda de los Torres	Arroyo Seco	09-Sep-99	
Black Copper Mine and Stamp Mill Historic District	Red River	18-Sep-98	16-Feb-01
Morada de San Antonio	Arroyo Seco	17-Nov-00	
Lawrence, D.H., Ranch Historic District	San Cristobal	08-Aug-03	15-Jan-04
Red River Community House	Red River	12-Dec-03	
Couse, Eanger Irving, House and Studio and Sharp, Joseph Henry, Studios	Taos	13-Feb-04	28-Sep-05
Beimer, Bernard J., Residence	Taos	05-Dec-05	22-Mar-06
Church and Campo Santo of the Most Holy Trinity, The	Arroyo Seco	12-Dec-08	
Historic Resources of the Canon Community	Taos	17-Mar-11	
Old Taos Guesthouse	Taos	17-Mar-11	
Martinez Property	Taos	17-Mar-11	

Source: New Mexico Historic Preservation Division

It should be noted that these lists change periodically, and they may not include those currently in the nomination process and not yet listed. Additionally, as defined by the National Environmental Policy Act (NEPA), any property over 50 years of age is considered a historic resource and is potentially eligible for the National Register. Thus, in the event that the property is to be altered, or has been altered, as the result of a major federal action, the property must be evaluated under

the guidelines set forth by NEPA. Structural mitigation projects are considered alterations for the purpose of this regulation.

Many cultural and historical resources in the County are vulnerable to several hazards due to the nature of their construction. Some of these risks include earthquakes, wildfires or high winds damaging historic buildings.

Natural Resources

Natural resources are important to include in benefit/cost analyses for future projects and may be used to leverage additional funding for mitigation projects that also contribute to community goals for protecting sensitive natural resources. Awareness of natural assets can lead to opportunities for meeting multiple objectives. For instance, protecting wetlands areas protects sensitive habitat as well as reducing the force of and storing floodwaters.

Natural and Beneficial Functions

Floodplains can have natural and beneficial functions. Wetlands function as natural sponges that trap and slowly release surface water, rain, snowmelt, groundwater and flood waters. Trees, root mats, and other wetland vegetation also slow the speed of floodwaters and distribute them more slowly over the floodplain. This combined water storage and braking action lowers flood heights and reduces erosion. Wetlands within and downstream of urban areas are particularly valuable, counteracting the greatly increased rate and volume of surface water runoff from pavement and buildings. The holding capacity of wetlands helps control floods and prevents water logging of crops. Preserving and restoring wetlands, together with other water retention, can often provide the level of flood control otherwise provided by expensive dredge operations and levees.

Special Status Species

To further understand natural resources that may be particularly vulnerable to a hazard event, as well as those that need consideration when implementing mitigation activities, it is important to identify at-risk species (i.e., endangered species) in the Planning Area. The US Fish and Wildlife Service maintains a list of threatened and endangered species in New Mexico. State and federal laws protect the habitat of these species through the environmental review process. Several additional species are of special concern or candidates to make the protected list.

Table 4-7 summarizes Taos County's special status animal species in the Fish and Wildlife Service database. A search for Taos County's special status plant species in the Fish and Wildlife Service database yielded no results.

Table 4-7: Threatened and Endangered Animals in Taos County

Name	Scientific Name	Status
Yellow-billed Cuckoo	<i>Coccyzus americanus</i>	Threatened
Mexican spotted owl	<i>Strix occidentalis lucida</i>	Threatened
Southwestern willow flycatcher	<i>Empidonax traillii extimus</i>	Endangered
Black-footed ferret	<i>Mustela nigripes</i>	Endangered
Canada Lynx	<i>Lynx Canadensis</i>	Threatened
North American wolverine	<i>Gulo luscus</i>	Proposed Threatened

Source: US Fish and Wildlife Service

Population, Growth and Development Trends

As part of the planning process, the HMPC looked at changes in growth and development, both past and future, and examined these changes in the context of hazard-prone areas, and how the changes in growth and development affect loss estimates and vulnerability.

The US Census Bureau estimated population of Taos County for July 1, 2014 was 33,041, representing a 10.2% increase in population since 2000 (estimated at 29,979). Table 4-8 illustrates the moderate pace of population growth in Taos County dating back to 2000 and population trends for each municipality in the county.

According to the 2016 Taos Regional Water Plan the recovery from the recession has been slow and that no major increases in economic activity are anticipated in the foreseeable future. The local real estate market remains slow for vacant and commercial property, and while the construction industry has stopped declining, it hasn't yet recovered. The county issued 60 residential building permits in 2012, compared with 269 in 2006.

Table 4-8: Population Growth for Taos County from 2000-2014

Municipality	2000	2010	2014 (Estimate)	Population Growth 2000-2014
Taos Ski Valley	56	69	91	62%
Town of Taos	4,700	5,716	5,740	22%
Village of Red River	484	477	476	-1.6%
Village of Questa	1,767	1,770	1,779	0.6%
Unincorporated	22,972	24,905	24,955	8.6%
Countywide	29,979	32,937	33,041	10.2%

Source: US Census Bureau

Future Population Growth

The University of New Mexico Bureau of Business and Economic Research (BBER) tracks future population growth for cities and counties in the State of New Mexico. This information forms the basis of population growth projections analyzed in the Taos Water Plan. For the population projections through 2060, two population forecasts were developed: one based on a moderately optimistic view of the economy for the region over the long term and one that portrays a more pessimistic picture. Under the low forecast, county population will reach 38,441 in 2060. The high population projections are more optimistic and assume a full recovery from the recession and drought and an eventual return of molybdenum mining after the planned closure of the mine. Under the high forecast, the population of the county will reach 47,769 in 2060.

Development Trends by Jurisdiction

The following are growth and development trends noted by the HMPC during the 2016 plan development process. Areas where growth is occurring in or near hazardous areas is noted where applicable.

Unincorporated County

The following development pressures in areas of hazard risk were noted by the County:

- Development in high impact Wildland Urban Interface Areas (WUI) throughout Taos County.
- Development in areas designated as being within a floodplain.
- Growth is occurring in the Llano Quemado and Low Las Colonias areas. These two areas have multiple arroyos running through them. These arroyos are a flooding risk that landowners can be complacent about due to their infrequent flow.
- The planned expansion of the airport will support growth in the tourism industry.

Town of Taos

Since the 2008 economic downturn, the town has seen decreased development activity with a slow uptick in 2016. A small portion of the town is located in Flood plains (mostly approximate A-Zone). Development in these areas is regulated to prevent against future catastrophic flooding. In addition, growth is largely limited by the amount of water available for the community through water rights. Drought and excessive heat could diminish the possibility of residential, commercial, and industrial growth in the future.

Red River

The Town of Red River finalized a Wastewater Treatment System Improvements Preliminary Engineering Report (developed by Dennis Engineering) in July 2014. The plan contains two scenarios for growth through 2035, one at a 0.15 percent annual growth rate and one at a 1.3 percent annual rate. The high scenario projects that the growth rate of the Town from 1980 to 2010 will continue into the future, which could increase the town's wildland urban interface.

Questa

No significant trends were noted by the Questa HMPC.

Taos Ski Valley

The recent sale of Taos Ski Valley Inc. is resulting in improvements to the ski complex. It is anticipated that 40 new lodging units will be added by 2016, 100 more by 2018, and an additional 60 to 110 by 2024. Included in this development is the new Blake Hotel and expected condominium and businesses. Much of the development is adjacent to national forest land.

4.3 Hazard Analysis and Risk Assessment

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.

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.

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 areas.

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.

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.

The hazards identified in Section 4.1, are profiled and assessed individually in this section. In general, information provided by planning team members is integrated into this section with information from other data sources. This section also includes the identified vulnerability to each of the priority hazards, describing the impact that each hazard would have on the county. The vulnerability assessment quantifies, to the extent feasible using best available data, assets at risk to hazards and estimates potential losses. Each hazard is assessed in the following areas:

- **Hazard/Problem Description:** A description of the hazard and associated issues; where known, this includes general information on the hazard extent, seasonal patterns, speed of onset/duration, and magnitude and/or any secondary effects.

- **Location:** The geographic areas within the planning area that could be affected by the hazard. The entire planning area could be uniformly affected by some hazards.
- **Extent:** The strength or magnitude of the hazard. Different hazards may have different measures of extent.
- **Previous Occurrences:** A record of historical incidents, including impacts where known. Available hazard data and historical incident worksheets were used to capture information from the HMPC on previous occurrences.
- **Probability of Future Occurrence:** The frequency of past events is used in this section to gauge the likelihood of future occurrences. Where possible, frequency was calculated based on existing data. This was determined by dividing the number of events observed by the number of years on record and multiplying by 100. This gives the percent chance of the event happening in any given year.

Vulnerability Assessment: The vulnerability of the planning area to a specific hazard is assessed through the study of potential impacts to specific sectors:

- People
- Economy
- Built Environment
- Natural Environment
- Future Development

Risk Summary: A summary of key risks, based on threat, vulnerability and consequence to the planning area and municipalities from the specific hazard.

Data used to support this assessment included the following:

- County GIS data (hazards, base layers, and assessor's data);
- Countywide Wildfire Risk Analysis data
- Statewide GIS datasets to support mitigation planning;
- State of New Mexico Hazard Mitigation Plan 2013
- Rio Arriba County Hazard Mitigation Plan (adjacent county to the west)
- University of New Mexico Hazard Mitigation Plan (Taos Branch Campus)
- US Forest Service GIS datasets;
- FEMA's HAZUS-MH GIS-based critical facility inventory data
- Written descriptions of inventory and risks provided by the jurisdictions;
- Online data sources (cited where applicable)
- Data and information from existing plans and studies; and
- Input from planning team members and staff from the County and local, state, and federal agencies.

Dam Failure

Hazard/Problem Description

Dams are man-made structures built for a variety of uses including flood protection, power generation, agriculture, water supply, and recreation. When dams are constructed for flood protection, they are usually engineered to withstand a flood with a computed risk of occurrence. For example, a dam may be designed to contain a flood at a location on a stream that has a certain probability of occurring in any one year. If prolonged periods of rainfall and flooding occur that exceed the design requirements, that structure may be overtopped and fail. Overtopping is the primary cause of earthen dam failure in the United States.

Dam failures can also result from any one or a combination of the following causes:

- Earthquake;
- Inadequate spillway capacity resulting in excess overtopping flows;
- Internal erosion caused by embankment or foundation leakage, or piping or rodent activity;
- Improper design;
- Improper maintenance;
- Negligent operation; and/or
- Failure of upstream dams on the same waterway.

Water released by a failed dam generates tremendous energy and can cause a flood that is catastrophic to life and property. A catastrophic dam failure could challenge local response capabilities and require evacuations to save lives. Impacts to life safety will depend on the warning time and the resources available to notify and evacuate the public. Major loss of life could result as well as potentially catastrophic effects to roads, bridges, and homes. Electric generating facilities and transmission lines could also be damaged and affect life support systems in communities outside the immediate hazard area. Associated water supply, water quality and health concerns could also be an issue. Factors that influence the potential severity of a full or partial dam failure are the amount of water impounded; the density, type, and value of development and infrastructure located downstream; and the speed of failure.

In general, there are three types of dams: concrete arch or hydraulic fill, earth and rockfall, and concrete gravity. Each type of dam has different failure characteristics. A concrete arch or hydraulic fill dam can fail almost instantaneously; the flood wave builds up rapidly to a peak then gradually declines. An earth-rockfill dam fails gradually due to erosion of the breach; a flood wave will build gradually to a peak and then decline until the reservoir is empty. A concrete gravity dam can fail instantaneously or gradually with a corresponding buildup and decline of the flood wave.

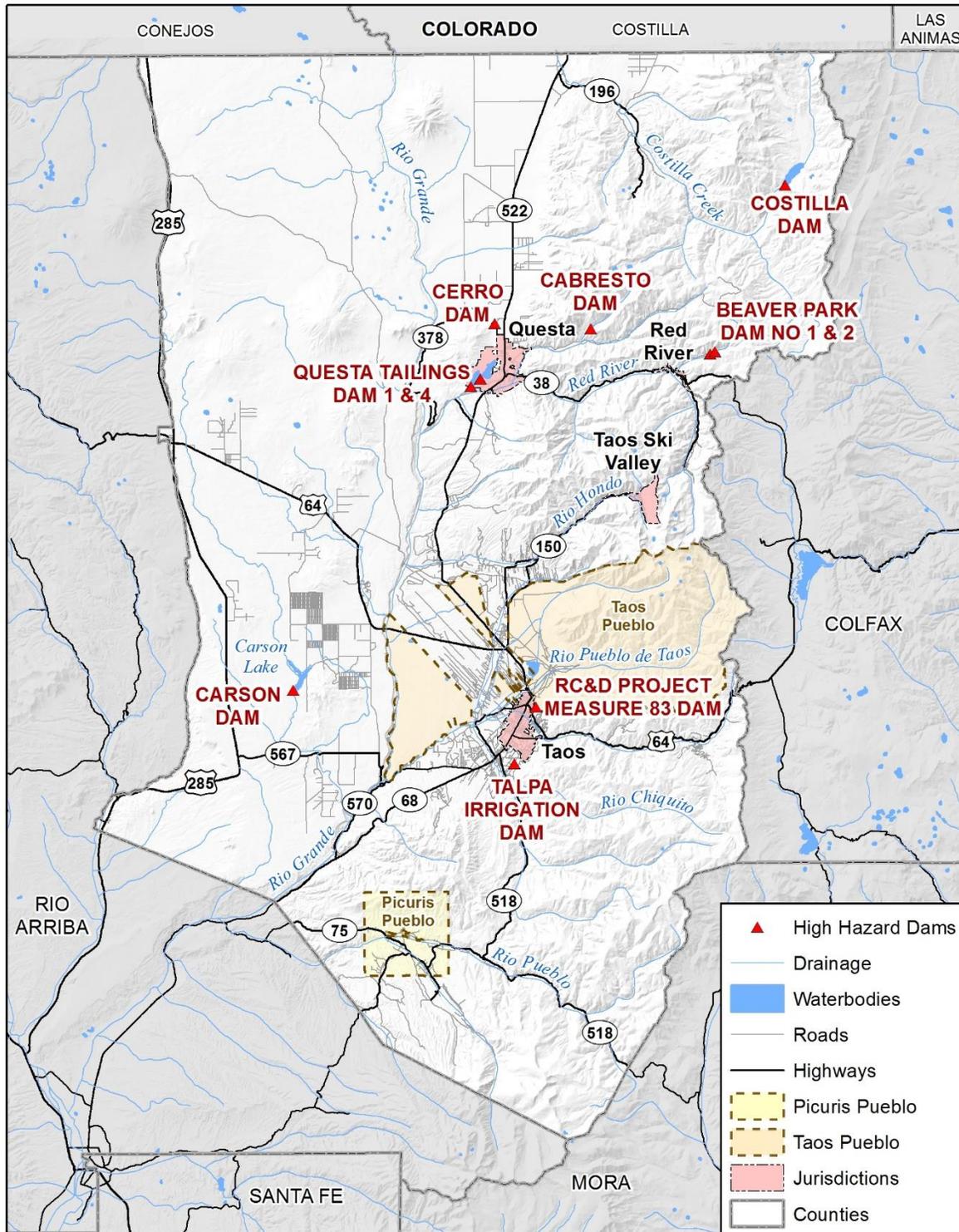
Dams and reservoirs have been built throughout New Mexico to supply water for agriculture and domestic use, to allow for flood control, as a source of hydroelectric power, and to serve as recreational facilities. The storage capacities of these reservoirs range from a few thousand acre feet to five million acre-feet.

The Office of the State Engineer - Dam Safety Bureau regulates the design, construction, reconstruction, modification, removal, inspection, operation, maintenance and continued safety of dams over 10 feet high, or dams that store more than 10 acre-feet of water. Dams 10 feet or less in height, or dams that store 10 acre-feet or less, are generally not regulated and are considered non-jurisdictional dams; however, if a non-jurisdictional dam threatens life and property due to an unsafe condition, the state engineer can issue a safety order to the owner requiring action to remove the threat.

Location

According to data within the National Inventory of Dams, there are 10 dams within the border Taos County, all of them rated as High Hazard as described in the Extent section. Four of these dams have an Emergency Action Plan (EAP) according to the database. While there are a number of dams on drainages to the north in Colorado that could release water in the County should failure occur, impacts would be focused on the Rio Grande gorge and should be preceded by adequate warning due to the distance of these dams from the County. Figure 4-2 shows the location and names of the 10 dams in the county. Based on the location of the High Hazard dams, the unincorporated County, Town of Taos, Village of Questa, and Town of Red River have dams within watersheds that drain into the jurisdictions. The Village of Taos Ski Valley does not have any risk from dam failure.

Figure 4-2: Location of Dams in Taos County




 Map compiled 10/2016;
 intended for planning purposes only.
 Data Source: Taos County,
 HSIP Freedom 2015, RGIS,
 National Inventory of Dams

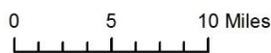


Table 4-9: Taos County Dam Inventory

Dam	River/ Stream	Nearest Community at Risk	Hazard Class	Year Built	Max Storage (AF)	Owner	EAP in Place
Beaver Park Dam No. 1	Bitter Creek	Red River (2.5 miles)	High	1949	16	Two Lakes Association	N
Beaver Park Dam No. 2	Bitter Creek	Red River (2.5 miles)	High	1952	15	Two Lakes Association	N
Cabresto Dam	Cabresto Creek	Questa (7 miles)	High	1906	1,235	Cabresto Lake Irrigation Co.; Llano Community Ditch	Y
Carson Dam	Rio Grande	Carson (2 miles)	High	1935	7,622	Van Buren, Maurie, Mondragon, Ted	N
Cerro Dam	Latir	Cerro	High	1957	72	Acequia Madre De Cerro De Guadalupe	N
Costilla Dam	Rio Costilla	Amalia (11 miles)	High	1920	30,499	Rio Costilla Cooperative Livestock Association	Y
RC & D Project Measure 83 Dam	Las Cruces Arroyo	Taos (.1 miles)	High	1967	337	Town of Taos	N
Questa Tailings Dam 1	Red River	Questa (.1 miles)	High	1980	29,555	Chevron Mining Inc.	Y
Questa Tailings Dam 4	Red River	Questa (.1 miles)	High	1966	21,307	Chevron Mining Inc.	Y
Talpa Irrigation Dam	Rio Chiquito	Talpa (.1 miles)	High	1900	30	Talpa Water Users Association	N

Source: National Inventory of Dams

From a hazard standpoint the RC & D Project Measure 83 Dam, the Questa Tailings Dams, and the Carson Dam pose the greatest potential for downstream impacts should failure occur. The HMPC also noted Carson (privately owned), Costilla, and Cabresto (above Questa) and the tailings dam associated with the molybdenum near Questa. Randall Reservoir is a new reservoir about one mile from Taos near Highway 64 that was not on the list of high hazard dams. The RC & D Project Measure 83 Dam, a flood control pass-through dam, was constructed by the U.S. Army Corps of Engineers to protect development in Las Cruces by controlling flood flows from the Alameda and Las Cruces Arroyos. The Questa Tailings are impounded in two deep arroyos behind earthen-filled dams that cover an area of approximately 640 acres. Seepage from below Dam No. 1 places exceeds New Mexico Water Quality Control Commission ground water standards for sulfate, manganese, molybdenum, TDS, and occasionally fluoride. The Beaver Park Dams are located just upstream and about 2.5 miles away from the Town of Red River, but typically have a small volume of water. Since these dams and the Carson Dam are all less than three miles away from a community warning and evacuation time would be short.

Extent

Standard practice among federal and state dam safety offices is to classify a dam according to the potential impact a dam failure (breach) or mis-operation (unscheduled release) would have on downstream areas. The hazard potential classification system categorizes dams based on the probable loss of human life and the impacts on economic, environmental and lifeline facilities. Dams are classified in three categories that identify the potential hazard to life and property:

- *High hazard* indicates that a failure would most probably result in the loss of life;
- *Significant hazard* indicates that a failure could result in appreciable property damage;
- *Low hazard* indicates that failure would result in only minimal property damage and loss of life is unlikely.

Since the County has High hazard dams, there is potential for loss of life and property damage. The extent of impacts depends on the nature of failure and location of the dam. The largest populations potentially at risk are in the Village of Questa, downstream from the Cabresto and Cerro dams, and potential for loss of life, property, and infrastructure damage exists. According to the Emergency Action Plan for the Cabresto Dam the dam is 78 ft high and the spillway is 60ft high. There was not available information regarding the discharge rate from a failure event. The Cerro Dam also is a high hazard dam that could impact Questa, but has a storage of 72 Acre Feet compared to the Cabresto max storage of 1,235 Acre Feet; an emergency action plan is not available for this dam thus downstream impacts are not known. A failure of one of the Questa Tailings Dam could have extensive environmental impacts. According to the County Emergency Coordinator, the Questa Tailings Dam is under new ownership with designs to drain the dam in the future, potentially removing the concern of failure. Emergency Action Plans, where they exist for High hazard dams, sometimes contain information on inundation areas for dam breaks and areas that would need evacuation and warning; this information is considered sensitive and considered for official use only. Additional details regarding depth of flooding and discharge from dam failure events was researched but was not available. This is a data deficiency for the unincorporated county and Questa.

Previous Occurrences

According to the database of the National Performance of Dams Program and the HMPC, there have been no past incidents of dam failure or any dam incidents in Taos County.

Probability of Future Occurrences

Unlikely—No known dam failure events have occurred in the County. The State Hazard Mitigation plan made efforts to determine a probability of occurrence for dam failure. Taos County falls in Preparedness Area 3, which the State determined had a 6% chance of a dam failure occurring in a given year in the region.

Vulnerability Assessment

People

Persons located underneath or downstream of a dam are at risk of a dam failure, though the level of risk can be tempered by topography, amount of water in the reservoir and time of day of the breach. The largest populations potentially at risk are in the Village of Questa, downstream from the Cabresto and Cerro dams, and the Village of Red River, downstream from the Beaver Park Dams. Persons travelling on roads along the inundation area could also be at risk during an event. Once the dam has breached, standing water presents all the same hazards to people as floodwater from other sources.

Economy

Depending on the circumstances and location of the breach, dam failure can have significant impacts on the economy. Waters can flood and ruin buildings, and wash out culverts, roads, bridges and other transportation systems. Depending on what the water damages, the economic impacts will vary but could be long-term and affect the tourism and recreation economy.

Built Environment

In general, communities located below a dam and along a waterway are likely to be exposed to the impacts of a dam failure. Inundation maps that identify anticipated flooded areas (which may not coincide with known floodplains) are produced for all high hazard dams and are contained in the Emergency Action Plan (EAP) required for each dam. However, the information contained in those plans is considered sensitive and is not widely distributed. For reference, high hazard dams threaten lives and property, significant hazard dams threaten property only.

The potential impacts from a dam failure in the County are largely dependent on the specific dam or area in question. There are a number of dams above urbanized areas (such as the Questa Tailings and the Beaver Parks Dams above Questa and Red River and the RC&D Project Dam (AKA Las Cruces Arroyo Dam) above Taos. The Cabresto Dam is likely to impact multiple residential and commercial properties in Questa, though detailed information on the impacts is not available within the EAP and has been identified as a data deficiency.

According to the Emergency Action Plan for the Costilla Dam, the dam is 137.5 ft high and the drainage area is 54.6 sq. miles. Failure of the Costilla Dam would impact several communities downstream of it including the Town of Costilla, approximately 22 miles downstream; the unincorporated community of Amalia, approximately 17 miles downstream; and the communities of Garcia, Eastdale and Jaroso in Colorado. Neither the Cabresto or Costilla high hazards dams are expected to impact the Town of Taos.

Impacts to Critical Infrastructure

A total dam failure can cause catastrophic impacts to areas downstream of the water body, including critical infrastructure. Any structures under the dam would be susceptible to a dam failure. The greatest risk would be to roads and bridges that could be vulnerable to washouts that further complicate response and recovery. The Costilla Dam is likely to inundate the valley below the dam as well as the road paralleling Costilla Creek. Highways that would become inundated in

the event of a dam failure include NM-196 and NM-522 C-159 downstream of the dam. According to analysis, the Cabresto Dam is likely to impact half a mile of Highway 38 east of Questa and would make the highway impassible; more definitive data on inundation can be found in the Cabresto Dam Emergency Action Plan. The Beaver Park dams could potentially impact gas pipelines in the Red River Valley, which could impact service to Red River.

Natural Environment

Dam failure effects on the environment would be similar to those caused by flooding from other causes. Water could erode topsoil, cover the environment with debris, and cause significant channel erosion. For the most part the environment is resilient and in the long term would be able to rebound. Failure of the Questa tailings dams could result in significant environmental impacts downstream. Debris flow areas in the Red River Valley have the potential to cause temporary, landslide dams which could have a similar impact of a dam failure if a sudden breach were to occur. Failure of the Costilla Dam would inundate the valley and Costilla Creek below the dam, putting all structures around the Creek and its floodplains at risk of flooding.

Future Development

Areas slated for future development should be cognizant of dam failure risk upstream. In the case of a dam failure, inundation would likely follow some existing FEMA mapped floodplains, which contains development restrictions for the 1% annual chance floods, though a dam failure could exceed those floodplains. It should be noted that development below a low hazard dam could increase its hazard rating though. There is not an increase in development anticipated below dams in the participating jurisdictions.

Risk Summary

- According to data provided by the National Inventory of Dams, there are 10 high hazard dams within Taos County that could result in loss of life and property damage if they failed.
- Several of these dams are above the Village of Questa, Town of Taos and the Town of Red River; Taos Ski Valley is not affected.
- According to the National Performance of Dams program, Taos County has never suffered a failure of one of these dams.

Table 4-10 Dam Failure Hazard Risk Summary

Jurisdiction	Geographic Extent	Probability of Future Occurrence	Potential Magnitude/Severity	Overall Significance
Taos Ski Valley	N/A	N/A	N/A	N/A
Town of Taos	Negligible	Unlikely	Limited	Low
Village of Red River	Limited	Unlikely	Limited	Low
Village of Questa	Significant	Unlikely	Critical	Medium
Taos County	Limited	Unlikely	Limited	Low

Drought

Hazard/Problem Description

Drought is different than many of the other natural hazards in that it is not a distinct event and usually has a slow onset. Drought can severely impact a region both physically and economically. Drought affects different sectors in different ways and with varying intensities. Adequate water is the most critical issue for agricultural, manufacturing, tourism, recreation, and commercial and domestic use. As the population in the area continues to grow, so too will the demand for water.

Although droughts are sometimes characterized as emergencies, they differ from typical emergency events. Most natural disasters, such as floods or forest fires, occur relatively rapidly and afford little time for preparing for disaster response. Droughts occur slowly, over a multi-year period, and it is often not obvious or easy to quantify when a drought begins and ends.

Drought is a complex hazard involving many factors. It occurs when a normal amount of precipitation is not available to satisfy an area’s usual water-consuming activities. Drought can be defined regionally based on its effects:

Meteorological drought - The first stage of drought is known as a meteorological drought. The conditions at this stage include any precipitation shortfall of 75% of normal for three months or longer. This criterion can be misleading if all the precipitation falls in a very short time period resulting in floods.

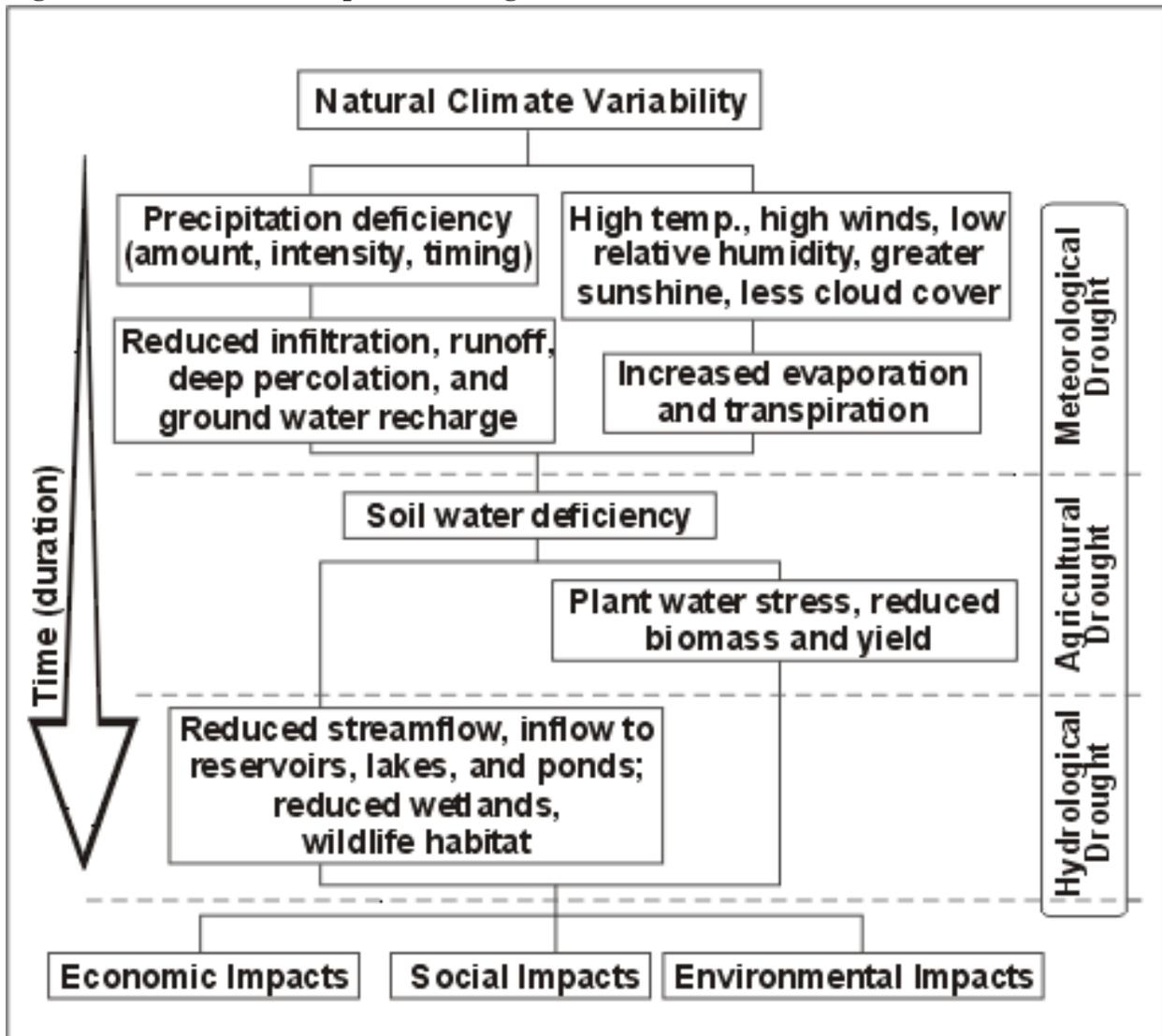
Agricultural drought - The second stage is known as agricultural drought. Soil moisture is deficient to the point where plants are stressed and biomass (yield) is reduced.

Hydrological drought - Defined as deficiencies in surface and subsurface water supplies. It is generally measured as streamflow, snowpack, and as lake, reservoir, and groundwater levels.

Socioeconomic drought - Occurs when a drought impacts health, well-being, and quality of life, or when a drought starts to have an adverse economic impact on a region.

Drought in the United States is monitored by the National Integrated Drought Information System (NIDIS); a major component of this portal is the U.S. Drought Monitor. The Drought Monitor concept was developed jointly by the NOAA’s Climate Prediction Center, the NDMC, and the USDA’s Joint Agricultural Weather Facility in the late 1990s as a process that synthesizes multiple indices, outlooks and local impacts, into an assessment that best represents current drought conditions. The final outcome of each Drought Monitor is a consensus of federal, state, and academic scientists who are intimately familiar with the conditions in their respective regions. Data from the Drought Monitor is used to inform the drought profile further in the extent, previous occurrences and probability sections.

Figure 4-3: Causes and Impact of Drought



Source: National Drought Mitigation Center

Location

Drought is a regional hazard, and at its worst can affect the entire state of New Mexico with varying levels of dryness and drought activity. It is safe to assume that unless the drought is at its very beginning or very end, if any area of Taos County is affected by any level of drought, the other areas of the county are experiencing varying effects as well.

According to the Taos Water Plan most of the water supply in the Taos water planning region is provided by surface water. The primary surface water feature in the region is the Rio Grande and its tributaries, the most important of which are Costilla Creek, Cabresto Creek, Red River, Rio Hondo, Rio Lucero, Rio Pueblo de Taos, Rio Fernando de Taos, Rio Grande del Rancho, Rio Pueblo, and Rio Santa Barbara. The availability of water from the Rio Grande stream system is limited by the terms of the Rio Grande Compact. There are about 300 acequias in the planning region supporting irrigated agriculture.

Groundwater supplies all of the communities in the region except for Red River, and numerous stock and domestic wells are also located throughout the region. The primary aquifers are located in late volcanics and Santa Fe Group sediments on the Taos Plateau, in Santa Fe Group sediments on the Costilla Plains, in alluvial sediments along river valleys, and in near-surface fractures in the Sangre de Cristo Mountains. The quantity and quality of groundwater and aquifer yields are highly variable.

Extent

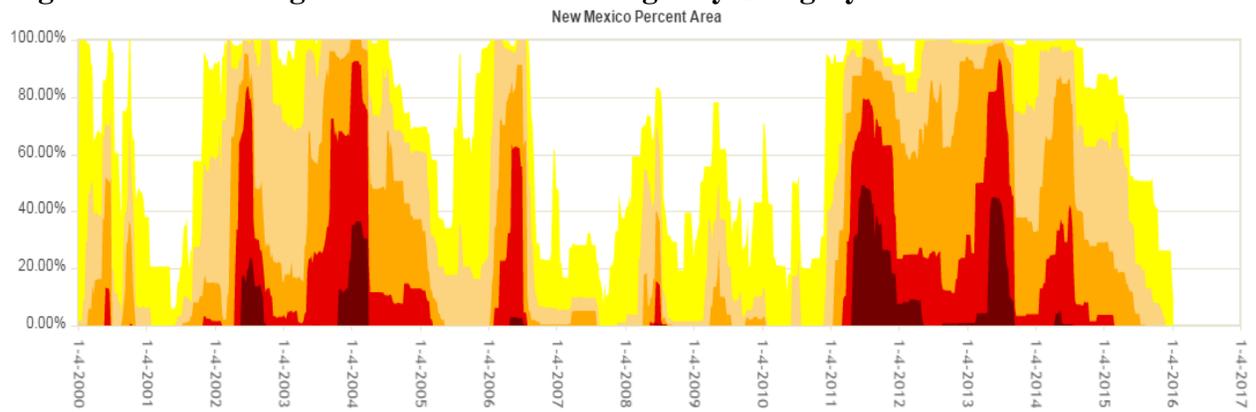
The United States Drought Monitor measures drought in five categories, from “abnormally dry” to “exceptional drought.” Each condition is defined in Figure 4-6; Taos County is vulnerable to all levels of drought, including exceptional drought. Droughts are subject to global climate and precipitation trends, and wet and dry periods can persist for years.

Previous Occurrences

Based on historical information, the occurrence of drought in New Mexico, including Taos County, is cyclical, driven by weather patterns. Drought has occurred in the past and will occur in the future. Periods of actual drought with adverse impacts can vary in duration, from short term intense droughts lasting months to prolonged drought lasting years. Determining when an extended dry period becomes a drought is often based on impacts to individual water users, typically agriculture. The vulnerability of Taos County to drought is countywide, but impacts may vary and include reduction in water supply and an increase in dry fuels.

Figure 4-4 from the National Drought Monitor shows the cyclical nature of drought conditions across the state. Figure 4-5 shows a similar graphic for the Tres Piedras climate station on the western edge of the county. This graphic is from the National Drought Mitigation Center’s online Drought Risk Atlas tool.

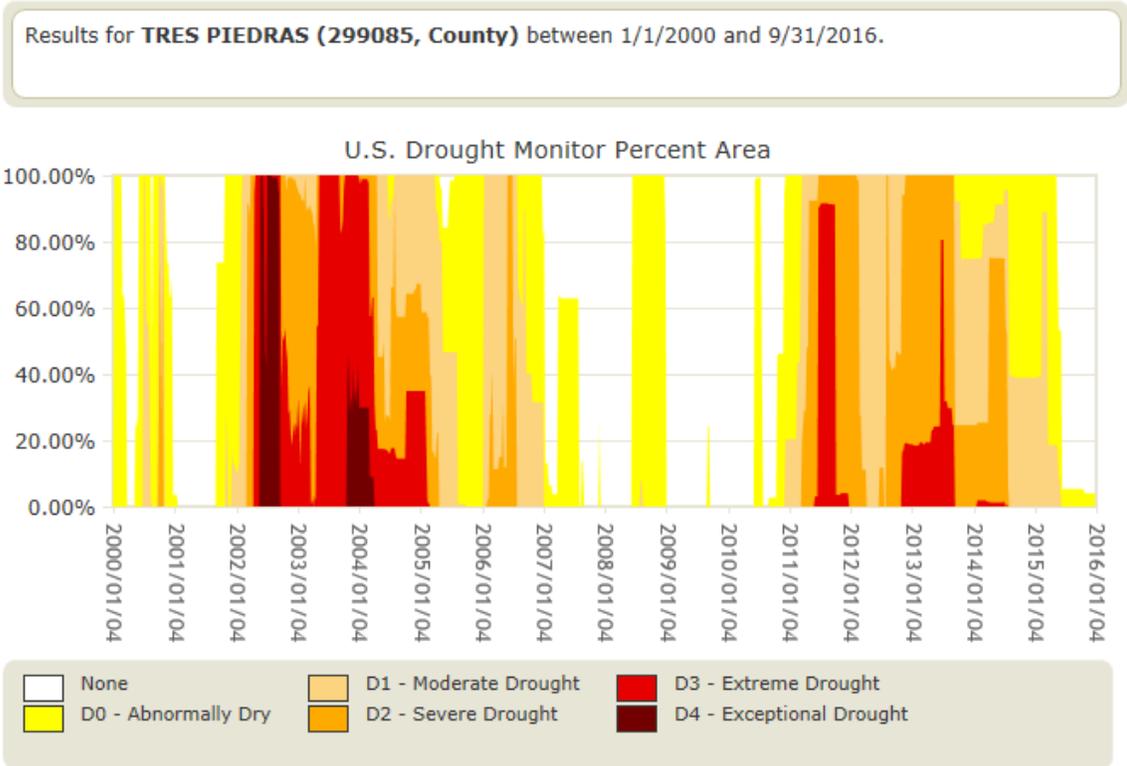
Figure 4-4: Percentage of New Mexico in Drought by Category 2000 to 2016



Drought Severity

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

Figure 4-5: Percentage of Taos County in Drought by Category 2000 to 2016



According to this data, New Mexico has experienced 4 periods where more than 10% of the state is classified under D4 (exceptional drought) since 2000, with the most severe period taking place early 2011 and lasting until the middle of 2013. Severe to moderate drought persisted until late 2015. The Tres Piedras climate station mirrors the statewide history and indicates that this part of the county has been more often in drought than not since 2000.

The State of New Mexico received a federal emergency declaration for drought in 1977. The NCDC database shows only records from the drought that has persisted since 2011, though it's interesting to note that Taos County had an NCDC-recorded drought event for every month between March 2011 and November 2014. The 2013 State of New Mexico Hazard Mitigation Plan noted the following for Preparedness Area 3 (Taos County falls in Area 3):

New Mexico experienced some of its worst drought conditions during the 1950's. The year 2000 was one of the hottest and driest on record for the state. Another severe drought year occurred two years later in 2002, followed by another multi-year drought that began in 2011 and continued into 2014.

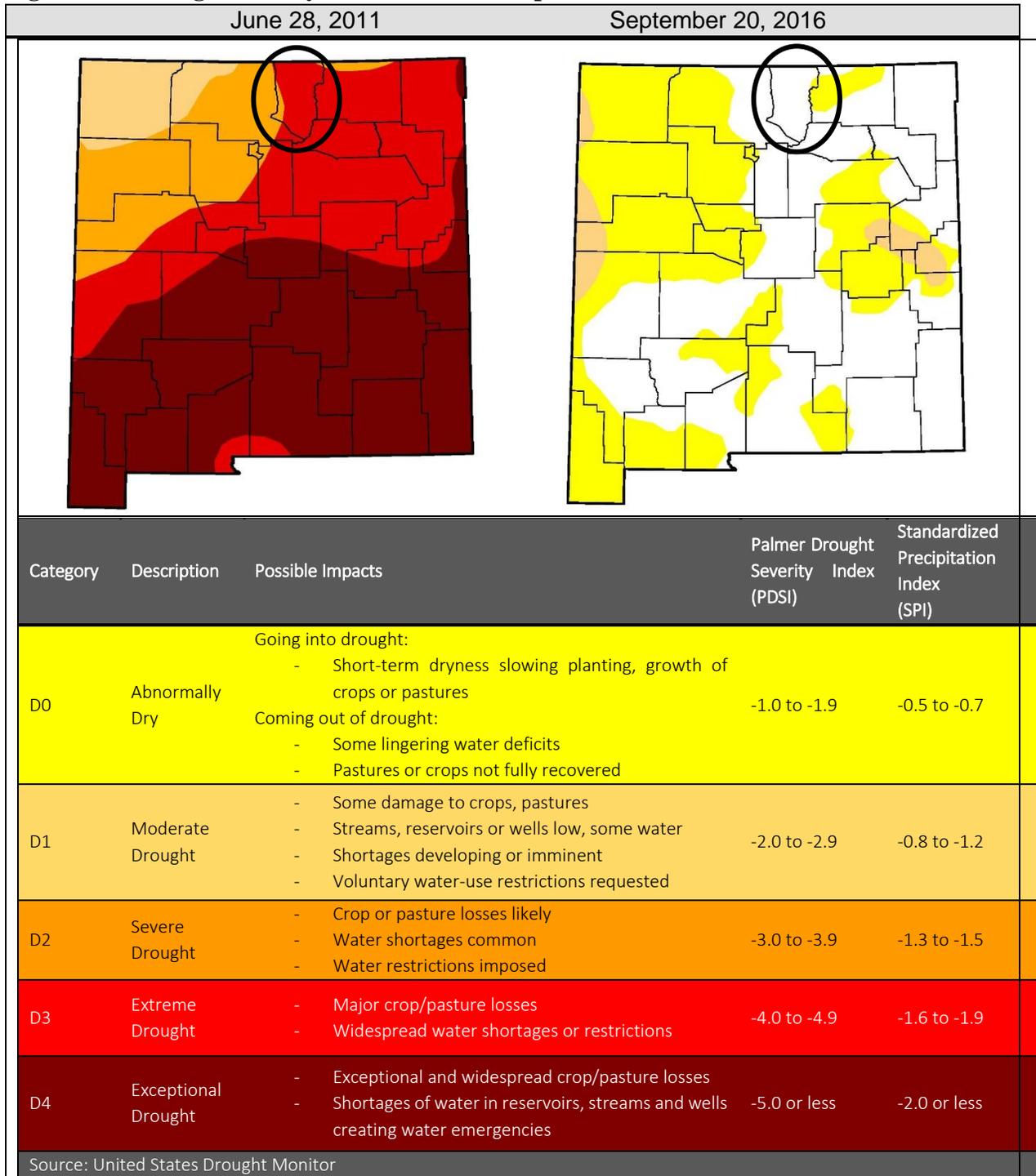
In the summer of 2008, the agriculture community was in a panic as the state was dealing with the endangered silvery minnow. Farmers were faced with a low snowpack that feeds irrigation reservoirs in northern New Mexico and low rainfall with forecasted continuing dry conditions cut irrigation supplies dramatically. Compounding issues more, legal issues were being considered

ordering farmers to share the river supply to save the silvery minnow. This results were impacts to financial capabilities in the agricultural community and decreases in agricultural supply.

Heavy precipitation in the spring of 2015 brought relief to the eastern half of the state. The table above shows the percentage and severity drought of conditions statewide between the most severe week of drought in New Mexico since 2000, and current drought conditions in September 2016, based on the U.S. Drought Monitor. From this comparison, it is reasonable to assume that Taos County is vulnerable to any level of drought, from no drought conditions to exceptional drought conditions, as defined by the U.S. Drought Monitor.

During New Mexico's worst single recorded week of drought during the 2011-2014 period, Taos County was considered in D3 - Extreme Drought during the height of the drought in June 2011.

Figure 4-6: Drought History - June 2011 and September 2016

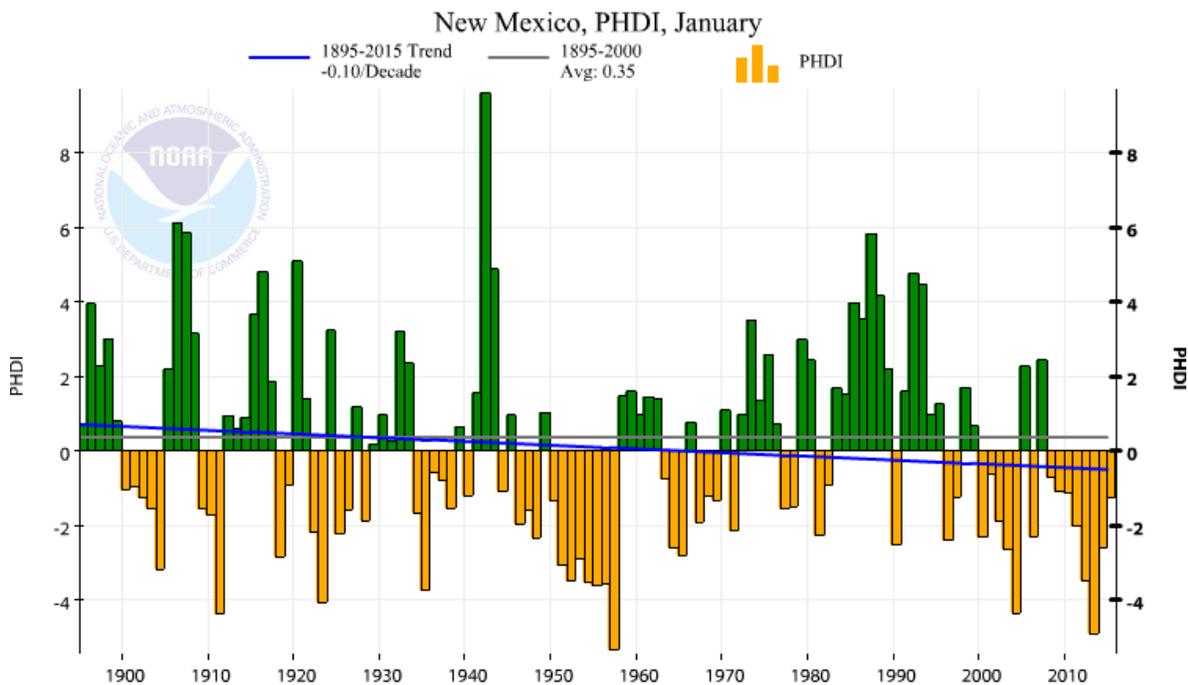


As of September 20, 2016 approximately 9.2% of the State of New Mexico qualifies as ‘Abnormally Dry’ (D0 or yellow) with no other drought categories being recorded. As of this same timeframe, there were no drought conditions in Taos County.

Probability of Future Occurrences

According to the New Mexico Office of the State Engineer, droughts occur on average every 10 years within the state, which corresponds to a Likely rating. Some of these droughts are multi-year events. According to over 100 years of precipitation data from the National Climate Data Center, the State of New Mexico experiences negative Palmer Hydrological Drought Index years an average of 5 years per decade and, in some decades (like 1950 through 1960 and 2000 to 2010), negative years outnumber positive years. See Figure 4-7 below.

Figure 4-7: New Mexico PHDI 1895 to 2014



The average PHDI in New Mexico from 1895-2000 was calculated at 0.35, or slightly wetter than normal conditions (the grey trend line above). However, when adding in the years 2000 to 2015 to the average, the PHDI is shown to be decreasing at a rate of 0.1 PHDI points per decade (the blue trend line above). This indicates the possibility of dryer conditions in the future for the state. The PHDI Scale is included for reference (Figure 4-8) below. According to the Taos Regional Water Plan climate change will likely result in more severe drought conditions and associated wildfires, interspersed with more extreme precipitation events. In addition, climate change is predicted to result in less availability of water and impacts to water quality in the long-term.

Figure 4-8: Palmer Drought Index Scale

4.00 to 6.00	3.00 to 3.99	2.00 to 2.99	1.00 to 1.99	0.50 to 0.99
Extremely wet	Very wet	Moderately wet	Slightly wet	Incipient wet spell
0.49 to -0.49				
Near normal				
-0.50 to -0.99	-1.00 to -1.99	-2.00 to -2.99	-3.00 to -3.99	-4.00 to -6.00
Incipient dry spell	Mild drought	Moderate drought	Severe drought	Extreme drought

Vulnerability Assessment

Drought impacts are wide-reaching and may be economic, environmental, and/or societal. The most significant impacts associated with drought in the Planning Area are those related to water intensive activities such as agriculture, wildfire protection, municipal usage, commerce, tourism, recreation, and wildlife preservation. Also, during a drought, water allocations go down, which results in reduced water availability. Water restrictions and other conservation measures are typically implemented during extended droughts, which can have an economic impact on water utilities. Drought conditions can also cause soil to compact and not absorb water well, potentially making an area more susceptible to flooding.

According to the NDMC Drought Impact Reporter, Taos County recorded a total of 69 impacts to drought in the survey period between 1/1/2000 and 9/20/2016. Of these, the majority (17) of the impacts were associated with Relief, Response, and Restrictions. See Table 4-11.

Table 4-11: Taos County Drought Impacts 1/1/2000 through 9/20/2016

Category	Number of Recorded Impacts*
Agriculture	14
Business and Industry	0
Energy	0
Fire	10
Plants & Wildlife	11
Relief, Response, and Restrictions	17
Society and Public Health	5
Tourism and recreation	2
Water Supply and Quality	10
Total	69

*Impacts may overlap across sectors

Source: National Drought Mitigation Center

Using the NDMC Drought Impact Reporter impacts to determine relative exposure/vulnerability to drought has limitations because the methodology can double-count impacts that are recorded at the state level, then counted again for each county within that state. Rather, the NDMC data should be used to develop an ongoing record of drought impacts to sector assets that relate the specific impacts to different intensity and duration droughts at a location. Over time a detailed impact profile could be developed for vulnerable sectors so that the impact of future drought vulnerability could be better defined based on historic impacts¹.

People

The most significant qualitative impacts associated with drought in the Planning Area are those related to water intensive activities such as wildfire protection, municipal usage, commerce, tourism, recreation, and wildlife preservation. Mandatory conservation measures are typically implemented during extended droughts, which can affect people.

Drought may cause health problems related to low water flows and poor water quality; it may also cause health problems due to dust. Generally, drought may require conservation of water resources, which could mean that water use is restricted to critical uses; this could impact how people use water on a daily basis.

Economy

Drought could have a devastating impact on Taos County's economy. As water resources become impacted, effects may be felt by any industry that uses large amounts of water. Prolonged drought would intensify these issues.

Agricultural data is generally used as a way to measure the negative economic impacts due to drought, however this model has limitations because it does not take into account the potential dollar losses caused by wildfires due to drought or losses in tourism revenue. In addition, there are limitations in determining agricultural losses. Factors to be considered are:

- USDA Agricultural Survey Statistics rely entirely on the willingness and availability of producers within a county to respond to quarterly surveys. Participation can be unreliable.
- Federal crop disaster declarations are most often multi-county, multi-hazard declarations, covering a variety of events in any given year (i.e., grasshoppers, hail, drought, etc.) thus these agencies cannot provide drought-attributed losses directly to each county.
- Policies have changed drastically regarding requirements by the USDA. Producers are now required to carry some level of crop disaster coverage in order to be eligible for future federal disaster dollars.

Agriculture is the largest water user in the region, followed by mining, though ski areas, rafting

¹ Drought Reporter at the University of Nebraska Lincoln <http://droughtreporter.unl.edu/>

companies, and other businesses supporting tourism are also dependent on adequate precipitation and water resources. The following analysis illustrates the relationship between agricultural production (both livestock and crop) and drought conditions by benchmarking non-drought agricultural output to drought condition crop output. All data for used for this analysis is from <http://quickstats.nass.usda.gov> and the U.S. Agricultural Census.

Crops

Crop sales account for the largest proportion of Taos County’s agricultural base. In the last agricultural census (2012) the county produced \$3.453M in total crop sales.

Years for which data are available in Taos County for this crops are: 1997, 2002, 2007 and 2012. The HMPC noted that the agriculture industry in Taos County consists mainly of hay and alfalfa crops.

If total sales for positive PHDI years are averaged and compared against total sales for negative PHDI years, an estimate of the reduction of output due to drought for this commodity can be ascertained. Data for this analysis are provided below in Table 4-12.

Table 4-12: Crop Sales Output Taos County

Year	PHDI Index	PHDI Indicator	Real Production Output	Adjusted Production Output (2016 Dollars)
2012	-4.73	Extreme Drought	\$3,453,000	\$3,622,330
2007	1.07	Slightly Wet	\$2,330,000	\$2,706,578
2002	-3.20	Severe Drought	\$607,000	\$812,661
1997	0.91	Incipient Wet Spell	\$2,431,000	\$3,648,060

Source: US Census of Agriculture

The average sales for 1997 and 2007 (non-drought years) equals \$3.18M whereas the average sales for 2002 and 2012 equal \$2.2M, representing a reduction in output of 30%.

Further analysis of the USDA NASS data in the Taos Water Plan noted that while the number of farms and ranches increased by 54 percent, from 637 in 2007 to 983 in 2012, the amount of land in farms and ranches declined by 31 percent, from 456,932 acres to 313,414 acres. Also, during that same five-year period, the amount of irrigated land declined from 19,411 acres to 14,458 acres, a decrease of 26 percent. The HMPC noted that when land becomes fallow and loses it agricultural status, property taxes go up. In addition to this economic impact on the land owner the long term ability to produce food and livestock is decreased and the potential for desertification increases. In 2012, the average payment to a farmer participating in agricultural support programs was \$4,997, up 330 percent from 2007, with a total of \$440,000 in government payments going to farmers in Taos County. These are inferred to be related to drought relief programs.

Cattle and Calves

Cattle ranching is the biggest livestock commodity contributing to Taos County’s agricultural base. In the last agricultural census (2012) the county produced \$4.9 in sales for this product.

Years for which data are available in Taos County for this commodity are 2002, 2007 and 2012. If total sales for positive PHDI years are averaged and compared against total sales for negative PHDI years, an estimate of the reduction of output due to drought for this commodity can be ascertained. Data for this analysis are provided below in Table 4-13.

Table 4-13: Cattle and Calf Output Taos County

Year	PHDI Index	PHDI Indicator	Real Production Output	Adjusted Production Output (2016 Dollars)
2012	-4.73	Extreme Drought	\$4,962,000	\$5,205,330.22
2007	1.07	Slightly Wet	\$3,661,000	\$4,252,697.63
2002	-3.20	Severe Drought	\$2,817,000	\$3,771,444.70
1997	0.91	Incipient Wet Spell	Note: US Census of Agriculture did not provide production output for 1997	

Source: US Census of Agriculture

As mentioned previously, there are limitations when using agricultural production as a proxy to measure impacts due to drought, however the data sometimes illustrate a strong relationship between the two and the County should be aware of the potential losses in this sector.

Data from the last two agricultural census (2007 and 2012) indicate that total livestock sales account for 61% of the total agricultural output, whereas crop sales account for the remaining 39%. While the data indicates an increase in production output in 2012, this might be due to selling livestock. This may have a short term economic gain, but a long-term economic loss until ranchers can replenish their herds.

The following excerpt comes from the National Drought Mitigation Center Drought Impact Reporter. Drought presented exceptional challenges for ranchers in Taos County because, despite the strong cultural heritage of ranching in the county, the county has fewer cattle than nearly all the other counties in the state, meaning that ranchers keep small herds. “Some ranchers have sold off 60 to 80 percent of their cattle herds, and they’re continuing to sell for lack of grass or water,” stated the executive director for the Farm Services Administration in New Mexico. “When you start selling off those mother cows, you can’t just replenish that livestock overnight, it could take several years.” Not all ranchers will be willing to take their chances with ranching again once they sell their herd. Some might wait for the drought to end before restocking or might decide it’s too risky. Taos News (N.M.), July 15, 2013.

According to the HMPC Taos County is urging communities to foster resilience for situations like these. Pueblos have stored food to last as long as 7 years. Straw bales in the County used to be

larger to provide more long term feed supply for livestock.

Recreation and tourism can also be negatively impacted by drought or drought-enhanced wildfires. Given the four ski areas in or near Taos County low snowpack can significantly impact the ski industry which can have a ripple effect on the local economy, particularly the municipalities of Red River, Taos Ski Valley, and Town of Taos. Potential impacts also include restrictions on water based recreation. The National Drought Mitigation Center listed a recreation drought impact between June 2010 and June 2014 in the tourism industry. The impact reporter explained that four years of low water challenged rafting companies on the Rio Grande River in northern New Mexico because higher flows are necessary to navigate the rocky streambed. Fewer tourists have come out to raft the Taos Box and the Race Course, leading to a big drop in income for the rafting companies. The river manager for the Bureau of Land Management in Taos said that the number of tourists riding the Taos Box were few to none, while the number of tourists enjoying the Race Course was a little over 50 percent of normal. Rafting companies responded to the low flows by catering to families and offering slower floats.

The HMPC emphasized the cascading effects that drought has on areas in Taos County. National Forest closures affect recreation and firewood access. Excessive heat leads to dryness and in turn drought which exacerbates beetle kill. Beetle kill often leads to an increased risk for wildfires, which can lead to flooding, which can lead to silting of reservoirs.

Built Environment

Direct structural damage from drought is rare, though it can happen. Drought can affect soil shrinking and swelling cycles, and can result in cracked foundations and infrastructure damage. The HMPC discussed some development that has occurred along areas that were dry during drought periods but have now become more at risk to flash flooding.

Critical Infrastructure

Because of their long-lasting nature, the biggest impact of drought is on the water supply. Because of this, critical facilities that rely on a steady supply of water could see the greatest impacts if a long-term drought occurred. Examples of these facilities include power plants and hospital and medical facilities. Drought can also directly impact water storage, treatment and distribution systems.

Natural Environment

Severe, prolonged drought can impact the natural environment. Wildlife and natural habitats can be affected, including the shrinkage of habitat, dwindling of food supplies and the migration of wildlife to more palatable areas. Prolonged drought can cause poor soil quality, loss of wetlands, and increased soil erosion. One of the prevailing impacts of drought to the natural environment is the increased risk of wildfires that burn larger and more intensely during dry conditions. Drought conditions can also cause soil to compact and not absorb water well, potentially making an area more susceptible to flooding.

Future Development

Future development and water supplies is a focus of the Taos Regional Water Plan. The following are excerpts from the plan that relate to water supply infrastructure.

- The Town of Taos is currently developing plans for new infrastructure for replacement of some wells under the terms of the Taos Pueblo Indian Water Rights Settlement and is working on water system improvements upgrades including metering, addressing well production issues, reducing leaks, and providing a source of emergency supply to Talpa and El Valle de Los Ranchos.
- The Village of Questa does not have adequate water rights to support its current and future needs and is actively seeking additional water rights. The Village also has infrastructure maintenance and upgrade needs.
- The Town of Red River has a good groundwater supply and pumping capacity, but needs a new storage tank and water and wastewater system upgrades. A water system engineering study is currently being prepared.

Risk Summary

- Drought has a cyclical occurrence in Taos County and typically every decade has multiple years of drought;
- Drought has had significant impacts on the agricultural economy in the County. Total crop sales were down an average of 30% in drought years (representing a loss of \$.9M adjusted 2015 dollars).
- The recreation and tourism industry is also vulnerable to drought induced snowpack shortages, water-based recreation, and forest closures due to wildfires or elevated wildfire risk which can have significant impacts to Taos Ski Valley and Red River.
- The dependence of the regional economy on agriculture and tourism makes the area more susceptible to drought impacts.

Table 4-14 Drought Hazard Risk Summary

Jurisdiction	Geographic Extent	Probability of Future Occurrence	Potential Magnitude/Severity	Overall Significance
Taos Ski Valley	Significant	Likely	Critical	High
Town of Taos	Extensive	Likely	Limited	Medium
Village of Red River	Extensive	Likely	Limited	Medium
Village of Questa	Extensive	Likely	Critical	High
Taos County	Extensive	Likely	Limited	Medium

Earthquake

Hazard/Problem Description

An earthquake is caused by a sudden slip on a fault. Stresses in the earth's outer layer push the sides of the fault together. Stress builds up, and the rocks slip suddenly, releasing energy in waves that travel through the earth's crust and cause the shaking that is felt during an earthquake.

The actual movement of the ground in an earthquake is seldom the direct cause of injury or death. Casualties typically result from falling objects and debris, or from forces that damage or demolish buildings and other structures. Disruption of communications, electrical power supplies, and gas, sewer, and water lines should be expected in a large earthquake. Earthquakes can trigger widespread fires, dam failures, landslides, or releases of hazardous material, compounding their hazards.

Faults

A fault is defined as “a fracture or fracture zone in the earth's crust along which there has been displacement of the sides relative to one another.” For the purpose of planning there are two types of faults, active and inactive. Active faults have experienced displacement in historic time, suggesting that future displacement may be expected. Inactive faults show no evidence of movement in recent geologic time, suggesting that these faults are dormant.

Two types of fault movement represent possible hazards to structures in the immediate vicinity of the fault: fault creep and sudden fault displacement. Fault creep, a slow movement of one side of a fault relative to the other, can cause cracking and buckling of sidewalks and foundations even without perceptible ground shaking. Sudden fault displacement occurs during an earthquake event and may result in the collapse of buildings or other structures that are found along the fault zone when fault displacement exceeds an inch or two. The only protection against damage caused directly by fault displacement is to prohibit construction in the fault zone.

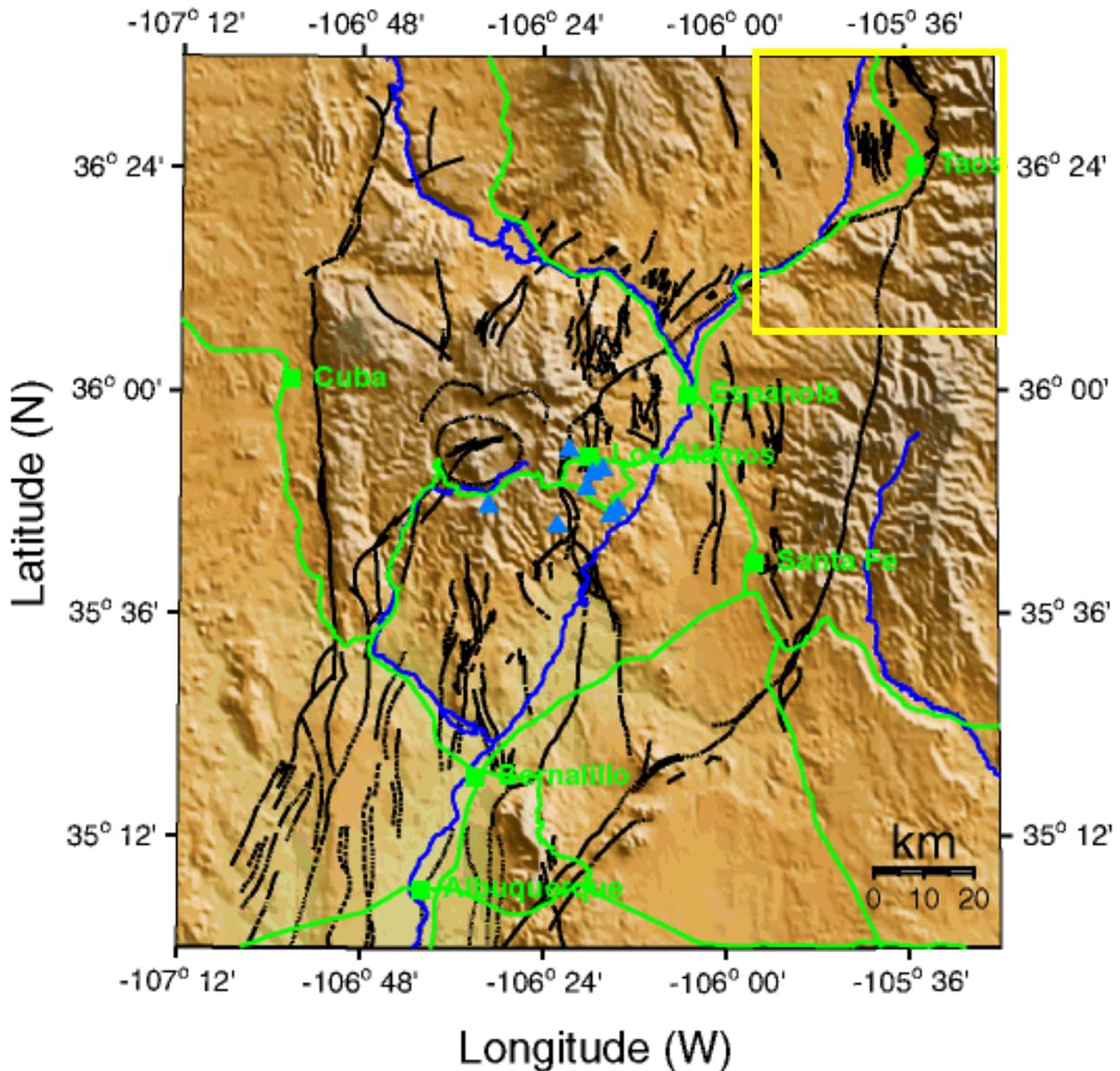
Location

Northern New Mexico and southern Colorado is essentially being pulled apart where the Rio Grande Rift cuts north/south across the central part of the state. The high mountains in the county and surrounding areas are a result of uplift on faults (with associated earthquakes) over geologic time that are part of the Rio Grande Rift system. Taos County lies near several major boundary faults of the Rio Grande Rift in north central New Mexico. The Rio Grande River follows the course of the rift from southern Colorado to El Paso and makes its way through Taos County. The county is northeast of three local fault systems in Northern New Mexico including The Pajarito Fault, the Guaje Mountain Fault, and the Rendija Canyon. Seismic investigations conducted by the Los Alamos National Labs (LANL) suggests that a magnitude 7.0 earthquake occurred along the Guaje Mountain Fault between 4,000 and 6,000 years ago. A quake of similar magnitude apparently occurred on the Rendija Canyon Fault either 8,000 or 22,000 years ago (a discrepancy due to different age results of two different materials: charcoal deposits, which yielded the more

recent date, and soil.) The magnitude of the earthquakes along the Guaje Mountain Fault and Rendija Canyon Fault were based on documented displacements of one and a half to two meters. However, according to researchers at LANL, this information is being updated. There is new evidence of three surface rupturing earthquakes suspected to be caused by magnitude 6.0 or larger; probably closer to magnitude 7.0, in the last 10,000 years. The most recent of these earthquakes was about 2,000 years ago.

Figure 4-9 shows the faults in northern New Mexico with Taos County in the area of the yellow box in the upper right side of the figure.

Figure 4-9: Faults in or Near Taos County

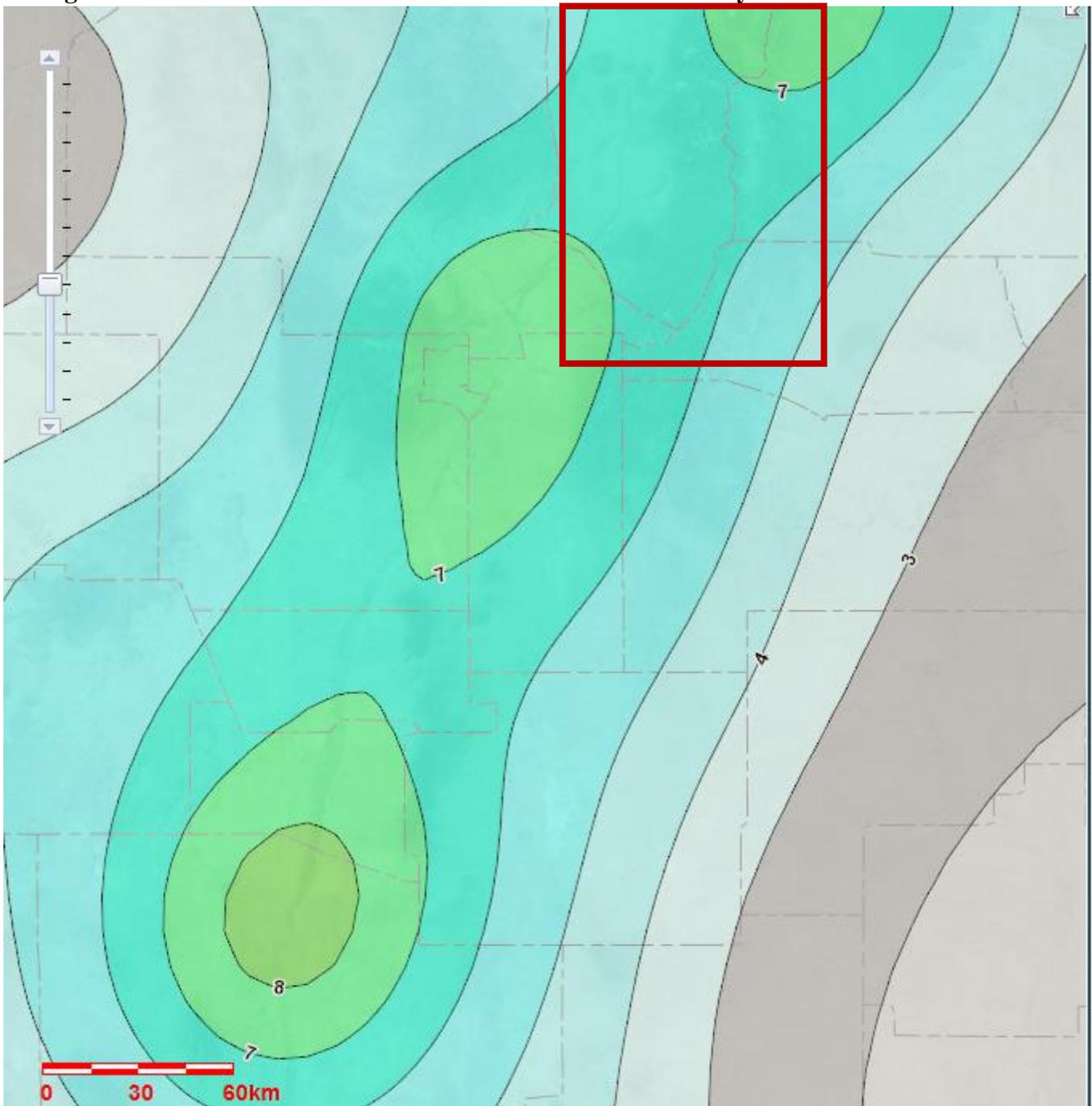


Source: Los Alamos Seismic Network

Ground Shaking

The U.S. Geological Survey (USGS) issues National Seismic Hazard Maps as reports every few years. These maps provide various acceleration and probabilities for time periods. Figure 4-10 depicts the peak horizontal acceleration (%g) with 10% probability of exceedance in 50 years for the planning region. The figure demonstrates that the County falls in the 5 to 7%g area. This data indicates that the expected severity of the more frequent earthquakes in the region is somewhat limited.

Figure 4-10: Peak Horizontal Acceleration with 10% Probability of Occurrence in 50 Years

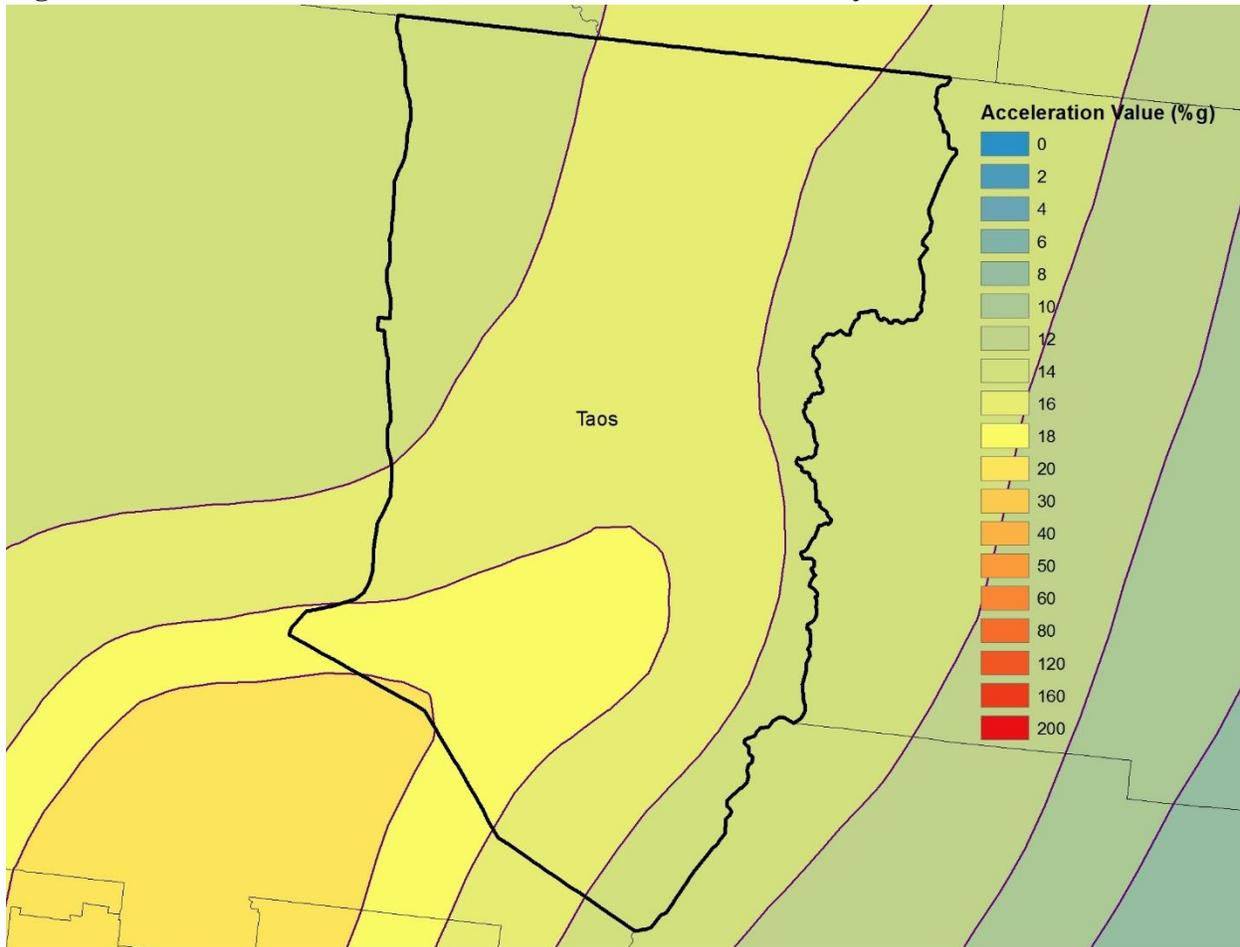


*Taos County highlighted by red rectangle

Source: USGS National Seismic Hazard Maps - 2008 Interactive Tool. Available online at <http://gldims.cr.usgs.gov/nshmp2008/viewer.htm>

Figure 4-11 depicts the peak horizontal acceleration (%g) with 2% probability of exceedance in 50 years for the County. The figure demonstrates that most of the County falls in the 14-20%g area, with areas in the southwestern County in the 20-30%g range. This data indicates that the expected severity of less frequent earthquakes in the region could be potentially damaging.

Figure 4-11: Peak Horizontal Acceleration with 2% Probability of Occurrence in 50 Years



Source: USGS National Seismic Hazard Maps

Liquefaction

Liquefaction is a process whereby certain soils behave similar to quicksand during intense and prolonged ground shaking. Liquefaction occurs in saturated sandy and silty soils, that is, soils in which the space between individual particles is completely filled with water. This water exerts a pressure on the soil particles that influence how tightly the particles themselves are pressed together. Prior to an earthquake, the water pressure is relatively low. However, earthquake shaking can cause the water pressure to increase to the point where the soil particles can readily move with each other. When liquefaction occurs, the strength of the soil decreases and the ability of soil to support foundations for buildings is reduced. Typically liquefaction occurs in alluvial soils along rivers and wetland areas. There were no available maps of liquefaction hazards and no documented occurrence of past liquefaction associated with earthquakes; the likely areas prone to liquefaction would be limited within the County based on the geology of the region, and likely concentrated along floodplains and arroyos.

Extent

The amount of energy released during an earthquake is usually expressed as a magnitude and is

measured directly from the earthquake as recorded on seismographs. Seismologists have developed several magnitude scales; one of the first was the Richter scale, developed in 1932 by the late Dr. Charles F. Richter of the California Institute of Technology. The Richter Magnitude Scale (shown in Table 4-15) is used to quantify the magnitude or strength of the seismic energy released by an earthquake. Based on the information provided in the previous sections the region could be susceptible to M 6 to 7 earthquakes (or Intensity VII or higher), though the probability is low.

Table 4-15: Richter Scale and Mercalli Intensity Comparison

Magnitude	Mercalli Intensity	Typical Effects
Less than 2.0	I	Microearthquakes, not felt or rarely felt; recorded by seismographs.
2.0-2.9	I	Felt slightly by some people; damages to buildings.
3.0-3.9	II to III	Often felt by people; rarely causes damage; shaking of indoor objects noticeable.
4.0-4.9	IV to V	Noticeable shaking of indoor objects and rattling noises; felt by most people in the affected area; slightly felt outside; generally no to minimal damage.
5.0-5.9	VI to VII	Can cause damage of varying severity to poorly constructed buildings; at most, none to slight damage to all other buildings. Felt by everyone.
6.0-6.9	VII to IX	Damage to a moderate number of well-built structures in populated areas; earthquake-resistant structures survive with slight to moderate damage; poorly designed structures receive moderate to severe damage; felt in wider areas; up to hundreds of miles/kilometers from the epicenter; strong to violent shaking in epicentral area.
7.0-7.9	VIII or higher	Causes damage to most buildings, some to partially or completely collapse or receive severe damage; well-designed structures are likely to receive damage; felt across great distances with major damage mostly limited to 250 km from epicenter.
8.0-8.9	VIII or higher	Major damage to buildings, structures likely to be destroyed; will cause moderate to heavy damage to sturdy or earthquake-resistant buildings; damaging in large areas; felt in extremely large regions.
9.0 and Greater	VIII or higher	At or near total destruction - severe damage or collapse to all buildings; heavy damage and shaking extends to distant locations; permanent changes in ground topography.

Another measure of earthquake severity is Intensity (Table 4-16). Intensity is an expression of the amount of shaking at any given location on the ground surface based on felt or observed effects. Seismic shaking is typically the greatest cause of losses to structures during earthquakes. Intensity is measured with the Modified Mercalli Intensity Scale.

Table 4-16: Modified Mercalli Intensity (MMI) Scale

MMI	Felt Intensity
I	Not felt except by a very few people under special conditions. Detected mostly by instruments.
II	Felt by a few people, especially those on upper floors of buildings. Suspended objects may swing.
III	Felt noticeably indoors. Standing automobiles may rock slightly.
IV	Felt by many people indoors; by a few outdoors. At night, some people are awakened. Dishes, windows, and doors rattle.
V	Felt by nearly everyone. Many people are awakened. Some dishes and windows are broken. Unstable objects are overturned.
VI	Felt by everyone. Many people become frightened and run outdoors. Some heavy furniture is moved. Some plaster falls.
VII	Most people are alarmed and run outside. Damage is negligible in buildings of good construction, considerable in buildings of poor construction.
VIII	Damage is slight in specially designed structures, considerable in ordinary buildings, and great in poorly built structures. Heavy furniture is overturned.
IX	Damage is considerable in specially designed buildings. Buildings shift from their foundations and partly collapse. Underground pipes are broken.
X	Some well-built wooden structures are destroyed. Most masonry structures are destroyed. The ground is badly cracked. Considerable landslides occur on steep slopes.
XI	Few, if any, masonry structures remain standing. Rails are bent. Broad fissures appear in the ground.
XII	Virtually total destruction. Waves are seen on the ground surface. Objects are thrown in the air.

Source: Multi-Hazard Identification and Risk Assessment, FEMA 1997

Previous Occurrences

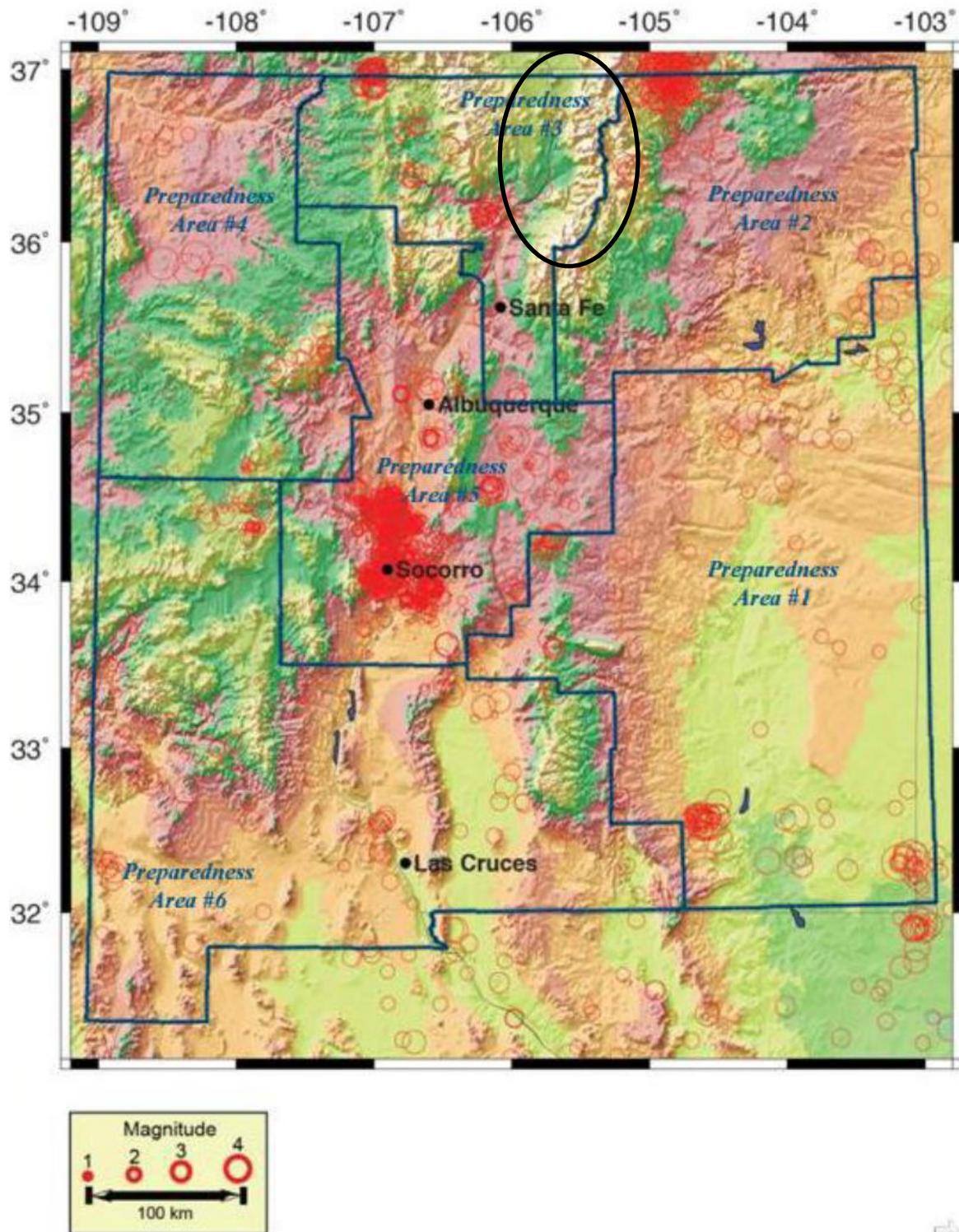
Most of the earthquakes recorded in Taos have been concentrated in the Rio Grande Valley near Ranchos de Taos. This data comes from the USGS Earthquake Hazards Program. Three earthquakes were recorded between 1973 and 2016. Each event took place less than 25 kilometers from Ranchos de Taos and occurred May 2014. On May 15, 2014, the magnitude was a 2.5, followed by the highest extent earthquake recorded in Taos County by USGS with a magnitude of 2.7 on May 15, 2014, about 21 kilometers West of Ranchos de Taos. On May 16, 2014, the magnitude was a 2.5.

While instrumentally recorded earthquakes in recent history have been relatively small in Taos County, the county is potentially susceptible to earthquakes of greater Magnitude and Intensity. Most of New Mexico’s historical seismicity has been concentrated in the Rio Grande Valley between Socorro and Albuquerque. About half of the earthquakes of Modified Mercalli (MM) intensity VI or greater that occurred in the State between 1868 and 1973 were centered in this region.

The Los Alamos Seismic Network (LASN)—The Los Alamos Seismic Network is located in north-central New Mexico. This network has been operated by Los Alamos National Laboratory since September, 1973. For the first 10-15 years (to 1985), stations were located throughout Northern New Mexico. It now has a more limited geographic extent, but is continually being upgraded and expanded.

The figure below from the 2013 New Mexico State Hazard Mitigation Plan and depicts recorded earthquakes in both the Planning Area and the State since 1962. Note the concentration of earthquakes just northeast of the County near Raton New Mexico and Trinidad Colorado; many which occurred in 2011 and some up to M 5.3 (August 22, 2011). A 2012 USGS study of these earthquakes suggested they were partly due to underground injection control wells disposing of wastewater from coalbed methane production wells, though the area has a history of natural earthquakes. During the HMPC Risk and Goals Meeting, members discussed that some fracking in the northern part of the county might be a source of recent earthquakes.

Figure 4-12: Earthquakes in New Mexico 1962-2012

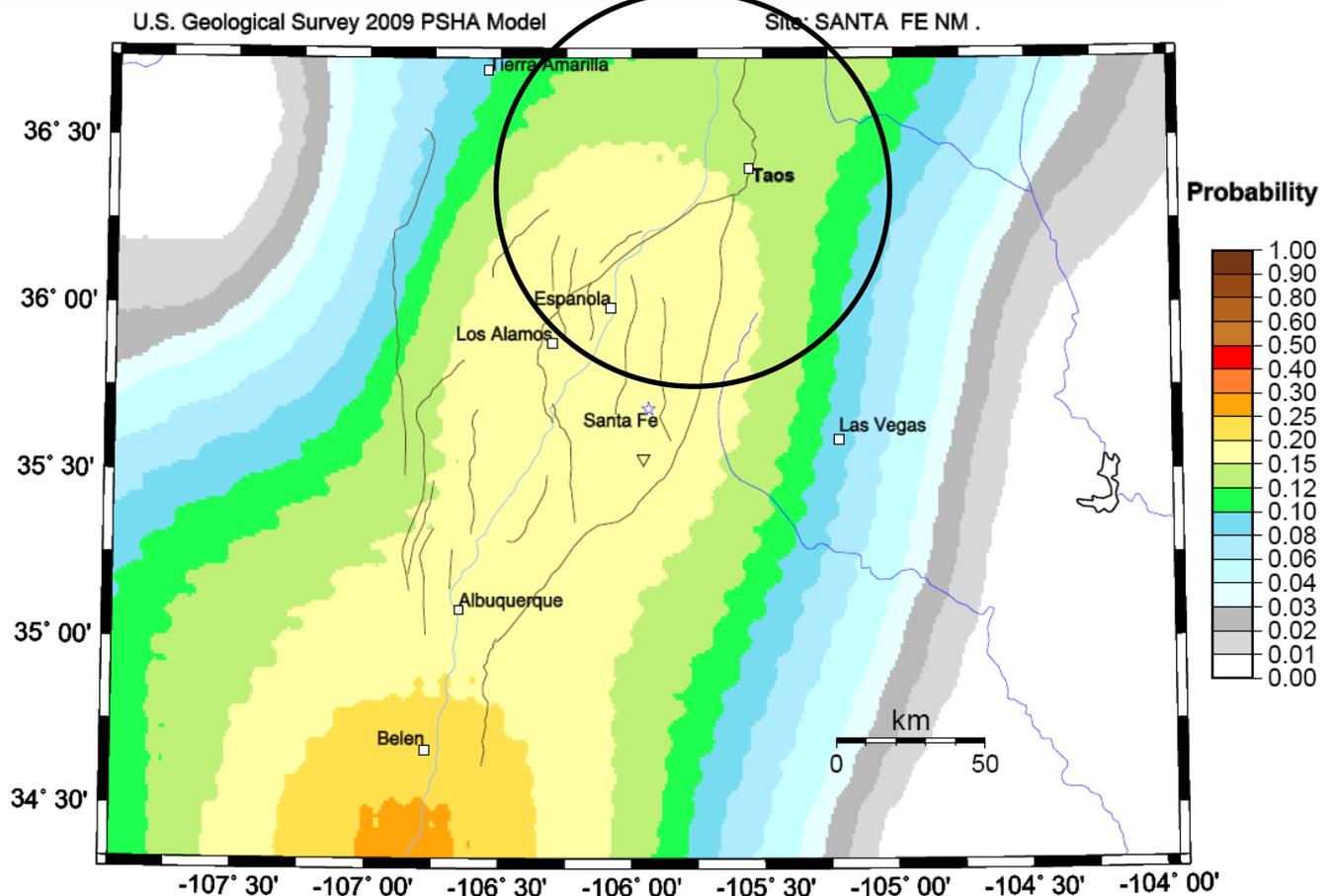


Source: 2013 New Mexico State Hazard Mitigation Plan

Probability of Future Occurrences

Occasional – No major earthquakes have been recorded within the County; although the County has felt ground shaking from earthquakes with epicenters located elsewhere. In 2009, the United States Geological Survey (USGS) released probability maps that are computed from the source model of the 2008 USGS-National Seismic Hazard Mapping Project (NSHMP) update. The low rate of historic seismicity in New Mexico does not reflect the earthquake potential for the state or Taos County. LANL, located in nearby Los Alamos County, has prepared seismic hazard assessments for the purposes of critical and lifeline facility risk assessments. Based on these studies the seismic hazard for the region including Taos County is significantly higher than what is presented in the USGS National Map. The USGS map is shown below and indicates that Taos County has a 0.15-0.2 annual chance of earthquakes of at least a magnitude 5.0 occurrence in the next 30 years.

Figure 4-13: Probability of M>5.0 Earthquake Magnitudes Occurring in 30 Year Time Frame and 50 km



GMT [2016 Jan 21 18:01:17] EQ probabilities from USGS OFR 08-1128 PSHA. 50 km maximum horizontal distance. Site of interest: triangle. Fault traces are brown; rivers blue. Epicenters M>=5.0 circles.

*Taos County surrounded by black oval

Source: United States Geological Survey 2009 Earthquake Probability Mapping

Vulnerability Assessment

FEMA's Hazus software provides an excellent system for determining vulnerability of specific areas to earthquakes. Hazus is a regional earthquake loss estimation model that was developed by FEMA and the National Institute of Building Sciences. The primary purpose is to provide a methodology and software application to develop earthquake losses at a regional scale. These loss estimates would be used primarily by local, state and regional officials to plan and stimulate efforts to reduce risks from earthquakes and to prepare for emergency response and recovery.

For the purposes of this hazard, a hypothetical 2,500 year, probabilistic earthquake scenario was modeled, which represents a worst-case scenario based on a variety of seismic sources in the region. The study area included all census tracts in Taos County. The geographical size of the region is 2,204 square miles, and it contains 6 census tracts. Hazus does not differentiate risk by jurisdiction, so the results represent county-wide impacts.

People

According to Hazus, there are over 14,000 households in the region, with a total population of 32,937 people (based on 2010 Census Bureau data). Casualty estimates are provided for three times of day: 2:00 AM, 2:00 PM and 5:00 PM. These times represent periods of the day that different sectors of the community are at their peak occupancy loads. The 2:00 AM estimate considers that the residential occupancy load is maximum, the 2:00 PM estimate considers that the educational, commercial and industrial sector loads are maximum, and 5:00 PM represents peak commute time.

The following table lists the estimated ranges of casualties within severity levels based on the 2,500 year scenario. The casualty ranges represent the lowest to highest casualties within the times of day. Casualty severity levels are described as follows;

- Level 1: Injuries will require medical attention but hospitalization is not needed
- Level 2: Injuries will require hospitalization but are not considered life-threatening
- Level 3: Injuries will require hospitalization and can become life-threatening if not promptly treated
- Level 4: Victims are killed by the earthquake

Table 4-17: HAZUS-MH 3.1 Earthquake Loss Estimation Scenario Results - People

Type of Impact	Impacts to County
Casualties (based on 2 a.m. time of occurrence)	Level 1: 80 Level 2: 16 Level 3: 2 Level 4: 3
Casualties (based on 2 p.m. time of occurrence)	Level 1: 113 Level 2: 26 Level 3: 4 Level 4: 7
Casualties (based on 5 p.m. time of occurrence)	Level 1: 84 Level 2: 19 Level 3: 3 Level 4: 5
Displaced Households	227
Shelter Requirements	150 (of 32,937 total population)

Source: HAZUS-MH

Based on the modeling the highest casualties would be associated with the 2 p.m. occurrence time. Hazus estimates that 150 people in the studied area will seek temporary shelter in public shelters following the earthquake with 227 households to be displaced due to the earthquake.

Economy

Hazus estimated economic loss for the studied area, including long-term economic impacts to the region for 15 years after the earthquake. The total economic loss estimated for the modeled earthquake is approximately \$384 million, which includes building and lifeline losses based on the region’s available inventory.

The total building-related losses were \$356M; 27% of the estimated losses were related to the business interruption of the region. By far, the largest loss was sustained by the residential occupancies which made up over 65% of the total loss.

Built Environment

According to Hazus data, there are an estimated 19,000 buildings in the region, with a total building replacement value (excluding contents) of \$3,474 million. In terms of building construction types found in the region, wood frame construction makes up 59% of the building inventory.

Hazus estimates that about 5,666 buildings will be at least moderately damaged. This is over 29% of the buildings in the region. There are an estimated 294 buildings that will be damaged beyond repair. The total building-related losses could be as high as \$355M.

The replacement value of the transportation and utility lifeline systems is estimated to be \$1,948 million and \$240 million, respectively. The total value of the lifeline inventory is over \$2,140 million; the inventory includes over 403 kilometers of highways, 40 bridges, and 2,387 kilometers of pipeline. All transportation systems were projected to see damage in locations and segments, but were expected to return to 50% or higher functionality on Day 1 after the earthquake.

The scenario also identified damages to essential facilities, defined as hospitals, schools, emergency operations centers, police stations and fire stations. Aside from one hospital, all facilities were projected to return to 50% or higher functionality on Day 1 after the earthquake. Before the earthquake, the region had 36 hospital beds available for use. On the day of the earthquake, the model estimates that only 9 hospital beds (26.00%) are available for use by patients already in the hospital and those injured by the earthquake. After one week, 59.00% of the beds will be back in service.

Hazus estimates the amount of debris that will be generated by the earthquake. It estimates a total of 0.18 million tons of debris, of which 28% is brick or wood, and the remainder being reinforced concrete and steel. The model estimates 7,000 truckloads (at 25 tons/truck) to remove the debris generated by the earthquake.

Critical Infrastructure

The Hazus model also estimates the damage to critical facilities. Table 4-18 shows the potential numbers of impacted facilities, along with rates of functionality after the incident. The data shows that aside from one hospital, all facilities would return with at least 50% of functionality within one day of the incident.

Table 4-18: HAZUS-MH Earthquake Loss Estimation Scenario Results – Critical Infrastructure

Classification	Total	Number of Facilities		
		At Least Moderate Damage > 50%	Complete Damage >50%	With Functionality > 50% on Day 1
Hospitals	1	0	0	0
Schools	29	0	0	29
EOCs	0	0	0	0
Police Stations	4	0	0	4
Fire Stations	7	0	0	7

Natural Environment

Generally, hazard specific impacts to the natural environment from an earthquake would be quickly absorbed by the surrounding area. An earthquake could cause cascading effects, including dam failure or rockslide that would impact the natural environment in different ways, depending on the scope of the cascading hazard. Other types of ground deformation could result.

Future Development

Over time population growth and development in the county and jurisdictions could increase exposure to the earthquake hazard. Building codes substantially reduce the costs of damage to future structures from earthquakes. Future facilities should be built to account for potential earth shaking and earthquake impacts.

Risk Summary

- Earthquakes in New Mexico are infrequent, but the potential for an M 6 to 7 earthquake exists along faults associated with the Rio Grande Rift Zone. The southern portion of the County has the potential for the highest ground shaking levels.
- Hazus estimates that about 5,666 buildings will be at least moderately damaged from a 2,500 year probabilistic earthquake scenario. This is over 29% of the buildings in the region. There are an estimated 294 buildings that will be damaged beyond repair. The total building-related losses were \$356M.
- With the widespread nature of ground shaking all jurisdictions are potentially vulnerable, but the Town of Taos has the greatest concentration of buildings and people exposed to the hazard.
- All transportation systems were projected to see damage in locations and segments, but were expected to return to 50% or higher functionality on Day 1 after the earthquake.
- While potentially significant the probability of a major earthquake is 2% in the next 50 years.

Table 4-19 Earthquake Hazard Risk Summary

Jurisdiction	Geographic Extent	Probability of Future Occurrence	Potential Magnitude/Severity	Overall Significance
Taos Ski Valley	Extensive	Unlikely	Limited	Low
Town of Taos	Extensive	Unlikely	Limited	Low
Village of Red River	Extensive	Unlikely	Negligible	Low
Village of Questa	Extensive	Unlikely	Limited	Low
Taos County	Extensive	Unlikely	Limited	Low

Flood

Hazard/Problem Description

Flooding is the rising and overflowing of a body of water onto normally dry land. Floods are among the most costly natural disasters in terms of human hardship and economic loss nationwide. Floods can cause substantial damage to structures, landscapes, and utilities, as well as causing life safety issues. Floods can be extremely dangerous; six inches of moving water can knock over a person given a strong current. A car will float in less than two feet of moving water and can be swept downstream into deeper waters. This is one reason floods kill more people trapped in vehicles than anywhere else. During a flood, people can also suffer heart attacks or electrocution

due to electrical equipment short outs. Floodwaters can transport large objects downstream, which can damage or remove stationary structures. Ground saturation can result in instability, collapse, or other damage. Objects can also be buried or destroyed through sediment deposition. Floodwaters can break utilities lines and interrupt services. Standing water can cause damage to crops, road, foundations, and electrical equipment.

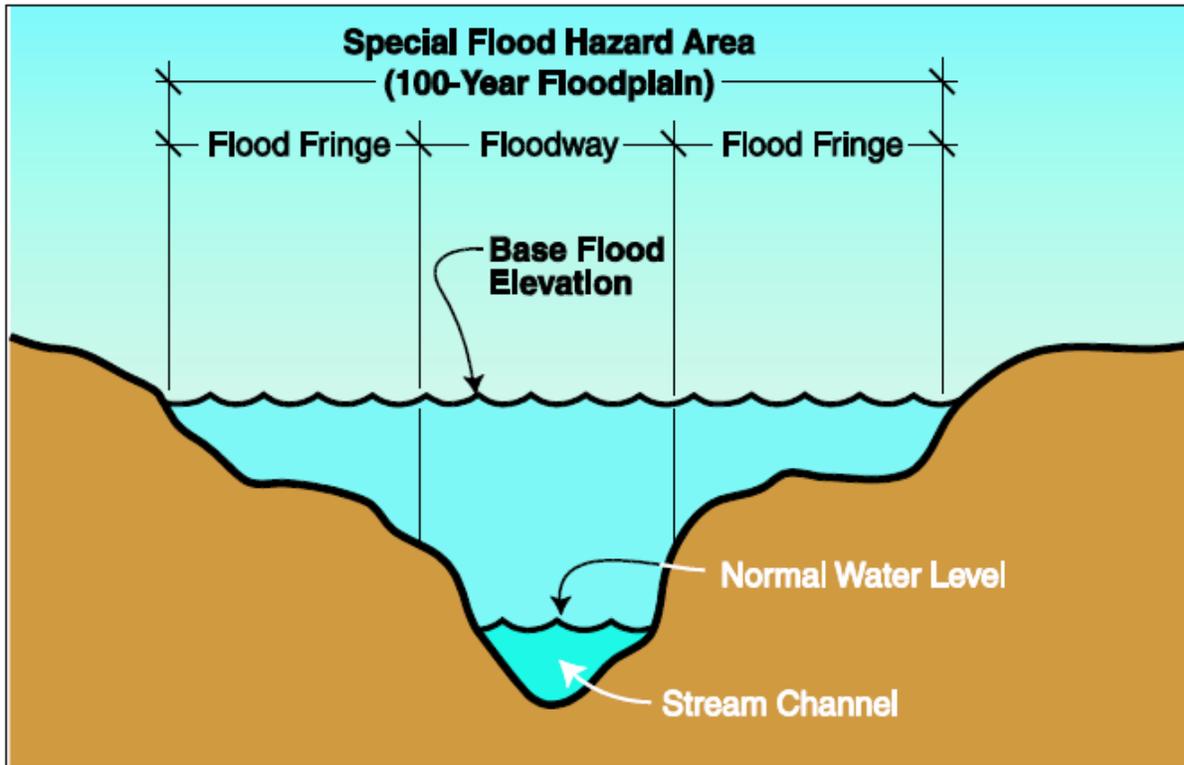
Direct impacts, such as drowning, can be limited with adequate warning and public education about what to do during floods. Where flooding occurs in populated areas, warning and evacuation will be of critical importance to reduce life and safety impacts from any type of flooding.

100-/500-year Flooding

Floodplains

The area adjacent to a channel is the floodplain (see Figure 4-14). Floodplains are illustrated on inundation maps, which show areas of potential flooding and sometimes water depths. In its common usage, the floodplain most often refers to the area that is inundated by the 100-year flood, the flood that has a one percent chance in any given year of being equaled or exceeded. This floodplain is also known as the Special Flood Hazard Area, Base Flood, or 1% annual chance flood. The 100-year flood is the national minimum standard to which communities regulate their floodplains through the National Flood Insurance Program (NFIP). The 500-year flood is the flood that has a 0.2 percent chance of being equaled or exceeded in any given year. The potential for flooding can change and increase through various land use changes and changes to land surface, which result in a change to the floodplain. A change in environment can create localized flooding problems inside and outside of natural floodplains by altering or confining natural drainage channels. These changes are most often created by human activity.

Figure 4-14: Floodplain Definitions



Source: 2013 New Mexico State Hazard Mitigation Plan

According to the Flood Insurance Study for Taos County, the storms that produce large amounts of runoff occur during the Monsoon season. Monsoon season in Taos County starts in May and lasts through October. It is characterized by heavy to severe downpours, lasting anywhere from five minutes to an hour. Such downpours can create flash floods. The Taos FIS explains that floods in the county result from rainstorms, snowmelt, and cloudburst storms.

The HMPC explained Arroyo erosion/migration has caused issues, particularly when there is development nearby or pressure to develop adjacent to them. In addition the often-dry arroyos in the County are prone to erosion and channel migration caused by high waters. This can cause shifting and meandering water channels that can erode sediment and cause damage to adjacent infrastructure and property, including property not mapped in a floodplain. Another factor that the HMPC discussed that may exacerbate the risk of flooding is wildfires. There is often elevated flood risk following wildfires in watersheds.

The Taos County Planning Area is susceptible to various types of flood events: riverine, flash, and localized stormwater flooding. The area is also at risk to flooding resulting from dam failures (discussed separately in Dam Failure). Regardless of the type of flood, the cause is often the result of severe weather and excessive rainfall, either in the flood area or upstream reach.

- Riverine flooding – Riverine flooding, defined as when a watercourse exceeds its “bank-full” capacity, generally occurs as a result of prolonged rainfall, or rainfall that is combined with snowmelt and/or already saturated soils from previous rain events. This type of flood occurs in river systems whose tributaries may drain large geographic areas and include one or more independent river basins.
- Flash flooding – Flash floods are intense, short-duration floods. Usually they abate within an hour, but can last as long as 24 hours. They occur throughout the southwest, and generally start high up on a mountain or in a canyon. Rain torrents follow the path of least resistance, initially canyons and arroyos. But along the way they pick up speed and debris. They can roll boulders, destroy footbridges, and uproot cottonwoods and piñons.
- Localized flooding – Localized, stormwater flooding problems are often caused by flash flooding, severe weather, or an unusual amount of rainfall. Flooding from these intense weather events usually occurs in areas experiencing an increase in runoff from impervious surfaces associated with development and urbanization as well as inadequate storm drainage systems.

The majority of the precipitation in Taos County occurs as summer thunderstorms. Flood stages sometimes occur in these months when moist tropical air moves north out of the Gulf of Mexico forming intense thunderstorms across the hot New Mexico land. Runoff occurring from these storms is generally termed flash flooding due to the large volumes of water that surge down the normally dry arroyo channels with high velocities. In the Sangre de Cristo Mountains, about one-third of the annual precipitation occurs as snowfall from December to March.

In addition the often-dry arroyos in the County are prone to erosion and channel migration caused by high waters. This can cause shifting and meandering water channels that can erode sediment and cause damage to adjacent infrastructure and property, including property not mapped in a floodplain.

Location - Major Sources of Flooding

Taos County encompasses multiple rivers, streams, creeks, and arroyos. Flood hazards associated with these drainages are shown on the following map. During most of the year, these watercourses are often dry. Damaging floods in Taos County occur when they impact the developed areas of the County. Flood flows generally follow defined stream channels, drainages, and watersheds.

In the Taos FIS, unincorporated areas and the town of Red River are highlighted as areas with “principal flood problems.” Concern over stream flooding in the unincorporated areas of Taos County centers on Rio Lucero and Rio Pueblo de Taos. These areas have witnessed multiple instances of damage from flooding over recent years. County officials anticipate development in the area, therefore increasing the potential for damage. The town of Red River has had one large flood event on the Red River in the 1960s and another in 1979. While damage was minimal, there are concerns surrounding the effects of high flows and flash floods from the Red River effecting future development.

According to the Taos Ski Valley Draft Hazard Mitigation Element of the Village Master Plan several areas within the Village are susceptible to flood, including several Amizette properties along the Rio Hondo, properties along the Lake Fork Creek in the O.E. Pattison subdivision, properties on Upper Twinning Road, and the Rio Hondo condominiums and the “old bone yard” near the Rio Hondo.

Floods are often exacerbated by wildfires in the County. Normally, vegetation absorbs rainfall, reducing runoff. However, wildfires leave the ground charred, barren, and unable to absorb water, creating conditions ripe for flash flooding and mudflow. Flood risk remains significantly higher until vegetation is restored—up to five years after a wildfire. Wildfire is discussed in more detail in the Wildfire Section of this chapter.

Extent

Flood maps can be used as an initial indicator of flood extent (magnitude) for each jurisdiction. As part of the County’s ongoing efforts to identify and manage their flood prone areas, Taos County generally relies on FEMA mapping efforts. What follows is a brief description of FEMA mapping efforts covering the Taos County Planning Area.

FEMA Floodplain Mapping

FEMA established standards for floodplain mapping studies as part of the National Flood Insurance Program (NFIP). The NFIP makes flood insurance available to property owners in participating communities adopting FEMA-approved local floodplain studies, maps, and regulations. Floodplain studies that may be approved by FEMA include federally funded studies; studies developed by state, city, and regional public agencies; and technical studies generated by private interests as part of property annexation and land development efforts. Such studies may include entire stream reaches or limited stream sections depending on the nature and scope of a study. A general overview of floodplain mapping and associated products is provided in the following paragraphs.

Flood Insurance Study (FIS)

The FIS develops flood-risk data for various areas of the community that will be used to establish flood insurance rates and to assist the community in its efforts to promote sound floodplain management. The current Taos County FIS is dated October 6, 2010. This study covers the entire County and incorporated areas.

Flood Insurance Rate Map (FIRM)

The FIRM is designed for flood insurance and floodplain management applications. For flood insurance, the FIRM designates flood insurance rate zones to assign premium rates for flood insurance policies. For floodplain management, the FIRM delineates 100- and 500-year floodplains, floodways, and the locations of selected cross sections used in the hydraulic analysis and local floodplain regulations. The County FIRMs have recently been replaced by new digital flood insurance rate maps (DFIRMs) as part of FEMA’s Map Modernization program.

These digital maps:

- Incorporate the latest updates (LOMRs and LOMAs);
- Utilize community supplied data;
- Verify the currency of the floodplains and refit them to community supplied base maps;
- Upgrade the FIRMs to a GIS database format to set the stage for future updates and to enable support for GIS analyses and other digital applications; and
- Solicit community participation.

DFIRMs, dated October 2010 for Taos County were released and are used for this plan's flood hazard analysis are shown on the maps in the vulnerability assessment section. All jurisdictions except Taos Ski Valley have mapped special flood hazard area and participate in the NFIP. While not mapped, Taos Ski Valley has had some flood issues and the Village requires site specific flood studies prior to approving new construction when there is an apparent threat of flood conditions.

Localized Stormwater/Flash Flooding

Localized, stormwater flooding also occurs throughout the County that may not be shown on FEMA flood maps. Urban storm drainpipes and pump stations have a finite capacity. When rainfall exceeds this capacity, or the system is clogged, water accumulates in the street until it reaches a level of overland release. This type of flooding may occur when intense storms move over areas of development or wildfire burn areas.

Flood Depth

Figure 4-15 illustrates the location of mapped flood hazard areas susceptible to the 1% annual chance flood, followed by maps that show the FEMA special flood hazard area in each jurisdiction; buildings potentially at risk are also displayed. Flood depth grid mapping was not available. Flood damage is typically directly proportional to the depth of flooding in a structure, thus flood depth can be used as an indicator of extent. In terms of the extent, or range of magnitude, floods can vary greatly in the planning area from localized drainage issues to dangerous flash floods with significant depths and high velocities. It is difficult to characterize an 'average' or 'extreme' event as the nature of the flooding can be extremely variable based on the duration and intensity of a rainfall event and the location and topography of the watershed upon which the rain occurs. In the higher elevations in the eastern county flood depths of two to three feet or greater could occur where variations in topography influence the depth and velocity of floods. Lower elevations with generally flatter terrain, such as Taos and Questa and the western unincorporated county can experience broad and shallow flooding ranging from approximately two feet to several inches, similar to sheet flow or alluvial fan flooding. For the purposes of loss estimation a two foot deep flood is assumed; this is discussed further in the flood vulnerability analysis section. Flash floods are more common in all areas of the county and by their nature, typically short-lived in duration.

Previous Occurrences

Historically, portions of Taos County have always been at risk to flooding because of monsoon rainfall, topography, and the location of development adjacent to flood-prone areas. Flooding events generally occur countywide, and have caused significant damage in the populated areas of the County. Flooding has occurred both within mapped floodplains and in other localized areas.

According to the 2010 Flood Insurance Study, major floods have been recorded in the area in the late 1960s, 1979, 1993, 1994, and 2006. Taos County experienced a flood that resulted in a Presidential Disaster Declaration (FEMA 1659-DR) allowing the County to receive public assistance due to severe flooding which occurred on July 26, 2006 and continued intermittently through September 18, 2006.

Historical information from NCDC on past floods in Taos County center around the Rio Grande River. The most recent noteworthy flood occurred September 13, 2013. Emergency management reported disastrous impacts to residential, commercial, and transportation infrastructure in the southern part of Taos County. Three flash floods were recorded around the Arroyo Hondo and Red River areas.

The HMPC noted specific areas with previous flood occurrences that raise concern. The Village of Questa has had some issues with flooding on the Red River. Costilla has also had multiple areas of concern. The committee explained that arroyo erosion and mitigation has caused issues, particularly when there is development nearby or pressure to develop adjacent to the arroyos. While the event was not listed in the NCDC database, the HMPC referenced the 2014 Presidential Declaration including Taos County due to impacts near Talpa.

Past events from the NCDC database are found in Table 4-20.

Table 4-20: Flood Events in Taos County 1996 to August 2015

Date	Incident Type	Deaths	Injuries	Property Damage	Crop Damage
9/13/2013	Flood	0	0	50.00K	0K
7/31/2014	Flash Flood	0	0	2.00K	0K
7/2/2015	Flash Flood	0	0	25.00K	0K
7/8/2015	Flash Flood	0	0	5.00K	0K

Source: NCDC

Flood Insurance Coverage and Claims

According to the NFIP as of January 2016 the County has 228 policies with \$55.6M in coverage; there have been 23 claims totaling \$52,122 since 1978. Most of the claims have been in the unincorporated county and Red River. According to the State NFIP coordinator there are no repetitive loss properties (properties defined by the NFIP as having 2 or more claims of \$1,000 or more in a 10 year period) in Taos County or the NFIP participating jurisdictions. Taos Ski Valley

has no mapped special flood hazard area and therefore is not listed as a participant in the NFIP and thus has no records of NFIP claims or payments.

Table 4-21: NFIP Claims and Payments 1978-2016

Jurisdiction	Policies	Claims	Total Paid Claims	Total Coverage
Town of Taos	62	2	\$0	\$20,567,500
Village of Questa	2	0	\$0	\$289,300
Village of Red River	83	6	\$7,500	\$13,383,900
Taos County	81	15	\$44,624	\$21,358,200

Source: FEMA Policy and Claim Statistics <http://www.fema.gov/policy-claim-statistics-flood-insurance> and State of New Mexico Department of Homeland Security, NFIP Coordinator as of 4/30/2016

Probability of Future Occurrences

100-Year Flood

A “100-year flood” is the flood elevation (or depth) that has a 1- percent chance of being equaled or exceeded each year. Thus, the 100-year flood could occur more than once in a relatively short period of time.

500-Year Flood

The 500-year flood is the flood elevation or depth that has a 0.2 percent chance of being equaled or exceeded each year.

Localized Stormwater/Flash Flooding

Based on historical data, flooding events less severe than a 100-year flood and those outside of the 100-year floodplain occur frequently during periods of heavy rains. The State Hazard Mitigation plan made efforts to determine a probability of occurrence for flash flooding. Taos County falls in Preparedness Area 3, which the State determined has a 29% chance of flash flooding occurring in a given year.

Vulnerability Assessment

People

Drowning is a major concern during flooding. Rising waters can quickly envelop people in vulnerable areas. Based on a GIS analysis of residential structures in flood hazard areas (using the count of structures multiplied by the U.S. Census Bureau average household size of 2.45 for the county) there are approximately 1,340 persons in the 1% annual chance zone and 44 additional in the 0.2% annual chance zone for the unincorporated, non-Pueblo areas. Refer to the table that notes flood risk by jurisdiction in the Built Environment section for more specifics.

Certain health hazards are also common to flood events. While such problems are often not reported, there are general types of health hazards accompany floods. The first comes from the water itself. Floodwaters carry anything that was on the ground that the upstream runoff picked up, including dirt, oil, animal waste, and lawn, farm and industrial chemicals. Pastures and areas where cattle and hogs are kept or their wastes are stored can contribute polluted waters to the receiving streams.

Floodwaters saturate the ground, which leads to infiltration into sanitary sewer lines. When wastewater treatment plants are flooded, there is nowhere for the sewage to flow. Infiltration and lack of treatment can lead to overloaded sewer lines that can back up into low-lying areas and homes. Even when it is diluted by flood waters, raw sewage can be a breeding ground for bacteria such as E. coli and other disease causing agents.

Stagnant pools of floodwater can become breeding grounds for mosquitoes, and wet areas of a building that have not been properly cleaned breed mold and mildew. A building that is not thoroughly cleaned becomes a health hazard, especially for small children and the elderly.

Another health hazard occurs when heating ducts in a forced air system are not properly cleaned after inundation. When the furnace or air conditioner is turned on, the sediments left in the ducts are circulated throughout the building and breathed in by the occupants.

Flooding can also impact drinking water quality. If a water system loses pressure, a boil order may be issued to protect people and animals from contaminated water.

Another hazard is the long-term psychological impact of having been through a flood and seeing one's home damaged and irreplaceable keepsakes destroyed. The cost and labor needed to repair a flood-damaged home puts a severe strain on people, especially the unprepared and uninsured. There is also a long-term problem for those who know that their homes can be flooded again. The resulting stress on floodplain residents takes its toll in the form of aggravated physical and mental health problems.

Economy

Flooding can have a major economic impact on the economy. Based on the flood loss analysis, there are 196 commercial structures worth an estimated \$40 M in total value directly at risk to flooding in the 1% annual chance zone. Based on the loss analysis (described further below) this could result in approximately \$20M in direct losses. This does not account for other indirect losses such as business interruption, lost wages and other downtime costs.

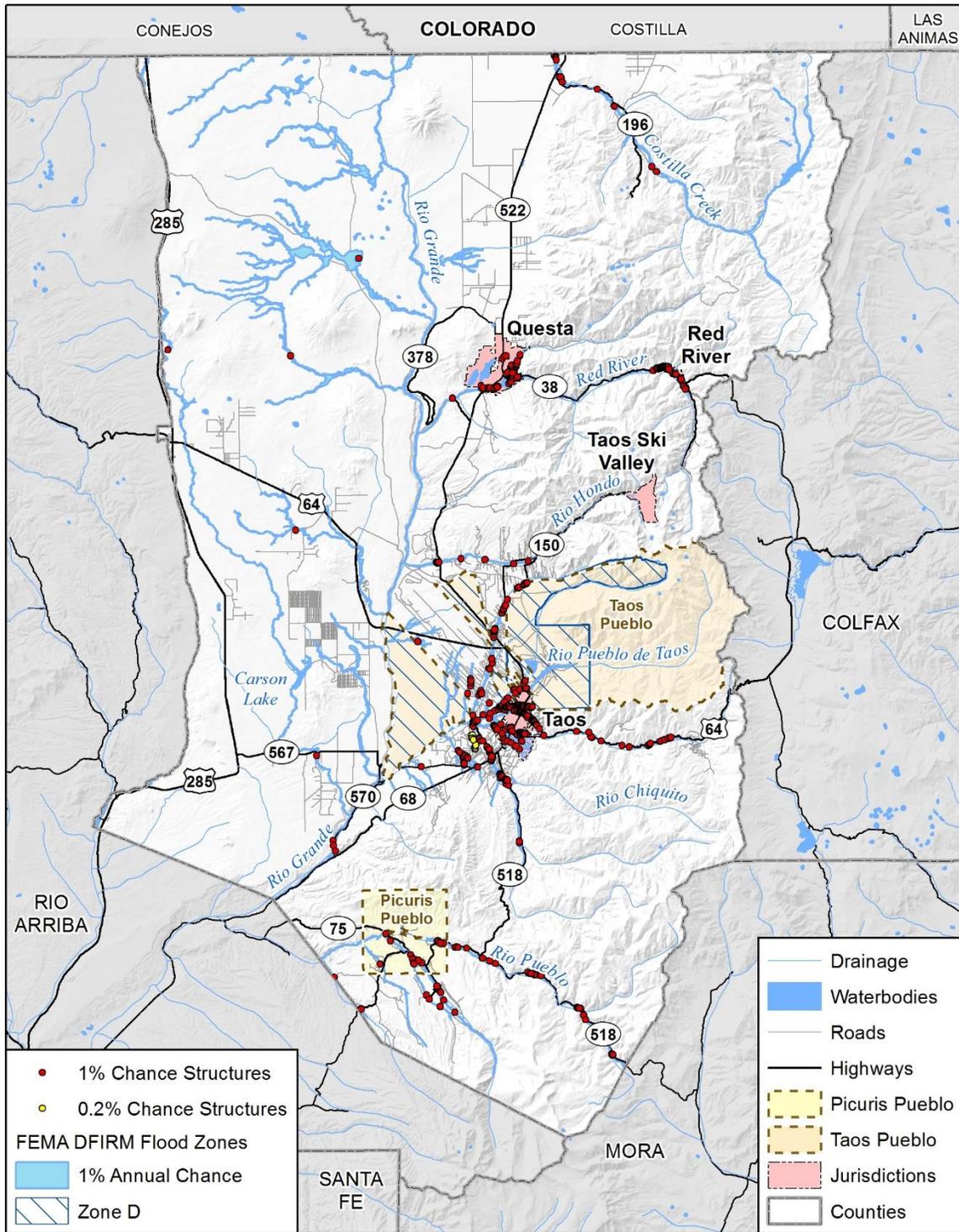
Built Environment

A flood vulnerability assessment was performed for Taos County using GIS. The county's parcel layer was joined to the assessor's database using only parcels with improved values. The parcel layer was then converted into centroids, or points representing the center of developed parcels, for this analysis as a proxy representation of buildings. GIS was used to intersect the improved parcel

centroids with the Taos County's effective DFIRM. DFIRM is FEMA's flood risk mapping that depicts the 1% annual chance (100-year) and the 0.2% annual chance (500-year) flood events. Taos County's effective FEMA DFIRM, dated October 6, 2010, was determined to be the best available floodplain data.

It is important to note that there could be more than one structure or building on an improved parcel (i.e., condo complex occupies one parcel but might have several structures). All parcels and the value of their improvements were analyzed. The end result is an inventory of the number and types of parcels and buildings subject to the hazards. Results are presented by unincorporated county and incorporated jurisdictions in the following map and tables.

Figure 4-15: Taos County FEMA DFIRM Flood Hazards

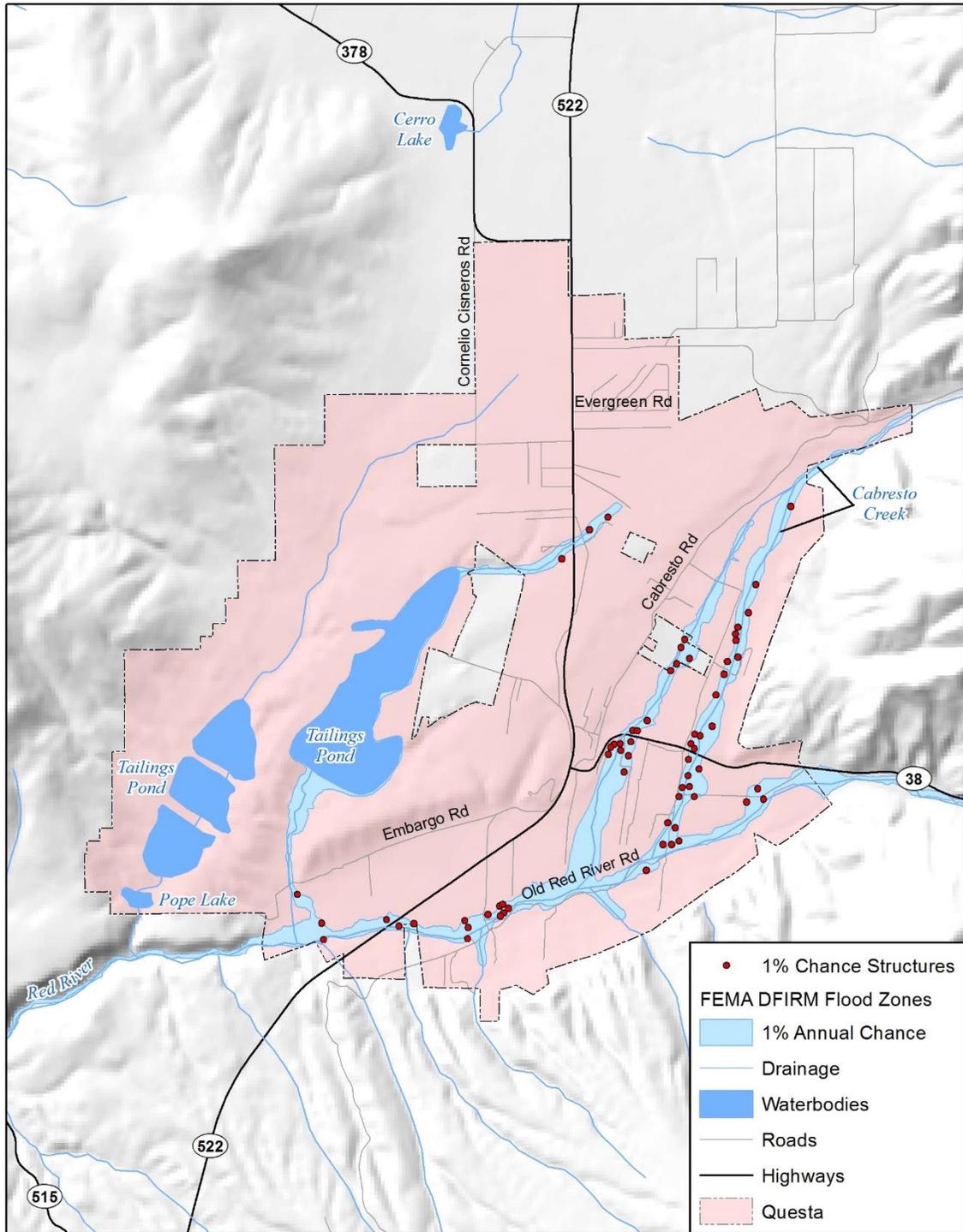


Map compiled 10/2016;
intended for planning purposes only.
Data Source: Taos County, RGIS,
HSIP Freedom 2015,
FEMA DFIRM 10/6/2010

0 5 10 Miles



Figure 4-16: Questa Flood Hazards



amec foster wheeler
 Map compiled 10/2016;
 intended for planning purposes only.
 Data Source: Taos County,
 HSIP Freedom 2015,
 FEMA DFIRM 10/6/2010

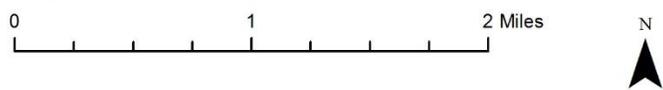
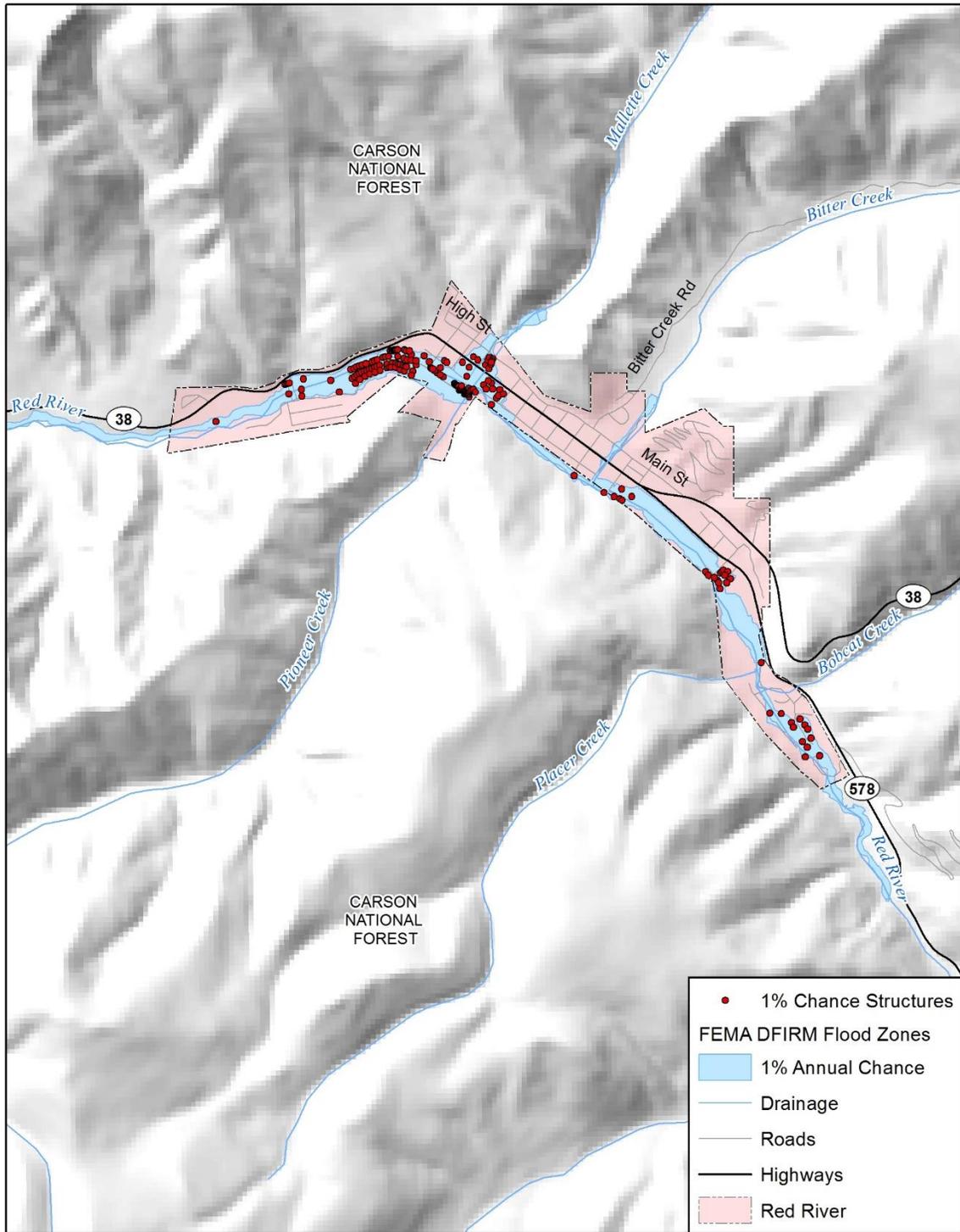


Figure 4-17: Red River Flood Hazards

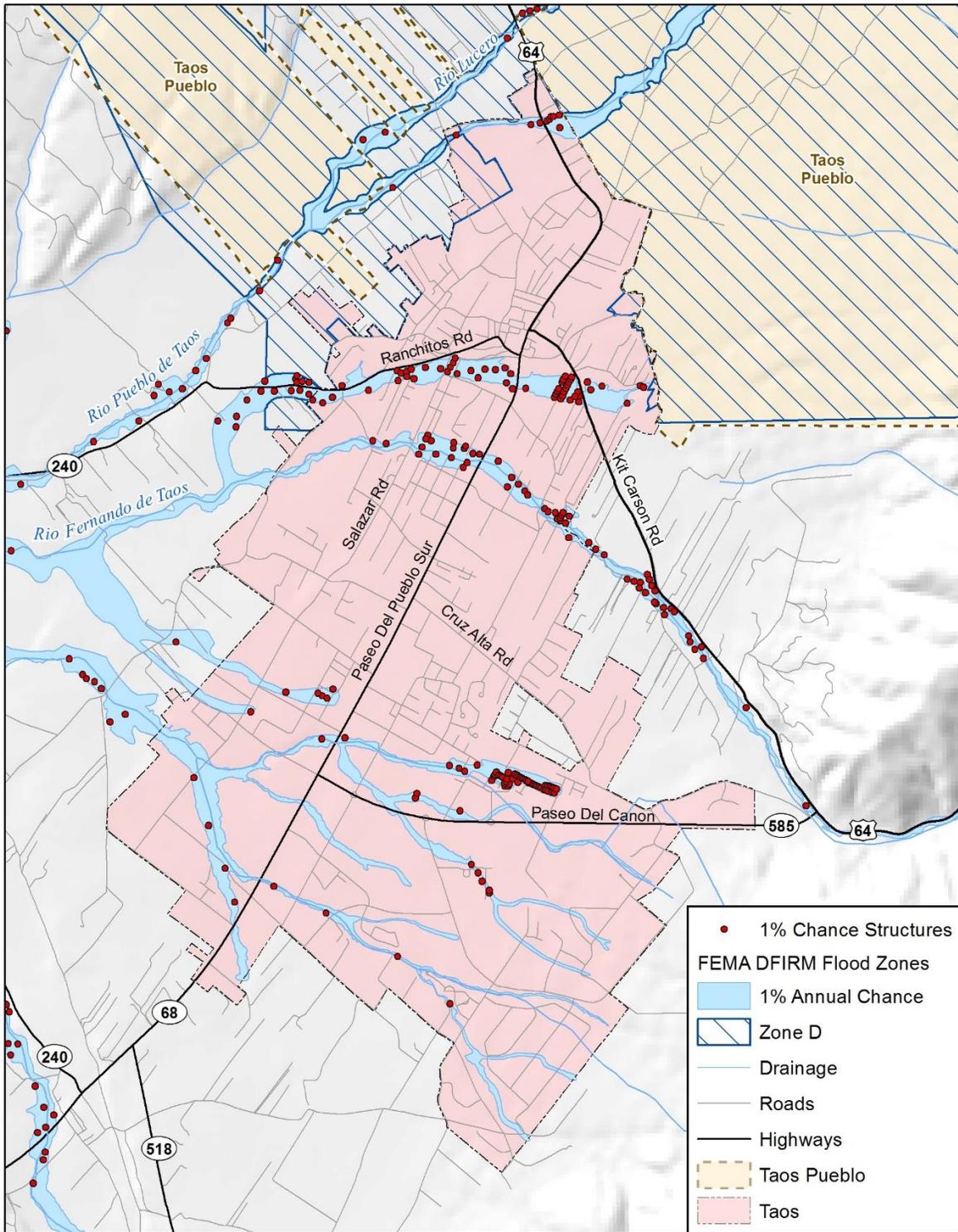



 Map compiled 10/2016;
 intended for planning purposes only.
 Data Source: Taos County,
 HSIP Freedom 2015,
 FEMA DFIRM 10/6/2010

0 0.5 1 Miles



Figure 4-18: Town of Taos Flood Hazards



Map compiled 10/2016;
intended for planning purposes only.
Data Source: Taos County,
HSIP Freedom 2015,
FEMA DFIRM 10/6/2010

0 1 2 Miles



Tabular results of the overlay analysis are shown in Table 4-22 and Table 4-24 are sorted by flood zone, the parcel's property type, and jurisdiction. Contents values were estimated as a percentage of building value based on their property type, using FEMA/HAZUS estimated content replacement values. This includes 100% of the structure value for non-residential structures and 50% for residential structures. A loss estimate analysis was also performed based on flood depth-damage relationships developed by the Army Corp of Engineers. An average depth-damage of 25% was applied to the total value to estimate flood loss. This is generally equivalent to the damage associated when buildings are inundated with a two foot deep flood.

Table 4-22: 1% Annual Chance Flood Hazard Exposure and Loss by Jurisdiction

Jurisdiction	Property Type	Improved Parcel Count	Improved Value	Content Value	Total Value	Losses	Population at Risk
Picuris Pueblo	Non-Residential	4	\$70,809	\$70,809	\$141,618	\$35,405	
	Residential	13	\$947,824	\$473,912	\$1,421,736	\$355,434	32
	Total	17	\$1,018,633	\$544,721	\$1,563,354	\$390,839	
Questa	Non-Residential	17	\$4,690,902	\$4,690,902	\$9,381,804	\$2,345,451	
	Residential	43	\$4,555,326	\$2,277,663	\$6,832,989	\$1,708,247	105
	Total	60	\$9,246,228	\$6,968,565	\$16,214,793	\$4,053,698	
Red River	Non-Residential	37	\$8,831,885	\$8,831,885	\$17,663,770	\$4,415,943	
	Residential	136	\$23,456,161	\$11,728,081	\$35,184,242	\$8,796,060	333
	Total	173	\$32,288,046	\$20,559,966	\$52,848,012	\$13,212,003	
Taos	Non-Residential	72	\$17,087,465	\$17,087,465	\$34,174,930	\$8,543,733	
	Residential	95	\$16,347,307	\$8,173,654	\$24,520,961	\$6,130,240	233
	Total	167	\$33,434,772	\$25,261,119	\$58,695,891	\$14,673,973	
Unincorporated	Non-Residential	66	\$9,155,157	\$9,155,157	\$18,310,314	\$4,577,579	
	Residential	260	\$34,460,876	\$17,230,438	\$51,691,314	\$12,822,829	637
	Total	326	\$43,616,033	\$26,385,595	\$70,001,628	\$17,001,628	
	Grand Total	743	\$119,603,712	\$79,719,965	\$199,323,677	\$49,830,919	1,340

Countywide there are 743 structures at risk worth nearly \$200M, with a loss estimate of approximately \$50M. The table also shows the distribution of structures exposed relative to the jurisdictions in the county. The Unincorporated area (non-Pueblo) accounts for 44% of the total structures at risk, and 35% of the total losses. Both Red River and the Town of Taos have

considerable number of structures in flood hazard areas. Red River has a higher loss ratio, which means 28% of the total developed parcels in the town are potentially at risk. Below is a table exhibiting damaged parcel loss ratios and loss ratios based on total exposure.

Table 4-23: 1% Annual Chance Loss Ratios by Jurisdiction

Jurisdiction	Total Improved Parcel Count	Total At-risk Parcel Count	At-risk Parcel Loss Ratio	Total Exposure Value	Exposure Loss Total	Loss Ratio Based on \$ Exposure
Unincorporated	8,336	326	3.91%	\$2,403,957,985.00	\$17,500,407	0.73%
Questa	683	60	8.78%	\$170,667,614.00	\$4,053,698	2.38%
Red River	613	173	28.22%	\$223,521,498.00	\$13,212,003	5.91%
Taos	2,525	167	6.61%	\$1,467,177,164.00	\$14,673,973	1.00%
Picuris Pueblo	526	17	3.23%	\$125,764,334.00	\$390,839	0.31%
Total	12,683	743	5.86%	\$4,391,088,595.00	\$49,830,919	1.13%

Only a small area of the 0.2% annual chance flood has been mapped within the County; this would add an additional 18 residential structures to the total at risk to flooding. This analysis does not account for flood losses that may occur outside of mapped flood hazard areas. For example Taos Ski Valley has some flood risk but is not mapped by FEMA, thus the risk is not portrayed in this analysis.

Table 4-24: Unincorporated 0.2% Annual Chance Flood Hazard

Jurisdiction	Property Type	Improved Parcel Count	Improved Value	Content Value	Total Value	Losses
Unincorporated	Residential	18	\$3,598,112	\$1,799,056	\$5,397,168	\$1,349,292

Critical Infrastructure

Analysis of critical facilities in the 1% annual probability floodplain was conducted for Taos County. The table below contains the number of critical facilities in the 1% annual chance flood zone by jurisdiction.

Table 4-25: Critical Facilities in the 1% Annual Probability Zone

Category	Jurisdiction	Facility Type	Facility Count
Essential Facilities	Taos	School	1
		YouthBuild House	1
		Total	2
	Taos County	Fire Station	2
		Total	6
Transportation & Lifelines	Red River	Helipad	1
		Total	1
			Grand Total

The Planning Director of Taos County listed Ranchos Mutual Domestic water distribution lines as infrastructure at risk due to poor stormwater drainage. The Town of Taos planner also indicated several assets at risk which are noted in Appendix D. The Town of Taos noted that a small portion of the town is located in floodplains, so the community is making efforts for development in this area to be limited. Most high risk flood areas in the town of Taos are located along the Rio Pueblo and the Rio Lucero, which experience large fluctuations in flow during spring runoff months and the summer monsoon season. In addition, the southern portion of the town is affected by alluvial fan flooding, which is more characteristic of large flash floods caused by wildfire burn/runoff or extreme summer monsoons storms which have the ability to produce large volumes of water over small areas. The southern portion of the town’s floodplains are typified by arroyo water movement through existing arroyo corridors. No critical infrastructure was identified at risk to flooding in Questa or Taos Ski Valley.

Natural Environment

Natural resources are generally resistant to flooding except where natural landscapes and soil compositions have been altered for human development or after periods of previous disasters such as drought and fire. Wetlands, for example, exist because of natural flooding incidents or shallow groundwater and can help absorb floodwaters. Areas recently impacted by wildfire may erode because of flooding, which can permanently alter an ecological system. Flood water can also contain contaminants that may adversely affect the environment.

Future Development

Future plans to reduce the risk of future development to localized stormwater/flash flooding can be enhanced by accurate recordkeeping of repetitive localized storm activity. Mitigating the root causes of localized stormwater through on-site detention or choosing not to develop in areas that often are subject to localized flooding will reduce future risks of losses due to stormwater/localized flooding.

Taos County’s gradual population, housing, and employment growth creates pressure for land use change and the supporting infrastructure improvements. Floodplain management practices

implemented through local floodplain management ordinances should mitigate the flood risk to new development in floodplains. Urbanization and increasing impervious surface areas tend to increase both the rate and the volume of stormwater runoff. Thus, the largest issue with future development trends is urbanization and stormwater drainage issues that add to the peak discharge and volume of floodwaters in floodplains.

As stated in the drought section, the HMPC discussed some development that has occurred along areas that were dry during drought periods but have now become more at risk to flash flooding. The County Planning Director specifically noted growth occurring in the Llano Quemado and Lower las Colonias areas. These two areas have multiple arroyos running through them. These arroyos are a flooding risk but landowners are complacent about them due to their infrequent flow.

Future development within flood hazard areas is not anticipated for Red River and Questa.

Risk Summary

- Countywide there are 743 structures at risk worth \$217M, with a loss estimate of \$54M
- The Unincorporated area (non-Pueblo) accounts for 44% of the total structures at risk, and 35% of the total losses.
- Both Red River and the Town of Taos have considerable number of structures in flood hazard areas. Red River has a higher loss ratio, which means 28% of the total developed parcels in the town are potentially at risk.
- Much of the county has approximate floodplain mapping only; only a small area of the 0.2% annual chance flood has been mapped within the County

Table 4-26 Flood Hazard Risk Summary

Jurisdiction	Geographic Extent	Probability of Future Occurrence	Potential Magnitude/Severity	Overall Significance
Taos Ski Valley	Negligible	Occasional	Limited	Low
Town of Taos	Significant	Likely	Critical	High
Village of Red River	Significant	Occasional	Critical	Medium
Village of Questa	Significant	Occasional	Critical	Medium
Taos County	Limited	Likely	Limited	Medium

Hazardous Materials

Hazard/Problem Description

A hazardous material is any item or agent (biological, chemical, physical) which has the potential to cause harm to humans, animals, or the environment, either by itself or through interaction with

other factors. Hazardous materials can be present in any form; gas, solid, or liquid. Environmental or atmospheric conditions can influence hazardous materials if they are uncontained.

The U.S. Occupational Safety and Health Administration's (OSHA) definition of a hazardous material includes any substance or chemical which is a "health hazard" or "physical hazard," including chemicals which are carcinogens, toxic agents, irritants, corrosives, sensitizers; agents which act on the hematopoietic system; agents which damage the lungs, skin, eyes, or mucous membranes; chemicals which are combustible, explosive, flammable, oxidizers, pyrophorics, unstable-reactive or water-reactive; and chemicals which in the course of normal handling, use, or storage may produce or release dusts, gases, fumes, vapors, mists or smoke which may have any of the previously mentioned characteristics.

The Environmental Protection Agency (EPA), through various regulations including the Resource Conservancy and Recovery Act, Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), and others, provide a series of definitions depending on the applicable regulation. A release or spill of bulk hazardous materials could result in fire, explosion, toxic cloud, or direct contamination of people and property. The effects may involve a local site or many square miles. Health problems may be immediate, such as corrosive effects on skin and lungs, or be gradual, such as the development of cancer from a carcinogen. Damage to property could range from immediate destruction by explosion to permanent contamination by a persistent hazardous material.

Accidents involving the transportation of hazardous materials could be just as catastrophic as accidents involving stored chemicals, and possibly more so, since the location of a transportation accident is not predictable. The U.S. Department of Transportation divides hazardous materials into nine major hazard classes. A hazard class is a group of materials that share a common major hazardous property (e.g., radioactivity, flammability, etc.).

Figure 4-19: Hazardous Materials Classes



Source: U.S. Department of Transportation

According to the HMPC, hazardous materials transported across the county include:

- Basic household waste and commercial materials;
- Fuel trucks
- Sewer/septic trucks

It is suspected that the above hazardous materials are transported across Taos County on a daily basis; the vast majority of these shipments move across the county without incident.

Organizations and businesses in the United States with hazardous chemicals above certain quantities are required by the EPA to fill out Tier II reports. Tier II reports are submitted annually to local fire departments, Local Emergency Planning Committees (LEPC) and State Emergency Response Commissions (SERCs) to help those agencies plan for and respond to chemical emergencies. Mandated by the Emergency Planning and Community Right to Know Act (EPCRA), the Tier II form captures information about the types, quantities and locations of hazardous materials at a given facility. The form also lists contact information for the facility's designated emergency point of contact.

Taos County provided information on ten Tier II hazardous materials facilities located in the county, based on a statewide inventory of facilities. The following table lists these facilities, along with their locations.

Table 4-27: Tier II Facilities

Facility Name	Location	Facility Street Address
Penasco Main	Penasco	15120 State Highway 75
Pendleton Oil & Gas Co. of Questa	Questa	2680 N. Highway 522
Pendleton Oil & Gas Co. of Taos	Ranchos De Taos	1547 South Santa Fe Road
Questa Main	Questa	2458 State Highway 522
Questa Mine	Questa	3.5 Miles East of Questa on Highway 38
Red River Main	Red River	110 South Center Street
Romero's Rio Grande Propane	Taos	200 D Benix Drive
Taos Main	Taos	111 Civic Plaza Drive
Taos North Co	Arroyo Seco	28 State Highway 230
Tri-State G&T Taos Substation	Los Cordovas	1/4 mile NW of the intersection of Blue Berry Hill Road and NM Hwy 240

The ‘Mains’ indicated above are gas mains. It is important to note that while it can be inferred that the gas mains included in the Tier II data are linear features under roads, these sites were assigned specific addresses in the statewide database provided.

The HMPC explained during the hazard identification and risk assessment meeting that the molybdenum mine in the Red River Valley and tailing ponds located near Questa could be an issue if an uncontrolled release occurred. With a fish hatchery downstream, a plan is in the works to shut down the mine and reclaim the area. The HMPC also noted that gas transmission pipelines are located in Taos Canyon, Rio Grande Canyon and Red River Canyon. Some of these pipelines may be re-located according to a gas company representative. The Los Alamos National Lab is about an hour away to the southwest, but was noted as close enough to be a possible concern as well.

Location

Hazardous materials are everywhere, and spills or releases occur in the U.S. on a daily basis. Transportation incidents can occur during the transportation of hazardous materials to and from storage facilities. The most likely routes for the transportation of hazardous materials are major roadways. The HMPC noted that there are currently no designated routes for hazardous materials across the county. According to the HMPC, fuel tankers and propane trucks travel on highways to the Taos Ski Valley, Red River and on roads countywide. Taos County does not have any rail lines, and the risk from transported materials was not likely to be high since there are no Interstates in the county. The locations of the ten Tier II facilities were noted in the previous section.

Extent

Because of the variability of hazardous materials transported across the county, a general extent measure is difficult to determine. On a transportation incident with relatively normal weather and

environmental conditions, it is anticipated that the impact area would be no more than a mile around the incident site.

Previous Occurrences

The U.S. Department of Transportation’s Pipeline and Hazardous Materials Safety Administration (PHMSA) tracks hazardous materials spills and occurrences. Since 1970, Taos County has had eight hazardous materials incidents recorded between the unincorporated county, Taos, Questa, Ranchos De Taos and Arroyo Seco. Additional details on these incidents are provided in the table below.

Table 4-28: Hazardous Materials Incidents in Taos County 1970-2016

Date	City	Hazard Class	Cause
10/13/1971	Taos	Flammable-Combustible Liquid	Not listed
12/02/1972	Taos	Flammable-Combustible Liquid	Not listed
11/30/1974	Taos	Flammable-Combustible Liquid	Defective component or device
05/28/1975	Taos	Corrosive Materials	Loose closure component or device
01/18/1984	Questa	Combustible Liquid	Not listed
05/28/1987	Taos	Flammable-Combustible Liquid	Not listed
05/24/1990	Ranchos de Taos	Flammable-Combustible Liquid	Not listed
08/19/2010	Arroyo Seco	Flammable-Combustible Liquid	Not listed

Source: PHMSA

Hazardous materials classes involved in spills in Taos County fall into three of the nine categories; the majority of materials released fell under the flammable liquid category.

Corrosive materials: 1
 Flammable-combustible liquid: 6
 Combustible liquid: 1

Not all incidents had a listed cause. When listed, the causes were:

Loose Closure Component or Device: 1
 Defective Component or Device: 1
 Dropped: 1

Six incidents had no cause listed. All incidents were classified as highway incidents. There were no recorded fatalities or injuries associated with these hazardous materials releases, and no recorded damages.

Probability of Future Occurrences

Based on the PHMSA data hazardous materials incidents occur on average once every 5 years, thus the probability of future occurrence rating is **likely**.

Vulnerability Assessment

The impact to life and property from any given release depends on a number of factors:

- Application mode: the human act(s) or unintended event(s) necessary to cause the hazard to occur.
- Duration: the length of time the hazard is present on the target.
- Dynamic/static characteristic of a hazard: its tendency, or that of its effects, to either expand, contract, or remain confined in time, magnitude, and space.
- Mitigating conditions: characteristics of the target and its physical environment that can reduce the effects of a hazard.
- Exacerbating conditions: characteristics that can enhance or magnify the effects of a hazard.

People

The public's general vulnerability to hazardous materials incidents depends on the hazard. There are three exposure pathways for a person to come into contact with a hazardous materials: inhalation, ingestion and skin contact. Effects to people can include burns, breathing problems, and contamination.

Economy

Hazardous materials in Taos County are usually transported along major highways and roadways; an incident could require the closure of roads that are also used for commerce and travel. While this may cause a small economic impact, in most cases the road wouldn't be closed for an extended period of time.

Built Environment

Impacts on the built environment are dependent on the site of the hazardous materials spill, weather and environmental conditions, and the material itself. While the county does not have routes designated for hazardous materials transport, meaning that hazardous materials could be transported along routes near residential populations, commercial zones and critical infrastructure. Should a hazardous materials spill occur near the built environment, impacts could include reduced or limited access for a short period of time, or building and ground contamination?

Some identified Tier II sites exist in areas surrounded by development. The surrounding area within a half mile radius of these facilities may be at increased risk from a hazardous materials incident at one of the sites.

Critical Infrastructure

A list of Tier II hazardous materials facilities list was provided by Taos County which was converted to GIS for a proximity analysis related to other critical infrastructure. A half-mile buffer was developed around each facility and overlaid with critical infrastructure data to identify potentially vulnerable sites. The following sites were identified as being potentially vulnerable to an incident at a Tier II facility.

Table 4-29: Critical Facilities within a Half-Mile of a Tier II Facility

Jurisdiction	Type	Critical Facility Owner/Name	Tier II Facility
Taos County	Communications Tower	Tri State Generation & Transmission Assoc., Inc.	Tri-State G&T Taos Substation
Taos County	Communications Tower	Tri State Generation & Transmission Assoc., Inc.	Tri-State G&T Taos Substation
Taos County	Communications Tower	New Mexico, State Of	Tri-State G&T Taos Substation
Taos County	Communications Tower	New Mexico, State Of	Tri-State G&T Taos Substation
Taos County	Communications Tower	New Mexico, State Of	Tri-State G&T Taos Substation
Taos County	Communications Tower	New Mexico, State Of	Tri-State G&T Taos Substation
Taos County	Communications Tower	Tri State Generation & Transmission Assn	Tri-State G&T Taos Substation
Taos County	Communications Tower	New Mexico, State Of	Tri-State G&T Taos Substation
Taos County	Communications Tower	New Mexico, State Of	Tri-State G&T Taos Substation
Taos County	Communications Tower	New Mexico, State Of	Tri-State G&T Taos Substation
Taos County	Community Center	Arroyo Seco Community Center	Taos North Co
Taos	Fire Station	Taos VFD Station 1	Taos Main
Taos	Police Station	Taos Police Department	Taos Main
Taos	School	Enos Garcia Elementary	Taos Main
Taos	School	Taos Integrated School Of Arts	Taos Main
Taos	School	Taos Cyber Magnet	Taos Main
Red River	Fire Station	Red River Fire Department	Red River Main
Red River	School	Red River Valley Charter School	Red River Main
Taos	School	Taos International Academy	Pendleton Oil and Gas Company of Taos

Based on this analysis, it is important to note facilities that provide emergency response services and areas where populations congregate that are located in potential impact zones.

Taos County has no designated hazardous materials routes. Any critical facilities within a half mile on either side of major roads has an increased vulnerability to impacts from a hazardous materials release, dependent on environmental factors. The Taos Tier II facilities list includes multiple gas mains, located at intersections and under roadways. Linear data for these mains was not available for analysis, only single-point locations, which is a noted limitation of this analysis. It can be extrapolated that there are likely other critical facilities, buildings and populations along these routes within one half mile on either side of the road/pipeline corridor. The following table notes routes with pipelines running under them.

Table 4-30: Tier II Gas Mains and Routes

Location	Route	Gas Main
Penasco	State Highway 75	Penasco Main
Questa	State Highway 522	Questa Main
Red River	South Center Street	Red River Main
Taos	Civic Plaza Drive	Taos Main

Natural Environment

Like all other vulnerability, vulnerability of the environment is predicated on the material, the location and prevailing conditions at the time of the incident. Areas of concern include areas where fuel, propane, and septic truck routes intersect or parallel rivers, and areas that present difficulty of access due to topography. Areas of concern include roads running through Carson National Forest and the forested areas around Questa, Red River and the Taos Ski Valley.

Future Development

When planning future development, proximity and vulnerability to hazardous materials routes and facilities should be taken into consideration, especially in populated areas where development may be more prevalent.

Risk Summary

- Taos County does not have designated hazardous materials routes; Transportation of flammable materials occurs around the county.
- There are 10 Tier 2 Facilities in Taos County; three in Questa, one in Red River, two in Taos and five in the unincorporated area.
- The HMPC noted that the molybdenum mine and tailing ponds could be an issue if an uncontrolled release occurred.
- Gas transmission pipelines are located in the major canyons.

- Since 1971, Taos County has had eight hazardous materials incidents based on PHMSA data; there were no recorded fatalities or injuries associated with these hazardous materials releases, and no recorded damages.

Table 4-31 Hazardous Materials Hazard Risk Summary

Jurisdiction	Geographic Extent	Probability of Future Occurrence	Potential Magnitude/Severity	Overall Significance
Taos Ski Valley	Significant	Unlikely	Critical	Medium
Town of Taos	Negligible	Likely	Negligible	Low
Village of Red River	Negligible	Unlikely	Negligible	Low
Village of Questa	Negligible	Occasional	Limited	Medium
Taos County	Limited	Likely	Limited	Medium

High Winds (including Straight Line Winds, Tornadoes and Microbursts)

Hazard/Problem Description

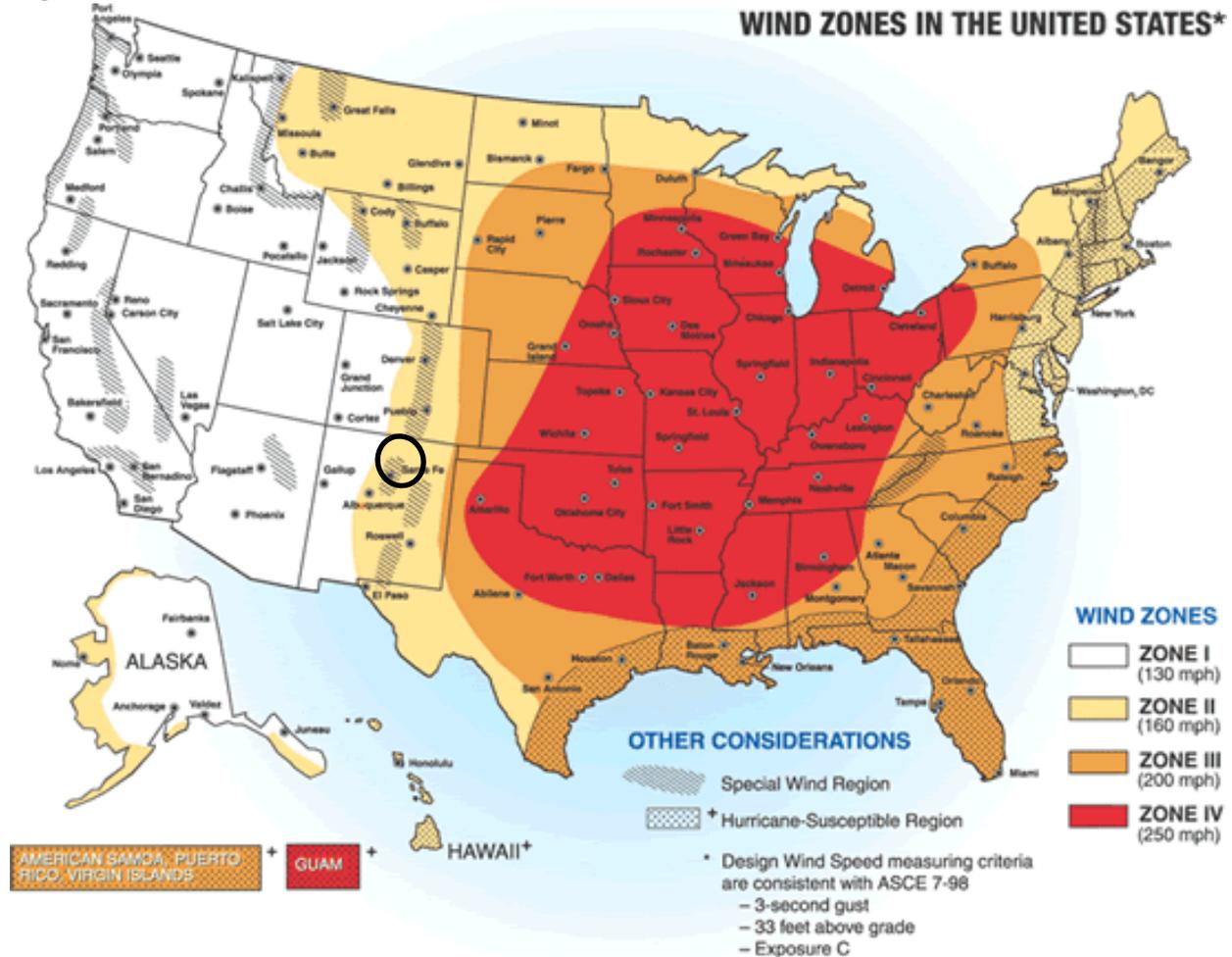
Wind is the motion of air relative to the earth’s surface, and the hazard of high wind is commonly associated with severe thunderstorm winds (exceeding 58 mph) as well as tornadoes, hurricanes, and tropical storms. High winds can also occur in the absence of other definable hazard conditions, events often referred to as simply “windstorms.” High wind events might occur over large, widespread areas or in a very limited, localized area. They can occur suddenly without warning, at any time of the day or night.

Typically, high winds occur when large air masses of varying temperatures meet. High winds, often accompanying severe thunderstorms, can cause significant property and crop damage, threaten public safety, and have adverse economic impacts from business closures and power loss. Rapidly rising warm moist air serves as the “engine” for severe thunderstorms, tornadoes and other windstorm events. These storms can occur singularly, in lines or in clusters. They can move through an area very quickly or linger for several hours. Winds in Taos County are typically straight-line winds, which are generally any thunderstorm wind that is not associated with rotation or tornadic. These winds can overturn mobile homes, tear roofs off of houses, topple trees, snap power lines, shatter windows, and sandblast paint from cars. Other associated hazards include utility outages, arcing power lines, debris blocking streets, dust storms, and an occasional structure fire. While straight line winds are the most common, microbursts and tornadoes may also occur in the County.

Straight-Line Winds

The following figure depicts wind zones for the United States; the approximate location of Taos County is circled in black. The map denotes that the majority of the Planning Area falls into Zone II, which is characterized by high winds of up to 160 mph.

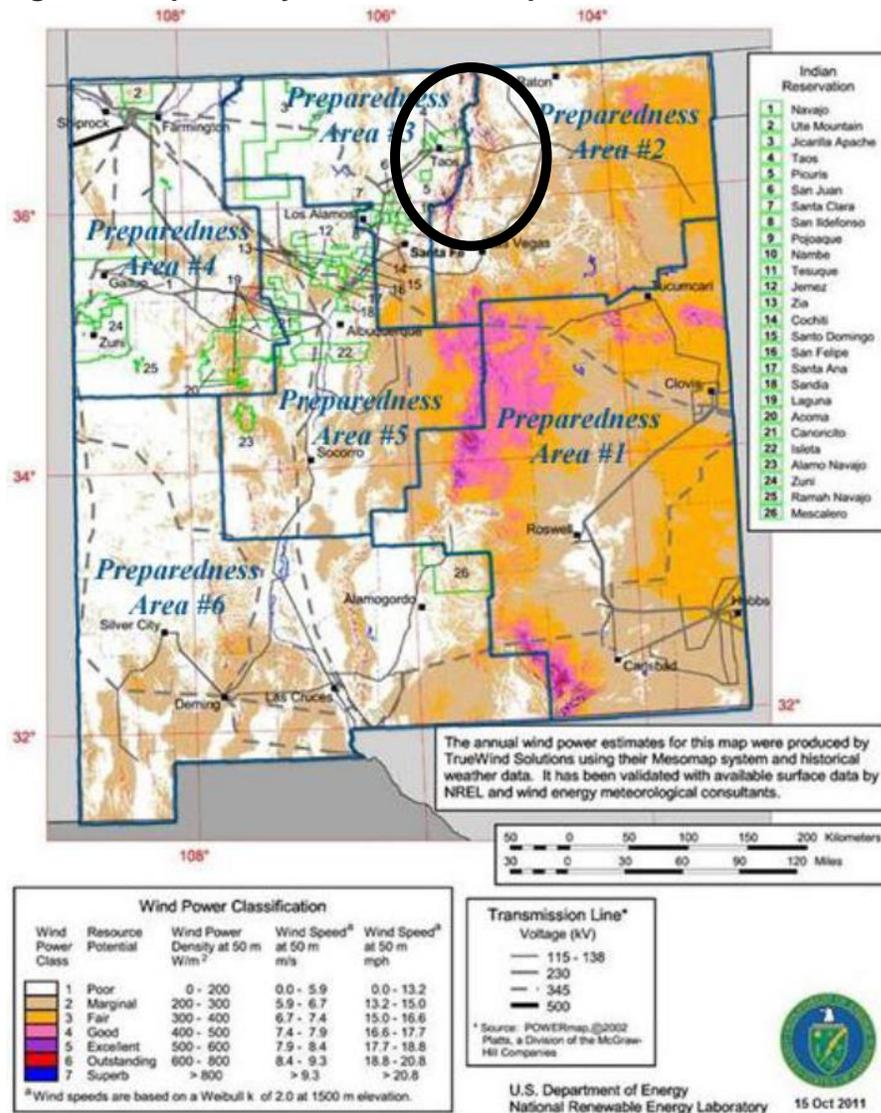
Figure 4-20: Wind Zones in the United States



Source: Federal Emergency Management Agency

The entire State of New Mexico is subject to high wind conditions, but areas most vulnerable include locations where the population is concentrated and buildings are of older design. The following figure shows average wind speeds in New Mexico as provided by the U.S. Department of Energy’s Wind Program and the National Renewable Energy Laboratory, which is excerpted from the New Mexico Hazard Mitigation Plan. This wind resource map shows estimates of wind power density at 50 meters above the ground. The general area of Taos County, located in NM Preparedness Area 3, is circled in black.

Figure 4-21: Average Wind Speeds by New Mexico Preparedness Area



* Taos County circled by black oval
Source: New Mexico Hazard Mitigation Plan 2013

During the kickoff meeting, the HMPC noted that while winds in Taos County generally aren't strong enough to cause extensive damage, they can be an issue in the canyons around the county including Red River and Taos Ski Valley.

Tornadoes

Tornadoes are rotating columns of air marked by a funnel-shaped downward extension of a cumulonimbus cloud whirling at destructive speeds of up to 300 mph, usually accompanying a thunderstorm. Tornadoes are the most powerful storms that exist. They can have the same pressure differential across a path only 300 yards wide or less as 300 mile wide hurricanes. Figure 4-22 illustrates the potential impact and damage from a tornado.

Figure 4-22: Potential Impact and Damage from a Tornado

Figure 2-2 Potential impact of a tornado

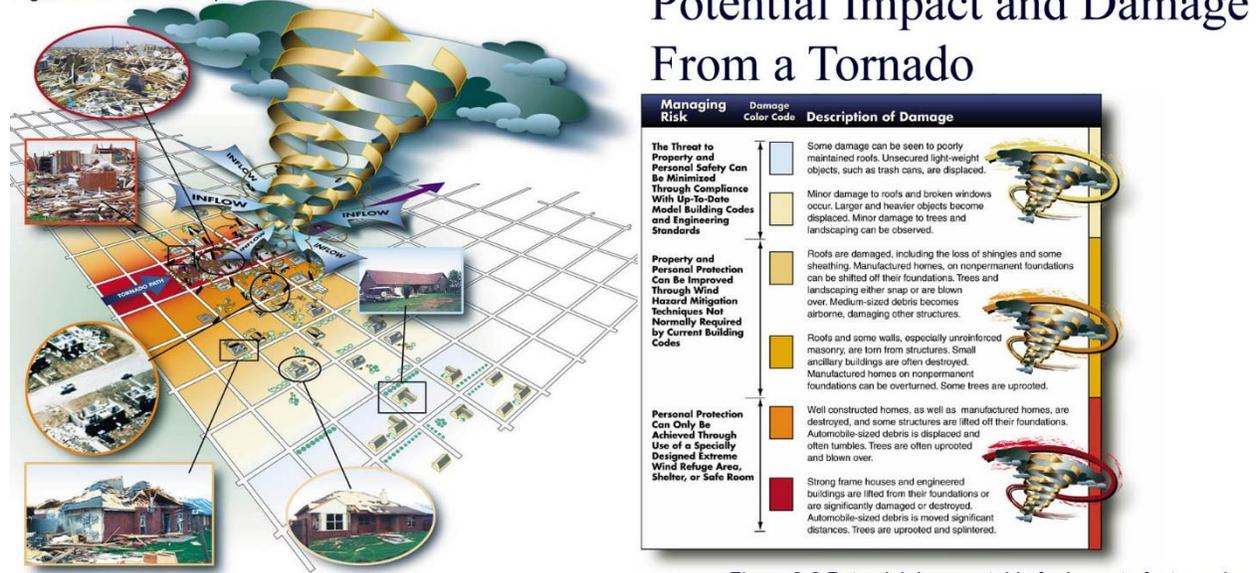


Figure 2-2 Potential damage table for impact of a tornado

Source: FEMA: Building Performance Assessment: Oklahoma and Kansas Tornadoes

Tornadoes can cause damage to property and loss of life. While most tornado damage is caused by violent winds, the majority of injuries and deaths generally result from flying debris. Property damage can include damage to buildings, fallen trees and power lines, broken gas lines, broken sewer and water mains, and the outbreak of fires. Agricultural crops and industries may also be damaged or destroyed. Access roads and streets may be blocked by debris, delaying necessary emergency response.

Microbursts

Taos County is subject to high winds from microbursts as well. A microburst is a small downburst with an outflow less than 2½ miles (4 kilometers) in horizontal diameter and last for only 2-5 minutes. Despite their small size, microbursts can produce destructive winds up to 168 mph. Also, they create hazardous conditions for pilots and have been responsible for several disasters.

Location

Any area of the county is vulnerable to high winds or tornadoes. Geographic features can affect the amount and speed of wind in different areas of the county. Higher elevations and canyon areas can experience extremely strong wind speeds, though much of this is in National Forest or undeveloped. Canyons and mountain towns such as Red River and Taos Ski Valley are more susceptible to high wind.

Southern Taos County is located in a 'Special Wind Region' as defined by FEMA (increased potential for strong downslope winds because of its topography) due to its topography and geographic setting.

Extent

While scales exist to measure the effects of wind, they can be conflicting or leave gaps in the information. For the purposes of this plan, the Beaufort Wind Scale was used because it is specifically adapted to wind effects on land.

Table 4-32: Beaufort Wind Scale

Force	Wind (MPH)	World Meteorological Organization (WMO) Classification	On Land
0	Less than 1	Calm	Calm, smoke rises vertically
1	1-3	Light Air	Smoke drift indicates wind direction, still wind vanes
2	4-7	Light Breeze	Wind felt on face, leaves rustle, vanes begin to move
3	8-12	Gentle Breeze	Leaves and small twigs constantly moving, light flags extended
4	13-18	Moderate Breeze	Dust, leaves, and loose paper lifted, small tree branches move
5	19-24	Fresh Breeze	Small trees in leaf begin to sway
6	25-31	Strong Breeze	Larger tree branches moving, whistling in wires
7	32-38	Near Gale	Whole trees moving, resistance felt walking against wind
8	39-46	Gale	Twigs breaking off trees, generally impedes progress
9	47-54	Strong Gale	Slight structural damage occurs.
10	55-63	Storm	Trees broken or uprooted, "considerable structural damage"
11	64-72	Violent Storm	Widespread structural damage.
12	72+	Hurricane	Considerable and widespread damage to structures.

Source: NOAA

All areas of the Taos County can experience all 12 Beaufort categories.

Prior to February 1, 2007, tornado intensity was measured by the Fujita (F) scale. This scale was revised and is now the Enhanced Fujita scale. Both scales are sets of wind estimates (not measurements) based on damage. The new scale provides more damage indicators (28) and associated degrees of damage, allowing for more detailed analysis and better correlation between damage and wind speed. It is also more precise because it takes into account the materials affected and the construction of structures damaged by a tornado. The following tables show the wind speeds associated with the original Fujita scale ratings and the damage that could result at different levels of intensity, and then wind speeds associated with the Enhanced Fujita Scale ratings.

Table 4-33: Fujita Scale

Fujita (F) Scale	Fujita Scale Wind Estimate (mph)	Typical Damage
F0	< 73	Light damage. Some damage to chimneys; branches broken off trees; shallow-rooted trees pushed over; sign boards damaged.
F1	73-112	Moderate damage. Peels surface off roofs; mobile homes pushed off foundations or overturned; moving autos blown off roads.
F2	113-157	Considerable damage. Roofs torn off frame houses; mobile homes demolished; boxcars overturned; large trees snapped or uprooted; light-object missiles generated; cars lifted off ground.
F3	158-206	Severe damage. Roofs and some walls torn off well-constructed houses; trains overturned; most trees in forest uprooted; heavy cars lifted and thrown.
F4	207-260	Devastating damage. Well-constructed houses leveled; structures with weak foundations blown away some distance; cars thrown and large missiles generated.
F5	261-318	Incredible damage. Strong frame houses leveled off foundations and swept away; automobile-sized missiles fly through the air in excess of 100 meters (109 yards); trees debarked; incredible phenomena will occur.

Source: National Oceanic and Atmospheric Administration Storm Prediction Center

Table 4-34: Enhanced Fujita Scale

Enhanced Fujita (EF) Scale	Enhanced Fujita Scale Wind Estimate (mph)
EF0	65-85
EF1	86-110
EF2	111-135
EF3	136-165
EF4	166-200
EF5	Over 200

Source: National Oceanic and Atmospheric Administration Storm Prediction Center

Historically, the highest-rated tornado occurring in the county was rated EF-0 on the Enhanced Fujita Scale. Nationally, 80% of tornadoes are rated EF0 or EF1. According to the records of the NCDC, the highest rated tornadoes occurring in New Mexico were rated F3. This provides a historical basis to suggest a likely maximum tornado strength in the county, though rare atmospheric conditions could produce a tornado that could rate up to an EF5.

Previous Occurrences

The National Climatic Data Center tracks previous occurrences for a variety of hazards nationally. The NCDC tracks wind incidents that fall under a variety of categories. For the purposes of assessing Taos County’s experience with high wind incidents, data was reviewed for the following

categories: High Wind, Strong Wind and Thunderstorm Wind. NCDC criteria for recording incidents for each category is outlined below.

High Wind: Any incidents of high winds that are sustained non-convective winds of 40 mph or greater lasting for 1 hour or longer or winds (sustained or gusts) of 58 mph for any duration (or otherwise locally/regionally defined), on a widespread or localized basis. In some mountainous areas, the above numerical values are 50 mph and 75 mph, respectively.

NCDC records for high winds are available from 2010 onward. There have been 21 incidents of high winds meeting the NCDC criteria in this time. The vast majority of these caused no reported damage. The average speed of a high wind gust in Taos County was 64 mph, with a maximum reported wind gust clocking in 82 mph on both November 5th, 2011 and March 22nd, 2016; neither wind gust caused any recorded impacts.

Table 4-35: High Wind Incidents 2010-2016

Date	Time	Incident	Wind Speed (MPH)	Direct Fatalities	Direct Injuries	Property Damage	Crop Damage
4/29/2010	0849	High Wind	41	0	0	0	0
2/19/2011	1730	High Wind	59	0	0	0	0
11/5/2011	0835	High Wind	82	0	0	0	0
1/22/2012	0645	High Wind	63	0	0	0	0
2/28/2012	0700	High Wind	66	0	0	0	0
2/28/2012	1445	High Wind	60	0	0	0	0
3/1/2012	1500	High Wind	64	0	0	0	0
3/18/2012	1100	High Wind	58	0	0	0	0
3/18/2012	1349	High Wind	77	0	0	0	0
12/19/2012	0500	High Wind	58	0	0	0	0
1/11/2013	0500	High Wind	79	0	0	0	0
4/14/2013	1100	High Wind	60	0	0	\$500	0
1/30/2014	1900	High Wind	61	0	0	0	0
3/30/2014	1900	High Wind	64	0	0	0	0
4/26/2014	1300	High Wind	58	0	0	0	0
12/22/2014	1600	High Wind	60	0	0	0	0
4/8/2015	1530	High Wind	58	0	0	0	0
12/22/2015	0100	High Wind	68	0	0	0	0
2/17/2016	2300	High Wind	66	0	0	0	0
3/22/2016	0600	High Wind	82	0	0	0	0
3/22/2016	1645	High Wind	63	0	0	0	0
Total:				0	0	\$500	\$0

Source: National Climatic Data Center

Thunderstorm Wind: Winds, arising from convection (occurring within 30 minutes of lightning being observed or detected), with speeds of at least 58 mph, or winds of any speed (non-severe thunderstorm winds below 57 mph) producing a fatality, injury, or damage.

The NCDC has records of thunderstorm winds in Taos County beginning in 1997; five thunderstorm wind incidents are recorded during this timeframe.

Table 4-36: Thunderstorm Wind Incidents 2010-2016

Date	Time	Incident	Wind Speed (MPH)	Direct Fatalities	Direct Injuries	Property Damage	Crop Damage
7/21/1997	1430	Thunderstorm Wind	-	0	0	\$30,000	\$0
5/22/2006	1155	Thunderstorm Wind	58	0	0	\$0	\$0
5/28/2008	1640	Thunderstorm Wind	75	0	0	\$20,000	\$0
6/13/2013	1302	Thunderstorm Wind	78	0	0	\$0	\$0
5/18/2015	2355	Thunderstorm Wind	60	0	0	\$0	\$0
Total:				0	0	\$50,000	\$0

Source: National Climatic Data Center

According to the NCDC, the average thunderstorm wind event in Taos County is caused by a 68 mph wind. It rarely causes fatalities, injuries or reportable damage. If it does cause damage, the average damage amount to property is \$10,000. No damage to crops has been recorded.

Tornado: Table 4-36 depicts the total number of tornado events reported and recorded by NCDC in Taos County. According to the NCDC, an incident will be characterized as a tornado if the type or intensity of the structural and vegetative damage and/or scarring of the ground could only have been tornadic, or if any two of the following guidelines are satisfied:

1. Fairly well-defined lateral boundaries of the damage path;
2. Evidence of cross-path wind component, e.g. trees lying 30 degrees or more to the left/right of the path axis (suggesting the presence of circulation)
3. Evidence of suction vortices, ground striations, and extreme missiles; or
4. Evidence of surface wind convergence as suggested by debris-fall pattern and distribution. In fast-moving storms, the convergence pattern may not be present and debris pattern may appear to fall in the same direction.

One tornado has been recorded in Taos County by the NCDC since 1950. It was rated EF-0 and did \$10,000 in property damage to a barn.

Table 4-37: NCDC Tornadoes in Taos County 1950 to 2016

Date	Location	Time	Magnitude	Injuries	Fatalities	Property Damage	Crop Damage
07/13/2009	Unincorporated Taos County	16:20	EF-0	0	0	\$10,000	-
Total				0	36	\$10,000	-

Source: NCDC

Probability of Future Occurrences

Some level of high winds are an annual occurrence in the county. Damaging winds occur less frequently which equates to a Likely probability rating.

Vulnerability Assessment

People

People directly exposed to high winds or tornadoes should seek shelter immediately, as winds can pick up debris and injure the public. According to the NCDC database, no injuries or fatalities have been recorded as a direct result of high winds in Taos County. Between 1996 and 2016, the State of New Mexico saw multiple fatalities and injuries directly caused by high winds. Causes included being struck by debris, automobile accidents and semi rollovers.

Some segments of the population are especially vulnerable to the indirect impacts of damaging wind, particularly the loss of electrical power. The highest risk demographic is to first responders who are dealing with emergency situations resulting from the windstorm. Those working or recreating outdoors can be susceptible to injury from wind borne debris.

As a group, the elderly or disabled, especially those with home health care services rely heavily on an uninterrupted source of electricity. Resident populations in nursing homes, Community Based Residential Facilities, or other special needs housing may also be vulnerable if wind-caused electrical outages are prolonged. Without a back-up power source, rural residents and agricultural operations reliant on electricity for heating, cooling, and water supplies are also especially vulnerable to power outages.

Economy

Winds typically don't have long-term impacts on the economy. Both winds and tornadoes may impact exposed critical infrastructure such as power lines; depending on the impact and the function, this could cause a short-term economic disruption.

Built Environment

In terms of property losses, the actual damages will depend on the building density in the impacted area; this is highly variable across the County. A severe thunderstorm with high winds, or a tornado

path in an older residential area with older homes, large trees, and overhead utility lines will have a significantly greater impact with the same storm in a new development with lower building density, modern constructed buildings, small or newly planted trees, and underground power lines. Recorded property damage suffered in Taos includes roofs being torn off or damaged, barns being blown over, tree damage and car damage from knocked-over trees. Based on NCDC a total of \$500 in property damage occurred over a 6 year period in Taos County. That averages to less than \$100 a year in damages for the entire county. It is highly likely that NCDC does not capture all wind losses and this is a noted data limitation.

In terms of crop losses, the actual damages that occur will depend on the type of crop and the growth stage of the plants. A wind storm in a rural area in the early spring when the plants are just emerging will have much less of an impact than a storm of the same intensity occurring later in the growing season when the plants are more susceptible to damage and when there is no time to replant if the crop is a total loss. The NCDC has not recorded any crop losses due to winds or tornadoes since 1950.

Critical Infrastructure

Because of the unpredictability of high wind or tornado paths, most critical infrastructure that is above ground is equally exposed to the hazard. Power lines, communications networks, and other above-ground infrastructure are vulnerable to the effects of windstorms both directly and indirectly. The HMPC noted that power poles are typically replaced with better ones when they get knocked down.

The wind itself may damage the infrastructure, or the wind may damage tree branches and throw other debris into the air, which may cause secondary damage to buildings and critical facilities or capabilities. Occasionally tree limbs on powerline cause outages in the County.

Emergency response vehicles with high profiles may be more exposed to high winds, which may hinder response times. In addition, wind may exacerbate dangerous conditions, such as fires, making response more difficult and dangerous. Due to the random nature of this hazard, a more specific risk assessment was not conducted for this plan.

Natural Environment

High winds can have many impacts on the environment, including erosion, flattening of trees and plants. Winds can cause wildfire to spread at a faster rate and exacerbate the impacts of winter storms and severe cold. Wind impacts to the environment are an ongoing natural process.

Future Development

Future growth is gradual and is not expected to increase exposure or vulnerability to this hazard. If new construction activity picks up these sites can be particularly vulnerable to windstorms. Wind-borne construction materials can become hazards to life and property. New development should be able to withstand or at least resist wind damage if properly constructed.

Risk Summary

- Southern Taos County is located in a ‘Special Wind Region’ as defined by FEMA (increased potential for strong downslope winds because of its topography) due to its topography and geographic setting;
- Canyon areas and mountain towns such as Red River and Taos Ski Valley are more susceptible to high wind.
- High winds can cause occasional impacts to power line infrastructure or knock trees and tree limbs onto them. This situation can also spark wildfires.
- High wind rarely causes fatalities, injuries or reportable building damage.
- Historical tornadoes have been rare and low-rated; the only tornado recorded by NCDC was ranked EF-0.
- High winds can exacerbate other hazards including winter weather and wildfire and contribute to dust storms during drought.

Table 4-38: High Winds Hazard Risk Summary

Jurisdiction	Geographic Extent	Probability of Future Occurrence	Potential Magnitude/Severity	Overall Significance
Taos Ski Valley	Extensive	Highly Likely	Critical	High
Town of Taos	Extensive	Likely	Limited	Medium
Village of Red River	Limited	Likely	Limited	Medium
Village of Questa	Extensive	Likely	Limited	Medium
Taos County	Significant	Likely	Limited	Medium

Landslides and Rockfall

Hazard/Problem Description

Landslides

Landslides are the downward and outward movement of loose material on slopes. Landslides include a wide range of ground movement, such as rock falls, deep failure of slopes, and shallow debris flows. Although gravity acting on and over steepened slopes is the primary reason for a landslide, landslides are often prompted by the occurrence of other disasters such as seismic activity or heavy rain fall. Landslides may be triggered by both natural and human-induced changes in the environment that result in slope instability.

A landslide is the breaking away and gravity-driven downward movement of hill slope materials, which can travel at speeds ranging from fractions of an inch per year to tens of miles per hour depending on the slope steepness and water content of the rock/soil mass. Landslides range from the size of an automobile to a mile or more in length and width and, due to their sheer weight and

speed, can cause serious damage and loss of life. Their secondary effects can be far-reaching; such as catastrophic flooding due to the sudden release of river water impounded by landslide debris or slope failure of an earthen dam.

Debris flows are a mixture of rock fragments, soil, vegetation, water and, in some cases, entrained air that flows downhill as a fluid. Debris flows can range in consistency from that of freshly mixed concrete to running water. Debris flows can be further classified as mudflows and earth flows depending on the ratio of water to soil and rock debris. Lahars are a special form of debris flow caused by volcanic eruptions.

Landslide and debris flow problems can be caused by land mismanagement, particularly in mountain, canyon, and coastal regions. In areas burned by forest and brush fires, a lower threshold of precipitation may initiate landslides and debris flows. Land-use zoning, professional inspections, drainage and erosion control, and proper design can minimize many landslide and debris flow problems.

The susceptibility of an area to landslides depends on many variables including steepness of slope, type of slope material, structure and physical properties of materials, water content, amount of vegetation, and proximity to areas undergoing rapid erosion or changes caused by human activities. These activities include mining, construction, and changes to surface drainage areas.

Landslides often accompany other natural hazard events, such as floods, wildfires, or earthquakes. Landslides can occur slowly or very suddenly and can damage and destroy structures, roads, utilities, and forested areas, and can cause injuries and death.

Rockfall

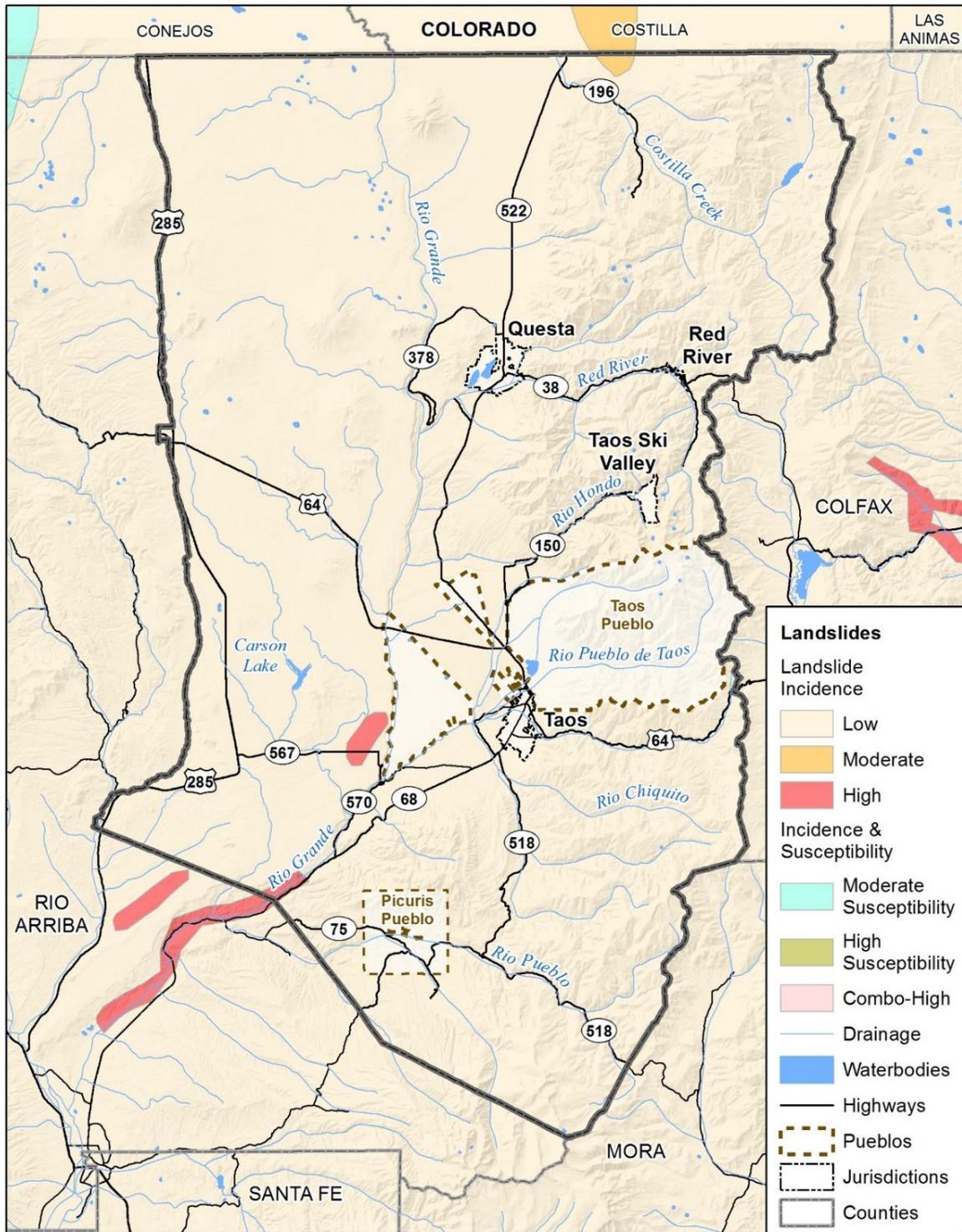
Rockfall is the falling of a detached mass of rock from a cliff or down a very steep slope. Weathering and decomposition of geological materials produce conditions to support rockfall. Rockfalls are caused by the loss of support from underneath through erosion or triggered by ice wedging, root growth, or ground shaking. Changes to an area or slope such as cutting and filling activities can also increase the risk of a rockfall. Rocks in a rockfall can be of any dimension, from the size of baseballs to houses. Rockfall occurs most frequently in mountains or other steep areas during the early spring when there is abundant moisture and repeated freezing and thawing. Rockfalls are a serious geological hazard that can threaten human life, impact transportation corridors and communication systems and result in other property damage.

Location

The USGS National Atlas landslide map is the best available landslide hazard mapping data for the County.

Figure 4-23 shows the Rio Grande River valley as being potentially susceptible to landslides. The HMPC noted the John Dunn Bridge Rd (BLM property) as a susceptible location. The switchbacks over the Rio Grande on the west side of the river have rockfall hazards. The bridge has scour issues as well. There are two debris flow hazard areas that cross Highway 38 near mile markers 8 and 9 in the Red River valley (see photos below). These areas are periodically cleared of debris by the NMDOT. The committee also noted Penasco, Highway 150 up to Taos Ski Valley, and bridges in Pileria as areas with high landslide hazards. In the 1990s a landslide broke a gas line above ground in the Rio Grande Valley.

Figure 4-23: Landslide Susceptibility in Taos County



Map compiled 10/2016; intended for planning purposes only.
 Data Source: Taos County, RGIS, HSIP Freedom 2015, USGS

0 5 10 Miles





Photos of debris flow hazard area on mile marker 8 on Hwy 38 near Red River (Brislaw)

Landslides directly damage buildings in two general ways: 1) disruption of structural foundations caused by differential movement and deformation of the ground upon which the structure sits; and 2) physical impact of debris moving down slope against structures located in the travel path. In addition to buildings, other types of engineered structures are vulnerable to the impact and ground deformation caused by slope failures, particularly utilities and transportation infrastructure. These belong to a category of structures called lifelines. Transmission lines for land-line telephone, electric power, gas, water, sewage, roadways, etc., are necessary for today's functioning society. They present a particular vulnerability because of their geographic extent and susceptibility to physical distress. Lifelines are generally linear structures that, because of their geographic extent, have a greater opportunity for impact by ground failure.

Extent

Landslides can be classified using the Alexander Scale, shown in Table 4-39. The scale is predicated on landslide debris impacting the built environment. Based on the history the highest extent level expected within the planning area is level 5 (Very Serious), but this is likely to be isolated to limited areas in Taos Ski Valley. Landslides do not directly impact Questa, the Town of Taos. Red River can have indirect impacts from highway infrastructure in the Red River Valley.

Table 4-39: Alexander Landslide Scale

Level	Damage	Description
0	None	Building is intact
1	Negligible	Hairline cracks in walls or structural members; no distortion of structure or detachment of external architectural details
2	Light	Buildings continue to be habitable; repair not urgent. Settlement of foundations, distortion of structure, and inclination of walls are not sufficient to compromise overall stability.
3	Moderate	Walls out of perpendicular by one or two degrees, or there has been substantial cracking in structural members, or the foundations have settled during differential subsidence of at least 6 inches; building requires evacuation and rapid attention to ensure its continued life.
4	Serious	Walls out of perpendicular by several degrees; open cracks in walls; fracture of structural members; fragmentation of masonry; differential settlement of at least 10 inches compromising foundations; floors may be inclined by one or two degrees or ruined by heave. Internal partition walls will need to be replaced; door and window frames are too distorted to use; occupants must be evacuated and major repairs carried out.
5	Very Serious	Walls out of plumb by five or six degrees; structure grossly distorted; differential settlement has seriously cracked floors and walls or caused major rotation or slewing of the building [wooden buildings are detached completely from their foundations]. Partition walls and brick infill will have at least partly collapsed; roofs may have partially collapsed; outhouses, porches, and patios may have been damaged more seriously than the principal structure itself. Occupants will need to be re-housed on a long-term basis, and rehabilitation of the building will probably not be feasible.
6	Partial Collapse	Requires immediate evacuation of the occupants and the cordoning off of the site to prevent accidents with falling masonry.
7	Total Collapse	Requires clearance of the site.

Source: 2013 New Mexico State Hazard Mitigation Plan

Previous Occurrences

New Mexico Geology is a quarterly, peer-reviewed journal with research papers and short articles primarily for professional geologists. An article titled Geologic Hazards in New Mexico was released in 1992 and provides examples of previous landslides in Taos County. “A large landslide, apparently reactivated by seepage from abandoned mine workings, affected a number of homes near the Taos ski valley in 1979.”

Other areas of concern included SR 38 to Red River and all state highways including 64 E and 76. The NM DOT has done rockfall mitigation in the Rio Grande Valley along Highway 68.

The HMPC noted mudslides as an issue on the highway in the Taos Canyon and at the end of Santa Barbara Canyon. Taos Canyon had 6 to 7 areas impacted by debris flows in 2015. SR 550 was rendered out of service from a landslide 20-30 years ago that remains closed to this day. The committee referenced a bus crash related to a rock fall that caused 2 fatalities around the same time.

Probability of Future Occurrences

Likely - Based on historical data, and given the sloped terrain along many of the roads within the Taos area, landslide and rockfall hazards are likely to continue.

Vulnerability Assessment

People

People are susceptible if they are caught in a landslide or rockfall; falling debris can cause injury or death. There is also a danger to drivers operating vehicles, as rocks and debris can strike vehicles passing through the hazard area or cause dangerous shifts in roadways

Economy

Economic impacts would likely center around transportation routes temporarily closed by debris flow, rockfall or slide activity. These roads may be used to transport goods across the county. Depending on the amount of damage, the road may simply need to be cleaned off, or may need some level of reconstruction, but little evidence of slide risk was noted in this assessment.

Built Environment

According to the USGS landslide map, while the county has areas susceptible to landslides and rockfall, the greatest risk occurs in locations without much development.

Based on information provided by the HMPC and data from the USGS, there is some limited exposure to landslides in the County. Areas of high landslide incidence include the high elevation areas in the Sangre de Cristo Mountains such as Taos Ski Valley, Wheeler Peak, and roads between Red River and Questa.

Critical Infrastructure

Active landslide deposits in the Rio Grande Gorge immediately southwest of Pilar are causing stress to a steel 8-inch natural gas utility pipeline (Taos Mainline) and could cause natural gas service to be interrupted to the communities of Taos, Questa, Taos County and Red River. Historically, the existing line ruptured in 1986 and caused service outages for 3 days. Sections of the line in this area have had to be replaced in 1995 and 1996 due to stress on the line. To provide more secure and safe service to the communities, New Mexico Gas Company (NMGC) has identified a need to replace the approximately 6-mile section of the existing pipeline with a 12-inch steel pipeline located outside the landslide area. NMGC has filed an application and associated Plan of Development for a right-of-way (ROW) with the Bureau of Land Management (BLM) Taos Field Office for the relocation of a 6-mile portion of the Taos Mainline natural gas utility pipeline near Pilar, New Mexico. Relocation is anticipated to occur in fall of 2017.

Natural Environment

Landslides and rockfalls have minimal impacts to the natural environment; these impacts would be confined to a small area. There is a slight chance that a rockfall or landslide could affect one of

the rivers running through the hazard impact area, possibly causing blockages and water backup from temporary landslide dams.

Future Development

There is no anticipated future development in landslide/rockfall areas, but lack of adequate hazard mapping should be taken into consideration.

Risk Summary

- A large landslide, apparently reactivated by seepage from abandoned mine workings, affected a number of homes near the Taos ski valley in 1979.
- Other areas of concern included SR 38 to Red River and all state highways including 64 E and 76. The DOT has done rockfall mitigation in the Rio Grande Valley along Highway 68.
- The HMPC noted mudslides as an issue on the highway in the Taos Canyon and at the end of Santa Barbara Canyon. Taos Canyon had a half dozen areas impacted by debris flows in 2015.
- Landslides have affected gas transmission lines and efforts are underway to mitigate risk to the Taos Main Line.

Table 4-40 Landslides and Rockfall Hazard Risk Summary

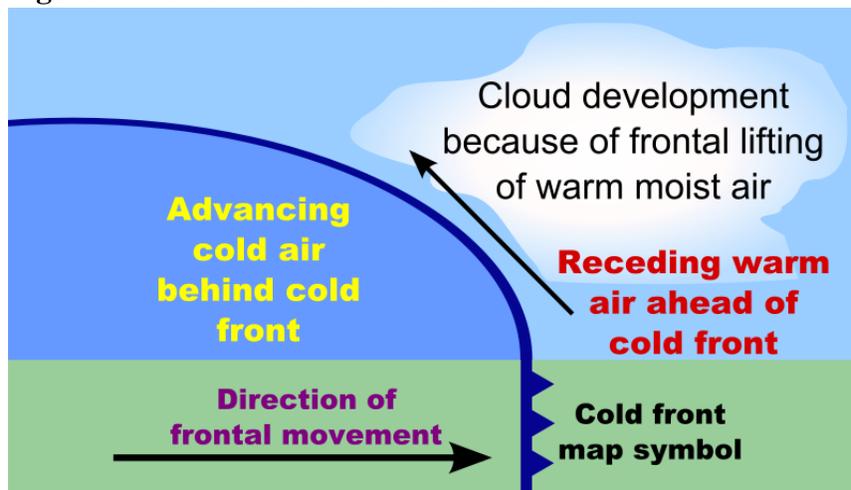
Jurisdiction	Geographic Extent	Probability of Future Occurrence	Potential Magnitude/Severity	Overall Significance
Taos Ski Valley	Extensive	Highly Likely	Critical	High
Town of Taos	Limited	Unlikely	Negligible	Low
Village of Red River	Significant	Likely	Limited	Medium
Village of Questa	Negligible	Occasional	Negligible	Low
Taos County	Limited	Likely	Limited	Medium

Severe Thunderstorms (includes Monsoon, Hail and Lightning)

Hazard/Problem Description

Severe thunderstorms in the Taos County Planning Area are generally characterized by heavy rain, often accompanied by strong winds and sometimes lightning and hail. Approximately 10 percent of the thunderstorms that occur each year in the United States are classified as severe. According to the National Weather Service, a thunderstorm is classified as severe when it contains one or more of the following phenomena: hail that is three-quarters of an inch or greater, winds in excess of 50 knots (57.5 mph), or a tornado. In an average year, Taos County experiences 51 thunderstorm days, usually occurring between April and September. This chapter profiles several sub-hazards that can impact Taos County in different ways – monsoon, hail and lightning. Thunderstorm and tornadic winds are addressed in the High Winds profile. Flooding as a result of the monsoon is addressed in the Flood profile.

Figure 4-24: Formation of a Thunderstorm



Source: NASA. http://rst.gsfc.nasa.gov/Sect14/Sect14_1c.html

Monsoon

Thunderstorms result from the rapid upward movement of warm, moist air. They can occur inside warm, moist air masses and at fronts. As the warm, moist air moves upward, it cools, condenses, and forms cumulonimbus clouds that can reach heights of greater than 35,000 feet. As the rising air reaches its dew point, water droplets and ice form and begin falling the long distance through the clouds towards earth's surface. As the droplets fall, they collide with other droplets and become larger. The falling droplets create a downdraft of air that spreads out at Earth's surface and causes strong winds associated with thunderstorms.

The term monsoon generally refers to a seasonal wind shift, or monsoon circulation, that produces a radical change in moisture conditions in a given area or region. In the southwestern United States, this shift in wind direction is primarily the result of two meteorological changes:

- The movement northward from winter to summer of the huge upper level subtropical high pressure system, specifically known as the Bermuda High, and
- The intense heating of the Mojave Desert creates rising air and surface low pressure, called a thermal low.

These two features then combine to create a strong southerly flow that helps bring in moisture (i.e., from the Gulf of Mexico, the Gulf of California, and the Pacific Ocean) that lifts and forms thunderstorms when it encounters the higher terrain of New Mexico, including Taos County.

Hail

Hail is formed when water droplets freeze and thaw as they are thrown high into the upper atmosphere by the violent internal forces of thunderstorms. Hail is sometimes associated with severe storms within the Taos County Planning Area. Hailstones are usually less than two inches

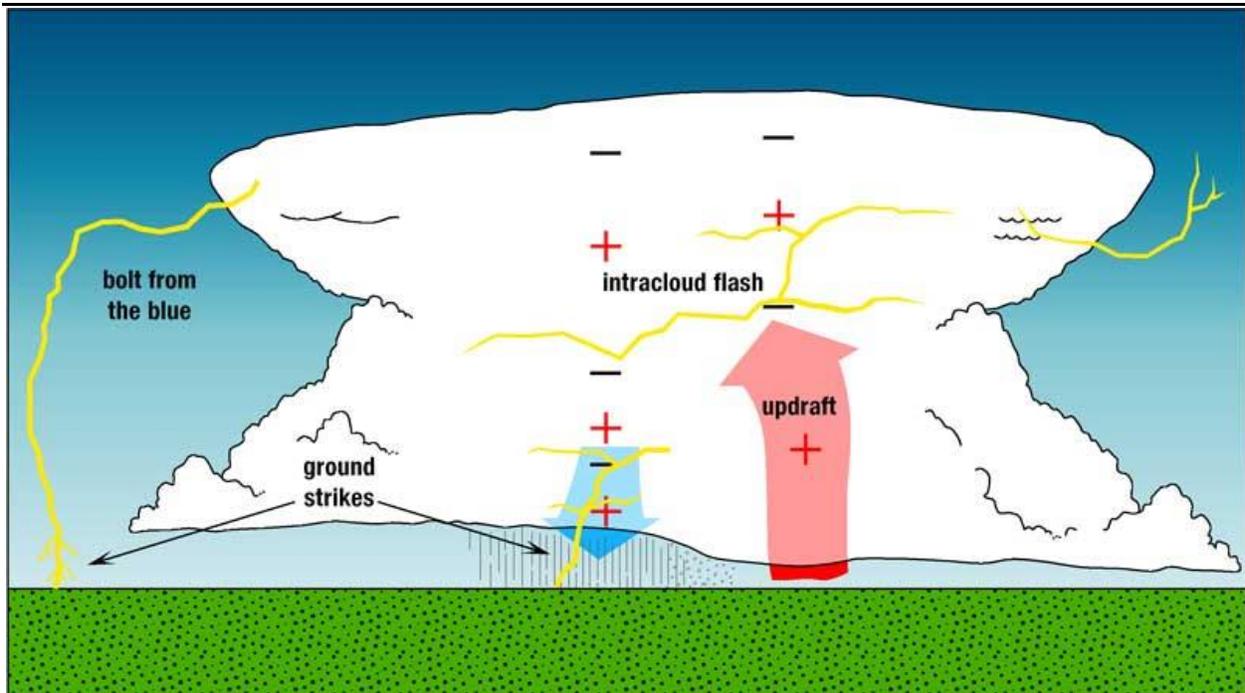
in diameter and can fall at speeds of 120 miles per hour (mph). Severe hailstorms can be quite destructive, causing damage to roofs, buildings, automobiles, vegetation, and crops.

Lightning

Lightning is defined as any and all of the various forms of visible electrical discharge caused by thunderstorms. Thunderstorms and lightning are usually (but not always) accompanied by rain. Cloud-to-ground lightning can kill or injure people by direct or indirect means. Objects can be struck directly, which may result in an explosion, burn, or total destruction. Damage may also be indirect, when the current passes through or near an object, which generally results in less damage.

Cloud-to-ground lightning is the most damaging and dangerous type of lightning. Most flashes originate near the lower-negative charge center and deliver negative charge to earth. However, a large minority of flashes carry positive charge to earth. These positive flashes often occur during the dissipating stage of a thunderstorm's life. Positive flashes are also more common as a percentage of total ground strikes during the winter months. This type of lightning is particularly dangerous for several reasons. It frequently strikes away from the rain core, either ahead or behind the thunderstorm. It can strike as far as 5 or 10 miles from the storm in areas that most people do not consider to be a threat. Positive lightning also has a longer duration, so fires are more easily ignited. And, when positive lightning strikes, it usually carries a high peak electrical current, potentially resulting in greater damage.

Figure 4-25: Cloud to Ground Lightning



Source: National Weather Service

Location

Thunderstorms are generally expansive in size. The entire county is susceptible to any of the effects of a severe thunderstorm, including monsoon, hail and lightning. The typical thunderstorm is 15 miles in diameter, and lasts 30 minutes. Thunderstorms generally move from west to east across the county.

Extent

The National Weather Service classifies hail by diameter size, and corresponding everyday objects to help relay scope and severity to the population. The table below indicates the hailstone measurements utilized by the National Weather Service.

Table 4-41: Hailstone Measurements

Average Diameter	Corresponding Household Object
.25 inch	Pea
.5 inch	Marble/Mothball
.75 inch	Dime/Penny
.875 inch	Nickel
1.0 inch	Quarter
1.5 inch	Ping-pong ball
1.75 inch	Golf-Ball
2.0 inch	Hen Egg
2.5 inch	Tennis Ball
2.75 inch	Baseball
3.00 inch	Teacup
4.00 inch	Grapefruit
4.5 inch	Softball

Source: National Weather Service

The largest hailstone recorded in Taos County had a diameter of 1.5 inches; this measurement has been recorded once in 1961. While 1.5 inches is a historical maximum size, Taos could be susceptible to larger stones that could do even more damage. The largest hailstones recorded in New Mexico had a diameter of 4.50 inches. Thus all jurisdictions within the County could experience at least 1.5 inches diameter hail; more rare events could produce larger hailstones.

Lightning is measured by the Lightning Activity Level (LAL) scale, created by the National Weather Service to define lightning activity into a specific categorical scale. The LAL is a common parameter that is part of fire weather forecasts nationwide. The LAL is reproduced below and the planning area is susceptible to all levels:

Table 4-42: Lightning Activity Level Scale

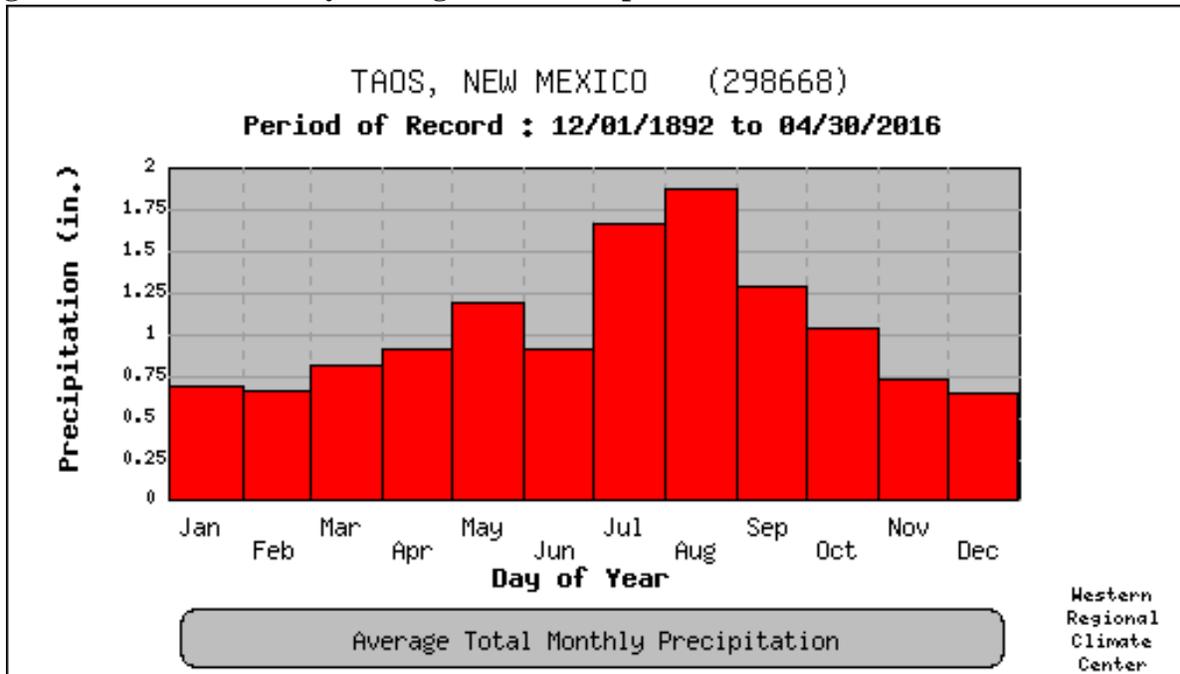
Level	Description
LAL 1	No thunderstorms
LAL 2	Isolated thunderstorms. Light rain will occasionally reach the ground. Lightning is very infrequent, 1 to 5 cloud to ground strikes in a five minute period
LAL 3	Widely scattered thunderstorms. Light to moderate rain will reach the ground. Lightning is infrequent, 6 to 10 cloud to ground strikes in a five minute period.
LAL 4	Scattered thunderstorms. Moderate rain is commonly produced. Lightning is frequent, 11 to 15 cloud to ground strikes in a five minute period.
LAL 5	Numerous thunderstorms. Rainfall is moderate to heavy. Lightning is frequent and intense, greater than 15 cloud to ground strikes in a five minute period.
LAL 6	Dry lightning (same as LAL 3 but without rain). This type of lightning has the potential for extreme fire activity and is normally highlighted in fire weather forecasts with a Red Flag warning.

Source: National Weather Service. Taos County is at risk to experience lightning in any of these categories.

Previous Occurrences

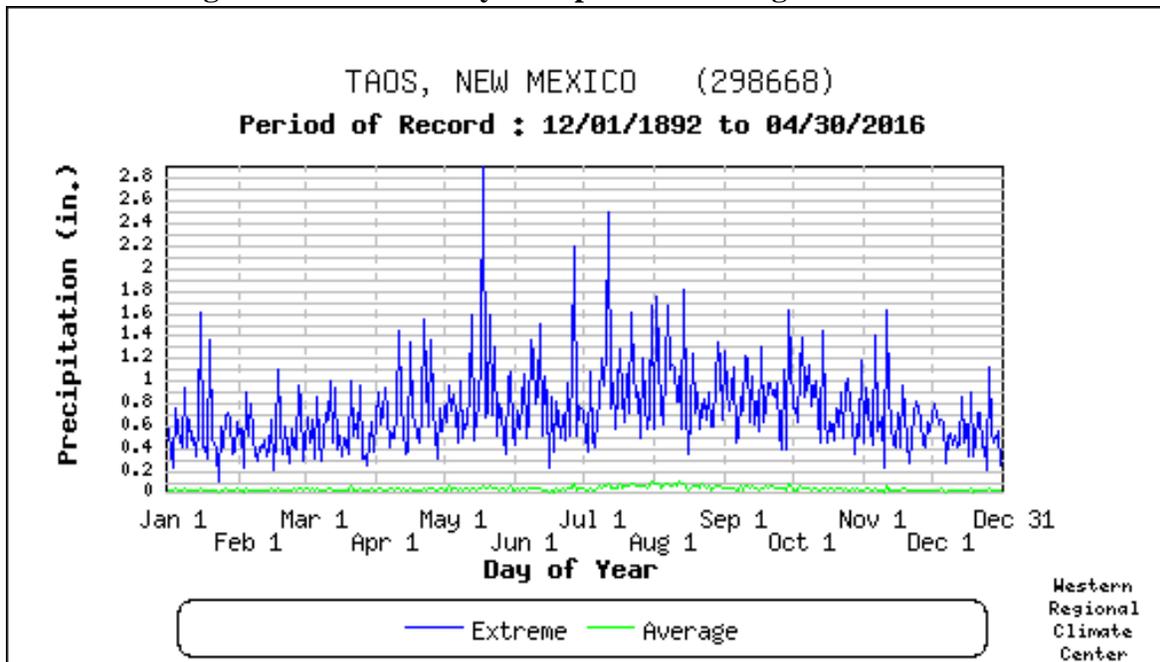
In Taos County, summer begins with warm, and often dry, conditions in June, followed by a 2-month rainy season. According to the Taos County FIS, the majority of the precipitation in the county occurs as summer thundershowers. However, the annual total fluctuates considerably from year to year and the monsoon can start as early as mid-June. Average monthly precipitation totals for Taos County are shown in Figure 4-26. Precipitation extremes for the County are shown in Figure 4-27. Many of these extremes have occurred in July but also in May and September.

Figure 4-26: Taos Monthly Average Total Precipitation



Source: Western Regional Climate Center

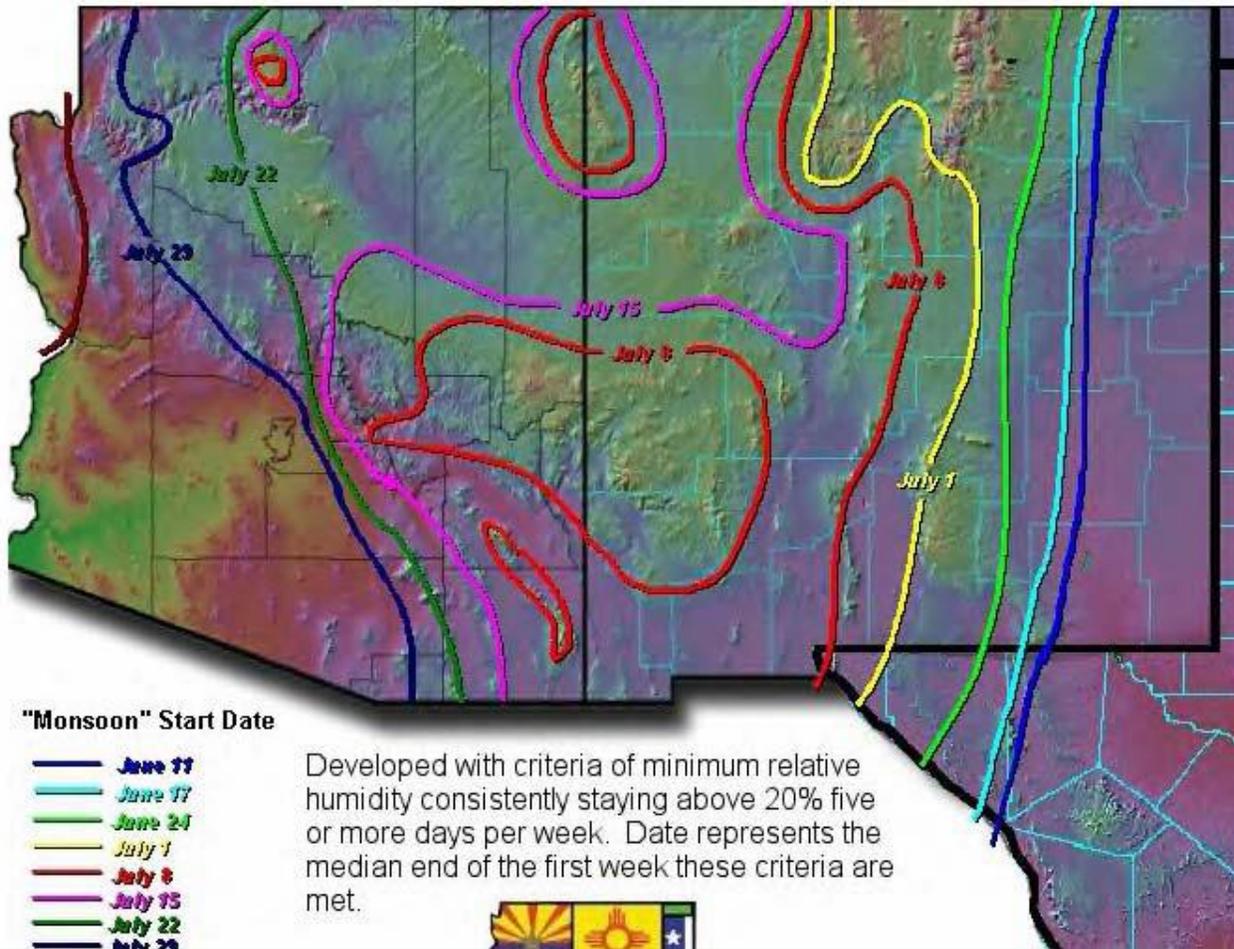
Figure 4-27: Taos Daily Precipitation Average and Extremes



Source: Western Regional Climate Center

Consistent with the monthly annual precipitation records, Figure 4-28 illustrates the typical monsoon season “start date” in New Mexico and Taos County.

Figure 4-28: Monsoon Start Dates in New Mexico



Source: Southwest Area Predictive Services

Heavy rain, monsoons, thunderstorms, lightning, and hail in Taos County are many in number and occur on a yearly basis. The NCDC has not recorded a heavy rain incident between 1960 and 2015.

The NCDC recorded 13 hail incidents between 1960 and 2015, though there were no damages to crops or property, nor were there any direct injuries or fatalities. Of the 13 incidents, 11 recorded hail with a diameter under one inch, and 2 recorded hail with a diameter larger than one inch. Hail with a diameter over two inches was not recorded. The average diameter of hailstone was .88", with the highest recorded hailstorm diameter being 1.5".

Lightning in Taos County occurs on a yearly basis. NCDC reported one lightning event in Red River causing one injury on September 14, 1999.

Probability of Future Occurrences

Small-scale lightning, hail and localized heavy rains are an annual occurrence in Taos County. In the 55 year timespan of NCDC-recorded data, Taos County experienced a recorded impact related

to severe weather once every 4.25 years, which equates to a Likely probability rating for damaging events.

Vulnerability Assessment

People

Exposure is the greatest danger to people from severe thunderstorms. People can be hit by lightning, pelted by hail, and caught in rising waters. Serious injury and loss of human life is rarely associated with hailstorms.

While national data shows that lightning causes more injuries and deaths than any other natural hazard except extreme heat, there doesn't seem to be any trend in the data to indicate that one segment of the population is at a disproportionately high risk of being directly affected. Anyone who is outside during a thunderstorm is at risk of being struck by lightning. Aspects of the population who rely on constant, uninterrupted electrical supplies may have a greater, indirect vulnerability to lightning. As a group, the elderly or disabled, especially those with home health care services relying on rely heavily on an uninterrupted source of electricity. Resident populations in nursing homes, residential facilities, or other special needs housing may also be vulnerable if electrical outages are prolonged. If they do not have a back-up power source, rural residents and agricultural operations reliant on electricity for heating, cooling, and water supplies are also especially vulnerable to power outages.

Economy

Economic impact of severe thunderstorms are typically short term. Lightning can cause power outages and fires. Hail can destroy exposed property; an example is car lots, where entire inventories can be damaged. Generally, long-term economic impacts center more around hazards that cascade from a severe thunderstorm, including wildfires ignited by lightning, and flooding.

Built Environment

The Taos County Planning Area experiences a rainy season in the summer, often referred to as the “monsoon” season. These summer storms can include significant precipitation, winds, and hail. According to historical hazard data, severe weather is an annual occurrence in Taos County. Damage and disaster declarations related to severe weather have occurred and will continue to occur in the future. Heavy rain and thunderstorms are the most frequent type of severe weather occurrences in the County. Utility outages, downing of trees, debris blocking streets and damage to property can be a direct result of these storm events. Given the nature of these types of storms, the entire County is potentially at risk.

The NCDC records no property or crop damage caused by the 13 recorded hail incidents in Taos County. However, hail is one of the costliest hazards in the United States, causing over \$1 billion in damage to crops and property each year.

Based on historic information, the primary effect of these storms has not resulted in significant injury or damages to people and property, or the losses are typically covered by insurance. It is the secondary hazards caused by weather, such as floods, that have had the greatest impact on the County. The Taos County HMPC noted that power outages often occur in Taos Ski Valley.

Critical Infrastructure

Because of the unpredictability of severe thunderstorm strength and path, most critical infrastructure that is above ground is equally exposed to the storm's impacts. Due to the random nature of these hazards, a more specific risk assessment was not conducted for this plan.

Natural Environment

Severe thunderstorms are a natural environmental process. Environmental impacts include the sparking of potentially destructive wildfires by lightning and localized flattening of plants by hail. As a natural process, the impacts of most severe thunderstorms by themselves are part of the overall natural cycle and do not cause long-term consequential damage.

Future Development

New critical facilities, such as communication towers should be built to withstand heavy rain, monsoon, and hail damage. Future development projects should consider severe weather hazards at the planning, engineering and architectural design stage with the goal of reducing vulnerability. Stormwater master planning and site review should be considered for all new development. Thus development trends in the County are not expected to increase overall vulnerability to the hazard, but population growth will increase potential exposure to hazards such as lightning.

Risk Summary

- The largest hailstones recorded in Taos County had a diameter of 1.5 inches; this measurement has been recorded once in 1961
- Most jurisdictions are equally exposed the severe thunderstorm hazard, though Taos Ski Valley has greater risk due to its higher elevation setting
- The county had no recorded monsoons between 1960 and 2015
- The county had one recorded lightning strike between 1960 and 2015

Table 4-43 Severe Thunderstorms Hazard Risk Summary

Jurisdiction	Geographic Extent	Probability of Future Occurrence	Potential Magnitude/Severity	Overall Significance
Taos Ski Valley	Extensive	Highly Likely	Critical	High
Town of Taos	Limited	Occasional	Limited	Medium
Village of Red River	Extensive	Likely	Negligible	Low
Village of Questa	Extensive	Occasional	Negligible	Medium
Taos County	Extensive	Likely	Limited	Medium

Wildfire

Hazard/Problem Description

A wildfire is a fire burning uncontrolled on lands covered wholly or in part by timber, brush, grass, grain or other inflammable vegetation. There are several types of wildfires. Prescribed fires are planned fires ignited by land managers to accomplish specific natural resource improvement objectives. Fires that occur from natural causes, such as lightning, that are then used to achieve management purposes under carefully controlled conditions with minimal suppression costs are known as wildland fire use (WFU). Wildfires are unwanted and unplanned fires that result from natural ignition, unauthorized human-caused fire, escaped WFU, or escaped prescribed fire. A wildland-urban interface (WUI) fire is a wildfire occurring in areas where structures and other human developments meet or intermingle with wildland vegetation-fuels.

The Taos County Community Wildfire Protection Plan defines the WUI as the area or zone where structures and other human development meet and intermingle with undeveloped wildland or vegetative fuels. WUI fires are a specific concern because they directly pose risks to human lives, property, structures, and critical infrastructure more so than the other types of wildland fires. Even relatively small acreage fires can result in disastrous damages. In the WUI, structures and vegetation are sufficiently close so that a wildland fire could spread to structures or a structure fire could ignite vegetation.

Generally, there are three major factors that sustain wildfires and allow for predictions of a given area’s potential to burn. These factors include fuel, topography, and weather.

Fuel

Fuel is the material that feeds a fire and is a key factor in wildfire behavior. Fuel is generally classified by type and by volume. Fuel sources are diverse and include everything from dead tree needles and leaves, twigs, and branches to dead standing trees, live trees, brush, and cured grasses. Also to be considered as a fuel source, are man-made structures and other associated combustibles. The type of prevalent fuel directly influences the behavior of wildfire. Light fuels such as grasses

burn quickly and serve as a catalyst for fire spread. Fuel is the only factor that is under human control.

Per the 2016 CWPP, the major vegetation types in Taos County are listed below. Each plant association type offers distinct characteristics of potential fire intensity, fire rate of spread, and probability of fire ignition.

- **Cottonwood Bosques:** Many Taos County communities were historically established along streams for the purposes of irrigation diversions and proximity to water. A bosque can be found growing along the riparian flood plains of streams, rivers, and acequia corridors. Most bosques in Taos County have not been managed and are heavily overstocked with living vegetation mixed with dead vegetation. Siberian elms, Russian olives, and Rocky Mountain junipers provide fuel ladders. The removal of dead wood is critical to reducing fire hazard.
- **Shrublands and Grasslands:** Various species of herbaceous and woody plants are the dominant vegetation types across the majority of the Taos Plateau, as well as being adjacent to an intermixed with the Bosque, Pinon, and Ponderosa Forest Types. The grasslands of the area have economic significance for ranchers. Certain grazing practices, along with historic fire suppression policies, are the main factors influencing the increase of Sagebrush and the encroachment of Pinon/Juniper into the grassland community. Historically, frequent fires carried by grasses kept Sagebrush densities low and promoted cool - season bunch grasses. Grassland management with mowing equipment or periodic grazing is an essential component of fire safety around structures and communities. Ignitions in grasslands, particularly during drought conditions, threaten homes and act as a fuse to ignite nearby overstocked forests.
- **Piñon-Juniper.** The piñon-juniper (PJ) woodland is among the most heavily overstocked and highest risk areas in the county due to elevated stand densities combined with the concentration of homes in surrounding areas. Pinon-juniper is the dominant fuel type associated with residential portions of Taos County, thereby representing a high risk to life and property. Treatment efforts are directed toward establishing a relatively open savannah landscape, with the goal of creating between 10 and 20 feet of open space between tree canopies. Trimming the lower branches of these trees can reduce their fuel ladder potential. More aggressive trimming and removal strategies are called for in the creation of “defensible space” around residential structures and the fortification of fuel breaks along existing roads.
- **Ponderosa Pine:** Ponderosa Pine forests are a dominant feature of the Sangre de Cristo Mountains. The composition of this type of forest will vary based on elevation and available soil moisture. In lower elevations, ponderosa pines will typically have pinyon-juniper and oak species in their understory. These particular habitats are very important for wildlife, including, wild turkey, black bear, and passerine birds. Historically, these forests would have had open canopies with a dense grass dominated herbaceous layer, maintained by more frequent fires and the natural fire resilience of the ponderosa pines. Treatment strategies that open the canopy, eliminate fuel ladders, and re-introduce more frequent fires can move these forests toward health and resilience.
- **Mixed Conifer:** With increases in elevation, Ponderosa Pine forests transition into Mixed

Conifer forests. The species composition is variable, influenced by elevation, topographic position, and slope exposure. Relatively *dry* stands are generally dominated by a mix of ponderosa pine, Douglas-fir, white fir, and quacking aspen. At higher elevations these stands can be found on ridgetops and south and west slope exposures. Relatively *wet* Mixed Conifer stands will have a greater abundance of subalpine fir as well as Engelmann and blue spruce in the canopy. There is a mixed severity fire regime for these forests, with some evidence of frequent low-severity fires and smaller areas of infrequent, high-severity crown fires.

- **Spruce-Fir:** This type of forest is typically located in more remote and steep-sloped areas that rise up to timber line and that can be found on all the higher elevations in Taos County. Stand composition is dominated by Engelmann or blue spruce, often with subalpine or corkbark fir and some quacking aspen. Due to average annual precipitation approaching 40 inches, the trees exist in contiguous stands that predispose this forest type to high-severity stand replacement fires that are believed to have occurred every one to three centuries. In general, treatments may be recommended to protect settlements and essential watersheds. Heavy thinning that would include mature timber removal (and usage) may have to be done in stages since spruce and fir are susceptible to wind-throw (sudden canopy opening may result in trees being blown over).
- **Quaking Aspen:** Stands of aspen often occur in small to large patches where crown fire has burned a mixed conifer forest, or where other stand-replacing disturbances have occurred. Aspen forest structure depends on successional age and stand-initiating disturbances. Aspen stands are less flammable than a similar mixed conifer counterpart with lower fire frequency and severity. For this reason, it is beneficial to promote the health of existing aspen stands by reducing conifer incursion through clearing, opening up the stand to light. This strategy can help recreate a forest mosaic that is less contiguous and therefore less likely to carry crown fire over large regions.

Topography

An area's terrain and land slopes affect its susceptibility to wildfire spread. Fire intensities and rates of spread increase as slope increases due to the tendency of heat from a fire to rise via convection. The natural arrangement of vegetation throughout a hillside can also contribute to increased fire activity on slopes. Terrain factors influencing fire behavior cannot be modified. Fires often run rapidly up steep slopes and are often pushed up or down canyons by daily cycles of wind direction.

Weather

Weather components such as temperature, relative humidity, wind, and lightning also affect the potential for wildfire. High temperatures and low relative humidity dry out the fuels that feed wildfire, creating a situation where fuel will more readily ignite and burn more intensely.

Differences in topographical characteristics throughout the State of New Mexico and Taos County contribute to the divergent climatic regimes within the planning area. The state generally has a mild, arid to semi-arid continental climate characterized by abundant sunshine, light total precipitation, low relative humidity, and relatively large annual and diurnal temperature ranges.

July is generally the warmest month. The mean annual precipitation within Taos County is typically light. July and August mark the onset of the region's monsoonal weather patterns and are typically the hottest and wettest months of the year, accounting for 30% to 40% of the state's annual precipitation as a whole. These storms also generate frequent lightning activity, which may result in multiple fire ignitions from each storm.

Winter is the driest season in New Mexico. Overall climate changes in the State of New Mexico consist of cyclical drought/wet year patterns.

Location

The 2016 CWPP identifies risk areas for wildfire, based on fire environment and defensibility. Figure 4-29 shows the generalized WUI areas on a map of the county. The crown fire map identifies areas of the county that could be susceptible to intense crown fires. A third map shows the potential for post-fire erosion. Fires in these areas could have significant impacts on the watershed and be prone to mud and debris flows.

The Taos County CWPP identifies and rates the risk to all 65 named Taos County communities, primarily by prioritizing fuel loads to be reduced. These communities include Red River, Questa, Taos Ski Valley and Town of Taos. Many Taos County communities are surrounded or bordered by wildlands, whether Carson National Forest lands or BLM managed properties. Many structures are at the edge of the fields and the forests. A hazardous fuel load can exist both on private and federal lands bordering the community. Firefighting resources, and homeowners who may be attempting to evacuate, are often faced with daunting single access challenges, with ingress and egress through limited roads in narrow mountain canyons.

The Taos County CWPP classifies hazard level to its various WUI communities with a hazard rating scale, based on a hazard and risk assessment. In 2016, the update conformed with the accepted NM State Communities at Risk Rating System which rates communities as High, Medium or Low. Seventeen of the 65 communities are rated as High. Communities with High ratings include: Upper Red River Valley, Village of Questa, Lama, Valdez, Gallina Canyon, Tres Ritos/Angostora, Sipapu, Pot Creek, Taos Canyon/Rio Fernando, Shady Brook, Llano Largo, El Salto, Tierra Blanca, Llano Quemado, Llano San Juan, Kiowa Village, and the Village of Taos Ski Valley.

The HMPC also noted the following areas as high risk WUI areas:

- State Road 150 through Valdez to Taos Ski Valley;
- Gallina Canyon, Valdez area;
- State Road 518 Talpa area to county line;
- State Road 38 MM2 to county line;
- US Hwy 64 East, Taos Canyon to county line;
- Bosque area along Red River near Old Red River Road
- Latir Wilderness Area

- Flag Mountain
- State Road 68 Horseshoe area to Velarde;
- Cabresto Canyon

Figure 4-29: Taos County Wildland-Urban Interface

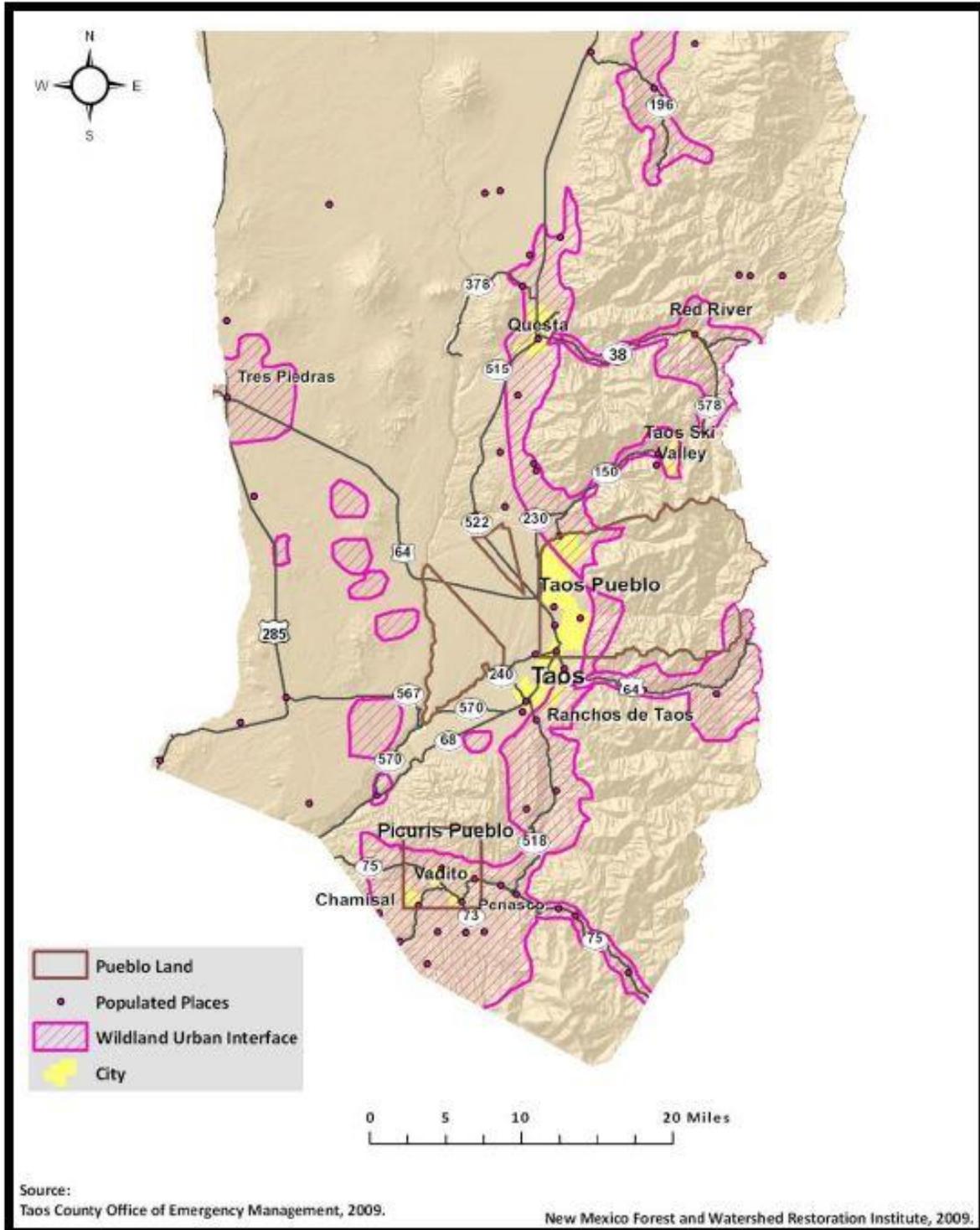


Figure 4-30: Taos County Wildfire Crown Fire Map

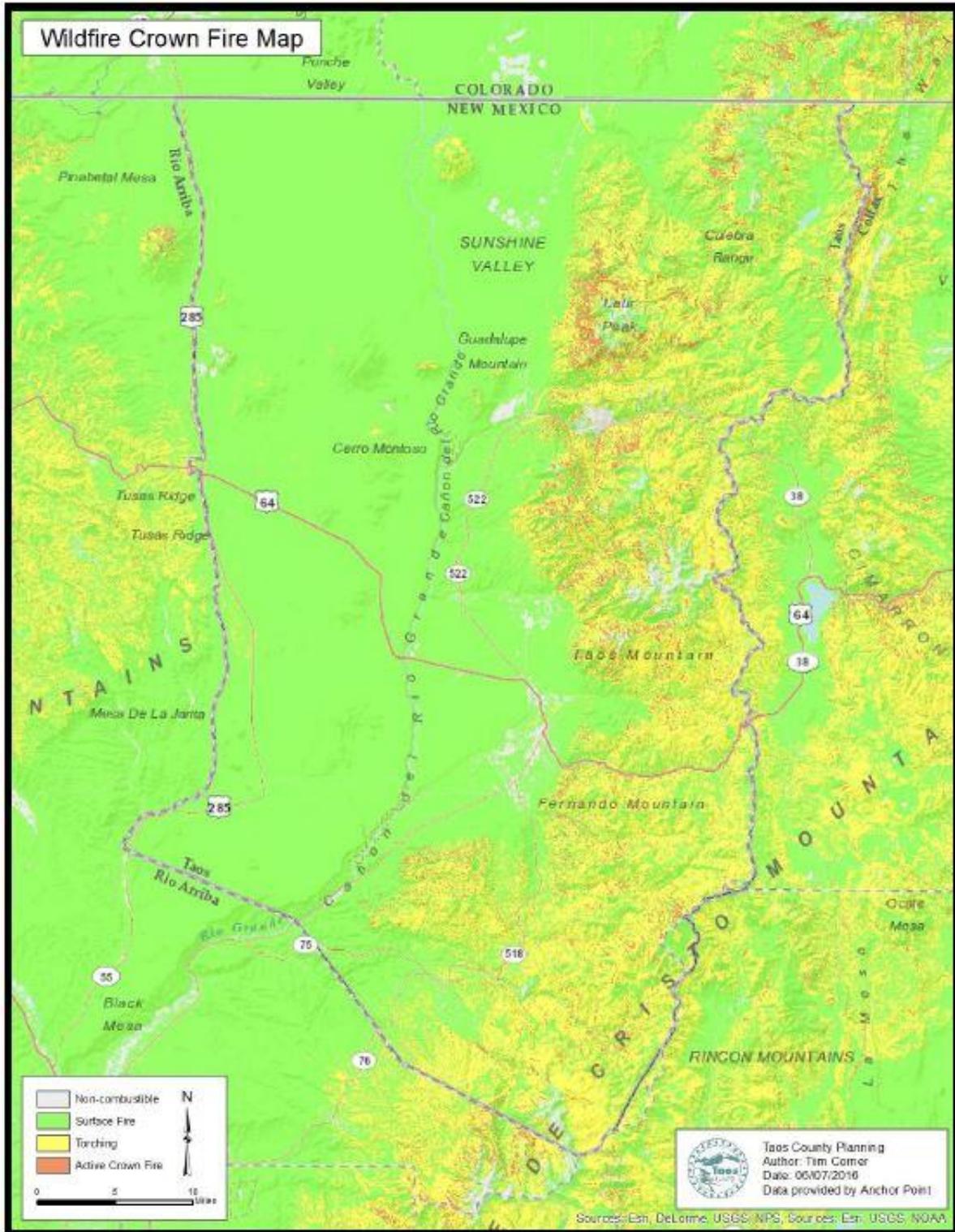
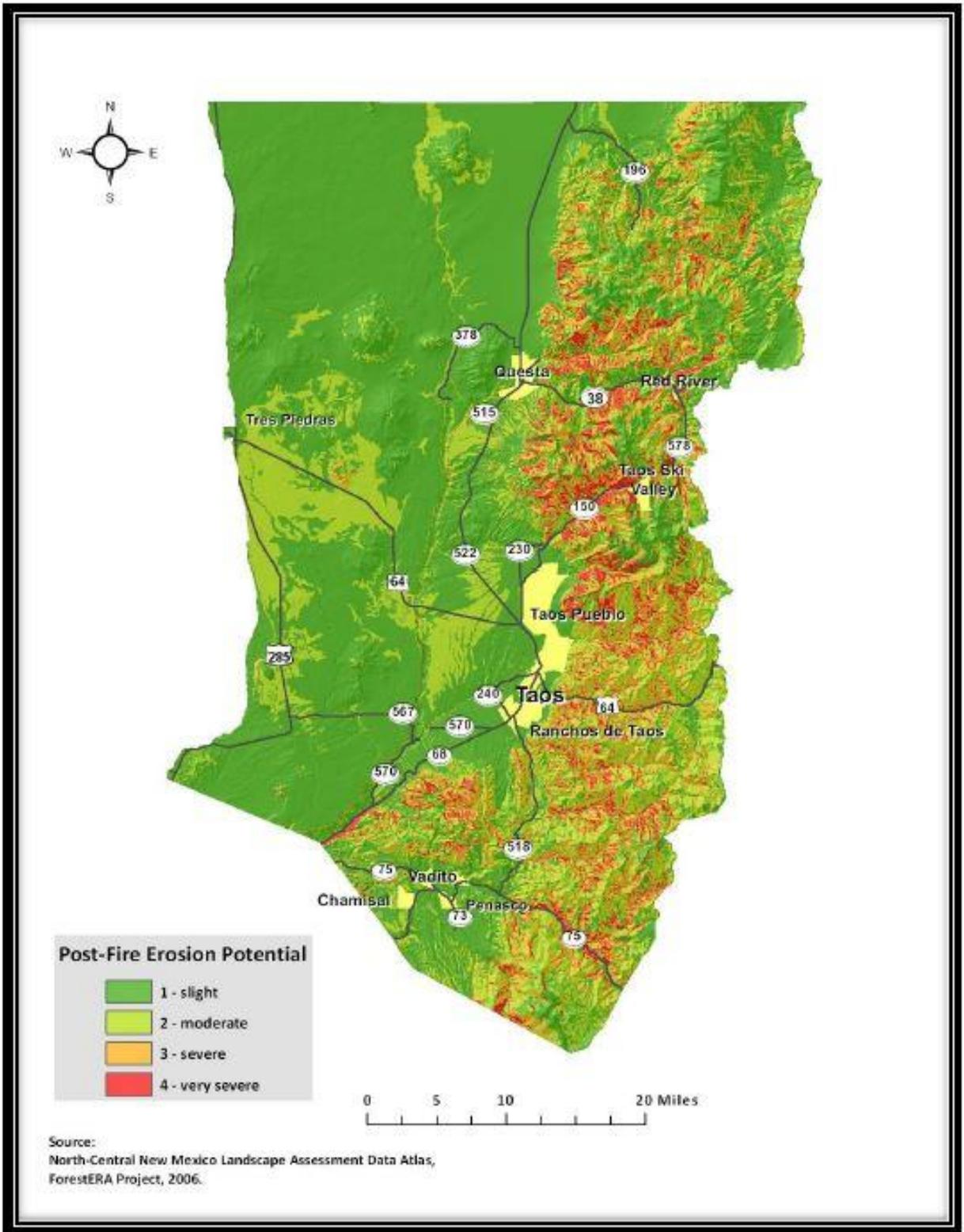


Figure 4-31: Taos County Post-Fire Erosion Potential



Extent

As a measure of extent the County has experienced three fires over 1,000 acres since 1980, therefore it is reasonable to expect that large scale wildfire could impact the County in the future. As further analyzed in the Vulnerability Assessment, the hazard extent varies but is greatest in Red River and Taos Ski Valley. Crown fire potential shown on the map in Figure 4-32 is also an indication of extent. There is a great risk of devastating wildfires in Taos County, in part due to decades of suppressed timber harvesting activities and fire suppression policies. Forests have been transformed during the past century due to land use, forest management practices, and climate. Today the forests are more vulnerable to insect and disease outbreaks, severe fires, and adversely affected biological, cultural and economic values. Fuel loads have grown progressively and communities have grown in the WUI. All of this could result in fires that can devastate property, damage watersheds, and result in injuries and loss of life.

Previous Occurrences

There have been numerous wildland fires within Taos County and vicinity. The Federal Wildland Fire Occurrence database, maintained by the USGS and other agencies, includes perimeter and point GIS layers for fires on public lands throughout the United States. The data includes fires dating back to 1980. The Bureau of Land Management, and US Forest Service reports include fires of 10 acres and greater. The database is limited to fires on federal lands. Some fires may be missing altogether or have missing or incorrect attribute data. Some fires may be missing because historical records were lost or damaged, fires were too small for the minimum cutoffs, documentation was inadequate, or fire perimeters have not yet been incorporated into the database. Also, agencies are at different stages of participation. For these reasons, the data should be used cautiously for statistical or analytical purposes.

The data provides a reasonable view of the spatial distribution of past large fires in the County. Using GIS, fire perimeters that intersect Taos County were extracted and are listed in Table 4-44. There are 17 fires recorded in this database for Taos County that exceeded 100 acres. Each of them was tracked by the National Fire Database; this database was last updated in 2014. The table lists each fire's name, start date and acres burned. The map that follows from the CWPP illustrates the point location for wildfire ignitions in Taos County since 1970 (50 acres or more) and their physical relationship to communities.

Table 4-44: Taos County Fire History – Fires Over 100 Acres since 1980

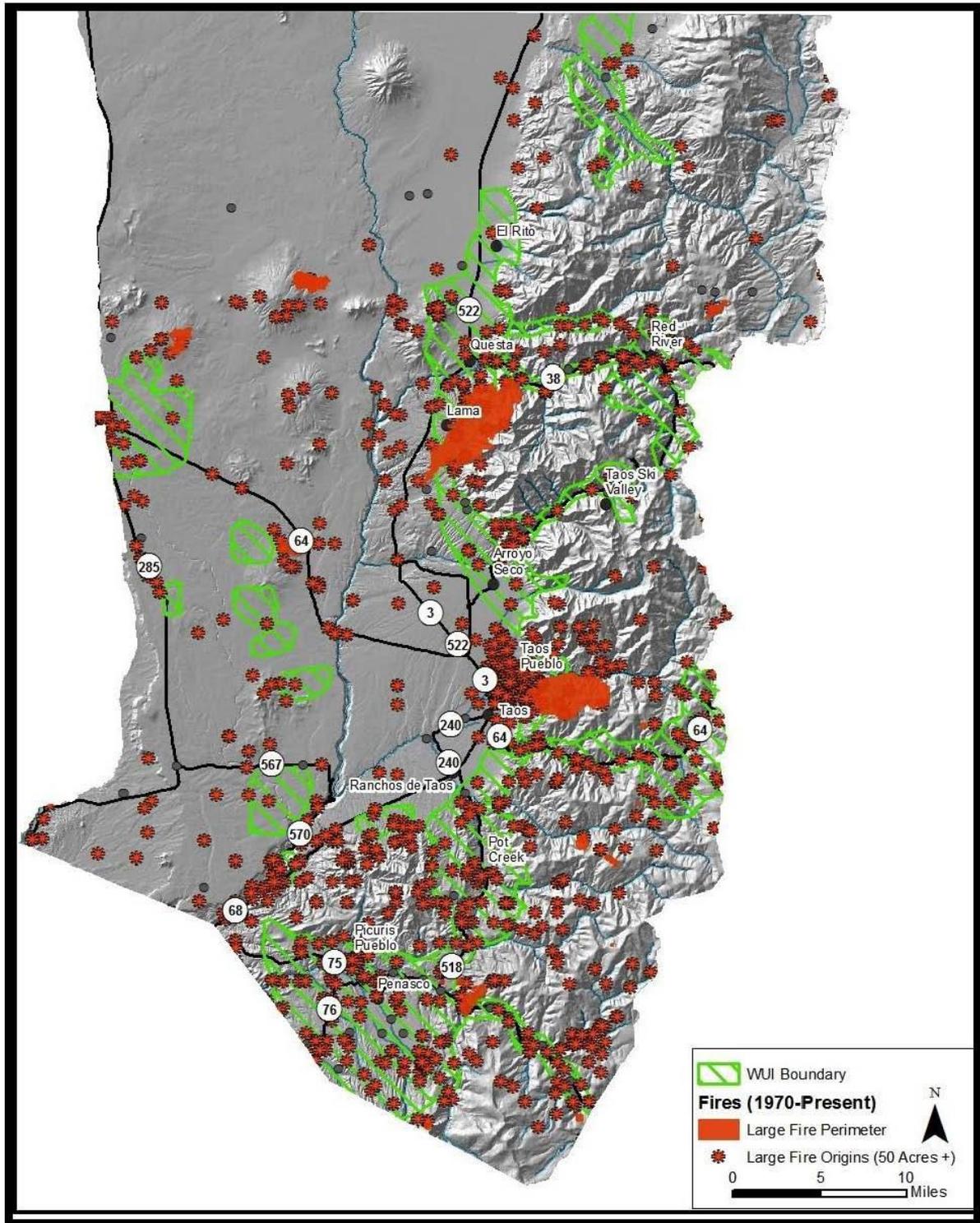
Fire Name	Start Date	Acres Burned
Unknown	1991-05-12	260
Dry Creek	1994-08-13	250
Vadito	1995	165
VQ	1995-11-13	190
Hondo	1996-05-05	7,525
Copper Hill	2000	400
Pot Mountain	2000-06-12	1,010
Chthinning	2001	550
Encebado	2003	5,373
Osha Park	2005-07-07	160
Double D	2007-06-25	458
Ojito	2010-08-23	270
Osha	2011-06-01	720
Cerro Del A	2012-07-17	675
Midnight	2012-10-23	363

Source: CWPP; Federal Fire Occurrence database

The Hondo/Lama Wildfire ignited on Cinco de Mayo 1996 in a trash barrel on private lands in San Cristobal. At the time it had the highest recorded rate of spread in the Pinyon/Juniper forest type. The fire completely consumed approximately 7,500 forested acres within 36 hours of ignition. The fire took about a month to fully contain and cost more than \$3 million for suppression. It destroyed 22 homes and other structures in the community of Lama and seriously threatened the Village of Questa. The post burn conditions impacted the spring box water collection source at the Lama Foundation and compromised Lama’s acequia system with siltation from post burn erosion.

On July 4th, 2003, a single lightning strike ignited the Taos Pueblo Encebado Wildfire that burned for 11 days and consumed over 5,400 acres. Considerable post-burn efforts were made to stabilize mountain soils, including aerial seeding and contour falling (cutting trees to fall across the slope to catch debris flows and retain soil). Nonetheless, summer rainstorms filled the retention ponds that were constructed to catch the ash and debris flow and overflowed onto the eastern side of the Pueblo. Another local and more recent wildfire of note was the Osha Fire that started near the community of Sipapu on June 1, 2011 and burned a total of 720 acres. This fire started when a tree fell onto a power line.

Figure 4-32: Taos County Fire History 1970-2016



Probability of Future Occurrences

Fire conditions arise from a combination of high temperatures, low moisture content in the air and fuel, accumulation of vegetation, and high winds. From approximately April to October of each year, Taos County faces a wildfire threat, but fires can occur at any time of the year. Generally, the worst fires occur from April to July of each year, before monsoon rains temper the risk during hotter, drier months. Wildfires will continue to occur on an annual basis in the County. The HMPC noted that there are typically about three wildland fires a year. This results in a **highly likely** rating of future occurrence. The municipalities have a statistically lower chance of a wildfire affecting them and thus have an occasional rating in the risk summary.

Vulnerability Assessment

People

The most exposed population are those living in the wildland-urban interface (WUI) zones, where residential properties are directly intruding into traditional wildland areas. The exposure of the population in these zones increases with the exposure of the corresponding residential property, examined in the section below. Other exposed groups include children, the elderly, or those with breathing conditions who may be exposed to high levels of smoke. Populations living in long term care facilities or other skilled care facilities face additional exposures because of increased evacuation times and the potential that the population may be required to shelter in place. The table below provides a vulnerability analysis on population at risk to wildfire. Population estimates were derived by applying an average household size estimate for the County (2.45 persons per household) multiplied by the number of residential structures. Note that in Red River and Taos Ski Valley this can result in population estimates greater than the Census population. This is the result of a large number of second homes that may only be seasonally occupied. It is possible that some seasonal fluctuations could occur during the summer fire season. Compounding vulnerability to populations in some locations is the existence of only one route for ingress/egress, notably in Taos Ski Valley. Evacuation of elderly and disabled and medical needs population could be taxing; notification of these and low-income populations may also be challenging.

Table 4-45: Taos Countywide Wildfire Risk Analysis Summary - Population

	Unincorporated	Questa	Red River	Taos	Taos Ski Valley	Total in County
Total Population	24,905	1,770	477	5,716	69	32,937
Population At Risk Very High	147	2	5	0	2	157
% Population at Risk Very High within Jurisdiction	0.6%	0.1%	1.0%	0.0%	3.5%	0.5%
Population At Risk High	804	27	728	5	0	1563
% Population at Risk High within Jurisdiction	3.2%	1.5%	152.5%	0.1%	0.0%	4.8%
Population At Risk Medium	8,656	299	341	453	306	10,055
% Population at Risk Medium within Jurisdiction	34.8%	16.9%	71.4%	7.9%	443.8%	30.5%
Population At Risk Low	5,329	948	0	791	0	7,068
% Population at Risk Low within Jurisdiction	21.40%	53.57%	0.00%	13.84%	0.00%	21.46%

Economy

A major wildfire can cause many economic impacts, depending on the location and size of the fire. Economic impacts could include direct fire damage to buildings and facilities, with cascading impacts associated with road closures and the accumulation of fire suppression costs. Since the economy of the County and most of the municipalities relies heavily on tourism wildfires can have a significant indirect impact when tourists avoid the county during times of fire. A wildfire affecting the ski areas could have significant economic impacts to Red River and Taos Ski Valley, which would have a ripple effect elsewhere in the county.

Built Environment

Any flammable materials are vulnerable during a wildfire, including structures and personal property. The vulnerability of general property increases as the distance of the property to wildfire-prone areas decreases, and is particularly high for structures located in the WUI. These structures receive an even higher level of vulnerability if the properties surrounding them are not properly mitigated for fire. If a wildland fire were to cross completely into an urban zone, the damage could be extensive and there would likely be a higher exposure of property and homes themselves become fuel in extreme fire weather conditions.

Potential losses to Taos County’s and participating jurisdictions built environment from wildfire was analyzed by using best available wildfire risk modeling and parcel-based structure data. A National Hazard and Risk model (No-HARM) custom risk assessment, performed for the County by Anchor Point Group in 2016, was utilized as the risk layer. The county’s assessor’s database was joined to the parcel layer to show parcels with improved values greater than zero as an

indication of developed properties. The parcel layer was then converted into centroids to represent buildings for the purpose of this analysis. GIS was then used to intersect the improved parcel centroids with the No-HARM fire risk layers to identify structures within each threat types that No-HARM identifies. The three threat types are divided into the following modules of the model: Interface, Intermix, and Wildland. These are described further below.

- **Interface.** When structures and roads become the defining elements of a landscape, these areas are assigned to the interface module of No-HARM. Unlike wildland and intermix areas, structures in the interface are primarily threatened by flame impingement on one or two sides, ember cast and smoke from adjacent areas. Fuel no longer surrounds structures and, therefore, the risk to houses is very different. (Note: Individual structures are not assessed directly for flammability.)
- **Intermix.** The Intermix module is characterized by a higher density of structures, roads and other infrastructure breaking up the continuity of natural fuel on the landscape. Threats to values-at-risk in this module focus not only on fuels, but also on the complexity of suppression in this environment. Higher road densities allow better access for suppression resources, but they also introduce an element of potential confusion for access and egress. Suppression strategies in Intermix areas must account for groups of houses as opposed to single structures as might be encountered in the Wildland. Along with suppression complexities, the presence of greater numbers of people in the Intermix also can mean a higher risk of ignitions due to barbecues, fireworks, matches, etc. The Intermix module accounts for this added complexity and added built environment by adding a greater number of appropriate input data sets. The inclusion of these added input data sets in conjunction with the wildland data sets (described below) as a “baseline” threat profile, captures the threat to structures in areas represented by this fuel/structure mixture.
- **Wildland.** The Wildland module operates in areas that are best represented by relatively continuous fuel with limited presence of structures, roads and other human-caused disturbances. Relatively few people live in these areas which limits one type of ignition source (anthropogenic) but any structures that are located in these areas are surrounded by fuel. Depending on weather and topography conditions (both accounted for in No-HARM), this can make suppression difficult or impossible. Potential mitigation measures are typically focused on treatment of the vegetation immediately surrounding a structure and hardening of the structure itself. Fires occurring in the Wildland will typically burn uninterrupted until conditions are no longer favorable or until the fire moves into less volatile fuel.

Tabular results of the overlay analysis area shown in the following tables sorted by the three threat types and by jurisdiction and property type. Contents values were estimated as a percentage of building value based on their property type, using FEMA/HAZUS estimated content replacement values. This includes 100% of the structure value for non-residential structures and 50% for residential structures.

The results indicate that \$2.8 billion in property value and 10,449 structures are potentially exposed to wildland fire hazards in the county. About 90% of the structures are within the Intermix

threat type and about 89% of the total value is within the Intermix threat type. When analyzing the differences in risk among jurisdictions, the unincorporated areas account for 74% of the structures at risk and 81% of the total value at risk. The exposure of the improvements on the parcels serve as a proxy for building losses that could be anticipated. Typically a wildfire results in total loss to the structure and contents, so the analyses represent the worst case scenario losses.

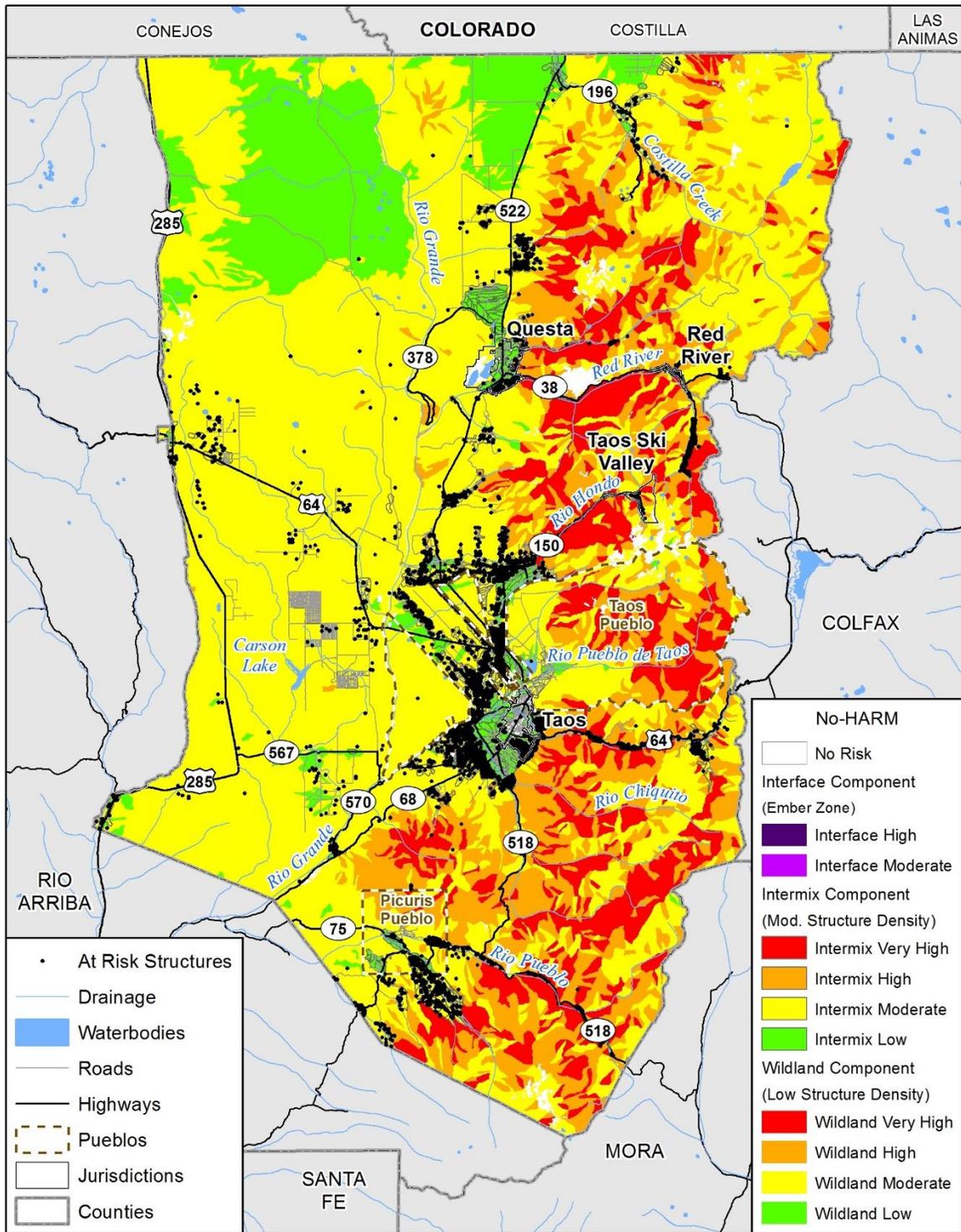
The following table summarizes the at-risk parcels compared to the total number of parcels in each jurisdiction and breaks it down by percent in a very high, high, moderate or low risk zone (either intermix, wildland or interface). Most of the developed areas of the county and jurisdictions are in a wildfire risk zone of some type; the upside is only 8% is within a high risk zone, and 1% in very high. The majority is within a moderate zone (55%). However the risk varies considerably by jurisdiction with Red River and Taos Ski Valley having considerably more risk. A Taos Ski Valley HMPC representative noted that fire risk maps do not reflect the elevated risk in the Village (areas shown as moderate should be ranked high or very high). The HMPC also noted that homeowners in Taos Ski Valley cannot get insurance due to the high wildfire risk in the municipality.

Table 4-46: Taos County and Jurisdictions Fire Risk Analysis Summary

	Unincorporated	Questa	Red River	Taos	Taos Ski Valley	Total
Total Developed Parcels*	8,336	683	613	2,525	159	12,316
Total At-Risk Parcels	7,765	683	568	743	158	9,917
% At Risk	93%	100%	93%	29%	99%	81%
% Very High	1.3%	0.1%	0.5%	-	1.3%	1%
% High	5.9%	1.9%	63.6%	0.9%	1.3%	8%
% Moderate	60%	23%	36%	37%	97%	55%
% Low	33%	75%	-	62%	-	35%

*Does not include at-risk parcels on Pueblo lands

Figure 4-34: Taos County Wildfire Risk Model with At Risk Parcel Centroids



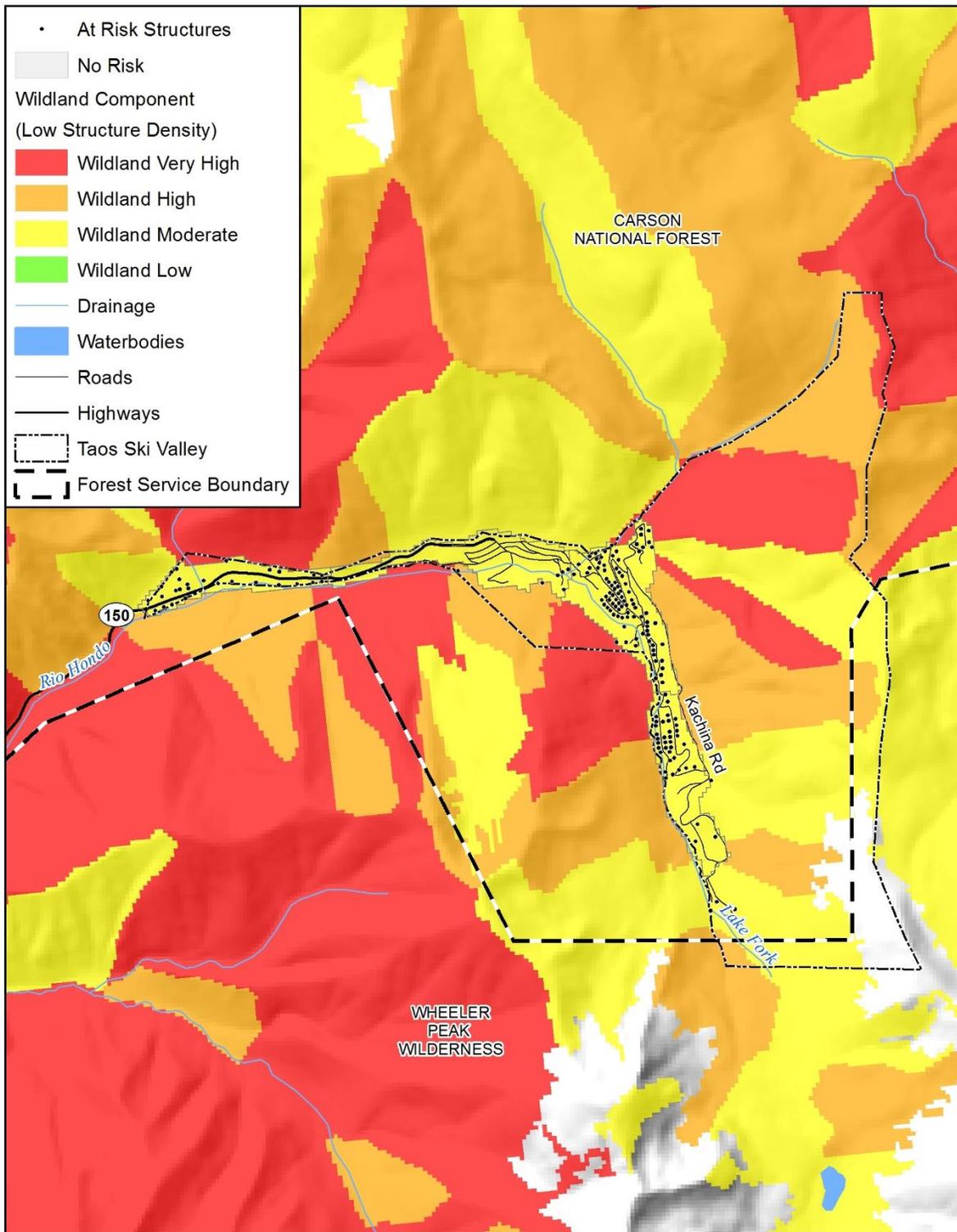
Map compiled 10/2016;
intended for planning purposes only.
Data Source: HSIP Freedom 2015, RGIS,
Taos County/Anchor Point Group 2016



Table 4-47: Taos Countywide Wildfire Risk Analysis Summary

Fire	Property Type	Improved Parcel Count	Improved Value	Content Value	Total Value
Interface High	Non-Residential	37	\$9,965,769	\$9,965,769	\$19,931,538
	Residential	96	\$16,148,117	\$8,074,059	\$24,222,176
	Total	133	\$26,113,886	\$18,039,828	\$44,153,714
Interface Moderate	Non-Residential	65	\$15,763,006	\$7,881,503	\$23,644,509
	Residential	137	\$17,771,907	\$8,885,954	\$26,657,861
	Total	202	\$33,534,913	\$16,767,457	\$50,302,370
Interface Total		335	\$59,648,799	\$34,807,284	\$94,456,083
Intermix Very High	Non-Residential	4	\$510,510	\$255,255	\$765,765
	Residential	11	\$938,336	\$469,168	\$1,407,504
	Total	15	\$1,448,846	\$724,423	\$2,173,269
Intermix High	Non-Residential	124	\$27,246,819	\$13,623,410	\$40,870,229
	Residential	487	\$82,985,685	\$41,492,843	\$124,478,528
	Total	611	\$110,232,504	\$55,116,252	\$165,348,756
Intermix Moderate	Non-Residential	1,090	\$239,397,539	\$119,698,770	\$359,096,309
	Residential	3,964	\$710,010,802	\$355,005,401	\$1,065,016,203
	Total	5,054	\$949,408,341	\$474,704,171	\$1,424,112,512
Intermix Low	Non-Residential	698	\$153,192,917	\$76,596,459	\$229,789,376
	Residential	3,123	\$450,023,376	\$225,011,688	\$675,035,064
	Total	3,821	\$603,216,293	\$301,608,147	\$904,824,440
Intermix Total		9,501	\$1,664,305,984	\$832,152,992	\$2,496,458,976
Wildland Very High	Non-Residential	36	\$37,646,600	\$18,823,300	\$56,469,900
	Residential	53	\$5,691,182	\$2,845,591	\$8,536,773
	Total	89	\$43,337,782	\$21,668,891	\$65,006,673
Wildland High	Non-Residential	43	\$7,612,212	\$3,806,106	\$11,418,318
	Residential	56	\$8,482,445	\$4,241,223	\$12,723,668
	Total	99	\$16,094,657	\$8,047,329	\$24,141,986
Wildland Moderate	Non-Residential	232	\$51,945,197	\$25,972,599	\$77,917,796
	Residential	149	\$32,851,340	\$16,425,670	\$49,277,010
	Total	381	\$84,796,537	\$42,398,269	\$127,194,806
Wildland Low	Non-Residential	31	\$1,710,362	\$855,181	\$2,565,543
	Residential	13	\$2,032,683	\$1,016,342	\$3,049,025
	Total	44	\$3,743,045	\$1,871,523	\$5,614,568
Wildland Total		613	\$147,972,021	\$73,986,011	\$221,958,032
Grand Total		10,449	\$1,871,926,804	\$940,946,287	\$2,812,873,091

Figure 4-35: Taos Ski Valley Wildfire Risk Model with At Risk Parcel Centroids

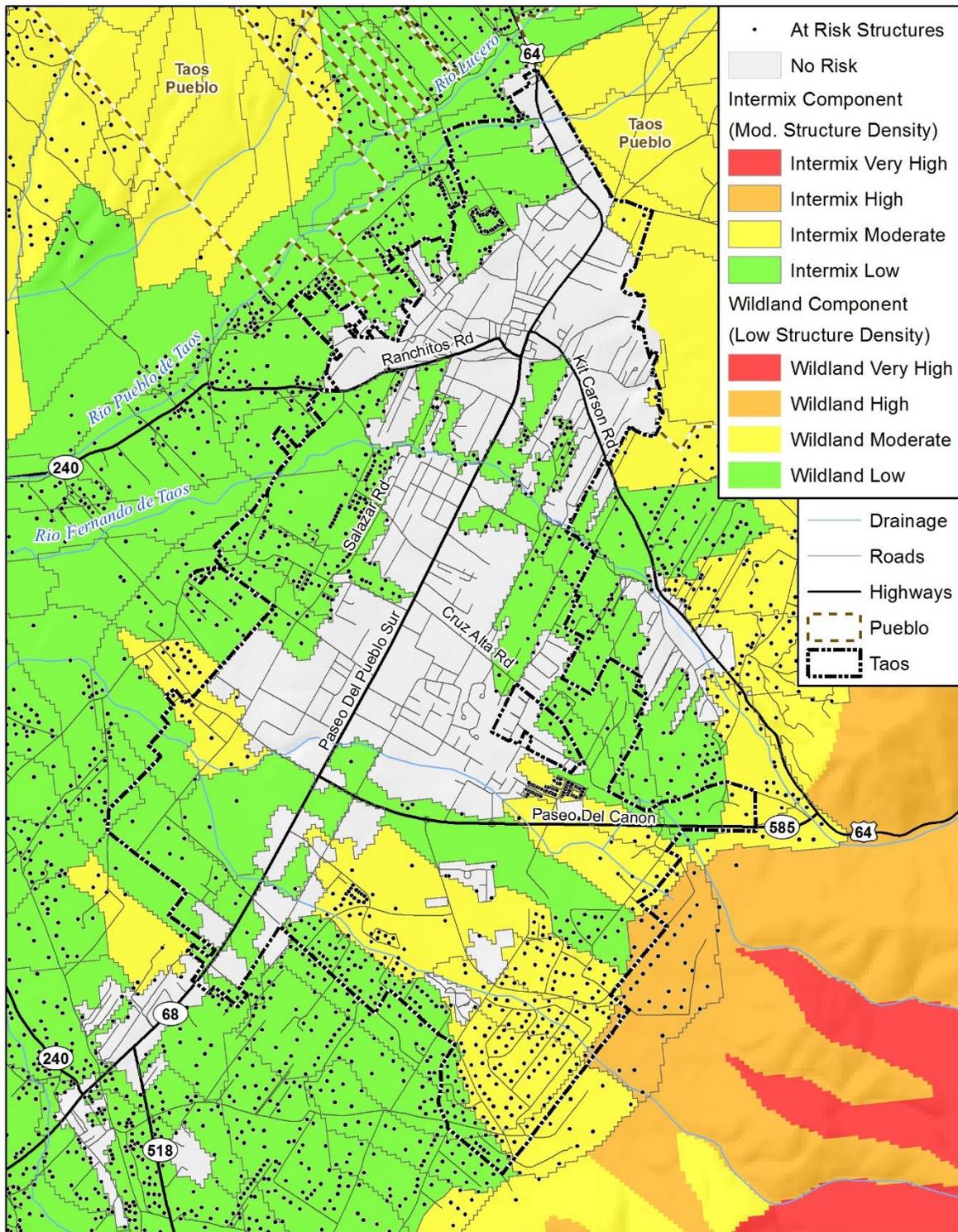



 Map compiled 10/2016;
 intended for planning purposes only.
 Data Source: HSIP Freedom 2015,
 Taos County/Anchor Point Group 2016

Table 4-48: Taos Ski Valley Fire Hazard Risk

Fire	Property Type	Improved Parcel Count	Improved Value	Content Value	Total Value
Intermix Moderate	Non-Residential	25	\$15,407,089	\$15,407,089	\$30,814,178
	Residential	125	\$35,528,097	\$17,764,049	\$53,292,146
	Total	150	\$50,935,186	\$33,171,138	\$84,106,324
Intermix Total		150	\$50,935,186	\$33,171,138	\$84,106,324
Wildland Very High	Non-Residential	1	\$32,967	\$32,967	\$65,934
	Residential	1	\$267,948	\$133,974	\$401,922
	Total	2	\$300,915	\$166,941	\$467,856
Wildland High	Non-Residential	2	\$2,339,097	\$2,339,097	\$4,678,194
	Total	2	\$2,339,097	\$2,339,097	\$4,678,194
Wildland Moderate	Non-Residential	4	\$2,459,503	\$2,459,503	\$4,919,006
	Total	4	\$2,459,503	\$2,459,503	\$4,919,006
Wildland Total		8	\$5,099,515	\$4,965,541	\$10,065,056
Grand Total		158	\$56,034,701	\$38,136,679	\$94,171,380

Figure 4-36: Town of Taos Wildfire Risk Model with At Risk Parcel Centroids



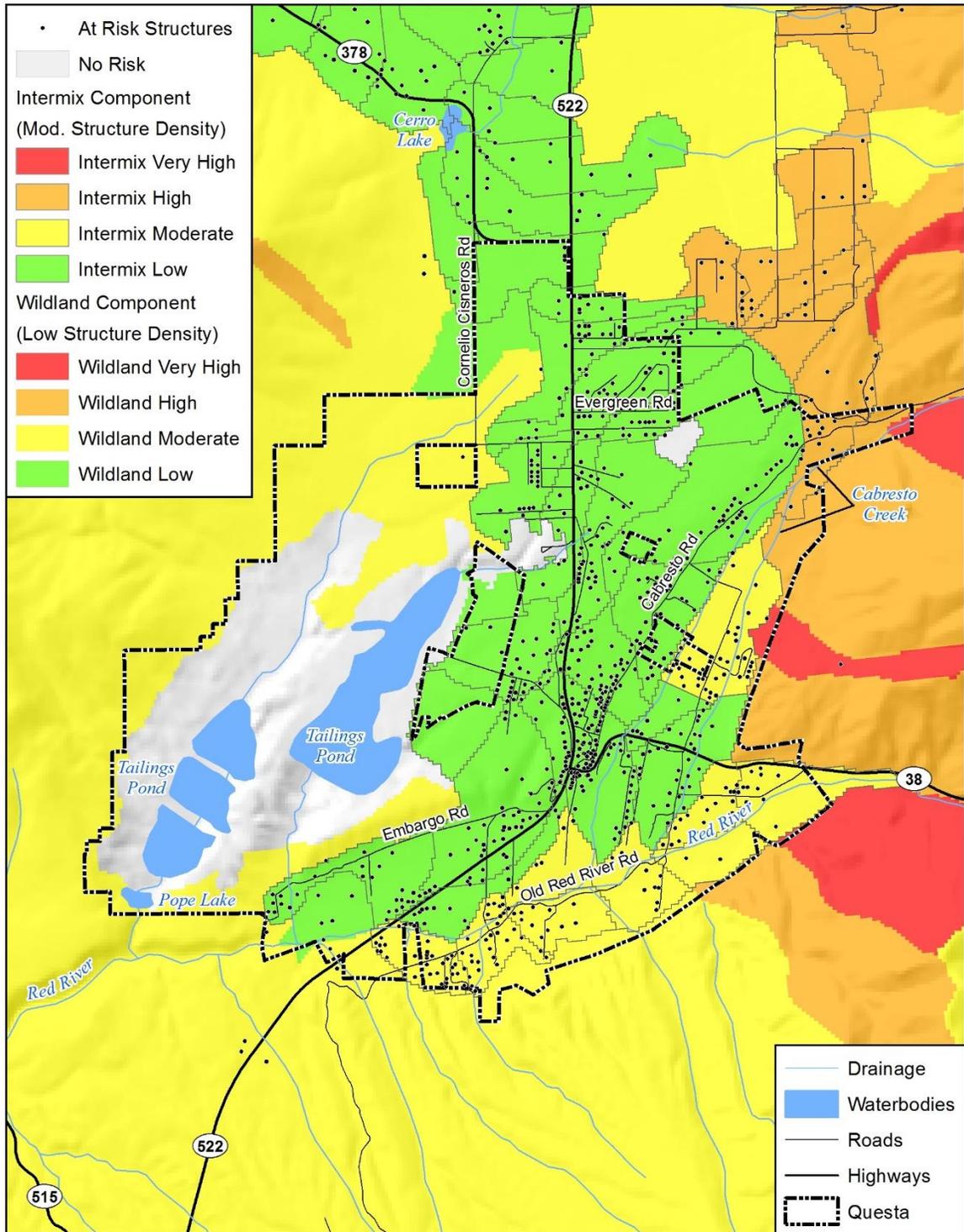

 Map compiled 10/2016;
 intended for planning purposes only.
 Data Source: HSIP Freedom 2015,
 Taos County/Anchor Point Group 2016



Table 4-49: Town of Taos Fire Hazard Risk

Fire	Property Type	Improved Parcel Count	Improved Value	Content Value	Total Value
Intermix High	Non-Residential	5	\$2,007,801	\$2,007,801	\$4,015,602
	Residential	2	\$800,972	\$400,486	\$1,201,458
	Total	7	\$2,808,773	\$2,408,287	\$5,217,060
Intermix Moderate	Non-Residential	90	\$23,359,290	\$23,359,290	\$46,718,580
	Residential	185	\$49,328,409	\$24,664,205	\$73,992,614
	Total	275	\$72,687,699	\$48,023,495	\$120,711,194
Intermix Low	Non-Residential	138	\$25,998,616	\$25,998,616	\$51,997,232
	Residential	323	\$56,393,433	\$28,196,717	\$84,590,150
	Total	461	\$82,392,049	\$54,195,333	\$136,587,382
Intermix Total		743	\$157,888,521	\$104,627,114	\$262,515,635
Grand Total		743	\$157,888,521	\$104,627,114	\$262,515,635

Figure 4-37: Village of Questa Fire Analysis Wildfire Risk Model with At Risk Parcel Centroids




 Map compiled 10/2016;
 intended for planning purposes only.
 Data Source: HSIP Freedom 2015,
 Taos County/Anchor Point Group 2016

Table 4-50: Village of Questa Fire Hazard Risk

Fire	Property Type	Improved Parcel Count	Improved Value	Content Value	Total Value
Intermix High	Non-Residential	2	\$295,131	\$295,131	\$590,262
	Residential	11	\$1,043,410	\$521,705	\$1,565,115
	Total	13	\$1,338,541	\$816,836	\$2,155,377
Intermix Moderate	Non-Residential	30	\$2,437,128	\$2,437,128	\$4,874,256
	Residential	119	\$11,854,364	\$5,927,182	\$17,781,546
	Total	149	\$14,291,492	\$8,364,310	\$22,655,802
Intermix Low	Non-Residential	128	\$34,920,307	\$34,920,307	\$69,840,614
	Residential	382	\$33,715,167	\$16,857,584	\$50,572,751
	Total	510	\$68,635,474	\$51,777,891	\$120,413,365
Intermix Total		672	\$84,265,507	\$60,959,037	\$145,224,544
Wildland Very High	Residential	1	\$87,608	\$43,804	\$131,412
	Total	1	\$87,608	\$43,804	\$131,412
Wildland Moderate	Non-Residential	2	\$646,618	\$646,618	\$1,293,236
	Residential	3	\$260,129	\$130,065	\$390,194
	Total	5	\$906,747	\$776,683	\$1,683,430
Wildland Low	Non-Residential	5	\$73,945	\$73,945	\$147,890
	Total	5	\$73,945	\$73,945	\$147,890
Wildland Total		11	\$1,068,300	\$894,432	\$1,962,732
Grand Total		683	\$85,333,807	\$61,853,468	\$147,187,275

Figure 4-38: Village of Red River Wildfire Risk Model with At Risk Parcel Centroids

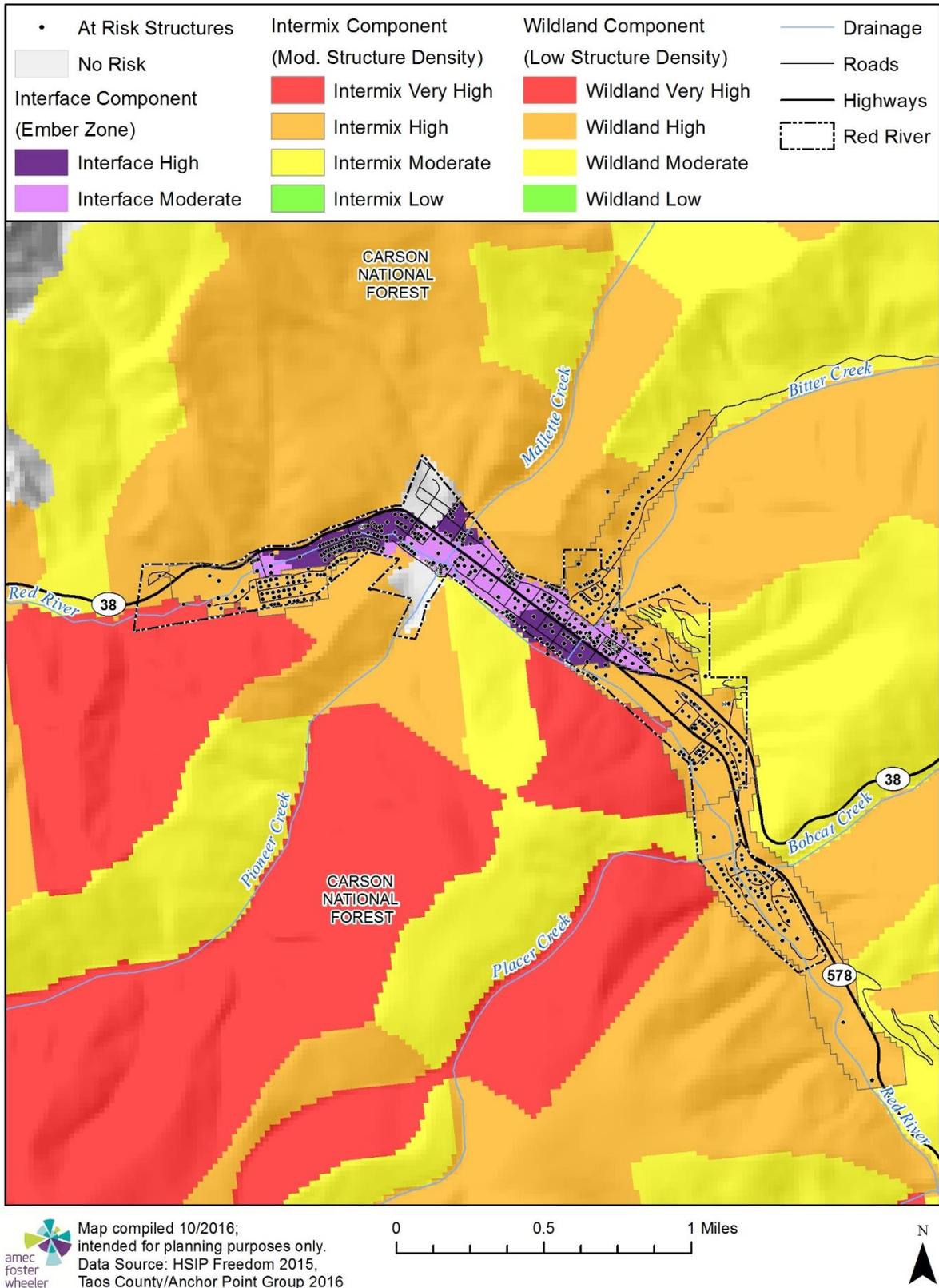


Table 4-51: Village of Red River Fire Hazard Risk

Fire	Property Type	Improved Parcel Count	Improved Value	Content Value	Total Value
Interface High	Non-Residential	37	\$9,965,769	\$9,965,769	\$19,931,538
	Residential	96	\$16,148,117	\$8,074,059	\$24,222,176
	Total	133	\$26,113,886	\$18,039,828	\$44,153,714
Interface Moderate	Non-Residential	65	\$15,763,006	\$15,763,006	\$31,526,012
	Residential	137	\$17,771,907	\$8,885,954	\$26,657,861
	Total	202	\$33,534,913	\$24,648,960	\$58,183,873
Interface Total		335	\$59,648,799	\$42,688,787	\$102,337,586
Intermix High	Non-Residential	24	\$3,260,666	\$3,260,666	\$6,521,332
	Residential	201	\$38,545,502	\$19,272,751	\$57,818,253
	Total	225	\$41,806,168	\$22,533,417	\$64,339,585
Intermix Moderate	Residential	1	\$165,381	\$82,691	\$248,072
	Total	1	\$165,381	\$82,691	\$248,072
Intermix Total		226	\$41,971,549	\$22,616,108	\$64,587,657
Wildland Very High	Non-Residential	1	\$873,159	\$873,159	\$1,746,318
	Residential	2	\$618,867	\$309,434	\$928,301
	Total	3	\$1,492,026	\$1,182,593	\$2,674,619
Wildland High	Non-Residential	3	\$468,792	\$468,792	\$937,584
	Total	3	\$468,792	\$468,792	\$937,584
Wildland Moderate	Residential	1	\$119,599	\$59,800	\$179,399
	Total	1	\$119,599	\$59,800	\$179,399
Wildland Total		7	\$2,080,417	\$1,711,184	\$3,791,601
Grand Total		568	\$103,700,765	\$67,016,079	\$170,716,844

Table 4-52: Unincorporated Taos County Fire Hazard Risk

Fire	Property Type	Improved Parcel Count	Improved Value	Content Value	Total Value
Intermix Very High	Non-Residential	4	\$510,510	\$510,510	\$1,021,020
	Residential	11	\$938,336	\$469,168	\$1,407,504
	Total	15	\$1,448,846	\$979,678	\$2,428,524
Intermix High	Non-Residential	93	\$21,683,221	\$21,683,221	\$43,366,442
	Residential	273	\$42,595,801	\$21,297,901	\$63,893,702
	Total	366	\$64,279,022	\$42,981,122	\$107,260,144
Intermix Moderate	Non-Residential	908	\$194,473,424	\$194,473,424	\$388,946,848
	Residential	3,392	\$601,695,768	\$300,847,884	\$902,543,652
	Total	4,300	\$796,169,192	\$495,321,308	\$1,291,490,500
Intermix Low	Non-Residential	343	\$68,727,227	\$68,727,227	\$137,454,454
	Residential	2,162	\$334,006,818	\$167,003,409	\$501,010,227
	Total	2,505	\$402,734,045	\$235,730,636	\$638,464,681
Intermix Total		7,186	\$1,264,631,105	\$775,012,744	\$2,039,643,849
Wildland Very High	Non-Residential	34	\$36,740,474	\$36,740,474	\$73,480,948
	Residential	49	\$4,716,759	\$2,358,380	\$7,075,139
	Total	83	\$41,457,233	\$39,098,854	\$80,556,087
Wildland High	Non-Residential	38	\$4,804,323	\$4,804,323	\$9,608,646
	Residential	55	\$8,425,616	\$4,212,808	\$12,638,424
	Total	93	\$13,229,939	\$9,017,131	\$22,247,070
Wildland Moderate	Non-Residential	223	\$47,174,468	\$47,174,468	\$94,348,936
	Residential	141	\$32,180,289	\$16,090,145	\$48,270,434
	Total	364	\$79,354,757	\$63,264,613	\$142,619,370
Wildland Low	Non-Residential	26	\$1,636,417	\$1,636,417	\$3,272,834
	Residential	13	\$2,032,683	\$1,016,342	\$3,049,025
	Total	39	\$3,669,100	\$2,652,759	\$6,321,859
Wildland Total		579	\$137,711,029	\$114,033,356	\$251,744,385
Grand Total		7,765	\$1,402,342,134	\$889,046,099	\$2,291,388,233

Critical Infrastructure. A GIS analysis was conducted to determine the number of critical facilities located in the three No-HARM threat zones; these facilities are at increased risk from a wildfire. The following tables shows the facilities by hazard level and jurisdiction. Questa noted the St Anthony Catholic Church historic site as a possible asset at risk.

Table 4-53: Jurisdictional Analysis of Critical Infrastructure in the Interface Wildfire Zone

Fire	Jurisdiction	Category	Facility Type	Facility Count
Interface High	Red River	Transportation & Lifelines	Helipad	1
			Total	1
Interface Moderate	Red River	Essential Facilities	Fire Station	1
			Local EOC	1
			Urgent Care Facility	1
			Total	3
		High Potential Loss Facilities	School	1
			Tier II	1
			Total	2
			Grand Total	6

Table 4-54: Jurisdictional Analysis of Critical Infrastructure in the Intermix Wildfire Zone

Fire	Jurisdiction	Category	Facility Type	Facility Count
Intermix High	Red River	Essential Facilities	EMS Depot	1
			Total	1
	Taos County	Essential Facilities	Fire Station	1
			Total	1
		High Potential Loss Facilities	Transfer Station	1
			Total	1
Transportation & Lifelines	Communications Tower	1		
	Total	1		
Intermix Moderate	Taos	Essential Facilities	Public Health Dept	1
			Total	1
		High Potential Loss Facilities	School	1
	Total		1	
	Taos Ski Valley	Essential Facilities	Fire Station	2
			Police Station	1
			Total	3
		Transportation & Lifelines	Communications Tower	2
	Total		2	
	Taos County	Essential Facilities	Community Center	2
			Fire Station	8
Local EOC			1	
Public Works			2	
Total			13	
High Potential Loss Facilities		School	1	
	Senior Center	1		

			Tier II	1
			Transfer Station	2
			Total	5
		Transportation & Lifelines	Communications Tower	24
			Total	24
Intermix Low	Questa	Essential Facilities	Fire Station	1
			Police Station	1
			Total	2
		High Potential Loss Facilities	Tier II	2
			Total	2
		Transportation & Lifelines	Communications Tower	4
	Total		4	
	Taos	Essential Facilities	Agricultural Center	1
			Park	1
			Total	2
		High Potential Loss Facilities	School	1
			Total	1
		Transportation & Lifelines	Communications Tower	3
	Total		3	
	Taos County	Essential Facilities	Community Center	3
			Earthship Biotech	1
			Fire Station	5
Public Works			1	
Total			10	
High Potential Loss Facilities		School	1	
		Tier II	1	
		Total	2	
Transportation & Lifelines		Airport	1	
		Communications Tower	6	
	Total	7		

Table 4-55: Jurisdictional Analysis of Critical Infrastructure in the Wildland Wildfire Zone

Fire	Jurisdiction	Category	Facility Type	Facility Count
Wildland Very High	Taos County	Transportation & Lifelines	Communications Tower	2
			Total	2
Wildland High	Taos County	High Potential Loss Facilities	Wastewater Facility	2
			Total	2
		Transportation & Lifelines	Communications Tower	11
			Total	11
Wildland Moderate	Taos County	Essential Facilities	Fire Station	1
			Total	1
		High Potential Loss Facilities	Tier II	2
			Transfer Station	3
			Wastewater Facility	1
			Total	6
		Transportation & Lifelines	Airport	2
			Communications Tower	35
Total	37			
Wildland Low	Taos County	Essential Facilities	Fire Station	1
			Total	1
		High Potential Loss Facilities	Transfer Station	1
			Total	1
		Transportation & Lifelines	Communications Tower	2
Total	2			
			Grand Total	66

Natural Environment

Fire is a keystone process in the natural environment, providing many benefiting impacts to the surrounding habitat. Some natural resources and natural areas may benefit from wildland fire, as at some level they must also be exposed to wildfire for a healthy ecological development of the area. However, extremely hot fires can result in habitat loss, watershed damage and increased erosion, and other impacts that could take decades to recover.

In Taos County, some acequias are becoming riparian zones with vegetation growth due to the presence of water. Dry fuels accumulate when vegetative debris clearance occurs; if ignited this can result in a “fuse” leading to other parts of the wildland urban interface. These areas may not show up as interface zones, but burn during droughts.

Future Development

The threat of wildfire and potential losses increase as human development and population increase. The HMPC noted that there has been steady development in Wildland Urban Interface Areas

(WUI) throughout Taos County and the incorporated jurisdictions. Long term comprehensive planning needs to take these areas into account, and new construction needs to be built with wildfire mitigation measures in mind. Generally, the adobe construction popular in the area is ignition-resistant. New development in the WUI should also consider access/egress for both residents and first responders.

Risk Summary

- GIS analysis for this plan indicates that \$2.8 billion in property value and 10,449 structures are potentially exposed to wildland fire hazards in the county. Red River and Taos Ski Valley have high loss ratios.
- About 90% of the structures are within the Intermix threat type and about 89% of the total value is within the Intermix threat type.
- When analyzing the differences in risk among jurisdictions, the unincorporated communities account for 74% of the structures at risk and 81% of the total value at risk.
- Limited egress/access in some areas can compromise evacuation and suppression
- Critical facility risk includes fire stations, schools, communication facilities and potable water facilities.

Table 4-56 Wildfire Hazard Risk Summary

Jurisdiction	Geographic Extent	Probability of Future Occurrence	Potential Magnitude/Severity	Overall Significance
Taos Ski Valley	Extensive	Likely	Catastrophic	High
Town of Taos	Significant	Occasional	Limited	Medium
Village of Red River	Significant	Occasional	Critical	High
Village of Questa	Extensive	Likely	Critical	High
Taos County	Significant	Highly Likely	Critical	High

Severe Winter Weather

Hazard/Problem Description

The severe winter weather hazard includes severe winter storms, extreme cold, and avalanche.

Severe Winter Storms

Taos County receives snowfall on a regular seasonal basis, mostly between the months of October and April. Because of the size of average storms, every area of the county is usually affected but the higher elevations of the eastern county can have the greatest snow accumulations. Winter storms occur when precipitation and freezing temperatures mix to produce a significant accumulation of snow or ice. Winter storms are often worsened by wind that produces blowing and drifting snow and reduced visibility. Winter storms can be quite disruptive. Road closures can

occur causing people to become stranded; accidents occur; power, water and sewer services can be temporarily interrupted. These events can cause great impact to the planning area depending on the severity and duration of a storm.

Extreme Cold

Extreme cold can occur on its own, but often accompanies a winter storm, or is left in its wake. It is most likely to occur in the winter months of December, January, and February. Prolonged exposure to the cold can cause frostbite or hypothermia, and can be life-threatening; infants and the elderly are most susceptible. Pipes may freeze and burst in homes or buildings that are poorly insulated or without heat. Extreme cold can disrupt or impair communications facilities.

Avalanche

Associated with winter weather in Taos County are avalanches. An avalanche is a mass of snow sliding down a mountainside. Avalanches can occur in the higher elevations and steep terrain in Taos County, primarily in around the Taos Ski Village. An avalanche occurs when the stress (from gravity) trying to pull the snow downhill exceeds the strength (from bonds between snow grains) of the snow cover. There are four factors that contribute to an avalanche: a steep slope, a snow cover, a weak layer in the snow cover, and a trigger. About 90% of all avalanches start on slopes of 30-45 degrees; about 98% of all avalanches occur on slopes of 25-50 degrees. Avalanches release most often on slopes above timberline that face away from prevailing winds (leeward slopes collect snow blowing from the windward sides of ridges). Nevertheless, avalanches can run on small slopes well below timberline, such as gullies, road cuts, and small openings in the trees. Very dense trees can anchor the snow to steep slopes and prevent avalanches from starting; however, avalanches can release and travel through a moderately dense forest.

The vast majority of avalanches occur during and shortly after winter storms, during the winter and spring months between November and April. High winds and temperature swings can also lead to avalanche prone conditions.

Location

Blizzards and severe winter storms are regional in nature, typically occurring across large areas of the county at once; higher elevations are more prone to deeper snow accumulations, avalanches, and more intense storms. Extreme cold can occur both in high elevations and in river valleys where the cold air tends to settle.



Avalanche runout zones visible above Taos Ski Valley (Juarez)

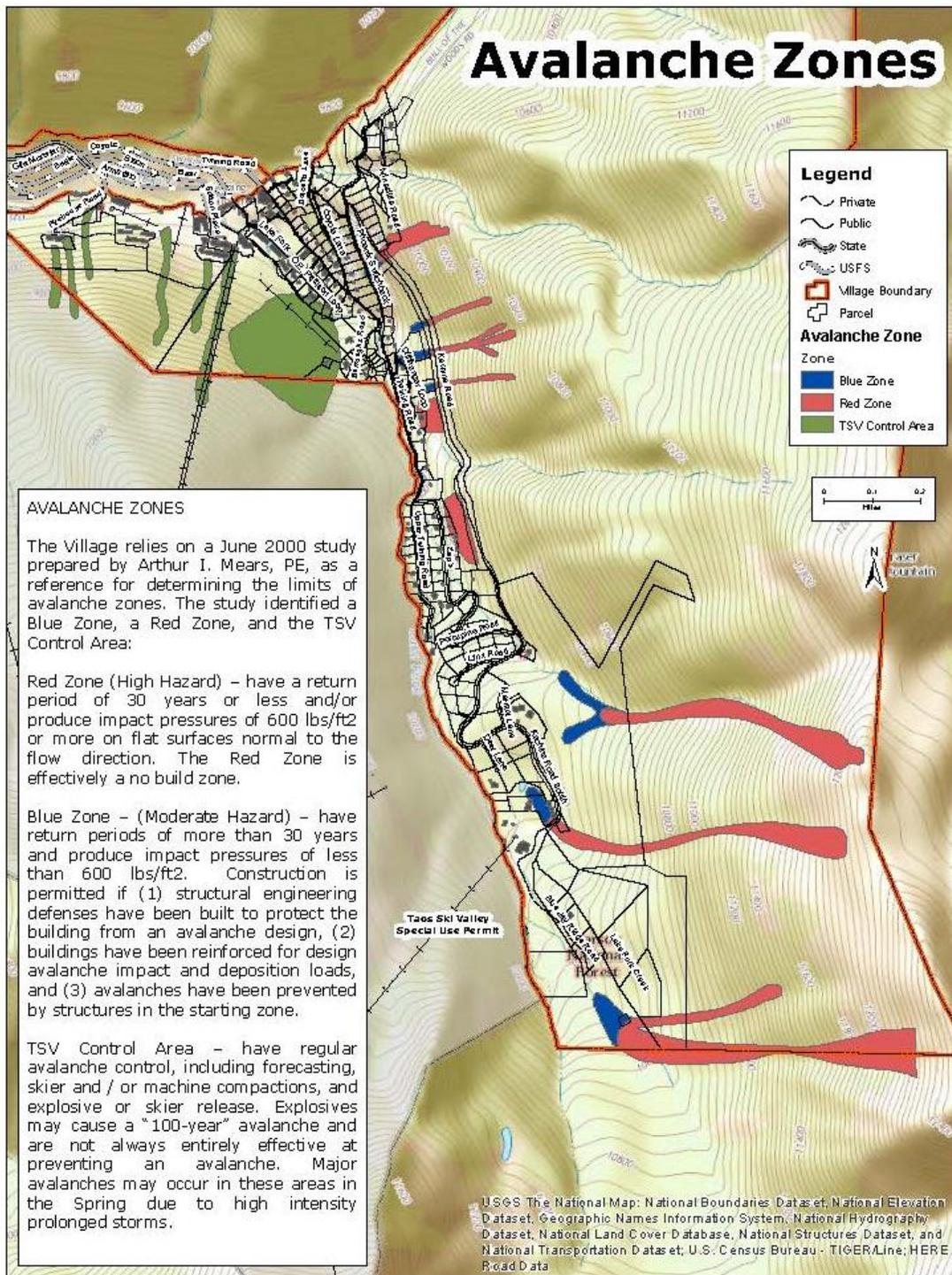
The avalanche geographic extent in the Taos County response area is **limited**. Areas that are particularly at risk include Taos Ski Valley, backcountry recreation areas, and highways or roads along steep mountainsides. There is no countywide mapping available of the avalanche hazard, although Taos Ski Valley has a Village Master Plan on their website which provides an Avalanche Zone Map. This map identifies the locations of Blue and Red zones and the TSV, Inc. Control Areas.

Red Zone (High Hazard) – have a return period of 30 years or less and/or produce impact pressures of 600 pounds per square foot or more on flat surfaces normal to the flow direction. The Red Zone is effectively a no build zone.

Blue Zone (Moderate Hazard) – have return period of more than 30 years and produce impact pressures of less than 600 pounds per square foot. Construction is permitted if (1) structural engineering defenses have been built to protect the building from an avalanche design, (2) buildings have been reinforced for design avalanche impact and deposition loads, and (3) avalanches have been prevented by structures in the starting zone.

TSV, Inc. Control Area – have regular avalanche control, including forecasting, skier and / or machine compactions, and explosive or skier release. Explosives may cause a “100-year” avalanche and are not always entirely effective at preventing an avalanche. Major avalanches may occur in these areas in the spring due to high intensity prolonged storms.

Figure 4-39: Taos Ski Valley Avalanche Hazards



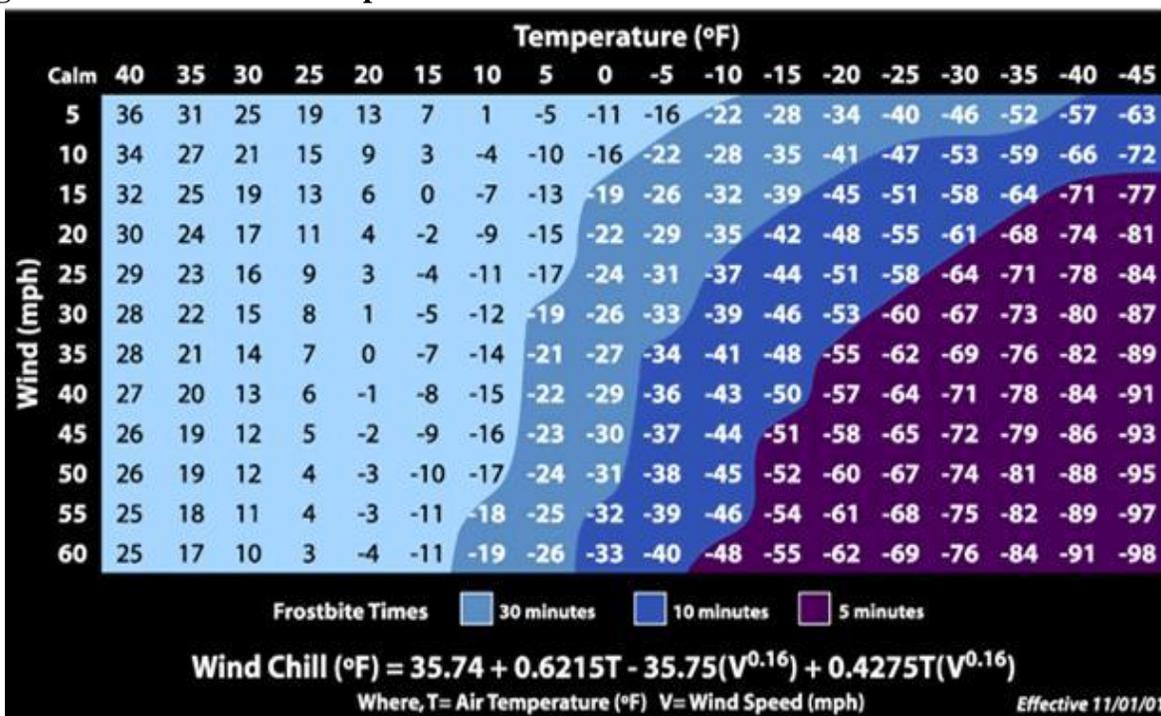
Extent

The extent of winter storms and cold that cause issues in Taos County includes storms forecasted to be Winter Storm Warnings, Wind Chill Warnings or Blizzard Warnings. The National Weather Service in Albuquerque issues a Winter Storm Warning when conditions that can quickly become life threatening and are more serious than an inconvenience are imminent or already occurring. Heavy snows, or a combination of snow, freezing rain or extreme wind chill due to strong wind, may bring widespread or lengthy road closures and hazardous travel conditions, plus threaten temporary loss of community services such as power and water. Deep snow and additional strong wind chill or frostbite may be a threat to even the appropriately dressed individual or to even the strongest person exposed to the frigid weather for only a short period.

A Wind Chill Warning is issued when the wind chill temperatures at or colder than minus 50 degrees F. At this level, frostbite can occur on exposed flesh within minutes. As the wind chill temperature drops, the frostbite time decreases, especially with higher wind speeds.

In 2001, the NWS implemented an updated Wind Chill Temperature index, which is provided in Figure 4-40 as a measure of extreme cold. This index was developed to describe the relative discomfort/danger resulting from the combination of wind and temperature. At -15 degrees Fahrenheit, with no wind, frostbite can occur to exposed skin within 30 minutes and defines the upper end of extreme cold. Wind chill is based on the rate of heat loss from exposed skin caused by wind and cold. As the wind increases, it draws heat from the body, driving down skin temperature and eventually the internal body temperature.

Figure 4-40: Wind Chill Temperature Chart

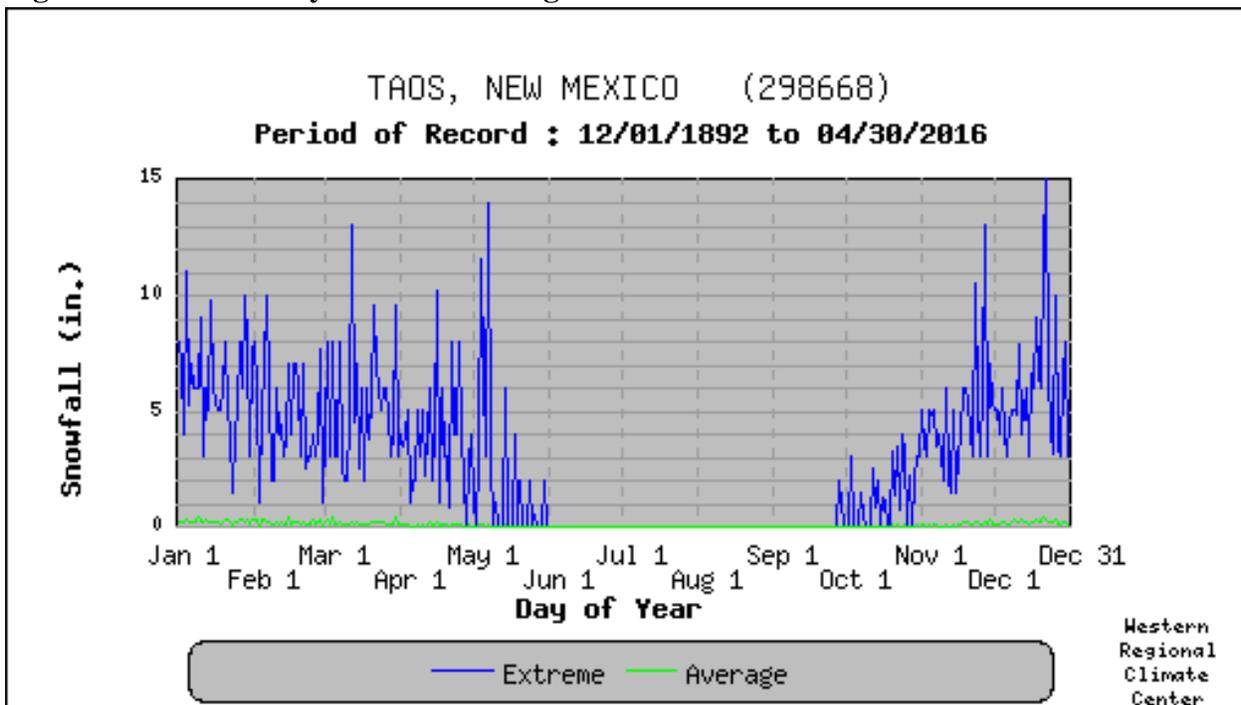


Source: National Weather Service

The most dangerous of all winter storms is the blizzard and is considered the upper extent for severe winter weather in Taos County. A blizzard warning is issued when winds of 35 miles an hour will occur in combination with considerable falling and/or blowing snow for at least 3 hours. Visibilities will frequently be reduced to less than 1/4 mile and temperatures are usually 20 degrees Fahrenheit or lower.

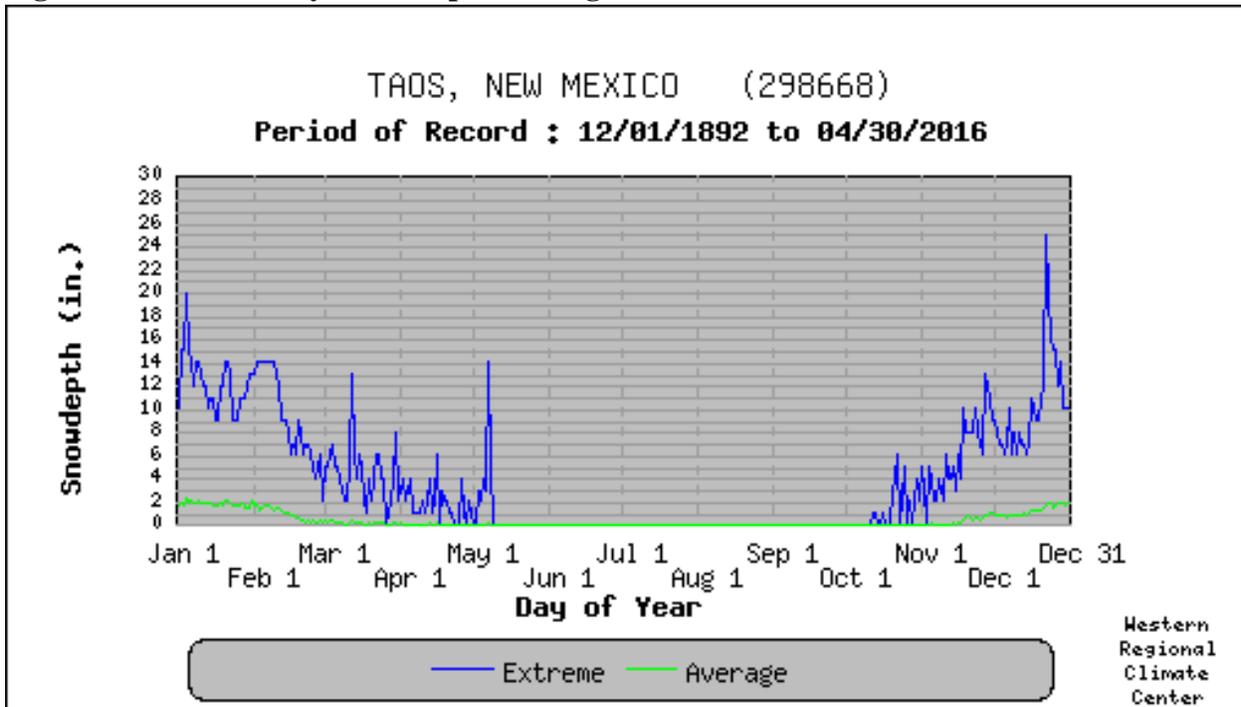
Between the period from 1892 to 2015 and based on the sum of monthly averages, Taos County received an annual average of 29.5 inches of snow per year. Figure 4-41 shows daily snowfall averages and extremes for the western portion of the County. Figure 4-42 shows average snow depths for the Town of Taos.

Figure 4-41: Taos Daily Snowfall Average and Extreme



Source: Western Regional Climate Center

Figure 4-42: Taos Daily Snow depth Average and Extreme



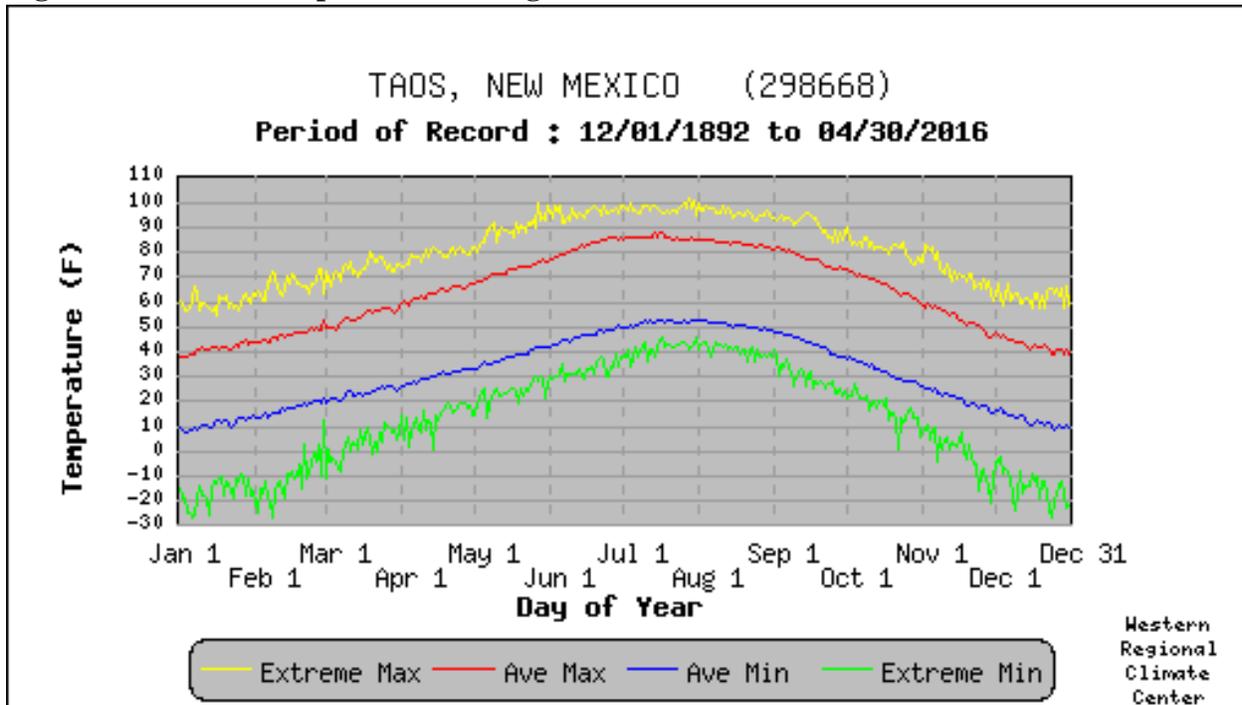
Source: Western Regional Climate Center

Town of Taos Station - Period of Record 5/27/1941 to 1/20/2015

In Taos County, monthly average minimum temperatures from November through March range from the upper 10s to the upper 20s. Average maximum temperatures range from the low 40s to the upper 80s. Extreme temperature minimums and maximums for Taos County are shown in

Figure 4-43. This range of temperatures gives an approximation of the highs and lows Taos County could expect to experience; current climate trends could cause temperatures higher or lower than this range in the future. Because of the county's elevation, extreme cold is a much more prevalent issue in Taos County than extreme heat.

Figure 4-43: Taos Temperature Averages and Extremes



Source: Western Regional Climate Center

Loss of life, infrastructure and property damage are the primary areas of concern regarding avalanches. In order to determine an extent rating for comparison with other hazards, and to assist in assessing the overall impact of the hazard on the planning area, information the event of record is needed. While there were no records or databases found for the county, there is anecdotal evidence of events. Overall, avalanche impacts would likely be negligible for the county but could have limited impacts to roads and property in Taos Ski Valley based on the mapping shown previously. However, a road closure due to avalanche activity could result in transportation disruption due to the limited number of roads county-wide. Apart from backcountry skiers, snowshoers, snowmobilers and snowboarders, the threat to life and safety is minimal.

Previous Occurrences

Extreme weather events associated with snow and blizzard events occur almost on an annual basis. Winter storms occur countywide and involve heavy rains, snow, ice, and high winds causing downed trees and power lines, power outages, accidents, and road closures. There are typically few injuries and limited damages.

A secondary impact of extreme cold is the increased usage of natural gas for heating purposes. This has caused natural gas shortages across the state, most recently in January/February of 2011 when the Governor declared a state of emergency, closing all non-necessary state offices and encouraging schools to close. While some counties in the State (including nearby Santa Fe and Rio Arriba Counties) were granted a Presidential Disaster Declaration for the incident, Taos was not included in the list of declared counties. Impacts in Taos County from this storm include

citizens reporting up to six days without heat in their homes, lost revenue for businesses, frozen and broken pipes, and infrastructure repair costs as the temperatures reached a new low record of -18 degrees on February 3rd, 2011.

Table 4-57 contains the NCDC database information for winter storm and winter weather events in Taos County; the database contains records back to 1960. According to the NCDC, winter storms are recorded when more than one significant hazard (i.e., heavy snow and blowing snow; snow and ice; snow and sleet; sleet and ice; or snow, sleet and ice) and meets or exceeds locally/regionally defined 12 and/or 24 hour warning criteria for at least one of the precipitation elements, on a widespread or localized basis. Normally, a winter storm noted in the database would have posed a threat to life or property.

Remarks and details are shown in the narrative below the table.

Table 4-57: Taos County Winter Storm and Winter Weather 1960-2016

Date	Location	Property Damage	Crop Damage	Type
12/25/2014	Upper Rio Grande Valley	\$0	\$0	Winter Storm
12/25/2014	Southern Sangre De Cristo Mountains	\$0	\$0	Winter Storm
12/25/2014	Northern Sangre De Cristo Mountains	\$0	\$0	Winter Storm
12/25/2014	West Slopes of the Sangre De Cristo Mountains	\$0	\$0	Winter Storm
2/2/2011	Southern Sangre De Cristo Mountains	\$0	\$0	Extreme Cold
2/2/2011	West Slopes of the Sangre De Cristo Mountains	\$0	\$0	Extreme Cold
2/2/2011	Northern Sangre De Cristo Mountains	\$0	\$0	Extreme Cold
2/2/2011	Upper Rio Grande Valley	\$0	\$0	Extreme Cold
2/2/2011	Lower Chama River Valley	\$0	\$0	Extreme Cold

Source: NCDC

December 25, 2014 - A strong, slow-moving upper level storm system crossed central and northern New Mexico Christmas night through the 26th. Areas of snow initially set up over northwest and west-central New Mexico late Christmas day along the associated Pacific front. As the cold front slowly moved eastward, bands of heavy snow developed and quickly expanded resulting in widespread, moderate to significant accumulations for the higher elevations of central

and northern New Mexico as well as the east-central and northeast high plains. Meanwhile, a back door cold frontal boundary shifted southwest over the northeast plains and stalled along the east slopes of the central mountain chain. The combination of strong lift with the upper low and upslope flow along the front produced heavy snowfall accumulations for the Sangre de Cristo Mountains. Many areas in the high terrain reported 5 to 11 inches. Moderate snowfall accumulations of 3 to 6 inches were also reported along the Interstate 40 corridor around the Sandia Mountains and the Continental Divide as well as near Clines Corners and Vaughn. Though late in the day, many areas experienced a true White Christmas if only for a few hours.

February 2, 2011 - A powerful storm and arctic cold front combined to bring fresh snow cover to nearly all of northern and central New Mexico on the 1st and 2nd, as well as extremely cold, record setting minimum temperatures. This resulted in dangerously low wind chill values over many areas. The cold temperatures prompted an IC response with Taos Fire, EMS, and multiple LE agencies involved. Property damage included frozen pipes at multiple private residences and well failure in the Town of Taos. Some local businesses were closed for several days and schools utilizing natural gas heat closed.

Avalanches. According to the Taos Ski Valley Village Master Plan Hazard Mitigation Element Draft the last major avalanche was above the Bavarian Restaurant in the Kachina area in 1995 and again in 1997. However, numerous avalanches routinely occur above and through Kachina Road and have resulted in significant property damage to homes on Cliffhanger Loop as recent as 2008.

On February 4, 1996, a single backcountry skier triggered a large slide in a historical avalanche chute in the Wheeler Peak Wilderness across from Taos Ski Valley. This avalanche was in an uncontrolled area well outside the ski area. The skier, male, age 38, was located by Taos Valley Ski Patrollers less than one hour after the avalanche during a hasty search.

Probability of Future Occurrences

Winter storms with snow, avalanches and freezing temperatures in the County are a frequent event, and occur annually and thus have a highly likely rating.

Vulnerability Assessment

People

While virtually all aspects of the population are vulnerable to severe winter weather, there are segments of the population that are more vulnerable to the potential indirect impacts of a severe winter storm than others, particularly the loss of electrical power. If they do not have a back-up power source, rural residents reliant on electricity for heating and water supplies are also especially vulnerable to power outages. As a group, the elderly or disabled, especially those with home health care services that rely heavily on an uninterrupted source of electricity. Resident populations in nursing homes, residential facilities, or other special needs housing may also be vulnerable if electrical outages are prolonged.

Public education efforts may help minimize the risks to future populations by increasing knowledge of appropriate mitigation behaviors, clothing, sheltering capacities, and decision making regarding snow totals, icy roads, driving conditions, and outdoor activities (all of which are contributors to decreased public safety during severe winter storms.) New establishments or increased populations who are particularly vulnerable to severe winter storms (such as those with health concerns or those who live in communities that may be isolated for extended periods of time due to the hazard) should be encouraged to maintain at least a 72-hour self-sufficiency as recommended by FEMA. Encouraging contingency planning for businesses may help alleviate future economic losses caused by such hazards while simultaneously limiting the population exposed to the hazards during commuting or commerce-driven activities.

The HMPC noted several issues surrounding people and their vulnerability to winter weather in Taos County. Citizens have noted impacts to first responders and elderly populations. The gas outage in 2011 during extreme cold events affected northern New Mexico for about two weeks.

The avalanche hazard generally affects a small number of people, such as the participants in backcountry recreation. An increase in backcountry recreation (skiers and snowmobilers) in recent years has led to more people being in avalanche-prone areas. A trend among some backcountry skiers and snowboarders is traveling into steeper and more “extreme” terrain, which tends to be more avalanche-prone. Taos Ski Valley is known for its outdoor recreation opportunities, such as backcountry skiing, snowboarding, and snowmobiling options.

Economy

Most economic impacts would be short term in duration. Impacts to the economy would center around road closings, travel restrictions, temporary power losses and pressure on power surge capacity.

Built Environment

Property vulnerabilities to severe weather include damage caused by high winds, ice, or snow pack and subsequently melting snow. Vehicles may be damaged by the same factors, or temporarily un-useable due to the driving conditions created by severe winter weather. Contents of homes, storage units, warehouses and storefronts may be damaged if the structures are compromised or fail due to the weather, or during potential flooding caused by melting snow. The density of very wet snow packs may create strains on structures, causing partial or entire collapses of walls, roofs, or windows. Vulnerability is influenced both by architecture (flat roofs being more vulnerable), age and type of construction material, and should be assessed on a building-by-building basis. Research did not yield significant issues with building collapse associated with winter storms.

The HMPC noted that drifts have been an issue in the northern county for both homes and roads. The committee also explained that multiple power outages have occurred from winter events or from plows hitting transformers buried in snow. Extreme cold also usually follows the storm events and can result in an increased use of woodstoves and potential for house fires.

Overall, avalanche impacts would likely be negligible for the county but could have limited impacts to roads and property in Taos Ski Valley based on the mapping and hazard history noted previously.

Impacts to Critical Infrastructure

Because of the unpredictability of severe winter storm strength and path, most critical infrastructure that is above ground is equally exposed to the storm's impacts. Roads are especially susceptible to the effects of a winter storm. Some roads in Taos Ski Valley are susceptible to avalanche runout. A more specific risk assessment was not conducted for this plan.

Natural Environment

Natural resources may be damaged by the severe winter weather, including broken trees and death of wildlife. Unseasonable storms may damage or kill plant and wildlife, which may impact natural food chains until the next growing season. Most of these impacts would be short-term.

Future Development

Future residential or commercial buildings should be built to be able to withstand snow loads from severe winter storms. Population growth in the County and growth in visitors will increase problems with road, business, and school closures, and increase the need for snow removal and emergency services related to severe winter weather events. Development in the County will increase the number of vehicles and persons vulnerable to this hazard.

Population and commercial growth in the County will increase the potential for complications with traffic and commerce interruptions associated winter storms, as well as increased exposed populations vulnerable to the impacts of a severe winter storm such as power outages or delays in vital services. Future power outages or delays in power delivery to future developments may be mitigated by construction considerations such as buried power lines. Future development will also require future considerations for snow removal capacity including equipment, personnel, and logistical support. Adequate planning will help establish the cost-effective balance.

Risk Summary

- Research indicated that severe winter storms contribute to traffic and vehicle collisions but little in significant damages.
- Most economic impacts are short term in duration. Impacts to the economy include road closings, travel restrictions, temporary power losses and pressure on power surge capacity.
- Vulnerable populations include elderly and travelers caught in severe winter weather.
- There is some risk to backcountry travelers and some structures in Taos Ski Valley from avalanches.

Table 4-58 Winter Weather Hazard Risk Summary

Jurisdiction	Geographic Extent	Probability of Future Occurrence	Potential Magnitude/Severity	Overall Significance
Taos Ski Valley	Extensive	Highly Likely	Critical	High
Town of Taos	Extensive	Likely	Limited	Medium
Village of Red River	Extensive	Likely	Critical	Medium
Village of Questa	Extensive	Likely	Critical	High
Taos County	Extensive	Highly Likely	Limited	Medium

5 MITIGATION STRATEGY

Requirement §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.

5.1 Mitigation Strategy: Overview

This section describes the mitigation strategy process and mitigation action plan for the Taos County Hazard Mitigation Plan. It describes how the County met the following requirements from the 10-step planning process:

- Planning Step 6: Set Goals
- Planning Step 7: Review Possible Activities
- Planning Step 8: Draft an Action Plan

The results of the planning process, the risk assessment, the goal setting, the identification of mitigation actions, and the hard work of the HMPC led to this mitigation strategy and action plan. Section 5.2 below identifies the goals of this plan; Section 5.3 discusses how potential mitigation actions were reviewed and prioritized and Section 5.4 details the mitigation action plan.

5.2 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.

Up to this point in the planning process, the HMPC has organized resources, assessed hazards and risks, and documented mitigation capabilities. The resulting goals, objectives, and mitigation actions were developed based on these tasks. The HMPC held a series of meetings designed to achieve a collaborative mitigation strategy as described further throughout this section.

During the initial goal-setting meeting, the HMPC reviewed the results of the hazard identification, vulnerability assessment, and capability assessment. This analysis of the risk assessment identified areas where improvements could be made and provided the framework for the HMPC to formulate planning goals and objectives and to develop the mitigation strategy for the Taos County Planning Area.

Goals were defined for the purpose of this mitigation plan as broad-based public policy statements that:

- Represent basic desires of the community;
- Encompass all aspects of community, public and private;
- Are nonspecific, in that they refer to the quality (not the quantity) of the outcome;
- Are future-oriented, in that they are achievable in the future; and
- Are time-independent, in that they are not scheduled events.

Goals are stated without regard to implementation. Implementation cost, schedule, and means are not considered. Goals are defined before considering how to accomplish them so that they are not dependent on the means of achievement. Goal statements form the basis for objectives and actions that will be used as means to achieve the goals. Objectives define strategies to attain the goals and are more specific and measurable.

To facilitate the development of plan goals the HMPC members were provided a worksheet that explained goals, objectives and actions and listed examples of each. Related plan goals were listed on the worksheet including the State of New Mexico Multi-Hazard Mitigation Plan (2013) (see worksheet in Appendix A), related goals from the Hazards Mitigation Element of the draft Comprehensive Plan 2016 Update, and goals from the Community Wildfire Protection Plan. This review was to ensure that this plan's mitigation strategy was aligned and integrated with existing plans and policies. Based on discussion at the HMPC meeting the group decided that the goals of the state plan would provide a good basis, with some modifications.

Based on the risk assessment review and goals development process, the HMPC identified the following goals which provide the direction for reducing future hazard-related losses within the Taos County Planning Area.

- 1. Enhance multi-agency and multi-jurisdictional coordination, communication, and collaboration related to hazard mitigation and emergency management.**
- 2. Reduce the impacts of hazards on Taos County citizens and visitors, including damage to public and private property.**
- 3. Lessen vulnerability of future development through improved land-use planning and regulation of development in hazard zones such as floodplains and wildland-urban interface areas.**
- 4. Shorten recovery time for both community function and the natural environment after natural hazard events.**

5.3 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.

The Disaster Mitigation Act and related FEMA planning guidance requires each participating jurisdiction to identify and analyze a comprehensive range of specific mitigation actions and projects to reduce the impacts of the hazards identified in the risk assessment. A comprehensive range means that communities analyze, or evaluate, different types of mitigation actions. To facilitate this the HMPC was provided with the following list of categories of mitigation actions, which originate from the National Flood Insurance Program’s Community Rating System:

- **Local Plans and Regulations:** Administrative or regulatory actions or processes that influence the way land and buildings are developed and built.
- **Property protection:** Actions that involve the modification of existing buildings or structures to protect them from a hazard or remove them from the hazard area.
- **Structural and Infrastructure Projects:** Actions that involve the construction of structures or infrastructure to reduce the impact of a hazard.
- **Natural resource protection:** Actions that, in addition to minimizing hazard losses, also preserve or restore the functions of natural systems.
- **Public information/education and awareness:** Actions to inform and educate citizens, elected officials, and property owners about the hazards and potential ways to mitigate them.
- **Emergency services:** Actions that protect people and property prior to, during and immediately after a disaster or hazard event.

In order to identify and select mitigation actions to support the mitigation goals, each hazard identified and profiled in Chapter 4 was evaluated. At the mitigation strategy meeting the HMPC was also provided with a matrix showing examples of potential mitigation action alternatives for each of the above categories, for each of the identified hazards. The HMPC was also provided a handout that explains the categories and provided further examples. Another reference document titled “Mitigation Ideas” developed by FEMA was distributed to the HMPC via an online link. This document lists the common alternatives for mitigation by hazard. The HMPC was also instructed to consider both future and existing buildings in considering possible mitigation actions. A facilitated discussion then took place to examine and analyze the options. Appendix A provides the matrix of alternatives considered. Each proposed action was written on a large sticky note and posted on flip charts in meeting room underneath the hazard it addressed.

Based upon the key issues identified in the risk assessment, including the capability assessment, and the overall political, technical, and financial feasibility of the potential actions, the HMPC came to consensus on proposed mitigation actions for each hazard. Certain hazards were best addressed through multi-hazard actions. A lead for each new action was identified. The leads were

responsible for filling out worksheets with additional details on the project so they could be captured in the plan. Additional discussion and refinement of proposed mitigation actions took place within follow-up meetings of the HMPC and individual departments. The refined mitigation actions were provided to the HMPC lead and planning consultant by filling out details on a mitigation action worksheet (See Appendix A). The final action strategies are captured in Section 5.4.

Prioritization Process

Once the mitigation actions were identified, the HMPC was provided with several decision-making tools, including FEMA's recommended prioritization criteria STAPLEE to assist in deciding why one recommended action might be more important, more effective, or more likely to be implemented than another. STAPLEE is an acronym for the following:

- Social: Does the measure treat people fairly? (e.g., different groups, different generations)
- Technical: Is the action technically feasible? Does it solve the problem?
- Administrative: Are there adequate staffing, funding, and other capabilities to implement the project?
- Political: Who are the stakeholders? Will there be adequate political and public support for the project?
- Legal: Does the jurisdiction have the legal authority to implement the action? Is it legal?
- Economic: Is the action cost-beneficial? Is there funding available? Will the action contribute to the local economy?
- Environmental: Does the action comply with environmental regulations? Will there be negative environmental consequences from the action?

In accordance with the DMA requirements, an emphasis was placed on the importance of a benefit-cost analysis in determining action priority. Other criteria used to assist in evaluating the benefit-cost of a mitigation action includes:

- Does the action address hazards or areas with the highest risk?
- Does the action protect lives?
- Does the action protect infrastructure, community assets or critical facilities?
- Does the action meet multiple objectives (Multiple Objective Management)?
- What will the action cost?
- What is the timing of available funding?

The mitigation categories, multi-hazard actions, and criteria are included in Appendix A.

At the mitigation strategy meeting the HMPC used STAPLEE to determine which of the identified actions were most likely to be implemented and effective. Keeping the STAPLEE criteria in mind, each member 'voted' for the new mitigation actions by sticking a colored dot on the sticky note on which the action was written. The number of dots next to each action was totaled as an

indication of relative priority and translated into ‘high,’ ‘medium’ and ‘low.’ The results of the STAPLEE evaluation process produced prioritized mitigation actions for implementation within the planning area.

The process of identification and analysis of mitigation alternatives allowed the HMPC to come to consensus and to prioritize recommended mitigation actions. During the voting process, emphasis was placed on the importance of a benefit-cost review in determining project priority; however, this was not a quantitative analysis. The Disaster Mitigation Act regulations state that benefit-cost review is the primary method by which mitigation projects should be prioritized. Recognizing the federal regulatory requirement to prioritize by benefit-cost, and the need for any publicly funded project to be cost-effective, the HMPC decided to pursue implementation according to when and where damage occurs, available funding, political will, jurisdictional priority, and priorities identified in the New Mexico Hazard Mitigation Plan. Cost-effectiveness will be considered in additional detail when seeking FEMA mitigation grant funding for eligible projects identified in this plan.

Benefit-cost was also considered in greater detail in the development of the Mitigation Action Plan detailed in Section 5.3. Specifically, each action developed for this plan contains a description of the problem and proposed project, the entity with primary responsibility for implementation, any other alternatives considered, a cost estimate, expected project benefits, potential funding sources, and a schedule for implementation. Development of these project details for each action led to the determination of a high, medium, or low priority for each.

5.4 Mitigation Action Plan

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.

This section outlines the development of the mitigation action plan. The action plan consists of the specific projects, or actions, designed to meet the plan's goals. Over time the implementation of these projects will be tracked as a measure of demonstrated progress on meeting the plan's goals.

Continued Compliance with NFIP

Given the flood hazard in the planning area and as required by DMA, an emphasis will be placed on continued compliance with the National Flood Insurance Program (NFIP). The County and NFIP participating jurisdictions of Taos, Red River, and Questa will continue to make every effort to remain in good standing with NFIP. This includes continuing to comply with the NFIP's standards for updating and adopting floodplain maps and maintaining and updating the floodplain

zoning ordinance. A mitigation action specific to continued compliance with the NFIP is listed in the mitigation strategy for each of these jurisdictions.

As evidence of compliance, the County has participated in the NFIP since 1989; initial flood hazard boundary maps were developed in 1977. The first official Flood Insurance Rate Maps were adopted in 1978. Since then, the County has administered floodplain management regulations that meet the minimum requirements of the NFIP. The County adopted new Digital Flood Insurance Rate Maps that became effective October 6, 2010. Ordinance No. 2009-01 and Resolution 2010-46 detail the floodplain management regulations for the County and is described in Section 2.2 in more detail and flood insurance coverage is discussed in Section 4.3.4.

There are several mitigation actions that address specifics with continued NFIP compliance for the County and NFIP participating jurisdictions of Taos, Red River, and Questa. Also to be considered are the flood mitigation actions contained in this HMP that support the ongoing efforts by the county to minimize the risk and vulnerability of the community to the flood hazard and to enhance their overall floodplain management program.

Mitigation Action Plan

This action plan presents the recommendations developed by the HMPC outlining how Taos County and the municipalities can reduce the risk and vulnerability of people, property, infrastructure, and natural and cultural resources to future disaster losses. The mitigation actions developed by the HMPC are summarized in Table 5.1 and listed in detail in the mitigation action worksheets that follow. Table 5.1 is a summary table for quick reference. It identifies the mitigation action title, lead agency/department, hazards mitigated, priority and if the action mitigates losses to existing or future development. The ‘Related Goal’ column notes which of the four goals in Section 5.2 that the action helps achieve. The action worksheets that follow provide more background information, ideas for implementation, lead agency, partners, potential funding sources, cost estimates, benefits, and timeline for each identified action.

It is important to note that Taos County has other existing, detailed action descriptions in other planning documents, such as the community wildfire protection plan, Comprehensive Plan Hazard Mitigation Element, capital improvement budgets, and other planning mechanisms. These actions are considered to be part of this plan, and the details, to avoid duplication, should be referenced in their original source document. The HMPC also realizes that new needs and priorities may arise as a result of a disaster or other circumstances and reserves the right to support new actions, as necessary, as long as they conform to the overall goals of this plan.

Further, it should be clarified that the actions included in this mitigation strategy are subject to further review and refinement; alternatives analyses; and reprioritization due to funding availability and/or other criteria. The County is not obligated by this document to implement any or all of these projects. Rather this mitigation strategy represents the desires of the community to mitigate the risks and vulnerabilities from identified hazards.

Also, many of the action items included in this plan are a collaborative effort among County agencies and other local, state, and federal agencies and stakeholders in the Taos County planning area. Table 5.1 identifies the lead agency/department. The individual worksheets for each mitigation action item identify other mitigation partners. Actions are grouped by the county and for each municipality.

Figure 5.1. Mitigation Action Summary Table

Action ID	Action Title	Hazard(s) Mitigated	Lead Agency	Address Existing or Future Development	Priority	Related Goal
TC-1	Become an officially designated StormReady Community by the National Weather Service	Thunderstorm (hail, lightning), Flood, Severe Winter Storm, High Wind	County OEM	Both	Medium	1, 2
TC-2	Improve E-911 addressing data and signage for life safety benefits	Multi-hazards: Wildfires, Severe Winter Storm	County Planning	Both	Medium	2,4
TC-3	Provide training with all entities to better prepare and mitigate hazards and strengthen working relationships with all agencies	Multi-hazards: Dam Failure, Drought, Earthquake, Flood, High Wind, Landslide, Severe Winter Storm, Thunderstorm, Wildfire, Hazardous Materials	County OEM	Both	High	1
TC-4	Enhance evacuation and shelter planning and escape route awareness	Multi-hazards: Dam Failure, Earthquake, Flood, High Wind, Landslide, Severe Winter Storm, Thunderstorm, Wildfire, Hazardous Materials	County OEM; County Fire Chief; District Fire Chiefs	Both	Medium	1, 2
TC-5	EMS Transportation / Resources for temporary closure and evacuation of local hospital and nursing home	Multi-hazards: Wildfire, flood	County EMS	Existing	Medium	1
TC-6	Wildfire Education with the LEPC to address wildfire risks in relation to Hazardous Materials	Multi-hazards: Wildfire, Hazardous Materials	County OEM	Existing	Medium	1, 2

Action ID	Action Title	Hazard(s) Mitigated	Lead Agency	Address Existing or Future Development	Priority	Related Goal
TC-7	Domestic and livestock animal evacuation and shelter planning	Multi-hazards: Wildfire, flood	Taos County Animal Control, Taos P.D. Animal Control	Existing	Medium	1
TC-8	Taos County Wildfire Protection Regulations Refinement	Wildfire	County Planning	Both	High	2, 3
TC-9	Implementation of large-scale fuel treatments and landscape restoration	Wildfire	CWPP Core Team	Both	Low	1, 4
TC-10	Encourage Firewise or Fire Adapted Communities on a countywide scale	Wildfire	CWPP Core Team	Both	Medium	2
TC-11	Wildfire education and awareness	Wildfire	CWPP Core Team	Both	Medium	2
TC-12	Widen access roads for large equipment to gain access to emergency situation	Wildfire	County OEM	Both	High	3, 4
TC-13	Identify firefighting water supply shortcomings and alternate water resources	Wildfire	County Fire Department	Both	Medium	1, 2, 3, 4
TC-14	Water Shortage/Outage Mitigation	Drought	County OEM	Both	Medium	1, 4

Action ID	Action Title	Hazard(s) Mitigated	Lead Agency	Address Existing or Future Development	Priority	Related Goal
TC-15	Create Emergency Action Plans for all dams	Dam Failure	County OEM, including Taos and Red River	Both	Medium	1, 2
TC-16	Perform enhanced dam failure risk assessments	Dam Failure	County OEM and County Planning	Both	Medium	1, 2
TC-17	Continued compliance with NFIP for Taos County	Flood	County Planning	Both	High	2, 3
TC-18	Manage the floodplain beyond FEMA minimum requirements	Flood	County Planning	Both	High	2, 3
TC-19	Improve county floodplain mapping	Flood	County Planning	Both	High	2,3
<i>Multi-Jurisdictional Actions</i>						
MJ-1	Community Hazard Awareness and Education	Multi-hazards: Dam Failure, Drought, Earthquake, Flood, High Wind, Landslide, Severe Winter Storm, Thunderstorm, Wildfire, Hazardous Materials	County OEM Village of Questa, Village of Taos Ski Valley, Town of Red River, Town of Taos	Both	High	1, 2

Action ID	Action Title	Hazard(s) Mitigated	Lead Agency	Address Existing or Future Development	Priority	Related Goal
MJ-2	Expand Backup Power Capabilities of all Jurisdictions	Multi-hazards: Thunderstorm (hail, lightning), Flood, Severe Winter Storm, High Wind, Landslide, Earthquake, Dam Failure, Wildfire	County OEM w Town of Taos, Village of Questa, Village of Taos Ski Valley, Town of Red River	Both	Medium	4
MJ-3	Implement Thinning and defensible space projects identified in the countywide and local Community Wildfire Protection Plans that mitigate wildfire impacts on structures, infrastructure, and natural systems.	Wildfire, Drought	Forestry Dept., CWPP Core Team, Village of Questa, Village of Taos Ski Valley, Town of Red River, Town of Taos	Existing	Medium	1, 2, 4
MJ-4	Rio Fernando de Taos Revitalization Project Work Plan Implementation	Drought, Flood, Wildfire	Town of Taos, Taos County	Both	High	1, 2, 4
<i>Municipal Actions</i>						
RR-1	Landslide/mudslide mitigation near Red River on NM Hwy 39	Landslide/Mudslide/Rock Fall	Town of Red River Marshal's Office	Both	Medium	1, 2
RR-2	Continued compliance with NFIP for Town of Red River	Flood	Town of Red River Planning Dept.	Both	Medium	1

Action ID	Action Title	Hazard(s) Mitigated	Lead Agency	Address Existing or Future Development	Priority	Related Goal
ToT-1	Continued compliance with NFIP for Town of Taos	Flood	Town of Taos Planning Dept.	Both	High	2, 3
ToT-2	Domestic and livestock animal evacuation and shelter planning- Participation in County Project	Wildfire	Town of Taos Police Dept.	Existing	Medium	1, 4
VoQ-1	Questa Water Conservation to Increase Drought Resilience	Drought	County OEM – and Village of Questa	Both	Medium	2, 4
VoQ-2	Continued compliance with NFIP for Village of Questa	Flood	Village of Questa Administration and County Planning	Both	Medium	2, 3
VTSV-1	Final Approval and Implementation of Village CWPP	Wildfire	VTSV - Firewise Community BOD, VTSV Fire Dept.	Both	High	1, 2
VTSV-2	Expand Emergency Siren Network	Multi-hazards: Wildfire, Severe Winter Storm (avalanche), Landslides,	VTSV - Firewise Community BOD	Both	High	1, 2, 4
VTSV-3	Implement a Text Alert System	Multi-hazards: Wildfire, Severe Winter Storm (avalanche), Landslides	VTSV	Both	High	1, 2, 4

Action ID	Action Title	Hazard(s) Mitigated	Lead Agency	Address Existing or Future Development	Priority	Related Goal
VTSV-4	Periodic Update of Emergency Evacuation Plan	Multi-hazards: Wildfire, Landslides/Rockfall,	VTSV	Both	Low	1, 2, 4
VTSV-5	Public Education on Wildfire Hazards	Wildfire	VTSV - Firewise Community BOD, VTSV Fire Dept.	Both	Medium	2
VTSV-6	Implementation of Various Firewise Projects to Mitigate Wildfire Hazards	Wildfire	VTSV, Nature Conservancy	Both	High	1, 2
VTSV-7	Monitor USFS Projects on St Rd 150	Wildfire	VTSV, USFS	Both	High	1, 2
VTSV-8	Source Water Protection Plan Implementation	Drought, Wildfire	VTSV	Both	High	1, 2

The following provides project specifics and implementation details for mitigation actions identified. They are grouped by the type of hazard(s) they address.

TC-1 *Become a StormReady Community*

Mitigation Project Title	Become a StormReady Community
Hazard(s) Mitigated	Thunderstorm (hail, lightning), Flood, Severe Winter Storm, High Wind
Project Description, Issue/Background	<p>The County will become an officially designated StormReady Community by the National Weather Service to increase community resilience from weather and flood hazards. StormReady is a National Weather Service (NWS) Program that helps communities to better prepare to save lives from the onslaught of severe weather through advanced planning, education and awareness. This is an accredited program through the National Oceanic & Atmospheric Administration & the National Weather Service.</p> <p>By participating in StormReady, emergency managers can earn recognition for their jurisdiction by meeting the program’s guidelines. The StormReady Program is intended to:</p> <ul style="list-style-type: none"> • Reduce fatalities, injuries and minimize property damage through timely distribution, receipt and effective communication of hazardous weather and flood warnings between the NWS, emergency managers and public • Provide detailed and clear recommendations emergency managers may use to establish or improve hazardous weather and flood planning, operations and public response • Empower Americans to make better decisions before and during weather and flood hazards through community preparedness <p>This action would entail meeting with the NWS to review the guidelines of the program and verifying that Taos County has made a strong commitment to implement the infrastructure and systems needed to save lives and protect property when hazardous weather and flooding strikes. The action would create a way to advertise weather to community with NOAA on weekly updates on all weather on a weekly basis and possible public announcements via radio, email, etc.</p>
Related planning mechanisms	Weather announcements
Other Alternatives	Weather advisories from reporters and radio stations
Responsible Office/ Agency	OEM

Partners	All agencies; NOAA/NWS
Priority (High, Medium, Low)	Medium
Cost Estimate	Low for certification assuming all programs in place to achieve designation
Benefits (Avoided Losses)	Properly inform community of weather coming in on weekly basis; mitigate loss of life and injury from severe weather through advanced planning, education and awareness. StormReady can also earn credits in the NFIP's Community Rating System should the County chose to participate in the future to help lower the cost of flood insurance.
Potential Funding	Can be accomplished with existing budget and staff time.
Schedule	Ongoing; Achieve certification in 2018

TC-2 *Improve E-911 Addressing Data and Signage for Life Safety Benefits*

Mitigation Project Title	Improve E-911 Addressing Data and Signage for life safety benefits
Hazard(s) Mitigated	Multi-hazards: flooding, wildfire, and severe winter storm
Project Description, Issue/Background	<p>Taos County began official addressing for Enhanced 911 (E-911) in the mid-1980s. However the project was never completed fully and around 3,000 (20%) houses are not listed with an address in the County’s E-911 data. In addition recent fieldwork has revealed that around 50% of all houses do not have an address adequately displayed. There is also a mismatch of data between the MSAG, ALI and Taos County Address data that needs to be resolved.</p> <p>Taos County has created a Rural Addressing Master Plan in place and began implementing this plan in the Fall of 2016. The plan is designed to resolve these issues through a combination of database editing, fieldwork, community engagement, and publicity. Taos County has put up funds to cover the cost of house number placards and is changing its ordinance to remove fees that act as disincentives to property owners to help improve the state of addressing in the county.</p> <p>Project Actions</p> <ul style="list-style-type: none"> • Clean and synchronize GIS data with the MSAG and the ALI to improve information available to the PSAP dispatchers in an emergency • Fieldwork and community engagement to address unaddressed houses • Fieldwork to identify houses with inadequate signage and distribute house number placards • Identify problem addresses such as duplicates or numbers out of sequence and resolve issues with property owners
Related planning mechanisms	Revising the County’s Rural Addressing Ordinance. Coordinating community meetings in advance of fieldwork with community organizations and fire departments.
Other Alternatives	No action
Responsible Office/ Agency	Taos County Planning Department, Rural Addressing Coordinator and assistant
Partners	Department of Homeland Security and Emergency Management (NMDHSEM), 17 Volunteer Fire Departments, community organizations such as neighborhood associations, radio stations for public service announcements

Priority (High, Medium, Low)	Medium
Cost Estimate	<p>\$110,000 per year in salaries and benefits of two employees dedicated to the work</p> <p>\$7,000 per year in sign costs</p> <p>\$1,000 per year in publicity costs</p>
Benefits (Avoided Losses)	Mitigation of loss of life and injury. Enhances Taos County's ability to plan for and respond to an emergency, cutting response times and potentially saving lives and/or property. Approximately 50% of homes, around 7,500, are either missing from our database or have inadequate signage which will impair the ability of emergency responders to locate people in an emergency or effectively evacuate persons in advance of a wildfire.
Potential Funding	NMDHSEM GIS grant funding \$5,000 per year, likely to decrease in the future
Schedule	<p>Clean and synchronize data by end of 2017</p> <p>Aim to complete fieldwork of Taos County by 2021</p> <p>Aim to resolve problem addresses by 2023</p>

TC-3 *Provide training with all entities to better prepare and mitigate hazards and strengthen working relationships with all agencies*

Hazard(s) Mitigated	Multi-hazards: Dam Failure, Drought, Earthquake, Flood, High Wind, Landslide, Severe Winter Storm, Thunderstorm, Wildfire, Hazardous Materials
Project Description, Issue/Background	Continued training for ALL emergency responders to better serve our community, and to gain better working relationships with all entities throughout. Also work on action plans as well as briefings, and de-briefings. This project would look for available trainings to be brought in to better our emergency efforts for the community. The types of trainings needed could include active shooter training, hazmat trainings, hospital emergency situational trainings, evacuation trainings, shelter in place, LZ training for helicopter landings, etc.,. A dam failure exercise would be also be beneficial.
Related planning mechanisms	
Other Alternatives	Travel for trainings if needed
Responsible Office/ Agency	County OEM and municipalities of Town of Taos; Town of Red River; Village of Questa; Taos Ski Valley
Partners	all agencies
Priority (High, Medium, Low)	High
Cost Estimate	Variable depending on training
Benefits (Avoided Losses)	To prepare and work together as a team, as well as protect the community
Potential Funding	Agency budgets
Schedule	Ongoing annually with multiple trainings throughout the year, and as needed to better multi-agency working relationships for smoother operations

TC-4 Enhance evacuation and shelter planning and escape route awareness

Hazard(s) Mitigated	Multi-hazards: Dam Failure, Earthquake, Flood, High Wind, Landslide, Severe Winter Storm, Thunderstorm, Wildfire, Hazardous Materials
Project Description, Issue/Background	<p>This project would create a multi-hazard Evacuation Plan for the County to include the fire districts. The plan would identify escape routes and safe shelters in each district, as well as shelter in place areas if the community is unable to evacuate.</p> <p>The project would initiate by obtaining a list and maps (where available) of escape routes for every fire district in the county, and to verify that all escapes routes are accessible.</p> <p>The effort would have each fire district go over escape routes with OEM and County Fire Chief. Make sure each responder knows all escape routes in their district.</p>
Related planning mechanisms	EOP, CWPP, Dam Emergency Action Plans (EAP)
Other Alternatives	No action
Responsible Office/ Agency	OEM, County Fire Chief, Individual District Fire Chiefs,
Partners	All agencies
Priority (High, Medium, Low)	Medium
Cost Estimate	\$50-60k for consulting assistance
Benefits (Avoided Losses)	The potential to save lives in a wildfire or other hazard event.
Potential Funding	EMPG, grants, in-house budgets
Schedule	Initiate in 2017

TC-5 EMS Transportation / Resources for temporary closure and evacuation of local hospital and nursing home

Hazard(s) Mitigated	Wildfire, Flood
Project Description, Issue/Background	<p>This project would assess adequacy of EMS Resources for evacuation of local hospital and nursing home located in a high risk area. The Holy Cross Hospital and Taos Living Center are built at base of mountain and within 1/2-1/4 mile of wildfire hazards and also at risk to flooding. These Areas are 1 way in 1 way out with no other means of entry. Evacuation of hospital is a concern. This project would assess:</p> <p>1) Need for additional resources</p> <p>2) Activating mutual aid for use of transportation resources</p> <p>3) Activation and notification of surrounding hospitals around Taos County for accepting patients:</p> <p>North: Colorado La Jara, Alamosa Raton Miners Colfax South: Espanola, St. Vincents - Santa Fe</p> <p>4) Sources for temporary medical facilities</p>
Related planning mechanisms	Emergency Operations Plan
Other Alternatives	Other means of temporary medical facilities
Responsible Office/ Agency	OEM / EMS: Taos, Rio Arriba Other Transportation agencies
Partners	Holy Cross Hospital / Living Center / Taos County EMS
Priority (High, Medium, Low)	Medium
Cost Estimate	To be Determined
Benefits (Avoided Losses)	Casualties and loss of life
Potential Funding	N/A
Schedule	Beginning planning in 2017

TC-6 Wildfire Education with the LEPC to address wildfire risks in relation to Hazardous Materials

Hazard(s) Mitigated	Multi-hazards: Wildfire, Hazardous Materials
Project Description, Issue/Background	<p>The risk assessment noted wildfire risk to some hazardous materials facilities such as propane storage. This project would engage the Taos County LEPC to further assess the need for wildfire mitigation around hazardous materials facilities and provide education on risks and mitigation techniques.</p> <p>This project would include educating the community about the dangers that may occur in our area. How to properly extinguish camp fires, proper disposal of ashes from fire places, smoking, fire lines when burning brush in property, proper disposal of trash (DO NOT BURN).</p>
Related planning mechanisms	Radio, school presentations, flyers, emails, social media education
Other Alternatives	Create an organization to do presentations
Responsible Office/ Agency	OEM
Partners	LEPC
Priority (High, Medium, Low)	Medium
Cost Estimate	Low
Benefits (Avoided Losses)	Improve safety of community from wildland fires, better knowledge to the constituents
Potential Funding	Can be accomplished with staff time
Schedule	By 2019

TC-7 *Domestic and livestock animal evacuation and shelter planning*

Hazard(s) Mitigated	Wildfire, flood
Project Description, Issue/Background	<p>Sheltering, moving, care giving, of animals (domestic and livestock) can be challenging in time of multi-hazard situations and is a primary reason that residents may not heed evacuation orders. Multi-agency cooperation and planning between Animal Shelter, Animal Control and Law Enforcement is needed to help mitigate loss of animals. This project would promote education and awareness with the public in proper sheltering and care giving during multi-hazard situations.</p> <p>The project would be accomplished in conjunction with shelters and law enforcement along with an Action Plan and Training.</p>
Related planning mechanisms	Creation of an action plan between agencies / shelter and training, education through media and PSAs.
Other Alternatives	Other means of temporary sheltering and animal protection
Responsible Office/ Agency	Taos County Animal Control, Taos P.D. Animal Control, Taos County Shelters and Veterinary Clinics.
Partners	Town of Taos, Taos County, Questa Village and Animal Shelters
Priority (High, Medium, Low)	Medium
Cost Estimate	Low
Benefits (Avoided Losses)	Animal and Human safety
Potential Funding	Town of Taos/Taos County
Schedule	Begin planning in 2017 with completion by 2019

TC-8 Taos County Wildfire Protection Regulations Refinement

Hazard(s) Mitigated	Wildfire
Project Description, Issue/Background	<p>Taos County now has Wildland Urban Interface (WUI) regulations implemented within the current Land Use Regulations as part of the permitting process that is integrated with the building and manufactured housing permitting process. The regulations still need to be refined to ensure future compliance with CCI regulations adopted by the New Mexico Construction Industries Division.</p> <p>The enhancement and enforcement of regulations related to development in the Wildland Urban Interface would entail the following:</p> <ul style="list-style-type: none"> • Fire resistant construction guidelines • Defensible space requirements on new development • Review of projects by individual Taos County departments • Maintaining certification of building inspectors, fire marshal
Related planning mechanisms	Update of Land Use Regulation to coincide with CCI WUI regulations. Community Wildfire Protection Plan; related to Taos County Comprehensive Plan Goal 5: Propose new land use policies to support wildfire risk reduction in the wildland-urban interface.
Other Alternatives	No action
Responsible Office/ Agency	Taos County Planning Department, Taos County WUI Coordinator, OEM Director and Fire Chief
Partners	State, Federal and Local agencies
Priority (High, Medium, Low)	High
Cost Estimate	<p>Cost of yearly Contract with WUI Coordinator \$30,000 – 40,000</p> <p>Update of CWPP plans \$15,000.00 per 5yrs</p> <p>Chipper Days \$20,000 per year</p> <p>Update of Comprehensive Plan \$ 50,000 per 5yrs</p> <p>Update of Land Use and Subdivision Regulations periodically - General Fund</p>
Benefits (Avoided Losses)	Wildfire protection development standards minimizes high risk development in the WUI areas of the county. WUI performance standards require some form of mitigation, normally through elevating site plans and construction plans. The benefit is reduced losses to community members from Wildfire.
Potential Funding	Title III Secure Schools Act, NMAC grants, NFL grants, CFRP grants. Rio Grande, Water Fund Headwaters Economics and NMFA grants

Schedule	Ongoing annually
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TC-9 *Implementation of large-scale fuel treatments and landscape restoration*

Hazard(s) Mitigated	Wildfire
Project Description, Issue/Background	<p>There is funding available through grants and partnerships to help implement large-scale fuel treatments and landscape restoration to help reduce the risk of catastrophic wildfires. The U.S. Forest Service Southwestern Region Collaborative Forest Restoration Program (CFRP) provides cost-share grants for forest restoration projects on Federal, Tribal, State, County, Land Grant, or Municipal forest lands in New Mexico that are designed through a collaborative process that includes affected communities and other stakeholders. Approximately \$3 Million was available in 2016. By working together, small business owners, conservation and environmental organizations, community groups, tribes, colleges, universities and other organizations can qualify for CFRP grants for forest restoration projects that reduce the threat of wildfire, improve watershed conditions, and provide jobs and training to local communities.</p> <p>Applicants are encouraged to submit applications for projects that facilitate landscape- scale, multi-jurisdictional efforts.</p> <p>The County continues to apply for and implement the NFL grants in lockstep with Collaborative Forest Restoration Program (CFRP) projects. Taos Soil and Water Conservation District offers a cost-share grant, which usually pays 85% of thinning cost on private property. Through The Nature Conservancy and CFRP monies, we continue to address large-scale fuel treatments on federal, tribal and private lands. Two issues that we may need to address in the future will be the contractor base of people do the thinning, and what is the best way to utilize small diameter wood removed (site specific).</p>
Related planning mechanisms	Countywide and local Community Wildfire Protection Plans
Other Alternatives	No action
Responsible Office/ Agency	Taos County, The Nature Conservancy, USFS, BLM
Partners	Taos County CWPP Core Team, Taos Soil and Water Conservation District, local forest contractors and sawmills
Priority (High, Medium, Low)	Low

Cost Estimate	Variable depending on the project. CFRP total project costs must not exceed \$450,000 over 4 years (including match). Total annual costs must not exceed \$150,000 (including match). Individual grant awards will not exceed \$360,000 in Forest Service funding over 4 years, and not more than \$120,000 in any one year. As a condition of award the applicant must provide a non-federal match of 20% of the total costs of the project.
Benefits (Avoided Losses)	Reduced severity and intensity of wildfires, improved watershed health, Small diameter wood applications
Potential Funding	The Nature Conservancy, Non-Federal Land Grant (NM State Forestry), CFRP Grant, NRCS.
Schedule	Review notices of funding availability and apply on an annual basis through 2022

TC-10 Encourage Firewise or Fire Adapted Communities on a countywide scale

Hazard(s) Mitigated	Wildfire
Project Description, Issue/Background	<p>NFPA’s Firewise Communities Program encourages local solutions for safety by involving homeowners in taking individual responsibility for preparing their homes from the risk of wildfire. Firewise is a key component of Fire Adapted Communities – a collaborative approach that connects all those who play a role in wildfire education, planning and action with comprehensive resources to help reduce risk. Fire Adapted Communities encourages communities in wildfire prone areas to work together to be fully prepared for wildfire. A “Fire Adapted Community” incorporates people, buildings, businesses, infrastructure, cultural resources, and natural areas to prepare for the effects of wildfire.</p> <p>The County will continue to encourage Firewise Communities, of which we currently have 6 certified and at least two more pending at this time. Outreach to communities has been ongoing, with some of the best success as a “piggyback” program with HOAs and ditch association meetings.</p>
Related planning mechanisms	CWPPs, NFPA Firewise program, Ready, Set, Go program. Fire Adapted Communities
Other Alternatives	No action. We must learn to accept fire in the ecosystem and smoke in the air.
Responsible Office/ Agency	Taos County WUI Coordinator, Taos Planning Department.
Partners	Taos News, Taos Soil and Water, Taos CWPP Core Team, Taos County Planning Department.
Priority (High, Medium, Low)	Medium
Cost Estimate	Low
Benefits (Avoided Losses)	Loss of life and property. By educating the public and especially the youth, we can once again accept wildfire as natural function and safely live with it.
Potential Funding	Title 3 funding, The Nature Conservancy.

Schedule	Outreach will occur on an annual basis.
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TC-11 Wildfire education and awareness

Hazard(s) Mitigated	Wildfire
Project Description, Issue/Background	<p>Wildfire is one of the most significant hazards in the county. An outreach program to raise awareness of the hazard and educate the public on what they can do to mitigate loss to their property is a key part of the County's wildfire mitigation program. The CWPP encourages implementation of Firewise practices with private property owners. This includes development of a public service announcement on clean up or chipper days of potential fuel sources, including debris, on private property. This project will continue outreach and education with communities, with some of the best success as a "piggyback" program with HOAs and ditch association meetings. WUI Coordinator will continue with presentations and media outreach. This will include:</p> <ul style="list-style-type: none"> • Sponsoring a radio show • Development of a public service announcement on cleanup of potential fuel sources, including debris, on private property • Sponsor chipper days to allow for safe disposal of slash material
Related planning mechanisms	CWPP, NFPA Firewise program, Ready, Set, Go program.
Other Alternatives	None. We must learn to accept fire in the ecosystem and smoke in the air.
Responsible Office/ Agency	Taos County WUI Coordinator.
Partners	Taos News, Taos Soil and Water, Taos CWPP Core Team, Taos County Planning Department.
Priority (High, Medium, Low)	Medium
Cost Estimate	Unknown
Benefits (Avoided Losses)	Loss of life and property. By educating the public and especially the youth, we can once again accept wildfire as natural function and safely live with it.
Potential Funding	Title 3 funds, The Nature Conservancy.
Schedule	Annual implementation of activities through 2021

TC-12 *Widen access roads for large equipment to gain access to emergency situation*

Hazard(s) Mitigated	Wildfire
Project Description, Issue/Background	This project would explore the feasibility of widening roads throughout the county or in high risk wildfire areas for means of access/egress in case of emergencies. OEM would work with the Planning Department to find a solution on widening roads in our communities for better access for all emergency vehicles. This could include public input through surveys, community outreach, etc. Taking emergency vehicle access into account in future land use planning and zoning will create safer communities.
Related planning mechanisms	Taos County Comprehensive Plan - Transportation Element includes a related goal: <i>Goal 3. Improve the development and maintenance of safe roads and bridges, especially related to emergency and school vehicles.</i>
Other Alternatives	No action
Responsible Office/ Agency	OEM
Partners	Taos County Planning
Priority (High, Medium, Low)	High
Cost Estimate	Low for initial staff conversations and planning. Potentially high to implement and retrofit high risk areas
Benefits (Avoided Losses)	Better access, faster response for emergency equipment.
Potential Funding	Initial study can be done with in house staff
Schedule	Complete initial analysis by 2018

TC-13 Identify firefighting water supply shortcomings and alternate water resources

Hazard(s) Mitigated	Wildfire
Project Description, Issue/Background	This project would identify current water supply areas in each of the 13 County Fire Districts. Adequate water supply and the ability for access for the apparatus to get to water source is critical in initial fire suppression and mitigating impacts. The project would work with the fire districts to identify existing sources. The feasibility of doing water shuttles with different departments would also be explored.
Related planning mechanisms	CWPP
Other Alternatives	Water Tender shuttle operation
Responsible Office/ Agency	Taos County Fire District Chiefs/ County Fire Chief/ and Municipal Fire Departments
Partners	Taos County Fire Districts, Village of Questa, Town of Taos, Town of Red River, Taos Ski Valley, surrounding NM counties Rio Arriba, Colfax, and Mora. Colorado counties, Costilla County, South Conejos fire protection district.
Priority (High, Medium, Low)	Medium
Cost Estimate	Low
Benefits (Avoided Losses)	Minimize loss of life and property
Potential Funding	State Fire funds, NM State Fire Marshall Grant
Schedule	Begin planning in 2017 with completion in 2018

TC-14 Water Shortage/Outage Mitigation

Hazard(s) Mitigated	Drought
Project Description, Issue/Background	This project would enhance mitigation for water outages that may occur in Taos county, by identifying and obtaining resources such as shower trailers, restroom trailers, non-potable water, drinking water, and any other equipment in case these situations arise. An incident with the Village of Questa in December 2016 resulted in a temporary water supply disruption. This project would identify local stores with drinking water supplies such as bottled water for possible agreements in advance of emergency situations.
Related planning mechanisms	Possible 1033 surplus program, companies that have any of the equipment in stock
Other Alternatives	Research other entities that may have equipment to use
Responsible Office/ Agency	OEM
Partners	All agencies
Priority (High, Medium, Low)	Medium
Cost Estimate	Low- planning can be done with in-house staff; Cost to purchase or lease resources, where applicable, would be identified during the effort.
Benefits (Avoided Losses)	Having additional water resources in place will mitigate impacts on residents and responders during drought and any water crisis that may arise in Taos County.
Potential Funding	Agency budgets
Schedule	Implement in 2017

TC-15 Create emergency action plans for all dams

Hazard(s) Mitigated	Dam Failure
Project Description, Issue/Background	According to the risk assessment in the plan only 4 of the 10 high hazard dams have Emergency Action Plans (EAPs). Some of these dams are above the towns of Red River, Taos, and the Village of Questa. This project would create Emergency Action Plans for all dams throughout Taos county in case the event of dam failures. EAPs can help identify communication and warning protocols in the event of an incident at a dam, thus helping to mitigate loss of life through effective public notification and response during an emergency. County OEM would work with dam owners to create these EAP's.
Related planning mechanisms	Emergency Action Plans, County Emergency Operations Plan
Other Alternatives	Contacting proper agencies for the dams in Taos county during an event, which would not be efficient or effective.
Responsible Office/ Agency	OEM
Partners	Town of Taos, Village of Questa and Town of Red River; All agencies; dam owners; New Mexico Office of the State Engineer
Priority (High, Medium, Low)	Medium
Cost Estimate	Unknown
Benefits (Avoided Losses)	Preparing in event that dams fail.
Potential Funding	Dam owners, New Mexico Office of the State Engineer, FEMA Dam Safety funding
Schedule	Within next 5 years.

TC-16 Perform Enhanced Dam Failure Risk Assessments

Hazards Mitigated	Dam Failure
Project Description, Issue/Background	The risk assessment identified potential risk to populations living below the 10 high hazard dams in the county. While the likelihood of failure is low, impacts could be catastrophic. There is a lack of available GIS-based inundation mapping, which would enable the county and municipalities to identify downstream structures and populations. By analyzing the risk further the county can prioritize planning and evacuation/warning procedures and raise awareness of the hazard in targeted areas. Funding from other sources, possibly the NM State Engineer, would be investigated to allow for a contractor to develop the inundation layers, which could require hydrologic and hydraulic modeling.
Other Alternatives	Work with paper-based mapping in the four existing EAPs
Related planning mechanisms	Emergency Action Plans
Responsible Office/ Agency	OEM and Taos County Planning Department
Partners	All agencies; dam owners; New Mexico Office of the State Engineer
Priority	Low
Cost Estimate	Variable depending on the dams that would need failure modeling; \$75,000-150,000
Benefits (Avoided losses)	Avoided loss of life and injuries from a refined understanding of risk that can be used for improved warning and evacuation.
Potential Funding	FEMA Dam safety grants, NMDHSEM, dam owners
Schedule	2018-2020

TC-17 Continued Compliance with NFIP

Hazard(s) Mitigated	Flood
Project Description, Issue/Background	<p>Taos County has been a member of the NFIP since the 1970s. However enforcement of the NFIP has been variable during that time. The quality of NFIP related practices and process has varied dependent upon a CFM being employed and the level of their training and experience. A Flood Damage Prevention Ordinance was not adopted until 2009 prior to the floodplains being remapped by FEMA in 2010. There was no manufactured home permitting in Taos County until 2007 therefore there was also no floodplain development permitting process to go alongside it. Taos County now has a floodplain development permitting process that is integrated with the building and manufactured housing permitting process. It still needs to be refined to ensure future compliance. FEMA conducted a Community Assistance Visit in the Summer of 2016 and deemed the County to be in compliance with the NFIP. FEMA did have recommendations and these form the backbone of this action point:</p> <ul style="list-style-type: none"> • Continue to permit floodplain development • Continue to record and retain permitting paperwork • Train a second CFM and ensure that there are always 2 CFMs employed by Taos County • Have CFMs attend the FEMA 273 course • Maintain CFM's CFM status through CECs • Formalize the floodplain administrator role in a job description • Build up a solid portfolio of work in preparation for a CRS application
Related planning mechanisms	Consider refining the County's Floodplain Damage Prevention ordinance to meet current FEMA requirements and recommendations.
Other Alternatives	
Responsible Office/ Agency	Taos County Planning Department, appointed Floodplain Administrator and assistant
Partners	FEMA, NM Floodplain Managers' Association (NMFMA), New Mexico Department of Homeland Security and Emergency Management (NMDHSEM), US Army Corps of Engineers (USACE), New Mexico Environment Department (NMED)
Priority (High, Medium, Low)	High
Cost Estimate	<p>Cost of training a second CFM and sending both CFMs to the 273.</p> <p>5 days per diem for FEMA 273 = \$425 x2 = \$850</p>

	<p>Once CFM attending NMFMA conferences to get necessary CECs = \$800 per year</p> <p>Increased salary for both CFMs when roles are formalized within a job description = \$4,000 per year</p>
Benefits (Avoided Losses)	<p>Floodplain development prevents high risk development in the floodplain. Floodplain development permits require some form of mitigation, normally through elevating the first floor of the structure to a safer level. Floodplain development permits discourage floodplain development through additional cost and impacts on aesthetics.</p> <p>The benefit is reduced losses to community members from flooding.</p>
Potential Funding	FEMA 273 courses are available at low cost thanks to the NMDHSEM.
Schedule	Annual implementation

TC-18 *Manage the floodplain beyond FEMA minimum requirements including producing educational flyers improving flood map availability*

Hazard(s) Mitigated	Flood
Project Description, Issue/Background	<p>FEMA conducted a Community Assistance Visit in the Summer of 2016 and deemed the County to be in compliance with the NFIP. The County is not yet in a position to join the Community Rating System (CRS) due to historical issues with permitting and archiving. However Taos County hopes to show a good record of compliance over the next five years so that we may be able to apply to join the CRS. In order to maximize the benefit from joining the CRS Taos County will need to partake in additional activities. The two the County will initially focus on relate to public awareness:</p> <ul style="list-style-type: none"> • Produce educational flyers for those wishing to develop in the floodplain or existing owners affected by a floodplain designation • Make the DFIRM available to the community through the use of ArcGIS Online mapping <p>The purpose of these goals is to increase public awareness of the dangers and costs of developing in the floodplain and enabling property buyers to determine the location of the property in relation to the floodplain. It is hoped that this will reduce future floodplain development.</p>
Related planning mechanisms	<p>Use desktop publishing software to produce flyers. Check NFIP library for existing flyers for inspiration. Find ways to effectively distribute the flyers to the community and target ordinance through community organizations.</p> <p>Create interactive floodplain webmap using ArcGIS online and find ways to publicize. Send link to groups of realtors and insurers in the community. Make the link prominent on the Taos County website / Facebook page /twitter.</p>
Other Alternatives	
Responsible Office/ Agency	Taos County Planning Department, appointed Floodplain Administrator and assistant
Partners	FEMA, NM Floodplain Managers' Association (NMFMA), New Mexico Department of Homeland Security and Emergency Management (NMDHSEM), US Army Corps of Engineers (USACE), New Mexico Environment Department (NMED), ESRI
Priority (High, Medium, Low)	High
Cost Estimate	Cost of printing 500 flyers is approximately \$250 at 50 cents apiece.

	ArcGIS online is free with our ongoing maintenance contract.
Benefits (Avoided Losses)	Reduced floodplain development leading to reduced risk to life and property from flooding, hard to quantify.
Potential Funding	County budget
Schedule	Both projects to be completed by the end of 2017

TC-19 *Improve county floodplain mapping*

Hazard(s) Mitigated	Flood
Project Description, Issue/Background	<p>The most recent mapping of the Taos County floodplains was conducted by FEMA in 2010. 99.02% of floodplains mapped by FEMA in Taos County were mapped using approximate methods and a 30M Digital Elevation Model (DEM). The result is bad mapping in some areas. Examples include:</p> <ul style="list-style-type: none"> • A river channel running outside of the mapped floodplain • The Upper Red River Valley not being mapped at all <p>Taos County has pushed for better mapping through conversations with representatives from FEMA Region VI and the Earth Data Analysis Center (EDAC) at the University of New Mexico (UNM). This has resulted in FEMA and USGS jointly funding a LiDAR capture project of Taos County in 2016.</p> <p>We will continue to promote the need for better mapping and initially for non-regulatory projects related to better floodplain data to be followed at a later date by a regulatory remapping of Taos County.</p> <p>The objective is to have a much more accurate understanding of flood risk and therefore to be more accurate and equitable in our management of the floodplain.</p>
Related planning mechanisms	Lobbying FEMA Region VI to utilize the data to produce products for regulatory and non-regulatory projects under RiskMAP.
Other Alternatives	Train a CFM to take the LiDAR data and process it with GIS software to produce flooding predictions. A costly and time consuming alternative.
Responsible Office/ Agency	Taos County Planning Department, appointed Floodplain Administrator and assistant
Partners	FEMA, NM Floodplain Managers' Association (NMFMA), New Mexico Department of Homeland Security and Emergency Management (NMDHSEM), US Army Corps of Engineers (USACE), New Mexico Environment Department (NMED), EDAC
Priority (High, Medium, Low)	High
Cost Estimate	Cost of attending NMFMA conferences in order to meet with representatives from FEMA and EDAC. \$800 per year
Benefits (Avoided Losses)	A more accurate understanding of the floodplain. Restricted development in previously unmapped areas. Hard to calculate at this point in time.

Potential Funding	FEMA Region VI has provided funding for the LiDAR capture project and is likely to fund the initial analysis to produce non-regulatory products.
Schedule	Non-regulatory products should be available by the end of 2018 and the goal is to have the County remapped by 2021.

MJ-1 Community Hazard Awareness and Education

Hazard(s) Mitigated	Multi-hazards: Dam Failure, Drought, Earthquake, Flood, High Wind, Landslide, Severe Winter Storm, Thunderstorm, Wildfire, Hazardous Materials
Project Description, Issue/Background	<p>This project would identify and assess ways to address the community of natural disasters that could occur in Taos county, and how to mitigate and prepare for these situations. Ways to address the community may include: Public radio announcements, web-based information, public school presentations, public forums to discuss the potential, Newsletters, the local newspaper, etc. This could include distribution of Red Cross and NOAA brochures and making Taos County-specific materials for the web or distribution. The hazard mitigation plan will be posted to the County's website for access by the public and planners.</p> <p>The municipalities will include distribution of materials related to hazards to raise awareness of what individuals can do to protect themselves and their property from hazards. This will include brochures and links to web-based information on the County's website, including the link to the hazard mitigation plan.</p>
Related planning mechanisms	Community Wildfire Protection Plan and FireWise workshops;
Other Alternatives	Educational announcements, weekly flyers
Responsible Office/ Agency	Taos County OEM in partnership with municipalities of Taos, Village of Questa, Village of Taos Ski Valley, and Town of Red River
Partners	Municipalities of Taos, Village of Questa, Village of Taos Ski Valley, and Town of Red River will coordinate with County OEM on the types and distribution of materials and web-based links.
Priority (High, Medium, Low)	High
Cost Estimate	Typically low for web-based information; Approximately \$10,000 depending on the methods
Benefits (Avoided Losses)	Communications throughout the county for better understanding of emergencies that may occur in our area. Improved self-reliance and personal property mitigation will lessen the impact on first responders.
Potential Funding	Research to find possible funding
Schedule	Implement on an annual basis over next 5 years

MJ-2 *Expand Backup Power Capabilities of all Jurisdictions*

Hazard(s) Mitigated	Multi-hazards: Thunderstorm (hail, lightning), Flood, Severe Winter Storm, High Wind, Landslide, Earthquake, Dam Failure, Wildfire
Project Description, Issue/Background	Multiple hazards have the potential to cause power loss and loss of critical services within the county. This project would expand the backup power capabilities for critical facilities of all incorporated jurisdictions and unincorporated County. Initially this project would identify the presence or absence of adequate generator hook-ups or transfer switches at the critical facilities identified with the HMP. Critical facilities without generator hook-ups would be identified for an assessment of critical power needs and quotes from vendors on costs to install the appropriate transfer switch or interlock device. Secondly, this project would develop a Memorandum of Understanding on sharing of generator resources between the Town of Taos, the County, and municipalities of Red River, Questa, and Taos Ski Valley. The Town of Taos has some mobile generators that could be made available to other jurisdiction to mitigate impacts related to loss of power at critical facilities. Under the MOU the County could loan equipment from Taos PD when needed during hazard events that could cause power outages to critical facilities and shelters. Additional mobile generator resources will be identified and acquired where applicable.
Related planning mechanisms	Law enforcement surplus
Other Alternatives	Law enforcement surplus, 1033 program, other programs for equipment
Responsible Office/ Agency	Taos County OEM and all municipalities including: Town of Taos Police Department, Red River Planning, Taos Ski Valley Administration, Village of Questa Police Dept.
Partners	
Priority (High, Medium, Low)	Medium
Cost Estimate	Low to develop MOU; Transfer switches may run \$500-5,000 depending on the facility needs.
Benefits (Avoided Losses)	Ensuring shelters and critical facilities have electricity during hazard events will benefit people and reduce economic losses.
Potential Funding	Can be accomplished with existing budgets
Schedule	Develop MOU by end of 2017

MJ-3 *Implement Thinning and defensible space projects identified in the countywide and local Community Wildfire Protection Plans that mitigate wildfire impacts on structures, infrastructure, and natural systems.*

Hazard(s) Mitigated	Wildfire, Drought
Project Description, Issue/Background	<p>This project links the multi-hazard mitigation plan with wildfire mitigation projects in the CWPPs through implementation of thinning and defensible space projects that mitigate wildfire impacts on structures, infrastructure, and natural systems.</p> <p>The CWPP Core Team has been meeting since 2007 and is the decision making mechanism for identifying risk ratings for communities and project priorities. Often this group has 30-40 people with representation from USFS, BLM, State Forestry, RMYC, TNC, Taos County, Taos Soil and Water, Forest Guild, 2 local tribes, local FDs, local communities and others.</p> <p>A general theme from Firewise and other stakeholders is a push for more thinning, maintenance and restoration projects in Taos County. This project would implement mitigation practices with a focus on high risk hazards and watersheds. Fuels mitigation in watersheds will also increase drought resiliency for all of the municipalities by decreasing the potential for catastrophic fires.</p>
Related planning mechanisms	2016 Taos County Community Wildfire Protection Plan. Individual community CWPPs. Fire Adapted Communities.
Other Alternatives	Develop communities with infrastructure that can withstand the assault of a wildfire, for example; Fire Adapted Communities.
Responsible Office/ Agency	Taos County Planning Department, Taos County WUI Coordinator, all municipalities including: Village of Questa, Village of Taos Ski Valley, Red River and Taos, Local Fire Departments,.
Partners	Taos County CWPP Core Team (NM State Forestry, Taos Soil and Water District, The Nature Conservancy, USFS Carson National Forest, Taos BLM, NMAC, Rocky Mountain Youth Corp, Headwaters Economics, Others)
Priority (High, Medium, Low)	Medium
Cost Estimate	Variable depending on project
Benefits (Avoided Losses)	Avoidance of loss to life and property due to catastrophic wildfire. Preservation of watershed integrity. Preserve overhead utilities and towers. Weakened economy if tourism is slowed or halted, especially

	with the 3 ski areas in Taos County as well as hiking, biking, fishing and hunting.
Potential Funding	The Nature Conservancy, Non-Federal Land Grant (NM State Forestry), CFRP Grant, NRCS, Taos Soil and Water District,
Schedule	Annual implementation of activities over next 5 years.

MJ-4 Rio Fernando de Taos Revitalization Project Work Plan Implementation

<p>Hazard(s) Mitigated</p>	<p>Drought, Wildfire, Flood,</p>
<p>Project Description, Issue/Background</p>	<p>The Rio Fernando runs through the town of Taos, playing an integral part in the health of the town and surrounding wildlife. The Rio Fernando de Taos watershed, which begins at the top of Taos Canyon in the Sangre de Cristo Mountains and covers 66.4 square miles of land, has been relied on for centuries for water and other natural resources, and serves as a corridor between the Taos Valley and the plains. The waters from the Rio Fernando are critical for supporting and enhancing vibrant agricultural in the Taos area by feeding a complex system of seven irrigation ditches (acequias): Acequia del Canon Norte, Acequia del Canon Sur, Acequia Vigil Y Romo, Acequia de Jose Venito Martinez, Acequia de Los Alamos, Randall Reservoir Ditch and Los Pandos. Despite the important role the river and watershed play, the Rio Fernando de Taos watershed experiences multiple stressors that have many possible causes, including traditional grazing in the upper water shed, aging septic systems and recent private development. Many sections of acequias stemming from the Rio Fernando need to be rebuilt or improved, due to wear or lack of upkeep over the years. Wetlands both in the headwaters and in town are degraded and in need of restoration to enhance watershed resiliency.</p> <p>The Rio Fernando de Taos Revitalization Project is a collaborative comprised of individuals, organizations, and government entities working together to support and implement meaningful and lasting revitalization projects in the Rio Fernando watershed. The collaborative completed the Rio Fernando de Taos Revitalization Project Work Plan in 2017. This project formally links the Taos County Hazard Mitigation Plan with the projects contained within the RFdT Work Plan. Many of the projects include mitigation of drought, flood, and wildfire hazards while meeting multiple objectives.</p> <p>Projects in the Work Plan and how they relate to hazard mitigation include:</p> <ul style="list-style-type: none"> • Acequia maintenance and infrastructure improvement (drought and flood) • Forest restoration (wildfire, drought) • Green infrastructure (flood) • Improved grazing management (drought) • Public education and outreach for clean water issues • Rio Fernando Park planning and implementation <p>This project would track the implementation of projects over time, as funding and resources allow.</p>

Related planning mechanisms	Rio Fernando de Taos Revitalization Project Work Plan
Other Alternatives	No action
Responsible Office/ Agency and Partners	Town of Taos Planning Department in collaboration and coordination with Partners noted below
Partners	<ul style="list-style-type: none"> • Amigos Bravos • Taos County • Taos Land Trust • Taos Soil & Water Conservation District • Taos Valley Acequia Association • The Nature Conservancy • US Forest Service
Priority (High, Medium, Low)	High
Cost Estimate	Variable depending on specific project. See specifics noted within the Work Plan.
Benefits (Avoided Losses)	Implementation of projects in the plan have numerous social, environmental, and economic benefits. Acequia improvements and restoration will mitigate public safety and erosion hazards associated with floods, as well as infrastructure damage. Improvements to acequias and associated water management will also provide benefits during droughts.
Potential Funding	Many of the projects identified in the Work Plan could be candidates for FEMA Hazard Mitigation Assistance funds, including those that meet 'climate resilient' actions including groundwater recharge, green infrastructure, and stream restoration. Other sources include USFS, Taos Soil and Water Conservation District, NMAD and associated grantors.
Schedule	Annual implementation on regular basis within next five years.

RR-1 Red River Landslide/Mudslide Mitigation

Hazards Mitigated	Landslide/mudslide
Project Description, Issue/Background	<p>Historically, after large rain events and/or snow melt events, debris in the form of rock, mud and trees have been swept onto NM 38 on either side of the Town of Red River. As this is the only route into and out of the town, this could be catastrophic should the need arise to have multi-agency responses for fire/EMS/police events. It also stops all private and commercial traffic through the area, essentially isolating the town. The previous slides occurred at known locations and from known gathering spots of the debris. By early removal of debris buildup, it should be possible to mitigate the scale, type and recovery of these events.</p> <p>Recommend meeting with MNDOT and NFS in order to work on a scheduled maintenance-type of inspection of known debris fields. Identify and monitor areas of riparian landslide activity. Use GIS to identify and map landslide/debris hazard areas and paths. In addition, we would need to meet with NMDOT, NFS, Taos County and Red River Public Works to see how many earth-moving assets would be available for a large-scale removal project and/or recovery.</p>
Other Alternatives	No action
Related planning mechanisms	
Responsible Office/ Agency	Red River Marshal's Office & National Forest Services
Priority	Medium
Cost Estimate	Dependent upon total man hours needed for inspection/debris mitigation
Benefits (Avoided losses)	By being proactive in removing observed caches of debris and rock, the larger part of the potential danger can be avoided. It would allow the continuation of normal activities or, at the least, reduce the time needed to do so.
Potential Funding	MNDOT, NFS, Taos County
Schedule	Initiate in 2017

RR-2 Red River Continued Compliance with NFIP

Hazard(s) Mitigated	Flood
Project Description, Issue/Background	<p>The Town of Red River participates in the National Flood Insurance Program. This project restates the commitment of the community to implement sound floodplain management practices, as stated in the flood damage prevention ordinance. This includes ongoing activities such as enforcing local floodplain development regulations, including issuing permits for appropriate development in Special Flood Hazard Areas and ensuring that this development is elevated to or above the base flood elevation. Floodplain managers will remain current on NFIP policies, and are encouraged to attend appropriate training and consider achieving Certified Floodplain Manager (CFM) status.</p> <p>This project also includes periodic reviews of the floodplain ordinance to ensure that it is clear and up to date and adequately addresses the level of flood risk identified within the Hazard Mitigation Plan.</p> <ul style="list-style-type: none"> • Continue to enforce permitting in regards to floodplain development • Continue to record and retain permitting paperwork • Suggest changes to improve enforcement of and compliance with regulations and programs; • Participate in Flood Insurance Rate Map updates by adopting new maps or amendments to maps; • Formalize the floodplain administrator role in a job description • Promote and disperse information on the benefits of flood insurance
Related planning mechanisms	
Other Alternatives	
Responsible Office/ Agency	Red River Planning Department, Planner functions as Floodplain Administrator
Partners	FEMA, NM Floodplain Managers' Association (NMFMA), New Mexico Department of Homeland Security and Emergency Management (NMDHSEM), US Army Corps of Engineers (USACE), New Mexico Environment Department (NMED)
Priority (High, Medium, Low)	Medium
Cost Estimate	Low – covered in existing staff budget

Benefits (Avoided Losses)	Reviewing proposals for floodplain and enforcing NFIP regulations prevents high risk development in the floodplain. Floodplain development permits require some form of mitigation, normally through elevating the first floor of the structure to a safer level. The benefit is reduced losses to community members from flooding. Participating in the NFIP allows continued availability of flood insurance to residents which can alleviate financial impacts and speed recovery for those affected.
Potential Funding	Covered in existing staff budget
Schedule	Annual implementation on regular basis, revise ordinance as needed

ToT-1 *Town of Taos Continued Compliance with NFIP*

Hazard(s) Mitigated	Flood
Project Description, Issue/Background	<p>The Town of Taos participates in the National Flood Insurance Program. This project restates the commitment of the community to implement sound floodplain management practices, as stated in the flood damage prevention ordinance. This includes ongoing activities such as enforcing local floodplain development regulations, including issuing permits for appropriate development in Special Flood Hazard Areas and ensuring that this development is elevated to or above the base flood elevation. Floodplain managers will remain current on NFIP policies, and are encouraged to attend appropriate training and consider achieving Certified Floodplain Manager (CFM) status.</p> <p>This project also includes periodic reviews of the floodplain ordinance to ensure that it is clear and up to date and adequately addresses the level of flood risk identified within the Hazard Mitigation Plan.</p> <ul style="list-style-type: none"> • Continue to enforce permitting in regards to floodplain development • Continue to record and retain permitting paperwork • Suggest changes to improve enforcement of and compliance with regulations and programs; • Participate in Flood Insurance Rate Map updates by adopting new maps or amendments to maps; • Formalize the floodplain administrator role in a job description • Promote and disperse information on the benefits of flood insurance
Related planning mechanisms	
Other Alternatives	No Action
Responsible Office/ Agency	Taos Planning Department, Planner functions as Floodplain Administrator
Partners	FEMA, NM Floodplain Managers' Association (NMFMA), New Mexico Department of Homeland Security and Emergency Management (NMDHSEM), US Army Corps of Engineers (USACE), New Mexico Environment Department (NMED)
Priority (High, Medium, Low)	High
Cost Estimate	Low – covered in existing staff budget

Benefits (Avoided Losses)	Reviewing proposals for floodplain and enforcing NFIP regulations prevents high risk development in the floodplain. Floodplain development permits require some form of mitigation, normally through elevating the first floor of the structure to a safer level. The benefit is reduced losses to future development from flooding. Participating in the NFIP allows continued availability of flood insurance to residents which can alleviate financial impacts and speed recovery for those that currently live in or near flood hazard areas.
Potential Funding	Covered in existing staff budget
Schedule	Annual implementation on regular basis, revise ordinance as needed

ToT-2 *Town of Taos Domestic and livestock animal evacuation and shelter planning*

Hazard(s) Mitigated	Wildfire, flood
Project Description, Issue/Background	<p>Sheltering, moving, care giving, of animals (domestic and livestock) can be challenging in time of multi-hazard situations and is a primary reason that residents may not heed evacuation orders. Multi-agency cooperation and planning between Animal Shelter, Animal Control and Law Enforcement is needed to help mitigate loss of animals. Creation of an action plan between agencies / shelter and training education through media and PSAs is needed. This project would promote education and awareness with the public in proper sheltering and care giving during multi-hazard situations.</p> <p>The project would be accomplished in conjunction with shelters and law enforcement along with an Action Plan and Training.</p>
Related planning mechanisms	
Other Alternatives	Other means of temporary sheltering and animal protection
Responsible Office/ Agency	Taos P.D. Animal Control, Taos County Animal Control, Taos County Shelters and Veterinary Clinics.
Partners	Town of Taos, Taos County, Questa Village and Animal Shelters
Priority (High, Medium, Low)	Medium
Cost Estimate	Low
Benefits (Avoided Losses)	Animal and Human safety
Potential Funding	Town of Taos/Taos County
Schedule	Begin planning in 2017 with completion in 2019

VoQ-1 Village of Questa Water Conservation to Increase Drought Resilience

Hazards Mitigated	Drought
Project Description, Issue/Background	This project would educate Village residents about water conservation to increase drought resilience. This project would educate the Village of Questa and constituents on the need to use ditches and irrigation wisely to reduce impacts to the community's water supply. The project will assist the village in gaining an understanding of the daily use of community water and set limits on the use of water gallons used per day when drought affects supply.
Other Alternatives	Develop a drought management plan to outline triggers for water restrictions
Related planning mechanisms	public speaking, schools, public meetings, banners, flyers, etc.
Responsible Office/ Agency	Village of Questa
Partners	Community members, OEM
Priority	High
Cost Estimate	Low
Benefits (Avoided losses)	Prevention of future water outages, community awareness, overcoming water crisis.
Potential Funding	Can be covered in existing staffs' budget
Schedule	Annual implementation on regular basis,

VoQ-2 *Village of Questa Continued Compliance with NFIP*

Hazard(s) Mitigated	Flood
Project Description, Issue/Background	<p>The Village of Questa participates in the National Flood Insurance Program with assistance from Taos County. This project restates the commitment of the community to implement sound floodplain management practices, as stated in the flood damage prevention ordinance. This includes ongoing activities such as enforcing local floodplain development regulations, including issuing permits for appropriate development in Special Flood Hazard Areas and ensuring that this development is elevated to or above the base flood elevation. Floodplain managers will remain current on NFIP policies, and are encouraged to attend appropriate training and consider achieving Certified Floodplain Manager (CFM) status.</p> <p>This project also includes periodic reviews of the floodplain ordinance to ensure that it is clear and up to date and adequately addresses the level of flood risk identified within the Hazard Mitigation Plan.</p> <ul style="list-style-type: none"> • Continue to enforce permitting in regards to floodplain development • Continue to record and retain permitting paperwork • Suggest changes to improve enforcement of and compliance with regulations and programs; • Participate in Flood Insurance Rate Map updates by adopting new maps or amendments to maps; • Formalize the floodplain administrator role in a job description and seek opportunities for training • Promote and disperse information on the benefits of flood insurance
Related planning mechanisms	
Other Alternatives	
Responsible Office/ Agency	Village Administration in coordination with Taos County Planning which functions as Floodplain Administrator for the Village through an agreement
Partners	County Planning, FEMA, NM Floodplain Managers' Association (NMFMA), New Mexico Department of Homeland Security and Emergency Management (NMDHSEM), US Army Corps of Engineers (USACE), New Mexico Environment Department (NMED)
Priority (High, Medium, Low)	High

Cost Estimate	Low – covered in existing staff budget
Benefits (Avoided Losses)	Reviewing proposals for floodplain and enforcing NFIP regulations prevents high risk development in the floodplain. Floodplain development permits require some form of mitigation, normally through elevating the first floor of the structure to a safer level. The benefit is reduced losses to future development from flooding. Participating in the NFIP allows continued availability of flood insurance to residents which can alleviate financial impacts and speed recovery for those that currently live in or near flood hazard areas.
Potential Funding	Covered in existing staff budget
Schedule	Annual implementation on regular basis, revise ordinance as needed

VTSV-1 Final approval and implementation of Village CWPP

Hazard(s) Mitigated	Wildfires Fires
Project Description, Issue/Background	The Village of TSV is at risk of a catastrophic wildfire. The CWPP acknowledges these risks and outlines a specific plan of action to minimize the risks and protect the village and its resources from the devastating impacts of a wildfire. The Village is in the process of finalizing the CWPP. Final approval of the CWPP by the Village will formalize the document so implementation can move forward with various mitigation projects.
Related planning mechanisms	The Village has completed the Firewise Community Assessment by the State Forestry Division.
Other Alternatives	Firewise Comm. BOD assessment of each property owner for defensible space.
Responsible Office/ Agency	Firewise Community BOD for VTSV, Taos County, CWPP, VTSV Fire Dept.
Partners	Local & State government representatives in Taos County & Colfax County
Priority (High, Medium, Low)	High. The approval will aid the Village to apply for grants.
Cost Estimate	N/A – can be done with existing staff
Benefits (Avoided Losses)	We will have the opportunity to secure grant money to aid in providing defensible space to all property owners.
Potential Funding	Funding is not needed for approval; Once approved the CWPP can be leveraged for funding for implementation from various state and federal sources including the Taos Soil and Water Conservation District.
Schedule	Winter prep. Spring, Summer, Fall implementation times from 2017-2022

VTSV-2 Expand emergency siren network

Hazard(s) Mitigated	Wildfires; Landslides; Avalanche
Project Description, Issue/Background	The Firewise Community contacted Sentry Siren, Inc. in Canon City, CO. to do a study of siren feasibility. The study indicated that 4 sirens are needed to span the entire Village. The Village Fire Dept. & Law Enforcement participated in the effort which included budget workshops.
Related planning mechanisms	Siren feasibility study
Other Alternatives	Door to door warning during an event, mobile phone and reverse 911 notifications
Responsible Office/ Agency	Village of TSV and Firewise Comm. BOD
Partners	N/A as to outside of Village
Priority (High, Medium, Low)	High
Cost Estimate	\$10,000 / siren. Budgeted one each fiscal year.
Benefits (Avoided Losses)	The potential to save lives and reduce injuries in the event of a hazard event.
Potential Funding	\$10,000.00 / yr. for 4 years starting in 2015
Schedule	1 per year beginning in 2017 through 2020. Need to get second siren in place summer 2017.

VTSV-3 *Implement a text alert system*

Hazard(s) Mitigated	Wildfires; Avalanches; Rock Slides
Project Description, Issue/Background	The Village of Taos Ski Valley intends to purchase a cell phone texting system from Textinteractions.com. Tourists, guests, residents, etc. will be able to log on to this system and register their cell numbers and they will be notified of a pending hazard. This additional warning/notification system will help save lives.
Related planning mechanisms	VSTV, Fire Dept., Law Enforcement; training from TEXTINTERACTIONS.LLC
Other Alternatives	Tried alert sense but couldn't get a number form FEMA
Responsible Office/ Agency	VSTV
Partners	None
Priority (High, Medium, Low)	High
Cost Estimate	\$260/yr. basic plus number of calls over \$260
Benefits (Avoided Losses)	Life safety; improved evacuation.
Potential Funding	\$260/yr.
Schedule	Annually beginning in 2017

VTSV-4 *Periodic update of Emergency Evacuation Plan*

Hazard(s) Mitigated	Wildfires; Landslides/Debris Flow/Rockfall
Project Description, Issue/Background	Periodically Taos Ski Valley needs to modify the Village evacuation plan as the mobile command unit is moved periodically and the kids ski center isn't available in winter.
Related planning mechanisms	Emergency Evacuation Plan
Other Alternatives	No action
Responsible Office/ Agency	Law Enforcement, Fire Dept., Firewise Community Board of Directors (BoD).
Partners	TSV, Inc.
Priority (High, Medium, Low)	High
Cost Estimate	Low
Benefits (Avoided Losses)	Saving lives
Potential Funding	Can be accomplished with Village staff
Schedule	Quarterly for next 4 years

VTSV-5 Public education on wildfire hazards

Hazard(s) Mitigated	Wildfires
Project Description, Issue/Background	This project would provide public education on wildfire hazards and information on mitigation techniques for property owners. This would include the annual 4 th of July Firewise tent at festivities plus quarterly mass mailings regarding grant money from Taos Soil and Water Conservation District and other grants the BOD is working on. Through these efforts there are lots of educational materials that can be distributed. Included would be a list of companies to hire to develop defensible space and help the community become Firewise.
Related planning mechanisms	Village CWPP
Other Alternatives	No Action
Responsible Office/ Agency	VTSV Fire Department,
Partners	Forest service, BLM, OEM, CWPP Core Team, NFPA, Taos Soil and Water Conservation District
Priority (High, Medium, Low)	Medium
Cost Estimate	Minimal for educational material
Benefits (Avoided Losses)	Loss of life and property minimized.
Potential Funding	Can be accomplished with VSTV budget
Schedule	Quarterly and on 7/4/2017

VTSV-6 *Implementation of various Firewise projects to mitigate wildfire hazards*

Hazard(s) Mitigated	Wildfires
Project Description, Issue/Background	The Firewise BOD is working on a possible grant available for private lands that abut public lands and USFS, to be used in the Amizette area. Since this area is the entrance to the Village it is important for these properties to have defensible space. There is only one way in and out of VTSV so minimizing wildfire hazards is important to prevent loss of life and property.
Related planning mechanisms	Village CWPP
Other Alternatives	No action
Responsible Office/ Agency	The Firewise BOD
Partners	Nature Conservancy
Priority (High, Medium, Low)	High
Cost Estimate	To be determined
Benefits (Avoided Losses)	Prevent loss of life and property
Potential Funding	USFS, Taos Soil and Water Conservation District, Nature Conservancy,
Schedule	Spring 2017

VTSV-7 Monitor USFS projects on St Rd 150

Hazard(s) Mitigated	Wildfires
Project Description, Issue/Background	There are plans by the USFS to restore State Route 150 corridor and Rio Hondo and the 3 camp grounds in this area. Community awareness of ongoing projects occurring throughout the year is needed to understand wildfire mitigation components. Enhanced coordination between VTSV and the USFS is needed as these projects progress.
Related planning mechanisms	
Other Alternatives	No action
Responsible Office/ Agency	USFS
Partners	NM DOT
Priority (High, Medium, Low)	High
Cost Estimate	In USFS budgets
Benefits (Avoided Losses)	Prevent loss of life
Potential Funding	USFS budgets
Schedule	Summer 2017

VTSV-8 Source Water Protection Plan Implementation

Hazard(s) Mitigated	Wildfires, Drought
Project Description, Issue/Background	The Village of Taos Ski Valley along with Taos Ski Valley Inc., are working on developing a plan to protect our source water Infiltration Gallery and chlorination station to enhance resilience to drought and wildfire. Low runoff and the potential for wildfires in the watershed have the potential to affect water quality and quantity for the Village. The plan will help identify additional protection need and ways to mitigate drought impacts to the town's water supply.
Related planning mechanisms	
Other Alternatives	No action
Responsible Office/ Agency	VTSV Public Works, VTSV Planning and Zoning
Partners	Taos Ski Valley, Inc., Amigos Bravos, Taos Agency and Partners Pueblo, FEI Engineers, Glorieta Geoscience, Inc., NMED DWB Source Water Protection, Martha Graham NMRWA Source Water Protection and the author of the plan,
Priority (High, Medium, Low)	High
Cost Estimate	Approximately \$35k
Benefits (Avoided Losses)	The Village needs to do this plan and initiate it so we don't lose our source water. It's our only Infiltration Gallery and it also services the Rio Hondo and all the people downstream from the Village of Taos Ski Valley.
Potential Funding	Town budget
Schedule	The plan is scheduled to be complete by March 31, 2018 with implementation anticipated through calendar year 2023.

6 PLAN ADOPTION

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

The purpose of formally adopting this plan is to secure buy-in from Taos County and the participating municipalities including the towns of Taos and Red River and the villages of Taos Ski Valley and Questa. Adoption raises awareness of the plan, and formalizes the plan's implementation with each jurisdiction. The adoption of this plan completes Planning Step 9 of the 10-step planning process: Adopt the Plan, in accordance with the requirements of DMA 2000. Taos County has adopted this Hazard Mitigation Plan by passing a resolution. A sample adoption resolution is included in Appendix C.

7 PLAN IMPLEMENTATION AND MAINTENANCE

Requirement §201.6(c)(4): [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.

Implementation and maintenance of the plan is critical to the overall success of hazard mitigation planning. This is Planning Step 10 of the 10-step planning process. This chapter provides an overview of the overall strategy for plan implementation and maintenance and outlines the method and schedule for monitoring, updating, and evaluating the plan. The chapter also discusses incorporating the plan into each jurisdiction's existing planning mechanisms and how to address continued public involvement.

7.1 Implementation

Once adopted, the plan faces the truest test of its worth: implementation. While this plan contains many worthwhile actions, the County will need to decide which action(s) to undertake first. Two factors will help with making that decision: the priority assigned the actions in the planning process and funding availability. Low or no-cost actions most easily demonstrate progress toward successful plan implementation.

Mitigation is most successful when it is incorporated into the day-to-day functions and priorities of government and development. Implementation will be accomplished by adhering to the schedules identified for each action and through constant, pervasive, and energetic efforts to network and highlight the benefits to each program and the Taos County community and its municipalities and stakeholders. This effort is achieved through the routine actions of monitoring meeting agendas for hazard mitigation related initiatives, coordinating on the topic at meetings, and promoting a safe, sustainable community. Additional mitigation strategies could include consistent and ongoing enforcement of existing policies and vigilant review of programs for coordination and multi-objective opportunities.

Simultaneous to these efforts, it is important to maintain a constant monitoring of funding opportunities that can be leveraged to implement some of the more costly recommended actions. This will include creating and maintaining a bank of ideas on how to meet local match or participation requirements. When funding does become available, the County will be in a position to capitalize on the opportunity. Funding opportunities to be monitored include special pre- and post-disaster funds, state and federal earmarked funds, benefit assessments, and other grant programs, including those that can serve or support multi-objective applications.

Role of Hazard Mitigation Planning Committee in Implementation and Maintenance

With adoption of this plan, the County will be responsible for the plan implementation and maintenance, in coordination with the municipalities. Taos County, led by the Office of Emergency Management (OEM), will periodically reconvene the multi-jurisdictional HMPC for plan implementation and maintenance. This HMPC will be the same committee (in form and function, if not actual individuals) that developed this HMP and will also be responsible for the next formal update to the plan in five years. The HMPC will:

- Act as a forum for hazard mitigation issues;
- Disseminate hazard mitigation ideas and activities to all participants;
- Pursue the implementation of high-priority, low/no-cost recommended actions;
- Ensure hazard mitigation remains a consideration for community decision makers;
- Maintain a vigilant monitoring of multi-objective cost-share opportunities to help the community implement the plan's recommended actions for which no current funding exists;
- Monitor and assist in implementation and update of this plan;
- Report on plan progress and recommended changes to the Taos County Commissioners; and
- Inform and solicit input from the public.

The HMPC will not have any powers over County or municipal staff; it will be purely an advisory body. The primary duty is to see the plan successfully carried out and to report to the County Commissioners, local governing boards, and the public on the status of plan implementation and mitigation opportunities. Other duties include reviewing and promoting mitigation proposals, considering stakeholder concerns about hazard mitigation, passing concerns on to appropriate entities, and posting relevant information on the County website (and others as appropriate).

7.2 Maintenance

Plan maintenance implies an ongoing effort to monitor and evaluate plan implementation and to update the plan as progress, roadblocks, or changing circumstances are recognized.

Maintenance Schedule

The Taos County OEM is responsible for initiating plan reviews and consulting with the heads of participating departments. In order to monitor progress and update the mitigation strategies identified in the action plan, Taos County OEM and the standing HMPC will conduct an annual review of this plan and/or following a hazard event. An annual mitigation action progress report will be prepared by the HMPC and kept on file to assist with for future updates. The annual review will be conducted by re-convening the HMPC in November of each year.

This plan will be updated, approved and adopted within a five-year cycle as per Requirement §201.6(c)(4)(i) of the Disaster Mitigation Act of 2000 unless disaster or other circumstances (e.g.,

changing regulations) require a change to this schedule. The County will inquire with DHSEM and FEMA for funds to assist with the update. It is recommended to begin seeking funds in 2020 as most applicable grants have multiple years to expend the funds. Funding sources may include the Emergency Management Performance Grants, Pre- Disaster Mitigation, Hazard Mitigation Grant Program (if a presidential disaster has been declared), and Flood Mitigation Assistance grant funds. The next plan update should be completed and reapproved by DHSEM and FEMA Region VI within five years of the FEMA final approval date. The planning process to prepare the update should begin no later than 12 months prior to that date.

Maintenance Evaluation Process

The planning team will continually observe the incorporation process, evaluation method, updating method, continued public participation, and completion of the action/projects to assure that the planning team and the plan itself are performing as anticipated. By monitoring these processes, the planning team will then be able to evaluate them at the time of the plan update, determining if any changes are needed.

Evaluation of progress can be achieved by monitoring changes in vulnerabilities identified in the plan. Changes in vulnerability can be identified by noting:

- Decreased vulnerability as a result of implementing recommended actions;
- Increased vulnerability as a result of new or altered hazards
- Increased vulnerability as a result of new development.

Updates to this plan will:

- Consider changes in vulnerability due to action implementation;
- Document success stories where mitigation efforts have proven effective;
- Document areas where mitigation actions were not effective;
- Document any new hazards that may arise or were previously overlooked;
- Incorporate new data or studies on hazards and risks;
- Incorporate new capabilities or changes in capabilities;
- Incorporate growth and development-related changes to infrastructure inventories; and
- Incorporate new action recommendations or changes in action prioritization.

In order to best evaluate any changes in vulnerability as a result of plan implementation, the County will adhere to the following process:

- A representative from the responsible office identified in each mitigation measure will be responsible for tracking and reporting on an annual basis to the department lead on action status and provide input on whether the action as implemented meets the defined objectives and is likely to be successful in reducing vulnerabilities.

- If the action does not meet identified objectives, the lead will determine what additional measures may be implemented, and an assigned individual will be responsible for defining action scope, implementing the action, monitoring success of the action, and making any required modifications to the plan.

Changes will be made to the plan to accommodate for actions that have failed or are not considered feasible after a review of their consistency with established criteria, time frame, community priorities, and/or funding resources. Actions that were not ranked high but were identified as potential mitigation activities will be reviewed as well during the monitoring and update of this plan to determine feasibility of future implementation. Updating of the plan will be by written changes and submissions, as the HMPC deems appropriate and necessary, and as approved by the Taos County Commissioners. In keeping with the five-year update process, the HMPC will convene public meetings to solicit public input on the plan and its routine maintenance and the final product will be adopted by the governing council.

Incorporation into Existing Planning Mechanisms

Another important implementation mechanism that is highly effective and low-cost is incorporation of the hazard mitigation plan recommendations and their underlying principles into other County and municipal plans and mechanisms. Where possible, plan participants will use existing plans and/or programs to implement hazard mitigation actions. As described in this plan's capability assessment in Chapter 2, the County and municipalities already implement policies and programs to reduce losses to life and property from hazards. This plan builds upon the momentum developed through previous and related planning efforts and mitigation programs and recommends implementing actions, where possible, through these other program mechanisms. These existing mechanisms include:

- County Comprehensive Plan
- Community Wildfire Protection Plan
- Capital improvement plans and budgets
- Recovery planning efforts
- Watershed planning efforts
- Wildfire planning efforts on adjacent public lands
- Master planning efforts
- Emergency Operations Plan
- Other plans, regulations, and practices with a mitigation aspect

HMPC members involved in these other planning mechanisms will be responsible for integrating the findings and recommendations of this plan with these other plans, programs, etc., as appropriate. As an action step to ensure integration with other planning mechanisms the County Emergency Manager will discuss this topic at the annual meeting of the HMPC previously described in the Maintenance Schedule. The HMPC will discuss if there are opportunities to incorporate the plan into other planning mechanisms and who would be responsible for leveraging

those opportunities. As described in Section 7.1 Implementation, incorporation into existing planning mechanisms will be done through the process of:

- Monitoring other planning/program agendas;
- Attending other planning/program meetings;
- Participating in other planning processes;
- Ensuring that the related planning process cross-references the hazard mitigation plan, where appropriate, and
- Monitoring community budget meetings for other community program opportunities.

Here are a few examples of opportunities to cross reference the hazard mitigation plan in other planning efforts.

- Build upon the link established between the Comprehensive Plan’s Hazard Mitigation Element and the development of this HMP.
- The Emergency Operations Plan, when updated, could reference the risk assessment and related mitigation actions in the HMP.
- There is a strong linkage with the HMP to the CWPP. The next time the CWPP is updated the HMP should be incorporated by reference. U.S. Forest Service forest management plans could be another related planning effort in regards to wildfire mitigation implementation.

Specific to the municipalities the planning mechanisms and process for integration can include the following:

Table 7-1: Municipal Planning Mechanisms and Process for HMP Integration

Jurisdiction	Planning Mechanism	Process for Integration
Town of Taos	Capital Improvement Plan	The Town ICIP is an annually adopted document that discusses the town’s capital improvements. In the 2016-2020 ICIP, there are proposals for infrastructure improvements; these could be reviewed annually for mitigation actions such as drainage improvements that relate to this plan’s goals.
Town of Red River	Comprehensive Master Plan	This plan already addresses some specific hazards and mitigation projects, especially WUI projects and infrastructure projects. When updated, this plan could reference the risk assessment and related mitigation actions in the HMP.
Village of Questa	Local Emergency Operations Plan	When updated, could reference the risk assessment and related mitigation actions in the HMP.
Village of Taos Ski Valley	Village Master Plan	Mitigation Plan Risk Assessment and Mitigation Strategy will be reviewed and incorporated, as appropriate to inform the Village Master Plan Mitigation Element. The Risk Assessment will inform hazard areas to avoid in terms of future development and the mitigation strategy will be reviewed for mitigation actions that are related to comprehensive plan goals.

The successful implementation of this mitigation strategy will require constant and vigilant review of existing plans and programs for coordination and multi-objective opportunities that promote a safe, sustainable community.

Efforts should continuously be made to monitor the progress of mitigation actions implemented through these other planning mechanisms and, where appropriate, their priority actions should be incorporated into updates of this hazard mitigation plan.

Continued Public Involvement

Continued public involvement is imperative to the overall success of the plan's implementation. The update process provides an opportunity to solicit participation from new and existing stakeholders and to publicize success stories from the plan implementation and seek additional public comment. The plan maintenance and update process will include continued public and stakeholder involvement and input through attendance at designated committee meetings, web postings, social media and email blasts, press releases to local media, and through public hearings.

When the multi-jurisdictional HMPC reconvenes for the update, they will coordinate with all stakeholders participating in the planning process—including those that joined the committee since the planning process began—to update and revise the plan. In reconvening, the HMPC plans to identify a public outreach subcommittee, which will be responsible for coordinating the activities necessary to involve the greater public. Public notice will be posted and public participation will be invited, at a minimum, through available website postings and press releases to the local media and social media outlets. As part of this effort, at least one public meeting will be held and public comments will be solicited on the plan update draft.

TAOS COUNTY HAZARD MITIGATION PLAN

APPENDIX A

PLANNING PROCESS DOCUMENTATION

2016 Taos County Multi-Hazard Mitigation Plan Development

Background Information

What is Hazard Mitigation?

The Federal Emergency Management Agency (FEMA) defines hazard mitigation as, “any sustained action taken to reduce or eliminate long-term risk to life and property from natural hazards.” Another way to understand hazard mitigation is as the prevention component of the emergency management process.

- Preparedness activities are the emergency plans, training, drills, and exercises that individuals, communities and first responders participate in on almost daily basis. These are things done to get ready for an emergency or disaster before it happens.
- Response is the short-term, emergency actions taken to address the immediate impacts of a hazard.
- Recovery is the longer-term process of restoring the community back to normal or pre-disaster conditions.
- Mitigation activities are actions that will reduce or eliminate losses, for anticipated future events. Mitigation can reduce or eliminate the need for an emergency response and greatly reduce the recovery period.



Emergency Management Cycle

Many types of mitigation actions are things done on a daily basis without much forethought such as purchasing insurance to protect a vehicle investment, putting on your seatbelt, or putting in gutters around a roof to better direct rain runoff. The same concepts apply to community level hazard mitigation planning. Mitigation planning is a process for county and local governments to identify community-level policies and actions that will reduce the impacts of natural hazards.

Why is Hazard Mitigation Important?

Most people who live or work in Taos County have been affected by hazards in one way or another. Some of the hazards that can affect the County include flash flooding, wildfire, drought, severe weather, and mud flows. Taos County has had much experience with disasters and emergencies in recent past, including severe storms, flooding, and mudslides that resulted in a presidential disaster declaration in 2013, and severe winter storms and extreme cold temperatures that resulted in a presidential disaster declaration in 2011. In addition to these large events, almost every year there are smaller, isolated weather events that cause localized property damage and losses significant to the people affected. The planning process will evaluate the potential for future damaging events and work toward solutions to help mitigate their impacts in the future.

Hazard Mitigation Plans

The rising costs associated with disaster response and recovery has caused federal, state, and local governments to focus on addressing natural hazards before they occur. The acts of “Mother Nature” cannot be prevented, but through the hazard mitigation planning process the impacts can be identified, which can lead to strategies to reduce and sometimes prevented the impacts altogether. A community comes together as a team (Hazard Mitigation Planning Committee, HMPC) in a facilitated forum to gather data that is then organized into a plan which identifies goals, objectives and actions pertaining to mitigating impacts from identified natural hazards. As the plan is developed, the HMPC reviews the data for accuracy and the public at large has an opportunity to comment and have their comments incorporated before a final draft is completed. FEMA realizes the importance of mitigation planning and offers incentives to communities that develop one. By following FEMA guidelines for a plan approval process, participating communities can be eligible for grant funding intended for mitigation projects. It is an opportunity for communities to take advantage of funds they would not have been able to tap into previously.

Plan Development Process

The Taos County Office of Emergency Management is taking the lead on the update with professional planning assistance from Amec Foster Wheeler. Amec Foster Wheeler will facilitate the planning process, collect necessary data, and perform other technical services, including updating the risk assessment and plan document.

A planning team will be organized, and will meet on a regular basis, working through varying levels of review, revision, and update of the following elements of the plan:

- Identify hazards that may impact or have impacted the County;
- Profiles of hazard events;
- Assessment of the vulnerability to those hazards;
- Assessment of the County's capabilities to mitigate the hazards;
- Mitigation goals;
- Specific mitigation actions and projects;
- Implementation strategy for the plan;
- Plan maintenance and update process;
- Plan approval and adoption.

The planning team will include representatives from various municipality and county departments. Stakeholders include representatives from state and federal agencies, local municipalities and pueblos.

The process will begin with a kickoff meeting of the Hazard Mitigation Planning Committee in mid-February 2016. The plan will be developed in the first half of 2016, with a draft for public review anticipated in July/August 2016.

How Can You Get Involved?

Members of the public have a very important role in this process. The planning team regards broad public participation in the planning process as an essential strategy for developing a plan that will be effective, supported by residents of the County, and ultimately implemented. The process will provide a range of opportunities for the County and its citizens, public officials, and stakeholder groups to participate and give input in the plan update. Interested stakeholders should pay attention to the Taos County Office of Emergency Management website for updates on the process.

For more information on the plan or the planning process, please contact:

Taos County Emergency Management Dominic Martinez Director OEM/E-911 Ph (575) 737-6451 dominic.martinez@taoscounty.org	Amec Foster Wheeler Jeff Brislawn Project Manager Ph (303) 820-4654 jeff.brislawn@amecfw.com
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**Taos County Hazard Mitigation Plan
Getting Organized call summary
August 23, 2016, 2:00pm**

The following is a summary of the initial coordination call that lasted approximately 45 minutes.

Participants:

Taos County – Dominic Martinez

Amec Foster Wheeler:

Jeff Brislawn – Project management

Kyle Karsjen – Assistant planner

Mackenzie Boshier – planner/researcher/document

Mack Chambers – GIS Analyst

Staff Introduction and Roles

Jeff began with introducing the Amec Foster Wheeler Team and their roles on the project.

Schedule

Jeff noted an updated project schedule provided by email. Dominic concurred that it looked reasonable.

Kick-off Meeting

A desired timeframe of mid-September was discussed for the kickoff meeting. Jeff will recommend available dates the weeks of September 12th and 19th. Dominic will check availability of chambers room which has the space and A/V needs. Jeff suggested a room for at least 30 attendees. Jeff will prepare an agenda for the meeting.

Hazard Mitigation Planning Committee Membership and Stakeholders

Jeff discussed the typical makeup of the Hazard Mitigation Planning Committee and noted that representatives from the county departments that would be involved in hazard mitigation are important to invite to attend. Examples include public works, floodplain management, wildland fire coordinators etc. There should be at least one representative of each municipality that wants full credit for participation.

A draft committee list was discussed. It was suggested that Timothy Corner from the Planning Department be added as he is the GIS person and floodplain manager for the County. The County wildland fire coordinator was also noted.

Stakeholders were discussed. Stakeholders are typically other state, federal or private non-profit entities that may have a role in hazard mitigation in the county, or neighboring jurisdictions that may want to be kept abreast of planning activities.

Stakeholders discussed included the US Forest Service, volunteer fire departments, neighboring county emergency managers, amateur radio groups, local school districts and Local Emergency Planning Committee (which includes a cross section of local business/industry and non-profits). The LEPC meets 2nd Thursday of each month, which could be an opportunity to discuss the plan. Taos Pueblo and Picuris Pueblo will be notified of the process, but the plan will not cover these entities or the school districts. Dominic will find a contact for the Picuris Pueblo.

Dominic will send out an updated participant and stakeholder list for Jeff to review.

Invitations

Coordination of communication with the HMPC was discussed. The County will be the point of contact for disseminating formal communications on the plan, using guidance, text and materials provided by Amec Foster Wheeler. Dominic will serve this role initially, but was working with county manager to identify a backup person and others in the E911 group to engage. The County is in the process of hiring an Emergency Management Director.

Jeff discussed the draft text provided for an email to participants of the Hazard Mitigation Planning Committee (HMPC). A separate but similar email should be sent to stakeholders. Jeff discussed the fact sheet/backgrounder that can be sent with the invitations and also used as a flyer at other meetings.

The schedule for getting invitations out was discussed. If the meeting is held mid-September then the invitations should go out by the end of August to give at least 2 weeks' notice.

Data Collection

A data collection guide will be developed specific to the planning project that will outline the information needs for each participating jurisdiction. This will be introduced and distributed at the kickoff meeting. Jeff will send Dominic a draft in advance of the meeting.

A GIS data collection needs form was provided by Jeff. The form lists typical data sets used for hazard mitigation planning, based on existing or available data only. Dominic had already sent this on to the county GIS contact. Jeff noted it was good to get this process started soon as GIS data is a key aspect of the hazard risk assessment.

Hazard Mitigation Plan Data Collection Guide

for



Hazard Mitigation Planning Committee (HMPC) and
Participating Jurisdictions

Prepared by

Amec Foster Wheeler

September 2016

Overview

The contents of this workbook have been designed to assist participating local government entities in collecting necessary background information to support the hazard mitigation planning process pursuant to the Federal Disaster Mitigation Act (DMA) of 2000. This includes a hazard identification and vulnerability assessment, an assessment of current hazard mitigation capabilities, and an identification of potential mitigation projects that, if undertaken, could prevent or reduce future losses.

The essential information needed to support the planning process includes background information about the entity; plans, technical studies, and data related to hazards and risks; current governing codes, ordinances, regulations, and procedures whose intent is to minimize future losses; and an assessment of the entity's technical and organizational capabilities to perform hazard mitigation/loss prevention functions.

The planning process is heavily dependent on existing data to be supplied by each of the participants represented on the Hazard Mitigation Planning Committee (HMPC). The DMA plan development process does not require the development of new data, but requires *existing data only*.

The goal of this process is to produce a hazard mitigation plan that meets Taos County and the participating jurisdictions' needs, as well as the requirements of DMA 2000 and that contains a list of projects that may be eligible for streamlined federal mitigation funding pre or post disaster.

Participation

The DMA planning regulations and guidance stress that each local government entity seeking the required FEMA approval of their mitigation plan must:

- Participate in the process;
- Detail areas within the jurisdiction where the risk differs from that facing the entire area;
- Identify specific projects to be eligible for funding; and
- Have the governing board of each jurisdiction formally adopt the plan.

For HMPC members, 'participation' means the planning committee representatives will:

- Attend and participate in HMPC meetings;
- Provide available data that is requested of the HMPC coordinator;
- Review and provide/coordinate comments on the draft plans;
- Advertise, coordinate and participate in the public input process; and
- Coordinate the formal adoption of the plan by the governing board.

Data Collection Guide

This guide contains an explanation of the types of hazard mitigation/loss prevention data that is needed for the hazard mitigation planning process. This guide identifies specific requirements for the Risk Assessment Process, which includes the Hazard Identification, Vulnerability, and Capability Assessments as well as defines requirements for development of the Mitigation Strategy.

The worksheets have been developed to assist with the data collection. **These need to be completed by each jurisdiction participating in the Plan** (1 complete workbook for each jurisdiction) and will serve two purposes:

- They will help facilitate the collection of the necessary information.
- They will function as evidence of “participation” in the planning process.

Data collection guides are due on October 5th to Kyle Karsjen (contact information below).

Project Reference

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Director

Taos County Office of Emergency Management

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Hazard Mitigation Lead/Sr Associate

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The Risk Assessment Process

The risk assessment process includes three components: hazard identification, vulnerability assessment, and capability assessment. Data needs and worksheets for each of the risk assessment components are included in this guide.

Taos County Multi-Hazard Mitigation Plan

Worksheet #1: Hazard Identification

Department/Jurisdiction: _____
Prepared by/Phone/Email: _____

Use this worksheet to identify possible hazards that may impact your jurisdiction. Please rank according to the guidelines that follow the table. Use copies of Worksheet #2: Historic Hazard Event to provide evidence to justify your conclusions.

Hazard	Geographic Extent	Probability of Future Occurrence	Potential Magnitude/Severity	Overall Significance
Dam Failure				
Drought				
Earthquake				
Expansive Soils				
Extreme Heat				
Flood/Flash Flood				
High Wind				
Landslide/Mudslide/Rockfall				
Land Subsidence				
Severe Winter Storm				
Thunderstorm (including Lightning and Hail)				
Tornado				
Volcano				
Wildland Fire				
Hazardous Materials				

Geographic Extent

Negligible: Less than 10 percent of planning area or isolated single-point occurrences
Limited: 10 to 25 percent of the planning area or limited single-point occurrences
Significant: 25 to 75 percent of planning area or frequent single-point occurrences
Extensive: 75 to 100 percent of planning area or consistent single-point occurrences

Potential Magnitude/Severity

Negligible: Less than 10 percent of property is severely damaged, facilities and services are unavailable for less than 24 hours, injuries and illnesses are treatable with first aid or within the response capability of the jurisdiction.
Limited: 10 to 25 percent of property is severely damaged, facilities and services are unavailable between 1 and 7 days, injuries and illnesses require sophisticated medical support that does not strain the response capability of the jurisdiction, or results in very few permanent disabilities.
Critical: 25 to 50 percent of property is severely damaged, facilities and services are unavailable or severely hindered for 1 to 2 weeks, injuries and illnesses overwhelm medical support for a brief period of time, or result in many permanent disabilities and a few deaths.
Catastrophic: More than 50 percent of property is severely damaged, facilities and services are unavailable or hindered for more than 2 weeks, the medical response system is overwhelmed for an extended period of time or many deaths occur.

Probability of Future Occurrences

Unlikely: Less than 1 percent probability of occurrence in the next year, or has a recurrence interval of greater than every 100 years.
Occasional: Between a 1 and 10 percent probability of occurrence in the next year, or has a recurrence interval of 11 to 100 years.
Likely: Between 10 and 90 percent probability of occurrence in the next year, or has a recurrence interval of 1 to 10 years
Highly Likely: Between 90 and 100 percent probability of occurrence in the next year, or has a recurrence interval of less than 1 year.

Overall Significance

Low: Two or more of the criteria fall in the lower classifications or the event has a minimal impact on the planning area. This rating is also sometimes used for hazards with a minimal or unknown record of occurrences/impacts or for hazards with minimal mitigation potential.
Medium: The criteria fall mostly in the middle ranges of classifications and the event's impacts on the planning area are noticeable but not devastating. This rating is also sometimes utilized for hazards with a high impact rating but an extremely low occurrence rating.
High: The criteria consistently fall along the high ranges of the classification and the event exerts significant and frequent impacts on the planning area. This rating is also sometimes utilized for hazards with a high psychological impact or for hazards that the jurisdiction identifies as particularly relevant.

Taos County Multi-Hazard Mitigation Plan

Worksheet #2: Historic Hazard Event

Name of Department/Jurisdiction: _____

Where applicable, fill out one sheet for each significant hazard event that has impacted your jurisdiction. Where available attach supporting documentation, photocopies of newspaper articles, or other original sources.

Type of event	
Nature and magnitude of event	
Location	
Date of event	
Injuries	
Deaths	
Property damage	
Infrastructure damage	
Crop damage	
Business/economic impacts	
Road/school/other closures	
Other damage	
Insured losses	
Federal/state disaster relief funding	
Opinion on likelihood of occurring again	
Source of information	
Comments	

Prepared by: _____

Phone: _____

Email: _____

Please return worksheets by mail, email, or fax to:
Kyle Karsjen
 1942 Broadway, Suite 314, Boulder CO 80302
 Fax (303) 442-0616 Phone (303) 820-4661
 Email: kyle.karsjen@amecfw.com

Taos County Multi-Hazard Mitigation Plan

Worksheet #3: Vulnerability Assessment

Name of Department/Jurisdiction: _____

The purpose of this worksheet is to assess the vulnerable buildings, populations, critical facilities, infrastructure, and other important assets in your community by using the best available data to complete the table and questions that follow. Use the table on the next page to compile a detailed inventory of specific assets at risk including critical facilities and infrastructure; natural, cultural, and historical assets; and economic assets as defined below. These may include hospitals, fire stations, or historic buildings. Attach supporting documentation, such as photographs, reports, or plans if possible. In the hazard specific column of the asset inventory table, indicate if there is a specific hazard to which the asset is at risk.

Critical Facilities

FEMA generally defines four kinds of critical facilities:

- Structures or facilities that produce, use, or store highly volatile, flammable, explosive, toxic, and/or water-reactive materials
- Hospitals, nursing homes, and housing likely to have occupants who may not be sufficiently mobile to avoid injury or death during a hazard event
- Police stations, fire stations, vehicle and equipment storage facilities, and emergency operations centers that are needed for emergency response activities before, during, and after a hazard event
- Public and private utility facilities that are vital to maintaining or restoring normal services to hazard areas before, during, and after a hazard event

FEMA’s HAZUS-MH loss estimation software uses the following three categories of critical assets. ‘Essential facilities’ are those that if damaged would have devastating impacts on disaster response and/or recovery. ‘High potential loss facilities’ are those that would have a high loss or impact on the community. Transportation and lifeline facilities are third category of critical assets; examples are provided below.

Essential Facilities	High Potential Loss Facilities	Transportation and Lifeline
<ul style="list-style-type: none"> ▪ Hospitals and other medical facilities ▪ Police stations ▪ Fire station ▪ Emergency Operations Centers 	<ul style="list-style-type: none"> ▪ Power plants ▪ Dams/levees ▪ Military installations ▪ Hazardous material sites ▪ Schools ▪ Shelters ▪ Day care centers ▪ Nursing homes ▪ Main government buildings 	<ul style="list-style-type: none"> ▪ Highways, bridges, and tunnels ▪ Railroads and facilities ▪ Bus facilities ▪ Airports ▪ Water treatment facilities ▪ Natural gas facilities and pipelines ▪ Oil facilities and pipelines ▪ Communications facilities

Additional Vulnerability Questions

<p>Describe any hazard-related concerns or issues regarding the vulnerability of special needs populations, such as the elderly, disabled, or low-income.</p>	
<p>Describe growth and development trends and future growth areas and how they relate to hazard areas and vulnerability concerns/issues.</p>	
<p>List specific problem areas – e.g. areas with poor stormwater drainage, at-risk facilities or infrastructure, high risk wildland urban interface areas, historic buildings etc.</p>	

Prepared by: _____

Phone: _____

Email: _____

Please return worksheets by mail, email, or fax to:

Kyle Karsjen

1942 Broadway, Suite 314, Boulder CO 80302

Fax (303) 442-0616 Phone (303) 820-4661

Email: kyle.karsjen@amecfw.com

Taos County Multi-Hazard Mitigation Plan

Worksheet #4: Capability Assessment

Name of Department/Jurisdiction: _____

Capabilities are the programs and policies currently in use to reduce hazard impacts or that could be used to implement hazard mitigation activities. Please complete this worksheet and provide supporting documentation if possible.

Planning and Regulatory

The following planning and land management tools are typically used by local jurisdictions to implement hazard mitigation activities. Please indicate what your jurisdiction has already in place. If your jurisdiction does not have this capability or authority, please indicate if a higher level of government has the authority. Also use the comments column to indicate how we can obtain a copy of the plan or document (i.e. available on the web (include address), will e-mail or mail).

Regulatory Tool (plans, ordinances, codes,)	Yes/No/Year	Does the plan address hazards? Does the plan identify projects to include in the mitigation strategy? Can the plan be used to implement mitigation actions
Plans		
Comprehensive/Master Plan		
Capital Improvements Plan		
Economic Development Plan		
Local Emergency Operations Plan		
Continuity of Operations Plan		
Transportation Plan		
Stormwater Management Plan		
Community Wildfire Protection Plan		
Other special plans (i.e., disaster recovery, climate change adaptation)		
Building Code, Permitting and Inspections	Yes/No	Are codes adequately enforced?
Building Code		Version/Year:
Building Code Effectiveness Grading Schedule (BCEGS) Score		Score (if applicable):

Fire department ISO rating		Rating: (1-10, 1 being the best)
Site plan review requirements		
Land Use Planning and Ordinances	Yes/No	Is the ordinance an effective measure for reducing hazard impacts? Is the ordinance adequately administered and enforced?
Zoning ordinance		
Subdivision ordinance		
Floodplain ordinance		
Natural hazard-specific ordinance (stormwater, steep slope, wildfire)		
Flood insurance rate maps		
Acquisition of land for open space and public recreation uses		
Other		

Administrative and Technical

Identify the technical and personnel resources responsible for activities related to hazard mitigation/loss prevention within your jurisdiction. For smaller jurisdictions without local staff resources, if there are public resources at the next higher level government that can provide technical assistance, please indicate so in the comments column.

Administration	Yes/No	Comments
Planning Commission		
Mitigation Planning Committee		
Maintenance programs to reduce risk, e.g., tree trimming, clearing drainage systems		
Mutual aid agreements		
Personnel Resources	Yes/No/Full or part time	Department/Position
Building Official		
Floodplain Administrator		
Emergency Manager		
Community Planner		
Civil Engineer		
GIS Coordinator		

Other personnel with a hazards management aspect		
Technical	Yes/No	Describe capability Has capability been used to assess/mitigate risk in the past?
Grant Writing		
GIS Data Resources (Hazard areas, critical facilities, land use, building footprints, etc.)		
Warning Systems/Services (Reverse 9-11, cable override, outdoor warning, text messages)		
Other		

Fiscal

Identify whether your jurisdiction has access to or is eligible to use the following financial resources for hazard mitigation

Financial Resources	Accessible/Eligible to Use (Yes/No)	Comments/ Could the resource be used to fund future mitigation actions?
Capital improvements project funding		
Authority to levy taxes for specific purposes		
Fees for water, sewer, gas, or electric services		
Impact fees for new development		
Stormwater utility fee		
Incur debt through general obligation bonds		
Incur debt through special tax bonds		
Incur debt through private activities		
Community Development Block Grants		
Other federal or state funding programs used		
Other		

Additional Capabilities Questions

<p>Does your community have any hazard-related certifications, such as Storm Ready certification or Firewise Communities certification?</p>	
<p>Describe any past or ongoing public education or information programs, such as for responsible water use, earthquake or fire safety, household preparedness, or environmental education.</p>	
<p>Describe any other past or ongoing projects or programs designed to reduce disaster losses. These may include projects to protect critical facilities.</p>	

Prepared by: _____

Phone: _____

Email: _____

Please return worksheets by mail, email, or fax to:
Kyle Karsjen
 1942 Broadway, Suite 314, Boulder CO 80302
 Fax (303) 442-0616 Phone (303) 820-4661
 Email: kyle.karsjen@amecfw.com

From: Shannan Brumley
To: [Brislawn, Jeff P](#)
Cc: [Dominic Martinez](#)
Subject: Stakeholder Meeting- Multi-Hazard Mitigation Plan
Date: Tuesday, September 06, 2016 8:55:08 AM
Attachments: [image003.png](#)
[image002.png](#)
[Invitation to Stakeholders Meeting.pdf](#)

Good morning Jeff,

Attached is the letter/invitation that was sent out Friday.

*Shannan Brumley
Legal Assistant
Taos County Administration*



*105 Albright St., Ste G
Taos, NM 87571
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Sent: Friday, September 02, 2016 4:36 PM
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Subject: Stakeholder Meeting- Multi-Hazard Mitigation Plan

Hello everyone,

*The attached letter is from Dominic Martinez, Director for the Office of
Emergency Management for Taos County, regarding the upcoming
stakeholder meeting on September 14, 2016 marking the beginning of the
process for the development of the Multi-Hazard Mitigation Plan for Taos
County.*

Please mark your calendars. Hope all of you can make it.

*Shannan Brumley
Legal Assistant
Taos County Administration*



*105 Albright St., Ste G
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Taos County Administration

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Telephone: (575) 737-6300 Fascimile: (575)737-6314 www.taoscounty.org

Hello,

Taos County is beginning the process of developing a Multi-Hazard Mitigation Plan to meet the requirements of the Disaster Mitigation Act of 2000 (DMA 2000). The primary purpose of the Hazard Mitigation Plan is to reduce or eliminate long-term risk to people and property from natural and human-caused hazards and their effects on the County planning area. The plan's scope focuses on the County and its municipalities, and will allow the County to become eligible for future federal mitigation grant funding and identify mitigation actions that will make it more disaster resilient. The emphasis of DMA 2000 is on creating an ongoing, community-wide planning process that involves the Hazard Mitigation Planning Committee, the public and other key stakeholders. The Taos County Office of Emergency Management is taking the lead on the project in coordination with a Hazard Mitigation Planning Committee (HMPC) comprised of various County departments and other stakeholders. Professional planning assistance is being provided by Amec Foster Wheeler.

As part of the planning process we are reaching out to other agencies, pueblos, neighboring jurisdictions, and stakeholders to raise awareness of this effort and provide an opportunity for input. Another objective of this outreach is to coordinate with those who may bring additional information to the planning process regarding hazard issues or mitigation efforts within the County. Any information, studies, or related plans or hazard mitigation projects which might inform the plan and supplement the work of the Hazard Mitigation Planning Committee would be welcomed. Additionally we invite your participation at our committee and public meetings throughout the planning process. Let me know if you would like to be added to an email distribution so that you can stay informed of the planning process and upcoming meetings.

A kickoff meeting is set for 9:00am to 12:00pm on September 14, 2016 in the Commission Chambers at the Taos County Complex, 105 Albright St., Taos, NM. The purpose of the meeting is to introduce and outline the process, identify hazards, collect information, plan for stakeholder and public involvement, and answer any questions.

As the lead coordinator on this project I can be contacted at 575-737-6451 or dominic.martinez@taoscounty.org. Secondary contact is Shannan Brumley; 575-737-6306 or shannan.brumley@taoscounty.org. Jeff Brislaw is the planning consultant project manager with Amec Foster Wheeler and can be contacted at 303-820-4654 or jeff.brislaw@amecfw.com.

Dominic Martinez, Director
Office of Emergency Management

Jim Fambro
District 1

Mark Gallegos
District 2

Gabriel J. Romero
District 3

Tom Blankenhorn
District 4

Candyce O'Donnell
District 5

Leandro Cordova
County Manager

Taos County Multi-Jurisdictional Hazard Mitigation Plan Development

Summary of the Kickoff and Hazard Identification Meeting Hazard Mitigation Planning Committee Meeting #1

September 14, 2016

9:00am to 12:00pm

**Taos County Complex, Administration Building Commission Chambers
105 Albright St, Taos, NM**

Introductions and Opening Remarks

The meeting began with welcoming remarks from the Deputy County Manager Brent Jaramillo and Dominic Martinez with Taos County Emergency Management and an introduction of Jeff Brislawn from Amec Foster Wheeler, the consulting firm hired to facilitate the planning process and develop the plan. Jeff asked everyone around the room to introduce themselves. Twenty three persons representing a mix of Taos County, the Town of Taos, Village of Questa, and Village of Red River were present. Other stakeholders included Taos Schools, U.S. Forest Service - Carson National Forest, Valle Escondido Firewise, Red Cross, SMU, NM Gas Co and New Mexico State Patrol were present and documented on a sign in sheet. An agenda and data collection guide were provided as handouts.

Mitigation, Disaster Mitigation Act (DMA) Requirements, and the Planning Process

A PowerPoint presentation was presented by Jeff Brislawn, the project manager from Amec Foster Wheeler. The presentation described the objectives and goals for developing a new Taos County Hazard Mitigation Plan. Jeff outlined the nine-step planning process that will be followed. The plan is intended to identify hazards, assets at risk, and ways to reduce impacts through long-term, sustainable mitigation projects. The plan will also create eligibility for FEMA mitigation grant funding.

Multi-Jurisdictional Participation and the Role of the Hazard Mitigation Planning Committee (HMPC)

This meeting is the first meeting of the Taos County Hazard Mitigation Planning Committee (HMPC) during the plan development process. A definition of participation in the planning process was provided that includes:

- Attend and participate in HMPC meetings
- Provide available data requested of the HMPC coordinator/Amec Foster Wheeler
- Provide hazard and vulnerability details specific to each participating jurisdiction
- Develop problem statements, based on risk assessment
- Provide input on local mitigation strategy (action items and projects)
- Advertise and assist with public input process
- Review and comment on plan drafts
- Coordinate formal adoption

Discussion of Objectives and Schedule for the Plan Development

Objectives of the process that were discussed included:

- Develop the County's Multi-Hazard Mitigation Plan per the DMA requirements
- Coordinate with existing related plans, where available
- Develop mitigation strategies as appropriate
- Engage governmental and non-governmental stakeholders and the public
- Integrate risk information, including wildfire hazard data and other available information

The plan will be developed over the next eight months, with at least two more meetings of the HMPC. An email group will be developed for the HMPC for sharing information on upcoming meetings. Amec Foster Wheeler will be drafting the risk assessment in the next couple of months, with input and data from the HMPC. The first draft for HMPC review is targeted for January, followed by a public review draft in February. A final draft for State DHSEM and FEMA review is targeted to be complete by late March of 2017. Based on the length of typical reviews, the final approved plan is anticipated to be ready for adoption around September 2017. The FEMA Plan Review Tool will be used throughout the process to ensure compliance with the DMA requirements.

The next meetings of the HMPC are targeted for late October/early November and early December, with specific dates to be determined. Jeff noted that the schedule was aggressive but could be accomplished as long as information requests deadlines are adhered to and other factors, such as hazard events, do not interfere.

Review of Identified Hazards

A list of potential natural hazards was discussed, based on hazards identified in the county's Threat and Hazard Identification and Risk Assessment (THIRA), the New Mexico State Hazard Mitigation Plan and other applicable sources. The focus of the plan will be on natural hazards, since man-made hazards are not required by DMA 2000 regulations; however, some man-made hazards such as hazardous materials, for example, were identified as a serious hazard issue. The hazards identified and discussed for possible inclusion in the plan include:

- Dam Failure
- Drought
- Earthquake
- Expansive Soils
- Extreme Heat
- Flood/Flash Flood
- High Wind
- Landslide/Mudslide/Rockfall
- Severe Winter Storm (including extreme cold and avalanche)
- Subsidence
- Thunderstorm (including Lightning and Hail)
- Tornado
- Volcano
- Wildland Fire

Human caused hazards:

- Hazardous Materials Incidents

This list was agreed upon as a good starting point. Some hazards may drop off the list if no issues or hazard areas are identified within the County. For example, subsidence (collapse or depressions in the land surface) is dependent on specific geologic conditions, groundwater withdrawal, or the presence of underground mining, and may not be a serious issue in the county. A facilitated discussion on each hazard took place. The HMPC noted the following consequences, problem areas or other issues typically associated with the identified hazards:

- Dam Failure
 - Dams noted included Carson (privately owned), Costilla, and Cabresto (above Questa) and the tailings dam associated with the molybdenum mine above Questa.
- Drought
 - Increases wildfire risk
 - Ski industry impacts
 - Livestock forage and water impacts
 - Forest closures affect tourism
 - Ag industry includes hay and alfalfa crops
 - Water sources include both surface and groundwater; primary is snowmelt runoff from Sangre De Cristo range.
 - Some development has occurred along areas that were dry during drought periods that have now become more wet or prone to flash flooding.
- Earthquake
 - No history, but risk associated with nearby Rio Grande Rift Zone will be investigated and quantified with HAZUS (FEMA's risk assessment software)
- Expansive Soils
 - No noted impacts or concerns; might not be profiled in plan
- Extreme Heat
 - Rarely an issue as highest temperatures only reach upper 90's due to elevation of county. Some buildings not equipped for air conditioning however; likely not profiled in plan
- Flood
 - The 2014 Presidential Declaration included Taos County due to impacts near Talpa
 - Questa has had some issues with flooding on the Red River
 - Costilla area has had problems
 - Arroyo erosion/migration has caused issues, particularly when there is development nearby or pressure to develop adjacent to them
 - There is elevated flood risk following wildfires in watersheds
 - Flood mapping is generally poor in the unincorporated county but better in the incorporated areas and is generally Zone A (Approximate) without Base Flood Elevations.

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- LiDAR is being collected presently by FEMA which could improve flood mapping and hazards analysis in the future but won't be available till next year.
 - High Wind
 - Generally does not get high enough to cause much damage but can be an issue in the canyons
 - A house roof was reportedly blown off during an event in recent years
 - Winds have knocked down power lines and sparked wildfires in addition to causing power outages and complicating evacuation communication, coordination, and logistics.
 - Landslide/Mudslide/Rockfall
 - Mudslides were noted as an issue on the highway in the Taos Canyon
 - Penasco area at the end of Santa Barbara Canyon
 - SR 38 to Red River
 - All State Highways have issues including 64 E and 76
 - Taos Canyon had 6-7 areas impacted by debris flows in 2015
 - SR 550 was rendered out of service from a landslide 20-30 years ago that remains closed to this day.
 - A bus crash related to a rock fall caused 2 fatalities 20-30 years ago.
 - The DOT has done a lot of rockfall mitigation in the Rio Grande Valley along HWY 68
 - Land Subsidence
 - No known issues from either natural or mining/man caused. Will likely not be profiled in plan.
 - Severe Winter Storm and extreme cold
 - Drifts have been an issue in the northern county for both homes and roads.
 - Impacts to first responders, elderly populations
 - Vehicle impacts
 - Power outages from event or plows hitting transformers buried in snow
 - Ice on roadways near the UNM campus has resulted in accidents
 - Extreme cold usually follows the storm events and can result in an increased use of woodstoves and potential for house fires.
 - The gas outage in 2011 during cold temperatures affected northern New Mexico for about 2 weeks.
 - Avalanches are usually associated with severe winter storms and wind events in the higher elevations of the county. The HMPC noted that no roadways or developed areas are impacted, only certain areas near Taos Ski Valley which is controlled by the resort. The HMPC did not recall any instances of backcountry travellers being impacted. This hazard will likely not be profiled, but noted, in the plan.
 - Thunderstorm (including Lightning and Hail)
 - Typically associated with monsoon flow during the summer
 - Hail is infrequent, but lightning causes occasional issues with critical infrastructure, power outages; 5 repeater sites in the county have lightning rods but could still have issues.
 - Lightning risk is greater in the higher elevations and can spark wildfires
 - Tornado
 - TORNADOS are infrequent and usually small. This may be combined with the wind profile and not profiled separately.

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- Volcano
 - This will be investigated but likely noted as a very low probability hazard and not profiled in the plan
 - Wildland Fire
 - Typically about three each year (see history map in CWPP)
 - A wildfire risk mapping project is nearly complete
 - The county CWPP was recently updated; in addition there are about 8 individual community CWPPs
 - The WUI areas and communities are mapped and ranked
 - There has been increased development in the WUI
 - Access/egress is an issue, many areas have only one way in and out
 - Potential for watershed damage
 - Some beetle issues
 - Hazardous Materials
 - The molybdenum mine and tailing ponds above the Red River could be an issue if an uncontrolled release occurred; fish hatchery is downstream
 - Plan is in the works to shut down mine and reclaim area
 - Chevron/Moly Corp has hazmat team
 - Taos airport – some expansion occurring
 - 18 Tier II facilities – Emergency Management has a list of these
 - Gas transmission pipelines are located in Taos Canyon and Red River Canyon; one area had an issue with landslides in the 1980's. Some pipelines may be re-located according to gas company representative.
 - Wastewater and water treatment plants also have hazardous materials
 - There is no rail in the county and the risk from transported materials was not likely to be high since there are no Interstates in the county.
 - Los Alamos National Lab is about an hour away but close enough to be a potential concern.

Climate change was also discussed and will be noted as a contributing factor in hazard probability/intensity but is not part of the scope of the plan. Other concerns noted with potable water supply infrastructure including wells going dry, old and collapsing water lines, and power supply concerns. These issues could be noted in the drought hazard profile. Amec Foster Wheeler will begin profiling and analyzing hazards which will be the topic of discussion at the next planning meeting. Jeff noted that the jurisdictions should work through the risk assessment worksheets in the data collection guide.

Coordination with other Agencies, Related Planning Efforts, and Recent Studies

Approximately 100 persons representing a broad cross section of public and private entities have been invited to join in the planning process as either stakeholders or participating jurisdictions. A slide in the PowerPoint presentation (slide 14) noted the agencies that will be coordinated with during the planning process. Additional agencies recommended for inclusion in the mitigation planning process include:

- Regional Fire Protection associations
- Regional EMA associations
- Surrounding counties emergency managers
- Kit Carson Electric

A discussion on data sources to support the hazard identification and risk assessment was held. Identified sources included:

- County THIRA
- Local GIS data resources
- Recently developed wildfire risk assessment
- Community wildfire protection plans

Coordination with related planning efforts is a key aspect of building resiliency and a requirement under the DMA. Related plans that should be coordinated or referenced during the HMP development include:

- County Comprehensive Plan in process of being updated with a target by the end of 2016. There could be an opportunity to cross reference the HMP.
- County Local Economic Development Plan also in update process
- Community Wildfire Protection Plans
- Taos Municipal School safety plans
- Town of Taos Comprehensive Plan in need of update
- Taos Pueblo Hazard Mitigation Plan

Planning for Continued Public and Stakeholder Involvement

A Public Participation Plan was discussed to outline the process for public and stakeholder engagement, and to identify upcoming opportunities where a flyer or public survey related to the planning effort could be distributed. A 'whole community' approach will be utilized. Per the DMA requirements, this includes 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.

Up to two regional meetings will be held as part of the planning process; or a public survey can substitute for one of the meetings. Jeff described how it can be challenging to get people to attend public meetings. Jeff noted that public surveys (both online and hardcopy) have been utilized for other hazard mitigation planning efforts with success. The group agreed a survey would be useful; Jeff will send an example. A backgrounder flyer on the planning effort has been developed that can be used for web posting and hardcopy distribution. A discussion was held on how to best engage the public and coordinate this planning process with other public outreach efforts. The following was noted from the discussion:

- Online advertisements/notices
- Online survey
- Discuss plan at Firewise meetings/workshops
- Add to Local Emergency Planning Committee (LEPC) meeting agendas and Facebook
- Distribute/advertise information through:
 - neighborhood associations
 - Chamber of Commerce
 - Taos Municipal Schools email lists
 - Local government web pages

-
- Utility billing mailers

Upcoming meetings that have a public audience that the plan could be noted as an agenda item include:

- Community Wildfire Protection Plan meetings – next one in October, date TBD
- Fire Chiefs meeting – Next meeting 2nd Wednesday in October (October 12)
- LEPC meeting
- Public meetings associated with County Comprehensive Plan update

Data Collection Needs/Next steps

A data collection guide was distributed to members of HMPC that is designed to facilitate gathering information on hazards, past events, vulnerable assets, and capabilities. Jeff recommended that County staff complete the form, reflecting input from several departments such as public works, road and bridge, planning, building, etc. Each participating municipality should also complete one workbook with a local sub-committee. The HMPC was asked to return completed workbooks to Amec Foster Wheeler planner Kyle Karsjen by October 5th, 2016. Amec Foster Wheeler will begin work on the risk assessment.

Adjourn

The meeting adjourned at 11:45 am.

Summary prepared by Jeff Brislawn, Amec Foster Wheeler, September 19, 2016.

**TAOS COUNTY MULTI-JURISDICTIONAL
HAZARD MITIGATION PLAN
KICKOFF MEETING**

**Wednesday, September 14, 2016 9:00am-Noon
Taos County Complex, Administration Building Commission Chambers
105 Albright St, Taos, NM**

- ❖ **Opening Remarks and Introductions**
- ❖ **Mitigation, Mitigation Planning Process, and the Disaster Mitigation Act Requirements**
- ❖ **Role of the Hazard Mitigation Planning Committee (HMPC)**
- ❖ **Objectives and Schedule for the Plan Development**
- ❖ **Hazard Identification**
- ❖ **Coordinating with Other Agencies\Related Planning Efforts\Recent Studies**
- ❖ **Planning for Stakeholder and Public Involvement**
- ❖ **Information Needs/Next Steps**
- ❖ **Questions and Answers/Adjourn**

SIGN-IN SHEET

TAOS COUNTY HAZARD MITIGATION PLAN PROJECT

HMPC Meeting #1 (Kickoff and Hazard Identification) September 14, 2016 9:00am-Noon

Taos County Complex, Administration Building Commission Chambers, Taos, NM

Name	Email Address	Phone	Department/ Organization/ Affiliation	Title
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Subject: Please take a moment to complete the Hazard Mitigation Plan Public Survey
Date: Tuesday, October 11, 2016 9:15:01 AM
Attachments: [image003.png](#)

Hello Everyone,

Please take a moment to respond to the Taos County Hazard Mitigation Plan 2016 Public Survey

Information collected by the survey will provide feedback to the Taos County multi-jurisdictional Hazard Mitigation Planning Committee on reducing hazard impacts. The survey is intended to gather public feedback on concerns about wildfires, floods, winter storms and other hazards and strategies to reduce their impacts. Please take a quick, five question survey and let your concerns and ideas be heard.

Please complete by November 30th.

<https://www.surveymonkey.com/r/TaosHMP2016>

YOUR TIME IS APPRECIATED..... THANK YOU!!!

*Shannan Brumley
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Worksheet: Formulating the Mitigation Strategy

Goals, Objectives, and Actions

Development of broad goals for the mitigation plan is the first step in developing the mitigation strategy for the Taos County Multi-Jurisdictional Hazard Mitigation Plan. Mitigation goals, objectives, and actions should be based on the information revealed in the Risk Assessment. Definitions of these in the context of hazard mitigation planning are provided below. This worksheet guides participants in the process of developing goals. Objectives are optional but are sometimes identified during the goals development process. Actions will be developed in a future meeting of the Hazard Mitigation Planning Committee (HMPC).

Goals are general guidelines that explain what you want to achieve. Goals are defined before considering how to accomplish them so that the goals are not dependent on the means of achievement. They are usually broad policy-type statements and represent long term visions such as:

- Reduce exposure to hazard related losses
- Minimize the risk from natural disasters to existing facilities and proposed development
- Reduce the impact of natural hazards to the citizens of the county
- Provide protection for natural resources from hazard impacts
- Maintain and enhance existing mitigation measures
- Increase public awareness of vulnerability to hazards and support and demand for hazard mitigation

Objectives define strategies or implementation steps to attain the identified goals. Unlike goals, objectives are specific and measurable, such as:

- Maintain the flood mitigation programs to provide 100-year flood protection
- Protect critical facilities to the 500 year flood
- Educate citizens about wildfire defensible space actions

Mitigation Actions are specific actions that help achieve the goals and objectives. Some examples include:

- Develop an earthquake safety program for the school to include bracing bookshelves
- Sponsor a chipping program to promote wildfire defensible space
- Retrofit the police department to withstand flood damage

Other Goals from Related Plans

The following are excerpts from other plans that have a hazard mitigation component to them, provided for reference. It is important to align the Taos County hazard mitigation strategy with other existing plan goals to ensure consistency, efficiency, and effectiveness. Integrated planning helps build resiliency and can also be useful in identifying funding opportunities that might meet multiple objectives in multiple plans.

State of New Mexico Multi-Hazard Mitigation Plan, 2013

- Reduce the number of injuries due to natural hazards.
- Reduce the number of fatalities from natural hazards.
- Reduce the amount of property damage, both public and private, from natural hazards.
- Reduce the number of necessary evacuations.
- Shorten Recovery time for both community function and the natural environment after natural hazard events.
- Improve communication, collaboration and integration among State, tribal and local emergency management agencies.

Taos County Comprehensive Plan - Draft 2016 Update related goals and implementation strategies

- Within Comprehensive Guiding Principles: Resiliency to natural and manmade hazards is important to the protection and security of the residents.
- Hazards Mitigation Element: **Goal 1: Increase community resiliency from all hazards such as wildfires, flooding, drought, severe weather, landslide, avalanche and contaminants.**
 - a) Implement the projects identified in the forthcoming Taos County Hazard Mitigation Plan's mitigation strategy to reduce vulnerability to the hazards profiled within the plan.
 - b) Update and improve the County All-Hazard Emergency Operations Plan, including development of an all-hazard emergency notification system.
 - c) Promote and coordinate the Best Management Practices (BMP) to protect and sustain safe and defensible fire safety buffer zones around communities that border the public lands through the Land Use Regulations and Subdivision Regulations.
 - d) Work with Taos Soil and Water Conservation District to develop a county-wide storm water management plan that addresses flood protection and erosion control and leads to implementation of soil stabilization and flood control projects such as dikes and culverts.
 - e) Develop capital improvement plans to identify and seek local, state and federal funding for priority emergency management and hazard mitigation projects.
 - f) Implement a public education campaign to educate County residents on hazard mitigation topics such as wildfire prevention through defensible space creation,

vegetation management and fuel reduction; flood protection through on-site retention and purchase of flood insurance; water conservation techniques and retrofitting; and actions to take during an emergency situation.

- g) Implement the recommendations of the Community Wildfire Protection Plan (CWPP), and continue to seek funding to regularly update and further disseminate the CWPP.
- Hazard Mitigation Element: **Goal 2: Improve land-use planning and regulation of development in hazard zones such as floodplains and wildland-urban interface areas.**
 - a) Complete and update county mapping of geologic hazards and the 100 year floodplain.
 - b) Require development to be located outside of the floodplain and significant geologic hazards except on properties where there are no feasible development sites outside of the floodplain or outside of significant geologic hazards; where floodplain or significant geologic hazards cannot be avoided, mitigation standards will be implemented to minimize risk to public health and safety.
- Hazard Mitigation Element: **Goal 3: Upgrade and enhance the County's emergency response system to ensure that all areas have adequate police, fire and emergency services.**
 - a) Increase the telecommunications system through partnerships with the private providers, state and federal agencies.
 - b) Expand the County's 911 dispatch system and encourage joint or multiple use facilities for law enforcement, fire fighters, and rescue services.
 - c) Propose a voter referendum to consider a dedicated Gross Receipts Tax for E911 services
- Hazard Mitigation Element: **Goal 4: Provide for health, safety and food security in the event of disasters**
 - a) Investigate the use of agricultural cooperatives and value added agricultural products and provide the findings to the community for education and information.
 - b) Cooperate with the New Mexico State Cooperative Extension Service to educate the community of the value of agriculture and encourage community gardens and Community Supported Agriculture (CSA) organizations.
 - c) Support through incentives or funding the construction of greenhouses to extend the local growing season.
 - d) Work with the State of New Mexico Property Tax Division and the Taos County Assessor's Office to develop a County tax policy to support and enhance agricultural production viability (e.g., agricultural inputs, acquisition fund, etc.).
 - e) Work with Taos County Extension, the Master Gardener Program and other relevant agricultural organizations on education and outreach to increase subsistence and kitchen gardening training opportunities.
 - f) Work with Taos County Food and Agriculture Policy Council to identify food security in the event of disasters as a subject for the Council's work.

2016 Taos County CWPP Core Team Goals

- The Taos County CWPP Core Team seeks to build fire resilient communities, forests and watersheds through collaboration with all community stakeholders and partners.
- The primary goal of the CWPP is to protect lives, property, infrastructure and natural resources in Taos County from catastrophic wildfires.
- The Taos County CWPP goals are aligned with the National Cohesive Wildland Strategy (NCWS) and its three pillars: Manage Resilient Landscapes; Promote Fire Adapted Communities, and Safely and Effectively Respond to Wildfire.

Chapter 7 - Goals and Recommendations- CWPP Core Team Related

1. Implement the recommendations and implementation strategies from the 2016 Taos County CWPP Update and follow through with remaining 2009 CWPP recommendations.
 2. Maintain and expand the collaboration. Collaborative continuity is essential for all stakeholders including municipal, county, tribal, acequia, state and federal government representatives.
 3. Continue planning integration with the predominant land managers in Taos County.
 4. Integrate the goals and priorities of the 2016 CWPP Update with the Carson National Forest Plan Revision.
 5. Seek greater participation from the Town of Taos and consider supporting a Water Source Protection Resolution.
 6. Expand the stakeholder base with stakeholder focus groups and reach out to local forestry contractors, community fuel wood harvesters, and NGOs with complimentary interests.
 7. Growth challenges (stakeholders, grants, projects, initiatives) need additional staffing commitments.
 8. Sub-committees can be focused on implementing key recommendations and strategies. Education and outreach, program development, grant applications, risk assessments, GIS mapping, Post Wildfire Restoration/BAER protocols are all good examples of work that can be addressed by sub-committees.
 9. Consider creating a central repository for data and information related to the CWPP mission: projects completed (type, acreage), potential new projects, meeting minutes, etc. A calendar and timelines for grant applications would be helpful.
 10. Explore organizational and structural recommendations and communication protocols that can improve CWPP Core Team operations and decision-making processes.
- See also CWPP Recommendations specific to:
 - Public Education and Outreach
 - Improve Fire Response and Emergency Management Capability
 - Structural Ignitability
 - Fuel Reduction Priorities
 - Restore and Maintain Resilient Landscapes
 - Risk Assessment
 - Restoration Economy
 - Funding Opportunities

Group Goals and Objectives Update/Development

List below suggestions for goals and objectives for the County's Hazard Mitigation Plan.

You can refer to the example goals listed previously and you may reword them or add new ones.

Leave behind or return to Jeff Brislawn (jeff.brislawn@amecfw.com).

Goal 1:

Objectives:

Goal 2:

Objectives:

Goal 3:

Objectives:

Goal 4:

Objectives:

- Home
- Government ▾
- Departments ▾
- Services ▾
- Public Safety ▾
- Community ▾
- Event Calendar
- Contact ▾

Welcome to Taos County

"Open County Government protecting the health, safety, welfare and environment of its citizens"



In our website you will find agendas for our scheduled meetings, minutes of all our meetings, job openings, hours of operation, forms and applications, access to our growth management plan, land use plan, information about all departments and their employees. This has been a collaborative effort with all employees to bring this information to the public and to better serve the community.

The County Commission Agendas are available to the public by clicking [HERE](#).

The New Taos County Animal Control Ordinance 2015-1
([click here](#))

Land Use Regulations Ordinance 2016-1 Amendment to Ordinance 2015-2 Recorded
([Click Here](#))

Ordinance 2016-2 Amending 2015-1 Animal Control Ordinance
([Click Here](#))

2016 Taos County CWPP Plan
([Click Here](#))

Taos County Hazard Mitigation Plan 2016 Public Survey
Provide feedback to the Taos County multi-jurisdictional Hazard Mitigation Planning Committee on reducing hazard impacts. The survey is intended to gather public feedback on concerns about wildfires, floods, winter storms and other hazards and strategies to reduce their impacts.
Take a quick, five question survey and let your concerns and ideas be heard.
Please complete by November 30th.

Click the link below to start the survey
<https://www.surveymonkey.com/r/TaosHMP2016>

Breaking / Latest News



Search

Location

Upcoming Events

Mon Oct 31

Halloween

Tue Nov 08 @07:00 -

07:00PM

Election Day

Fri Nov 11

Veterans Day

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Job Openings

TAOS COUNTY
EMPLOYMENT
OPPORTUNITY: Evidence
Technician

Taos County Employment
Opportunity: Emergency
Medical Technician (EMT) -
Basic

Taos County Employment
Opportunity: Juvenile
Detention Officer I TEMP

Taos County Employment
Opportunity: Emergency
Management Director

Taos County Employment:
Adult Detention Officer Cadet

Taos County Employment
Opportunity: Custodian

Taos County Employment
Opportunity: Intermediate -
Emergency Medical
Technician (EMT)

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Taos County Hazard Identification Worksheet

Hazard	Spatial Extent	Probability of Future Occurrences	Magnitude/Severity	Overall Significance
Dam Failure	Negligible	Unlikely	Negligible	Low
Drought	Extensive	Likely	Negligible	Medium
Earthquake	Negligible	Unlikely	Negligible	Low
Expansive Soils	Limited	Occasional	Limited	Low
Extreme Heat	Limited	Likely	Limited	Medium
Flood/Flash Flood	Limited	Occasional	Limited	Medium
High Wind	Significant	Likely	Limited	Medium
Landslide/Mudslide/Rockfall	Limited	Likely	Limited	Medium
Land Subsidence	Limited	Occasional	Limited	Low
Severe Winter Storm	Significant	Likely	Limited	Medium
Thunderstorm (including Lightning and Hail)	Significant	Likely	Negligible	Medium
Tornado	Negligible	Unlikely	Negligible	Low
Volcano	Negligible	Unlikely	Negligible	Low
Wildland Fire	Significant	Likely	Critical	High
Hazardous Materials	Limited	Occasional	Limited	Medium

Geographic Extent

Negligible: Less than 10 percent of planning area or isolated single-point occurrences

Limited: 10 to 25 percent of the planning area or limited single-point occurrences

Significant: 25 to 75 percent of planning area or frequent single-point occurrences

Extensive: 75 to 100 percent of planning area or consistent single-point occurrences

Potential Magnitude/Severity

Negligible: Less than 10 percent of property is severely damaged, facilities and services are unavailable for less than 24 hours, injuries and illnesses are treatable with first aid or within the response capability of the jurisdiction.

Limited: 10 to 25 percent of property is severely damaged, facilities and services are unavailable between 1 and 7 days, injuries and illnesses require sophisticated medical support that does not strain the response capability of the jurisdiction, or results in very few permanent disabilities.

Critical: 25 to 50 percent of property is severely damaged, facilities and services are unavailable or severely hindered for 1 to 2 weeks, injuries and illnesses overwhelm medical support for a brief period of time, or result in many permanent disabilities and a few deaths.

Catastrophic: More than 50 percent of property is severely damaged, facilities and services are unavailable or hindered for more than 2 weeks, the medical response system is overwhelmed for an extended period of time or many deaths occur.

Probability of Future Occurrences

Unlikely: Less than 1 percent probability of occurrence in the next year, or has a recurrence interval of greater than every 100 years.

Occasional: Between a 1 and 10 percent probability of occurrence in the next year, or has a recurrence interval of 11 to 100 years.

Likely: Between 10 and 90 percent probability of occurrence in the next year, or has a recurrence interval of 1 to 10 years

Highly Likely: Between 90 and 100 percent probability of occurrence in the next year, or has a recurrence interval of less than 1 year.

Overall Significance

Low: Two or more of the criteria fall in the lower classifications or the event has a minimal impact on the planning area. This rating is also sometimes used for hazards with a minimal or unknown record of occurrences/impacts or for hazards with minimal mitigation potential.

Medium: The criteria fall mostly in the middle ranges of classifications and the event's impacts on the planning area are noticeable but not devastating. This rating is also sometimes utilized for hazards with a high impact rating but an extremely low occurrence rating.

High: The criteria consistently fall along the high ranges of the classification and the event exerts significant and frequent impacts on the planning area. This rating is also sometimes utilized for hazards with a high psychological impact or for hazards that the jurisdiction identifies as particularly relevant.

Source: Amec Foster Wheeler Data Collection Guide, Taos County

Taos County Risk Summary Handout - DRAFT 10-19-16

Hazard	Vulnerability Summary/Problem Statements
Dam Failure	<ul style="list-style-type: none"> • According to data provided by the National Inventory of Dams, there are 10 high hazard dams within Taos County. • Several of these dams are above the Village of Questa and the Town of Red River. Questa Tailings Dams are within .1 mile to Questa and Cabresto Dam is 7 miles to Questa. Beaver Park Dams are within 2.5 miles from Red River. • According to the National Performance of Dams program, Taos County has never suffered a failure of one of these dams.
Drought	<ul style="list-style-type: none"> • Drought has a cyclical occurrence in Taos County and typically every decade has multiple years of drought; • Drought has had significant impacts on the agricultural economy in the County. Total crop sales were down an average of 30% in drought years (representing a loss of \$0.9M adjusted 2015 dollars) • NDMC Drought Impact Reporter listed an impact in 2013 pertaining to livestock, explaining that drought presented exceptional challenges for ranchers in Taos County. Some ranchers sold off 60 to 80 percent of their cattle herds. • The recreation and tourism industry is also vulnerable to drought induced snowpack shortages, water-based recreation, and forest closures due to wildfires or elevated wildfire risk.
Earthquake	<ul style="list-style-type: none"> • Earthquakes in New Mexico are infrequent, but the potential for an M 6 to 7 earthquake exists along faults associated with the Rio Grande Rift Zone. The southern portion of the County has the potential for the highest ground shaking levels. • Hazus loss modeling estimates that about 5,666 buildings will be at least moderately damaged from a 2,500 year probabilistic earthquake scenario. This is over 29% of the buildings in the region. • There are an estimated 294 buildings that will be damaged beyond repair. The total building-related losses would be on the order of \$356M. • All transportation systems were projected to see damage in locations and segments, but were expected to return to 50% or higher functionality on Day 1 after the earthquake.
Flood	<ul style="list-style-type: none"> • Countywide there are 743 structures at risk worth \$217M, with a loss estimate of \$54M • The Unincorporated area (non-Pueblo) accounts for 44% of the total structures at risk, and 40% of the total losses. • Both Red River and the Town of Taos have considerable number of structures in flood hazard areas. Red River has a higher loss ratio, which means 28% of the total developed parcels in the town are potentially at risk. • Only a small area of the 0.2% annual chance flood has been mapped within the County; this would add an additional 18 residential structures to the total at risk to flooding. • Red River and Questa have the highest loss ratios comparing dollar losses to inventory values. Red River has a loss ratio of 5.91% and Questa 2.38%. • 5 critical facilities were identified in the 1% annual chance flood hazard area.
Hazardous Materials	<ul style="list-style-type: none"> • There are 10 Tier 2 Facilities in Taos County • One of these facilities, a propane company, is located in a very high fire risk zone • There are gas transmission pipelines located in Taos Canyon, Red River Canyon, and along the Rio Grande in the southern county. Some of these pipelines may be re-located according to a gas company representative; a line in the Rio Grande valley is being relocated from a landslide hazard area. Lines in the Red River valley have been reinforced for flood and landslide hazards. • The molybdenum mine and tailing ponds above the Red River valley and Questa could be an issue if an uncontrolled release occurred.

Taos County Risk Summary Handout - DRAFT 10-19-16

	<ul style="list-style-type: none"> • PHEMSA records six hazardous materials incidents since 1970; the majority of these were flammable liquid releases, and caused no injuries, no fatalities and no recorded damage.
High Winds	<ul style="list-style-type: none"> • Southern Taos County is located in a ‘Special Wind Region’ as defined by FEMA (increased potential for strong downslope winds because of its topography) due to its topography and geographic setting; • High wind rarely causes fatalities, injuries or reportable damage. • Historical tornadoes have been infrequent and low-rated; the only tornado recorded by NCDC was ranked EF-0.
Landslides and Rockfall	<ul style="list-style-type: none"> • “A large landslide, apparently reactivated by seepage from abandoned mine workings, affected a number of homes near the Taos ski valley in 1979.” • Other areas of concern included SR 38 to Red River and all state highways including 64 E and 76. The DOT has done rockfall mitigation in the Rio Grande Valley along Highway 68. • The HMPC noted mudslides as an issue on the highway in the Taos Canyon and at the end of Santa Barbara Canyon. Taos Canyon had a half dozen areas impacted by debris flows in 2015.
Severe Thunderstorms	<ul style="list-style-type: none"> • The largest hailstones recorded in Taos County had a diameter of 1.5 inches; this measurement has been recorded once in 1961. • NCDC reported one lightning event in Red River causing one injury on September 14, 1999.
Wildfire	<ul style="list-style-type: none"> • GIS analysis for this plan indicates that \$2.8 billion in property value and 10,449 structures are potentially exposed to wildland fire hazards in the county. • About 90% of the structures are within the Intermix threat type and about 89% of the total value is within the Intermix threat type. • When analyzing the differences in risk among jurisdictions, the unincorporated communities account for 74% of the structures at risk and 81% of the total value at risk. • GIS Fire Loss Ratio analysis shows that 35% of developed parcels at risk have a low risk rating, 55% have a moderate risk rating, 8% have a high rating, and 1% have a very high rating. • Critical facility risk includes fire stations, schools, communication facilities and potable water facilities. • All of the municipalities have wildfire risk, notably in and around Red River.
Winter Weather	<ul style="list-style-type: none"> • Research indicated that severe winter storms contribute to traffic and vehicle collisions but little in significant damages. • Most economic impacts are short term in duration. Impacts to the economy include road closings, travel restrictions, temporary power losses and pressure on power surge capacity;

**TAOS COUNTY MULTI-JURISDICTIONAL
HAZARD MITIGATION PLAN
*RISK ASSESSMENT and GOALS MEETING***

**October 21, 2016 9:00am-Noon
Taos County Complex, Administration Building Commission Chambers
105 Albright St, Taos, NM**

- ❖ **Introductions**
- ❖ **Review of the Planning Process**
- ❖ **Review of Identified Hazards**
- ❖ **Vulnerability Assessment Overview by Hazard**
- ❖ **Capability Assessment Overview**
- ❖ **Developing Goals for the Mitigation Plan**
- ❖ **Update on Public Involvement Activities/public meeting**
- ❖ **Next Steps**
- ❖ **Questions and Answers/Adjourn**

SIGN-IN SHEET
TAOS COUNTY HAZARD MITIGATION PLAN PROJECT
HMPC Meeting #2 (Risk and Goals meeting) October 21, 2016 9:00am-Noon
Taos County Complex, Administration Building Commission Chambers
105 Albright St, Taos, NM

Name	Email Address	Phone	Department/ Organization/ Affiliation	Title
Jeff BrisLawn	Jeff.brislawn@amcfcw.com	303-704-5506	AMPC Foster Wheeler	PROJECT MANAGER
Dominic MARTINEZ	ON FILE	505 737-0451	OEM/legal TAOS CTY	DIRECTOR
Andy B. Iardello	ABiardello@UTSVU.org	561 644 1358	TAOS Ski Valley	Police chief
Daniel BARRONE	dbarrone@TAOS GOV.CM	770-7255	Town of TAOS	Mayor
Bandy Farmer	rfarmer@taosloc.com	575 799 5111	Taos PD	Chief
Chris BACA	CPBACA@TECOENERGY.COM	505-870-2386	NM Gas Co.	SA. SRV. TECH
JOHN MILLER	jmiller@taosgov.com	779-7591	Town of Taos	SR. planner, Floodplain mgmt
Carla Duran ^{FOR}	lillian.bvrez@taoschools.org	758-5202	TAOS Mun. Schools	Secretary to Superintendent
EDUARD VIGIL	eduard.vigil@taoscounty.org	737-6444	Taos County	Planning Director
Eddie J. Abeyta		758-3386	TAOS FIRE	
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NICK LAMENDOLA	POLICECHIEF@VILLAGEOFQUESTA.ORG	613-2854	QUESTA POLICE	CHIEF
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Brent Jeremillo	brentjeremillo@taoscounty.org	737-6304	Taos County	Deputy County Manager
Kathy BENNETT	KathyBENNETT@TSV.COM	741-1003	TAOS SIKI VALLEY	COUNCILOR

Summary of the Taos County Multi-Jurisdictional Hazard Mitigation Plan Risk Assessment and Goals Meeting

October 21st, 2016

9am-Noon

Taos County Complex, Administration Building Commission Chambers
105 Albright St, Taos, NM

Introductions and Opening Remarks

Dominic Martinez, Taos County Office of Emergency Management, and Jeff Brislawn of AMEC Foster Wheeler, the consulting firm hired to facilitate the plan development process, began the meeting with welcoming remarks. Dominic asked everyone around the room to introduce themselves. Nineteen persons representing Taos County, Town of Taos, Village of Questa, Taos Ski Valley (TSV) and other stakeholders were present and documented on a sign in sheet. Stakeholders included New Mexico Gas Company, Kit Carson Electric Cooperative, Taos Municipal Schools, and the Community Wildfire Protection Plan (CWPP) Core Team. An agenda, goals update worksheet, risk summaries overview sheet, and hard copies of the maps developed for the plan update were provided as handouts.

Review of Mitigation, Disaster Mitigation Act (DMA) Requirements, and the Planning Process

A PowerPoint presentation was presented by Jeff Brislawn, the project manager from AMEC Foster Wheeler. Jeff reviewed the nine step planning process being followed and discussed the project status.

Risk Assessment Presentation and Discussion

Jeff outlined the general risk assessment requirements before beginning a detailed discussion of each hazard. He presented highlights on each hazard that will be included in the draft risk assessment chapter of the plan. Refer to the Taos County HMP Risk Assessment PowerPoint presentation and draft Hazard Identification and Risk Assessment (HIRA - forthcoming) chapter for specific details on each hazard.

Additional insight and details were learned during the risk assessment conversation among participants. Highlights of the discussion are noted by hazard in the table below.

Hazard or Topic	Meeting Discussion
Dam Failure	<ul style="list-style-type: none">• 10 High Hazard dams are located in the County• Seepage at Cabresto Dam has been occurring – the State Engineer's Office may have more info• Randall Reservoir is a new reservoir about 1 mile from Taos near Hwy 64; no water in it yet; this was not on the list of high hazard dams.

Drought	<ul style="list-style-type: none"> • National Forest closures affect recreation and firewood access • Drought has many cascading impacts: excessive heat > dryness > beetle kill > fires > floods > silting of reservoirs • 4/5 of National Forest has seen loss to spruce trees • Timber harvest impacts • Wells going dry: economic impact to drill deeper or more wells • Less water in acequias <ul style="list-style-type: none"> ○ Land becomes fallow, lose agricultural status and taxes go up ○ Long term ability to produce food and livestock decreased ○ Desertification increasing ○ Growth not sustainable • Foster resilience – Pueblos have stored food to last as long as 7 years. Straw bales in the County used to be larger to provide more long term feed supply for livestock
Flood	<ul style="list-style-type: none"> • Jeff discussed results of GIS-based vulnerability assessment • Town of Taos noted a fire substation in floodplain • Arroyo erosion and debris flows as or more damaging than floodwaters themselves • Public awareness is an issue. There is a lot of complacency or lack of awareness when the arroyos are typically dry and only flood periodically.
Wildfire	<ul style="list-style-type: none"> • Acequias are becoming man-made riparian zones with vegetation growth due to the presence of water <ul style="list-style-type: none"> ○ Dry fuels accumulate when vegetative debris clearance occurs; if ignited this can result in a “fuse” leading to other parts of the wildland urban interface ○ May not show up as interface zones, but burn often during droughts • Noted by TSV that homeowners cannot get insurance due to high wildfire risk in the municipality • TSV also noted that fire risk maps do not reflect the elevated risk in the town which includes a lot of homes without any defensible space.
Severe Winter Storm	<ul style="list-style-type: none"> • Extreme cold during the 2011 cold snap reached 38 degrees below zero • Is there a homeless roundup during storm or cold events? Not a specific program for it according to Dominic.
High Wind	<ul style="list-style-type: none"> • Power lines are typically replaced with better ones when they get knocked down • Occasionally tree limbs on powerline cause outages
Severe Thunderstorm	<ul style="list-style-type: none"> • Lightning rods exist on communication towers • Power outages often occur in TSV
Earthquake	<ul style="list-style-type: none"> • Fracking in northern part of the county is thought to be a source of recent earthquakes • USGS study in Raton NM and Trinidad CO of 2011 earthquakes; some of these were in the M5 range and related to wastewater injection. • The Rio Grande Rift and other faults in the region provide potential for low probability but potentially high consequence event • Jeff discussed results of HAZUS earthquake modeling
Landslides/Rockfall/Avalanche	<ul style="list-style-type: none"> • John Dunn Bridge Rd (BLM property)- switchbacks over Rio Grande on west side have rockfall hazards. Bridge has scour issues according to County Public Works. • Penasco - steep ramps • Bridges – Pilera – 70 years old

	<ul style="list-style-type: none"> • HWY 150 up to Taos Ski Valley has rockfall risk <ul style="list-style-type: none"> ○ Large rockslides in recent years near base of canyon ○ Some areas may be snow avalanche prone • In 1990s a landslide broke a gas line above ground according to the NM Gas Co. <ul style="list-style-type: none"> ○ Now monitored with strain gages ○ Relocation of 7 miles of pipe in Rio Grande valley planned; scheduled to start in Oct. 2017
HazMat	<ul style="list-style-type: none"> • Fuel tankers and propane trucks travel on highways to TSV, Red River and roads countywide • Sewer/septic trucks can also be a hazard and couple spills have resulted from accidents. • A new gas transmission pipeline has been routed up to TSV • What are 'Mains' noted in Tier II facilities list? Gas company representative noted these could be gas transmission main lines, but not sure what the 'Penasco Main' was. Dominic to check with LEPC. • Meth labs were brought up as being potentially hazardous • 4 Kit Karson Propane Facilities are not on the Tier II list include: <ul style="list-style-type: none"> ○ Penasco ○ Questa ○ Airport ○ CJ Caliente • WIPP shipments used to come through 285 N until the route changed • There are not any obvious bypass routes through Taos

Risk Summary Review

Jeff reviewed a handout with risk summaries specific to each hazard. This is a draft document for HMPC reference moving forward for quick reference. The intent is to summarize the key issues that may also provide the basis and need for mitigation actions. A summary of hazard significance level for each hazard from a county-wide perspective is provided, based on HMPC input. Hazard significance will vary by jurisdiction and these differences will be noted in the plan.

Capability Assessment Review

Jeff briefly reviewed highlights of existing capabilities in the county to mitigate hazards, including participation in the National Flood Insurance Program, county planning and zoning regulations, and the county Community Wildfire Protection Plan and related activities. The Comprehensive Plan will include a Hazard Mitigation Element which is being developed during the 2016 update of that plan, in coordination with the HMP development. Capabilities will be summarized in the plan by jurisdiction, largely based on input from the jurisdictions on the data collection guides. Building on and improving these capabilities will be discussed moving forward in the mitigation strategy development.

Plan Goals Development

The HMPC Reviewed a worksheet handout *Formulating the Mitigation Strategy* that included a list of typical goal statements for hazard mitigation plans, drawn from FEMA

guidance and other plans (including the Hazard Mitigation Element from the draft Comprehensive Plan update and 2016 CWPP), and the New Mexico State hazard Mitigation Plan. The group discussed the example goals and generally felt that the State Hazard Mitigation Plan goals could serve as the basis for the plan goals with some adjustments. The group commented that goals 2 and 3 from the Hazard Mitigation Element from the draft Comprehensive Plan update should be incorporated in some form as well. Based on the feedback Jeff will create a draft set of goals for the plan and share by email prior to the next HMPC meeting for further review and refinement.

Update on Public Involvement Activities/public meeting

Public involvement for the HMP includes a public survey, public workshop and advertisement of the draft plan for review and comment. The online public survey has received 75 responses as of 10/20/2016. The survey closes at the end of November. Results of the survey will be shared by email and discussed further at the next HMPC meeting. The public meeting will be held during the same timeframe as the next HMPC meeting, likely in the late afternoon/early evening the day of the HMPC meeting.

Plan Timeline/Next steps

Jeff summarized the next steps in the process. Amec Foster Wheeler will finalize the HIRA and share it with the HMPC in the next few weeks.

HMPC to do list:

- Need data collection guides back from Questa and TSV
- When available, provide feedback on draft goals
- When it's available, review the draft HIRA chapter and provide feedback
- Assist with advertising public survey and upcoming public meeting (details forthcoming)
- Start formulating ideas for mitigation projects

The next and final HMPC planning meeting will be held December 8th, 2016 from 9am-noon, likely at the Taos County Complex, Administration Building Commission Chambers. The purpose of this meeting is to develop mitigation actions for the plan specific to each participating jurisdiction. *Jeff emphasized that this is an important meeting and will form the basis for the mitigation action plan.* A calendar update will be sent out to save the date. The meeting materials will also be shared electronically, including the presentation and handouts. The public meeting is likely to be December 8th as well, from 5:30-7:30pm at a location to be determined; more details and a press release will be provided.

From: Shannan Brumley <shannanb@taoscounty.org>
Sent: Monday, November 28, 2016 9:42 AM
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Subject: Public Meeting Notice for Immediate Release

Attachments: Public Meeting Notice.pdf

Importance: High

Please pass out to any one you think might be interested including other association, boards, committees, etc. and post around your work place. It will be posted on the LEPC and Taos County Website.

Shannan Brumley
Legal Assistant
Taos County Administration

105 Albright St., Ste G
Taos, NM 87571
Ph: 575-737-6306
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Taos County Local Hazard Mitigation Plan New Mitigation Action Worksheet

Use this to record new potential mitigation projects (1 form per project) identified during the planning process. Provide as much detail as possible and use additional pages as necessary. Complete and return to Jeff Brislawn by **January 6th**. **Note Jurisdiction:**

Mitigation Project Title	
Hazard(s) Mitigated	
Project Description, Issue/Background	
Related planning mechanisms	
Other Alternatives	
Responsible Office/ Agency and Partners	
Partners	
Priority (High, Medium, Low)	
Cost Estimate	
Benefits (Avoided Losses)	
Potential Funding	
Schedule	

Prepared by: _____
 Title/Dept: _____
 Phone: _____
 Email: _____

Please return worksheets by mail, email, or fax to:
Jeff Brislawn
 jeff.brislawn@amecfw.com
 Phone: 303-704-5506
 Fax: 303-935-6575
 1942 Broadway, Suite 407, Boulder, CO 80302

Example Mitigation Actions by FEMA categories with Hazards Identified in the Taos Hazard Mitigation Plan

Alternative Mitigation Actions	Dam Failure	Floods	Hazardous Materials	Landslides/ Debris Flows/ Rockfalls; soil hazards; subsidence	Weather Extremes (Tornado, hail, lightning, wind, temps, drought)	Earth quakes	Wildfires	Severe Winter Storm
PLANS and REGULATIONS								
Building codes and enforcement		■	■	■	■	■	■	■
Comprehensive Watershed Tax		■						
Density controls	■	■	■	■			■	
Design review standards		■	■	■		■	■	
Easements		■	■	■			■	
Environmental review standards		■	■	■		■	■	
Floodplain development regulations	■	■	■					
Hazard mapping	■	■	■	■			■	
Floodplain zoning	■	■	■					
Forest fire fuel reduction							■	
Housing/landlord codes			■		■			
Slide-prone area/grading/hillside development regulations				■			■	
Manufactured home guidelines/regulations		■			■	■		
Minimize hazardous materials waste generation			■					
Multi-Jurisdiction Cooperation within watershed	■	■						
Open space preservation	■	■		■			■	
Performance standards	■	■		■	■	■	■	■
Periodically contain/remove wastes for disposal			■					
Pesticide/herbicide management regulations			■					
Special use permits	■	■	■	■			■	
Stormwater management regulations		■	■					
Subdivision and development regulations	■	■	■	■		■	■	
Surge protectors and lightning protection					■			

Alternative Mitigation Actions	Dam Failure	Floods	Hazardous Materials	Landslides/ Debris Flows/ Rockfalls; soil hazards; subsidence	Weather Extremes (Tornado, hail, lightning, wind, temps, drought)	Earth quakes	Wildfires	Severe Winter Storm
Tree Management					■		■	■
Transfer of development rights		■		■			■	
Utility location			■	■	■			■
STRUCTURE AND INFRASTRUCTRE PROJECTS								
Acquisition of hazard prone structures	■	■		■			■	
Facility inspections/reporting	■	■	■			■		
Construction of barriers around structures	■	■	■					
Elevation of structures	■	■						
Relocation out of hazard areas	■	■	■	■			■	
Structural retrofits (e.g., reinforcement, floodproofing, bracing, etc.)		■	■	■	■	■	■	■
Channel maintenance		■		■				
Dams/reservoirs (including maintenance)	■	■						
Isolate hazardous materials waste storage sties			■					
Levees and floodwalls (including maintenance)		■						
Safe room/shelter					■	■		■
Secondary containment system			■					
Site reclamation/restoration/revegetation		■		■				
Snow fences								■
Water supply augmentation					■			
Debris Control		■		■				
Defensible Space							■	
Stream stabilization		■		■				
EDUCATION AND AWARENESS								
Flood Insurance	■	■						
Hazard information centers	■	■	■	■	■	■	■	■

Alternative Mitigation Actions	Dam Failure	Floods	Hazardous Materials	Landslides/ Debris Flows/ Rockfalls; soil hazards; subsidence	Weather Extremes (Tornado, hail, lightning, wind, temps, drought)	Earth quakes	Wildfires	Severe Winter Storm
Public education and outreach programs	■	■	■	■	■	■	■	■
Real estate disclosure	■	■	■	■	■	■	■	■
Crop Insurance					■	■		
Lightning detectors in public areas					■			
NATURAL SYSTEMS PROTECTION								
Best Management Practices (BMPs)		■	■	■	■		■	
Forest and vegetation management	■	■		■	■		■	■
Hydrological Monitoring	■	■	■	■	■			
Sediment and erosion control regulations	■	■	■	■				
Stream corridor restoration		■		■				
Stream dumping regulations		■	■					
Urban forestry and landscape management		■		■	■		■	■
Wetlands development regulations		■	■	■			■	
EMERGENCY SERVICES								
Critical facilities protection	■	■	■	■	■	■	■	■
Emergency response services	■	■	■	■	■	■	■	■
Facility employee safety training programs	■	■	■	■	■	■	■	■
Hazard threat recognition	■	■	■	■	■	■	■	■
Hazard warning systems (community sirens, NOAA weather radio)	■	■	■	■	■	■	■	■
Health and safety maintenance	■	■	■	■	■	■	■	■
Post-disaster mitigation	■	■	■	■	■	■	■	■
Evacuation planning	■	■	■	■			■	

CATEGORIES OF MITIGATION MEASURES – NFIP CRS

PREVENTION: Preventive measures are designed to keep the problem from occurring or getting worse. Their objective is to ensure that future development is not exposed to damage and does not increase damage to other properties.

- *Planning*
- *Zoning*
- *Open Space Preservation*
- *Land Development Regulations*
 - *Subdivision regulations*
 - *floodplain development regulations*
- *Storm Water Management*
- *Fuels Management, Fire-Breaks*
- *Building Codes*
 - *Fire-Wise Construction*
- *(See Property Protection also)*

PROPERTY PROTECTION: Property protection measures are used to modify buildings subject to damage rather than to keep the hazard away. A community may find these to be inexpensive measures because often they are implemented by or cost-shared with property owners. Many of the measures do not affect the appearance or use of a building, which makes them particularly appropriate for historical sites and landmarks.

- *Retrofitting/disaster proofing*
 - *Floods*
 - Wet/Dry floodproofing (barriers, shields, backflow valves)
 - Relocation
 - Acquisition
 - *Tornadoes*
 - Safe Rooms
 - Securing roofs and foundations with fasteners and tie-downs
 - Strengthening garage doors and other large openings
 - *Drought*
 - Improve water supply (transport/storage/conservation)
 - Remove moisture competitive plants (Tamarisk/Salt Cedar)
 - Water Restrictions/Water Saver Sprinklers/Appliances
 - Grazing on CRP lands (no overgrazing-see Noxious Weeds)
 - Create incentives to consolidate/connect water services
 - Recycled wastewater on golf courses
 - *Earthquakes*
 - Removing masonry overhangs, bracing other parts.
 - Tying down appliances, water heaters, bookcases and fragile furniture so they won't fall over during a quake.

- Installing flexible utility connections that won't break during shaking (pipelines too!)
- **Wildfire, Grassfires**
 - Replacing building components with fireproof materials
 - Roofing, screening
 - Create "Defensible Space"
 - Installing spark arrestors
 - Fuels Modification
- **Noxious Weeds/Insects**
 - Mowing
 - Spraying
 - Replacement planting
 - Stop overgrazing
 - Introduce natural predators

o **Insurance**

NATURAL RESOURCE PROTECTION: Natural resource protection activities are generally aimed at preserving (or in some cases restoring) natural areas. In so doing, these activities enable the naturally beneficial functions of floodplains and watersheds to be better realized. These natural and beneficial floodplain functions include the following:

- storage of floodwaters
- absorption of flood energy
- reduction in flood scour
- infiltration that absorbs overland flood flow
- groundwater recharge
- removal/filtering of excess nutrients, pollutants, and sediments from floodwaters
- habitat for flora and fauna
- recreational and aesthetic opportunities

Methods of protecting natural resources include:

- o **Erosion & Sediment Control**
- o **Wetlands Protection**
- o **Riparian Area/Habitat Protection**
- o **Threatened & Endangered Species Protection**
- o **Fuels Management**
- o **Set-back regulations/buffers**
- o **Best Management Practices**

Best management practices ("BMPs") are measures that reduce nonpoint source pollutants that enter the waterways. Nonpoint source pollutants come from non-specific locations. Examples of nonpoint source pollutants are lawn fertilizers, pesticides, and other farm chemicals, animal wastes, oils from street surfaces and industrial areas and sediment from agriculture, construction, mining and forestry. These pollutants are washed off the ground's surface by stormwater and flushed into receiving storm

sewers, ditches and streams. BMPs can be implemented during construction and as part of a project's design to permanently address nonpoint source pollutants. There are three general categories of BMPs:

1. Avoidance: setting construction projects back from the stream.
 2. Reduction: Preventing runoff that conveys sediment and other water-borne pollutants, such as planting proper vegetation and conservation tillage.
 3. Cleanse: Stopping pollutants after they are en route to a stream, such as using grass drainageways that filter the water and retention and detention basins that let pollutants settle to the bottom before they are drained
- o *Dumping Regulations*
 - o *Water Use Restrictions*
 - o *Weather Modification*
 - o *Landscape Management*

STRUCTURAL PROJECTS have traditionally been used by communities to control flows and water surface elevations. Structural projects keep flood waters away from an area. They are usually designed by engineers and managed or maintained by public works staff. These measures are popular with many because they “stop” flooding problems. However, structural projects have several important shortcomings that need to be kept in mind when considering them for flood hazard mitigation:

- They are expensive, sometimes requiring capital bond issues and/or cost sharing with Federal agencies, such as the U.S. Army Corps of Engineers or the Natural Resources Conservation Service.
- They disturb the land and disrupt natural water flows, often destroying habitats.
- They are built to a certain flood protection level that can be exceeded by a larger flood, causing extensive damage.
- They can create a false sense of security when people protected by a structure believe that no flood can ever reach them.
- They require regular maintenance to ensure that they continue to provide their design protection level.

Structural measures include:

- o *Detention/Retention structures*
- o *Erosion and Sediment Control*
- o *Basins/Low-head Weirs*
- o *Channel Modifications*

- *Culvert resizing/replacement/Maintenance*
- *Levees and Floodwalls*
- *Fencing (for snow, sand, wind)*
- *Drainage System Maintenance*
- *Reservoirs(for flood control, water storage, recreation, agriculture)*
- *Diversions*
- *Storm Sewers*
- *Critical Facilities Protection (Buildings or locations vital to the response and recovery effort, such as police/fire stations, hospitals, sewage treatment plants/lift stations, power substations)*
 - Buildings or locations that, if damaged, would create secondary disasters, such as hazardous materials facilities and nursing homes
 - Lifeline Utilities Protection
 - Health & Safety Maintenance

PUBLIC INFORMATION: A successful hazard mitigation program involves both the public and private sectors. Public information activities advise property owners, renters, businesses, and local officials about hazards and ways to protect people and property from these hazards. These activities can motivate people to take protection

- *Hazard Maps and Data*
- *Outreach Projects*
 - (mailings, media, web, speakers bureau)
- *Library Resources*
- *Real Estate Disclosure*
- *Environmental Education*
- *Technical Assistance*

EMERGENCY SERVICES measures protect people during and after a disaster. A good emergency services program addresses all hazards. Measures include:

- *Warning* (floods, tornadoes, ice storms, hail storms, dam failures)
 - NOAA Weather Radio
 - Sirens
 - Reverse 911
- *Monitoring of Conditions (dams)*
- *Evacuation & Sheltering*
- *Communications*
- *Emergency Planning*

Mitigation Action Selection and Prioritization Criteria

Does the proposed action protect lives?

Does the proposed action address hazards or areas with the highest risk?

Does the proposed action protect critical facilities, infrastructure, or community assets?

Does the proposed action meet multiple objectives (multi-objective management)?

STAPLE/E

Developed by FEMA, this method of applying evaluation criteria enables the planning team to consider in a systematic way the social, technical, administrative, political, legal, economic, and environmental opportunities and constraints of implementing a particular mitigation action. For each action, the HMPC should ask, and consider the answers to, the following questions:

Social

Does the measure treat people fairly (different groups, different generations)?

Technical

Will it work? (Does it solve the problem? Is it feasible?)

Aministrative

Is there capacity to implement and manage project?

Political

Who are the stakeholders? Did they get to participate? Is there public support? Is political leadership willing to support it?

Legal

Does your organization have the authority to implement? Is it legal? Are there liability implications?

Economic

Is it cost-beneficial? Is there funding? Does it contribute to the local economy or economic development? Does it reduce direct property losses or indirect economic losses?

Environmental

Does it comply with environmental regulations or have adverse environmental impacts?



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Welcome to Taos County

"Open County Government protecting the health, safety, welfare and environment of its citizens"



In our website you will find agendas for our scheduled meetings, minutes of all our meetings, job openings, hours of operation, forms and applications, access to our growth management plan, land use plan, information about all departments and their employees. This has been a collaborative effort with all employees to bring this information to the public and to better serve the community.

The County Commission Agendas are available to the public by clicking [HERE](#).

- Proposed: Ordinance 2016-5
Adopting a Countywide Emergency Communications Tax
[\(Click Here\)](#)
- 2016 Taos County CWPP Plan
[\(Click Here\)](#)
- Proposed: Taos Economic Development Plan
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- Proposed: Taos County Comprehensive Plan 8
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- Upcoming Events**
- Thu Dec 08 @17:30 - 07:30PM
[Taos County All Hazards Mitigation Plan Public Meeting](#)
 - Wed Dec 14 @18:00 -
[Planning Commission agenda 12-14-2016](#)
 - Sun Dec 25
[Christmas Day](#)
 - Sun Jan 01
[New Years Day](#)
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- [Taos County Employment Opportunity: Emergency Medical Technician \(EMT\) - EMT-Basic or EMT - Intermediate](#)
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PREPAREDNESS

PUBLIC MEETING

**TAOS COUNTY ALL HAZARD
MITIGATION PLAN**

Would you like to learn more about what Taos County and the incorporated municipalities are doing to minimize the impacts of floods, dam failures, wildfires, hazardous materials incidents, and other hazards?

The County is leading the development of a multi-jurisdictional hazard mitigation plan. The plan assesses risks posed by natural and man-made hazards, identifies ways to reduce those risks, and allows each jurisdiction to be eligible for mitigation grant funding from FEMA. Representatives from all municipalities and the County have been developing the plan over the past four months with assistance from a consultant, Amec Foster Wheeler.

The plan will identify hazard mitigation goals and mitigation projects, with the intent of reducing losses from hazard events before they occur again. A public workshop is being held to solicit discuss the plan, the identified hazards and vulnerabilities, and solicit ideas for mitigation projects.

Date: December 8, 2016

Time: 5:30-7:30 PM



amec foster wheeler



**Location: 105 Albright St.
Taos County Complex
Commission Chambers
Taos, NM 87571**

In addition public input is being solicited through a short survey at the following website:

<https://www.surveymonkey.com/r/TaosHMP2016>

Taos County Hazard Mitigation Plan

Public Meeting Summary

12-8-2016 5:30-6:30pm

Taos County Complex, Administration Building Commission Chambers

105 Albright St, Taos, NM

Introduction

- Dominic Martinez (Taos County E911 Coordinator) and Jeff Brislawn (Project Manager with consulting firm Amec Foster Wheeler) kicked off the meeting at 5:30 PM. Fifteen (15) persons were present and documented on a sign in sheet. Some attendees included members of the Hazard Mitigation Planning Committee. Jeff began with a presentation that went over the project scope, the hazard mitigation planning process and timeline, and the work completed so far. A list of hazards addressed in the plan, followed by slides that summarized hazard vulnerability. The group was asked what hazards presented the greatest concern. This led to further discussion summarized below.

Comments/discussion

- The group noted landslide and rockfall problems in the Rio Grande Canyon (South of Pilar) and Red River Valley. The NMDOT has been proactive with mitigation in these areas.
- A member of the public noted in regards to Highway 68 there is a cooperative agreement between the BLM and NMDOT related to debris flow mitigation on public lands.
- Utility lines have been at risk to landslides, including natural gas and fiber optic. A person noted that the fiber optic line had been severed before. This could have extensive economic ramifications, including shutting down banking. Jeff discussed how the gas companies have been involved in the process and there is a project planned to relocate the gas line in the Rio Grande Canyon outside of a landslide area next year.
- Other infrastructure discussed were bridges and dams. The High bridge and John Dunn Bridges over the Rio Grande are getting old and the only means to reach the western side of the county without a major detour. The Cabresto Dam was noted as having seepage issues.
- The 2011 natural gas outage was also discussed, as well as planned enhancements to the 911 system.
- The meeting adjourned at 6:30 pm.

TAOS COUNTY
MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN
MITIGATION STRATEGY MEETING

Thursday, Dec 8, 2016 9am-Noon
Taos County Complex, Administration Building
105 Albright St, Taos, NM

- ❖ Opening remarks and introductions
- ❖ Review of the planning process and key issues from the risk assessment and capability assessment
- ❖ Finalization of goals for the Mitigation Plan
- ❖ Review of possible mitigation activities and alternatives
- ❖ Discuss criteria for mitigation action selection and prioritization
- ❖ Brainstorming Session: Development of mitigation actions (group process)
- ❖ Prioritize mitigation actions (group process)
- ❖ Discuss plan implementation and maintenance
- ❖ Discuss next steps and public involvement/public meeting
- ❖ Questions and Answers/Adjourn

Summary of the Taos County Multi-Jurisdictional Hazard Mitigation Plan

Risk Assessment and Goals Meeting

December 8, 2016

9am-noon

Taos County Complex, Clerks conference room
105 Albright St, Taos, NM

Introduction and Opening Remarks

Dominic Martinez County E911 Coordinator introduced Jeff Brislawn, project manager with Amec Foster Wheeler. Dominic also introduced Bobby Lucero who just started as the OEM Director for Taos County. Jeff initiated the meeting with a discussion of the agenda. Jeff asked everyone around the room to introduce themselves; 16 persons from various County departments and the municipalities were present. Several handout materials were provided.

Jeff presented the PowerPoint slides that outlined the meeting agenda and discussion topics.

Review of the Planning Process

Jeff reviewed the planning process that has taken place so far. The process is currently in Phase III – Develop a Mitigation Plan. As a recap of the Hazard Identification and Risk Assessment Jeff presented a slide that summarized the hazard significance ratings for the County as a whole. Jeff suggested that the County may want to reconsider the dam failure summary risk rating, currently ranked as “low,” given the 10 high hazard dams in the county. After further discussion the group suggested keeping it at low, given the low probability and relatively small amount of water impounded by most dams. Jeff said he would provide more details on storage volumes for the dams; inundation mapping in GIS is not available and thus it’s difficult to further quantify risk. The Sanchez Dam in Costilla County Colorado was also mentioned as a possible concern.

Plan Goals

Jeff reviewed the broad mitigation goals developed for the plan at the previous meeting. The initial goals were based on the State mitigation plan goals. After further discussion the group decided that goals 1 and 2 of the state plan could be combined and to move the last goal on the list to the top. Based on the discussion the revised goals are:

- Enhance multi-agency and multi-jurisdictional coordination, communication, and collaboration related to hazard mitigation and emergency management.
- Reduce the impacts of hazards on Taos County citizens and visitors, including damage to public and private property.
- Lessen vulnerability of future development through improved land-use planning and regulation of development in hazard zones such as floodplains and wildland-urban interface areas.
- Shorten recovery time for both community function and the natural environment after natural hazard events.

Review of Possible Mitigation Activities and Alternatives

Jeff presented information on typical mitigation activities and alternatives and referred to handouts with further details and guidance. Jeff outlined potential project criteria and action requirements, including the requirements of the Disaster Mitigation Act (DMA) of 2000. Each hazard must have at least two true mitigation actions (not preparedness) pertaining to them.

Coordination with Other Plans

The group also discussed the importance of coordinating the mitigation plan with other planning processes, and vice versa. The DMA recommends developing a process to integrate the mitigation plan with other planning efforts. Jeff suggested that the group look for opportunities to cross reference the hazard mitigation plan in other future planning efforts and noted some possible plans. The group noted that in addition to the Comprehensive Plan and CWPP the U.S. Forest Service forest management plans could be another related planning effort in regards to wildfire mitigation.

New Mitigation Action Brainstorming

The group proceeded to brainstorm possible mitigation projects and categorize them by hazard. Jeff reviewed ideas for possible mitigation activities and alternatives based on the risk assessment. The HMPC members were provided with several lists of alternative multi-hazard mitigation actions. To facilitate the brainstorming process, the HMPC referred to a matrix of typical mitigation alternatives organized by the FEMA mitigation action category for the hazards identified in the plan. Another reference document included mitigation categories and examples as noted by the NFIP Community Rating System. Another reference document titled "Mitigation Ideas" developed by FEMA was made available for reference at the meeting. This reference lists the common alternatives for mitigation by hazard. A facilitated discussion then took place to examine and analyze the alternatives. In addition, preliminary results from the public survey were provided so that public considerations were taken into account during the mitigation strategy development. This included responses regarding the types of mitigation activities supported by the public, and comments on specific suggestions noted in the survey.

With an understanding of the alternatives, a brainstorming session was conducted to generate a list of preferred mitigation actions, beginning with discussion regarding the priority hazards. HMPC members wrote project ideas on large sticky notes. Each proposed action was written on a large sticky note and posted on flip chart paper underneath the hazard it addressed. The result was a number of project ideas with the intent of mitigating the identified hazards.

Each proposed action was discussed with the group. The group was provided with a decision-making tools to consider when prioritizing the actions. This including FEMA's recommended criteria, STAPLE/E (which considers social, technical, administrative, political, legal, economic, and environmental constraints and benefits). Other criteria used to recommend what actions

might be more important, more effective, or more likely to be implemented than another included:

- Does action protect lives?
- Does action address hazards or areas with the highest risk?
- Does action protect critical facilities, infrastructure or community assets?
- Does action meet multiple objectives (Multiple Objective Management)?

With these criteria in mind, team members were given a set of four green sticky-dots. The team was asked to use the dots to prioritize projects with the above criteria in mind, essentially voting on the projects. The dots will be converted to a high, medium, and low prioritization scheme. The projects with the most dots will indicate the higher priority projects.

Jeff provided a mitigation action worksheet. Each identified action will need more details added to the worksheet for incorporation into the plan. He walked through the proposed actions to identify points of contact who will help fill out the specifics of the different projects on the worksheet. Two forms were filled out and provided to Jeff at the meeting. An electronic version of the form will be provided for folks to fill in the blanks in the form. Jeff will summarize the proposed mitigation projects into an initial action table.

Plan Implementation and Maintenance and Public Involvement

Jeff covered the steps for plan implementation that will be outlined in the plan. These can be found on a slide in the PowerPoint. Jeff discussed the public meeting which would take place at 5:30 in the afternoon at the Commission Chambers.

Next Steps

Jeff discussed the timeline and next steps to complete the draft and final plan. The draft plan will be available in January.

HMPC comments on draft HIRA due	Dec 8
Public survey closes	Dec 16
New mitigation actions due from CPT	Jan 6
HMPC draft	Late Jan
HMPC comments by	Mid Feb
Public review draft	Early March
Public comments due	End of March
Plan to state/FEMA	Early-mid April
Conditional Approval	July
Local adoption	August
Target for approved, adopted plan	Oct 2017

Wrap up and Adjourn

The meeting adjourned at noon.

SIGN-IN SHEET
TAOS COUNTY HAZARD MITIGATION PLAN PROJECT
HMPC Meeting #3 (Mitigation Strategy meeting) Dec 8, 2016 9am-Noon
Taos County Complex, Administration Building
105 Albright St, Taos, NM

Name	Email Address	Phone	Department/ Organization/ Affiliation	Title
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Jerry Hogrefe	jerry.hogrefe@taoscounty.org	737-6480	TCSO	Sheriff
Chris Cote	latw@cofermail.com	779-5937	Taos County	WAF coordinator
EDWARD H. VIGIL	edward.vigil@taoscounty.org	575-737-6444	Taos County Planning	Planning Director
Nathan Sanchez	nathan.sanchez@taoscounty.org	737-6443	TAOS County Planning	Chief Planner
Brent Jeramilla	brent.jeramilla@taoscounty.org	737-6304	Taos County	Deputy Mgr
KATHY BENNETT	KATHYBENNETT@TSV.COM	741-1003	Vly of TSV	Councilor

IV. Vision, Goals and Strategies

Hazards Mitigation Element

Goal 1. Upgrade and improve emergency services throughout the county to meet current and projected needs.

- a) *Expand the County's 911 dispatch system and rural addressing program, and encourage joint or multiple use facilities for law enforcement, fire fighters, and rescue services.*
- b) *In cooperation with other municipalities, ensure there is adequate EMS to serve the residents and seek funding from local, State and Federal sources.*
- c) *The Taos County Sheriff's Department will promote "Neighborhood Watch" programs throughout the County.*
- d) *Involve the NCRTD in mutual aid/emergency response programs.*

Goal 2: Increase community resiliency from all hazards such as wildfires, flooding, drought, severe weather, landslide, avalanche and contaminants.

- a) *Implement the projects identified in the forthcoming Taos County Hazard Mitigation Plan.*
- b) *Update and improve the County All-Hazard Emergency Operations Plan, including development of an all-hazard emergency notification system.*
- c) *Work with Taos Soil and Water Conservation District to develop a county-wide storm water management plan that addresses flood protection and erosion control and leads to implementation of soil stabilization and flood control projects such as dikes and culverts.*
- d) *Develop capital improvement plans to identify and seek local, state and federal funding for priority emergency management and hazard mitigation projects.*
- e) *Implement a public education campaign to educate County residents on hazard mitigation topics such as wildfire prevention through defensible space creation, vegetation management and fuel reduction; flood protection through on-site retention and purchase of flood insurance; water conservation techniques and retrofitting; and actions to take during an emergency situation.*
- f) *Implement the recommendations of the Community Wildfire Protection Plan (CWPP), and continue to seek funding to regularly update and further disseminate the CWPP.*

Goal 3. Improve land-use planning and regulation of development in hazard zones such as floodplains and wildland-urban interface areas.

- a) *Complete and update county mapping of geologic hazards and the 100 year floodplain and complete the LITR mapping program.*

IV. Vision, Goals and Strategies

- b) *Encourage development to be located outside of the floodplain and significant geologic hazards except on properties where there are no feasible development sites outside of the floodplain or outside of significant geologic hazards; where floodplain or significant geologic hazards cannot be avoided, mitigation standards will be implemented to minimize risk to public health and safety.*
- c) *Promote and coordinate the Best Management Practices (BMP) for Taos County's watersheds with the Federal, State local agencies and private land owners to protect and sustain safe and defensible fire safety buffers zones around Taos County communities*

Goal 4: Upgrade and enhance the County's emergency response system to ensure that all areas have adequate police, fire and emergency services.

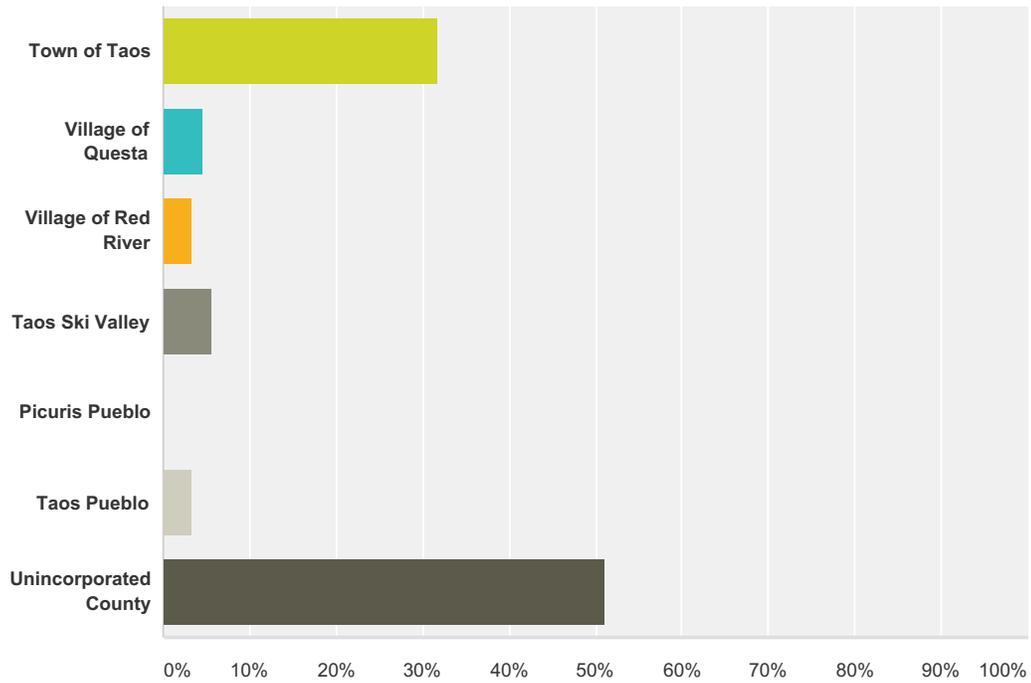
- a) *Increase the telecommunications system through partnerships with the private providers, state and federal agencies.*
- b) *Expand the County's 911 dispatch system and rural addressing program, and encourage joint or multiple use facilities for law enforcement, fire fighters, and rescue services.*
- c) *Propose a voter referendum to consider a dedicated Gross Receipts Tax for E911 services.*

Goal 5: Propose new land use policies to support wildfire risk reduction in the wildland-urban interface.

- a) *Use of fire-resistant construction methods and building materials in wildfire prone areas to reduce ignition potential and structure vulnerability from wildfire, including direct flames, radiant heat and ember attacks;*
- b) *Vegetation management (often referred to as defensible space) within the Home Ignition Zone – an area that extends at least 100 feet from the structure – to ensure thinning and other landscaping techniques are used for hazardous vegetation;*
- c) *Structure density and development location recommendations based on wildfire risk;*
- d) *Implementation of other planning and growth management tools—such as transfer of development rights and conservation easements—to ensure a safe, resilient and sustainable Taos County;*
- e) *Integration with other hazard mitigation efforts, such as water quality and availability, forest health and droughts.*

Q1 Indicate the community you reside in:

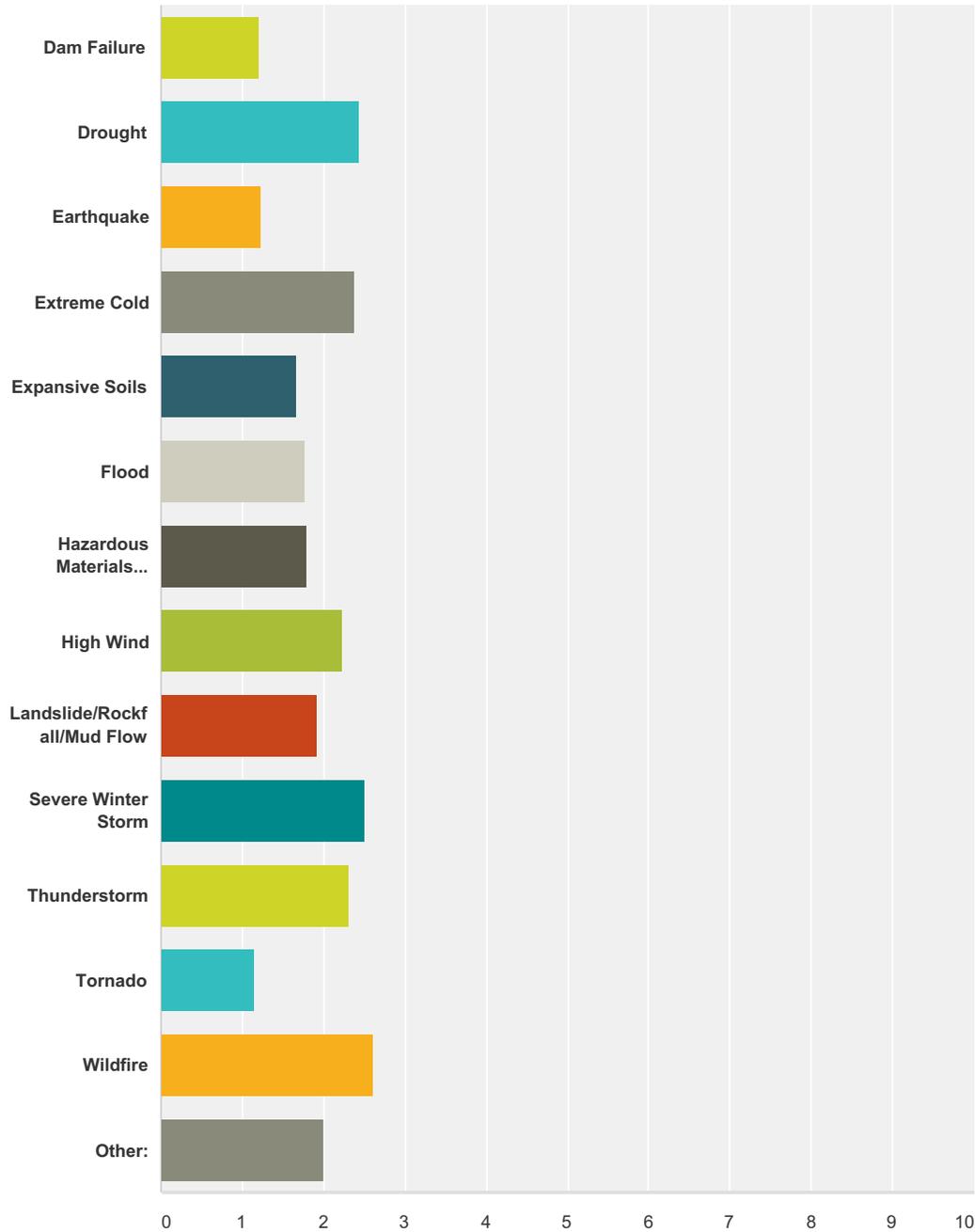
Answered: 88 Skipped: 2



Answer Choices	Responses
Town of Taos	31.82% 28
Village of Questa	4.55% 4
Village of Red River	3.41% 3
Taos Ski Valley	5.68% 5
Picuris Pueblo	0.00% 0
Taos Pueblo	3.41% 3
Unincorporated County	51.14% 45
Total	88

Q2 The hazards addressed in the Hazard Mitigation Plan are listed below. Please indicate the level of significance in your community that you perceive for each hazard. Please rate these hazards 1 through 3 as follows: 1=low, 2=moderate, 3=high.

Answered: 90 Skipped: 0



	1=Low	2=Moderate	3=High	Total	Weighted Average
--	-------	------------	--------	-------	------------------

Dam Failure	85.06% 74	9.20% 8	5.75% 5	87	1.21
Drought	3.37% 3	48.31% 43	48.31% 43	89	2.45
Earthquake	79.31% 69	17.24% 15	3.45% 3	87	1.24
Extreme Cold	9.20% 8	43.68% 38	47.13% 41	87	2.38
Expansive Soils	43.53% 37	44.71% 38	11.76% 10	85	1.68
Flood	39.08% 34	43.68% 38	17.24% 15	87	1.78
Hazardous Materials Incident	34.83% 31	50.56% 45	14.61% 13	89	1.80
High Wind	11.36% 10	54.55% 48	34.09% 30	88	2.23
Landslide/Rockfall/Mud Flow	34.48% 30	37.93% 33	27.59% 24	87	1.93
Severe Winter Storm	6.74% 6	35.96% 32	57.30% 51	89	2.51
Thunderstorm	9.09% 8	51.14% 45	39.77% 35	88	2.31
Tornado	87.21% 75	10.47% 9	2.33% 2	86	1.15
Wildfire	8.99% 8	20.22% 18	70.79% 63	89	2.62
Other:	35.29% 6	29.41% 5	35.29% 6	17	2.00

#	Other (please specify)	Date
1	Radiological Event released fro LANL (possibly seismic caused)	12/13/2016 2:57 PM
2	Drinking water contamination, medical facilities/care for large scale incidents	12/5/2016 2:58 PM
3	LANL producing fallout	11/30/2016 7:57 AM
4	Impassable muddy roads	11/22/2016 6:48 PM
5	Los Alamos Nuclear Storage Facility & FRACKING & Methane Gas & Oil Pipeline Leaks	10/31/2016 10:34 PM
6	Debris resulting from catastrophic crown fire.	10/27/2016 7:31 PM
7	Notification to public other than tech. devices	10/14/2016 4:04 PM
8	Solar flare. Low probability with high level of damage to communications equipment. For perspective, Canada was hit with a minir flare in 1989 and the US with a major flare in 1859.	10/14/2016 3:10 PM
9	Extended power or gas outage	10/13/2016 9:46 AM
10	Collapsing soils	10/11/2016 12:20 PM
11	N/A	10/11/2016 10:25 AM
12	well water contamination	10/11/2016 9:36 AM
13	Zombie apocolypse	9/19/2016 12:41 PM

Q3 Do you have information on specific hazard issues/problem areas that you would like the planning committee to consider? Note the county and, if applicable, the municipality to which it applies.

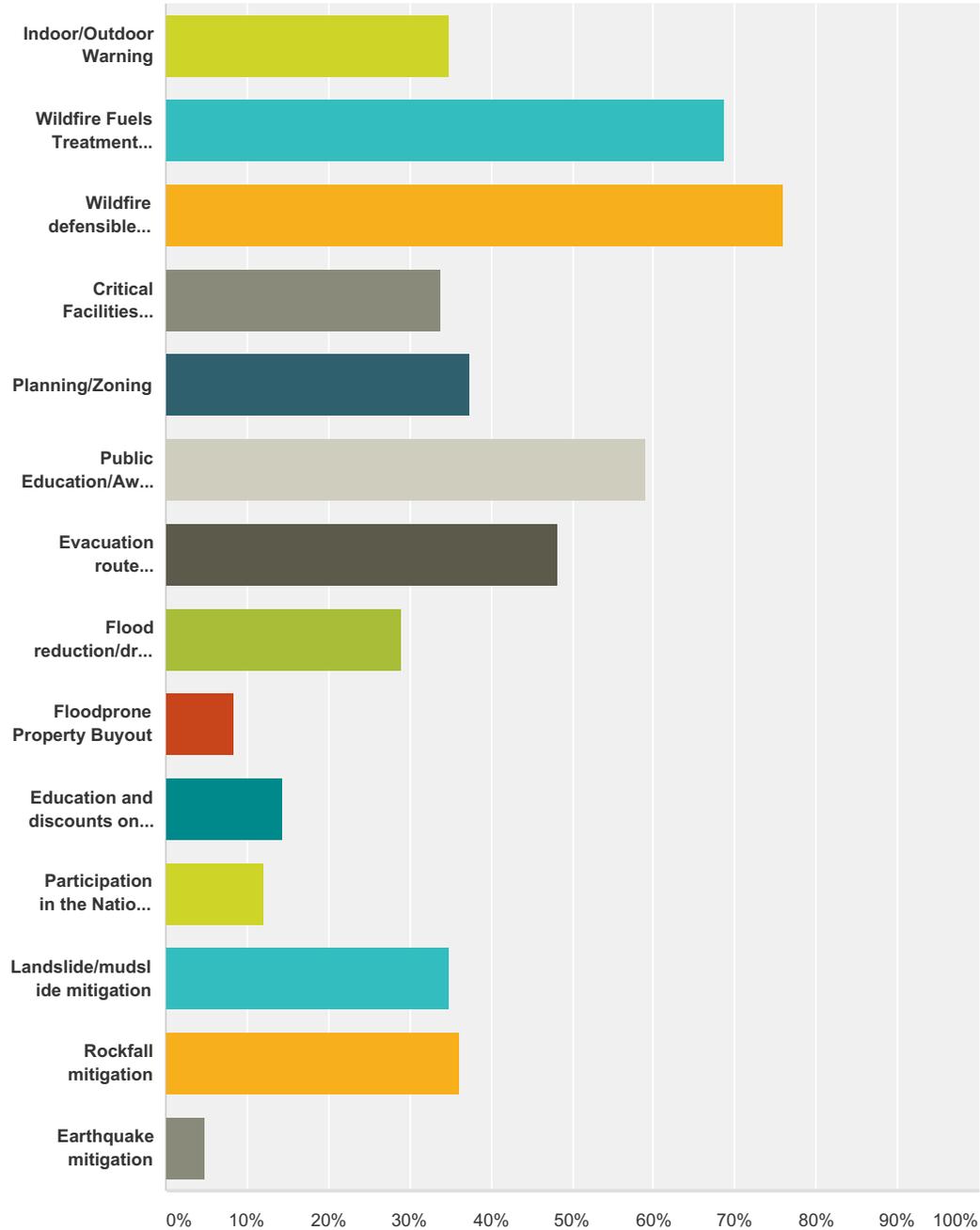
Answered: 32 Skipped: 58

#	Responses	Date
1	Emergency Evacuation Plans & shelter for the Talpa/Pot Creek or Taos Canon communities in case of a wild fire.	12/21/2016 1:51 PM
2	Lots of wildfires in 2016. Worrisome to think i'd probably see smoke before hearing anything else. affordable housing isn't a natural-hazard but dangerous for the enchanted circle if we can't get a handle on it	12/20/2016 3:37 PM
3	Radiological Event released fro LANL (possibly seismic caused)	12/13/2016 2:57 PM
4	Taos County, county roads	12/5/2016 2:58 PM
5	Occasional extreme mud in some neighborhoods (e.g., Hondo Mesa) that make it impossible to drive without four-wheel drive and high clearance.	11/22/2016 6:48 PM
6	All of the wildland urban interface areas where farmland and forest meet, including acequia corridors are heavily fuel loaded, and are likely to burn, given dry and warm weather.	10/27/2016 7:31 PM
7	Possible hazard material spills in Rio Hondo.	10/21/2016 8:55 AM
8	Catastrophic wildfire,	10/17/2016 9:37 AM
9	Hondo River contamination from TSV construction,transport of hazardous materials to TSV,	10/16/2016 6:28 PM
10	Pot Creek: wildfire and flood risks	10/14/2016 9:24 PM
11	N/A	10/14/2016 4:04 PM
12	Emergency plan should communications equipment fail (due to anything from high winds, thunderstorms, solar flares, etc.)	10/14/2016 3:10 PM
13	No	10/14/2016 2:07 PM
14	unknown	10/14/2016 1:45 PM
15	Specific hazard issues/problem areas are detailed in our CWPP for the Village of Taos Ski Valley.	10/14/2016 11:18 AM
16	Wildfire and Severe Winter Storms along U.S. Highway 64 in Taos Canyon.	10/13/2016 3:07 PM
17	Of course Los Alamos comes to mind, and even though most of Taos County is upwind and upstream, it still merits close observation.	10/13/2016 10:39 AM
18	Taos County - Taos Canyon area, wild fire with one main road into and out of the region and above ground telephone wires that could be compromised in the event of an emergency, limiting communications.	10/13/2016 10:14 AM
19	no	10/13/2016 10:10 AM
20	Phone/Internet outage	10/13/2016 9:46 AM
21	Flooding in the area north and south of Cerro Montoso rd (Taos County)	10/12/2016 10:45 PM
22	Flood plain management and catastrophic flooding caused by large scale wildfires. Protect the forests and limit development in floodplains more strictly so that when there is a fire, the flood damage is limited.	10/11/2016 12:20 PM
23	Wildfire/forest fire is the most critical hazard in North-Central New Mexico	10/11/2016 12:05 PM
24	none	10/11/2016 11:40 AM
25	Catastrophic Wildfire Risk - Taos Ski Valley, Carson National Forest east of Taos, and Rio Fernando riparian areas.	10/11/2016 11:16 AM
26	None at this time	10/11/2016 10:25 AM

27	none	10/11/2016 10:18 AM
28	Source water protection plans , all communities with septic tanks and abandoned wells are in danger	10/11/2016 9:36 AM
29	Pool of water in the drainage ditch by south side lota burger. Stagnant, may be a mosquito threat.	10/11/2016 9:36 AM
30	Open boundary access from Taos Ski Valley into wilderness, Taos Pueblo lands.	10/11/2016 9:31 AM
31	Not right now.	10/11/2016 9:31 AM
32	Blah blah blah...	9/19/2016 12:41 PM

Q4 The following types of mitigation actions may be considered in the regional plan. Please place a check next to the types of mitigation actions that you think should have the highest priority in the plan.

Answered: 83 Skipped: 7



Answer Choices	Responses
Indoor/Outdoor Warning	34.94% 29

Wildfire Fuels Treatment projects	68.67%	57
Wildfire defensible space projects	75.90%	63
Critical Facilities Protection	33.73%	28
Planning/Zoning	37.35%	31
Public Education/Awareness	59.04%	49
Evacuation route development	48.19%	40
Flood reduction/drainage improvement	28.92%	24
Floodprone Property Buyout	8.43%	7
Education and discounts on flood insurance	14.46%	12
Participation in the National Flood Insurance Program	12.05%	10
Landslide/mudslide mitigation	34.94%	29
Rockfall mitigation	36.14%	30
Earthquake mitigation	4.82%	4
Total Respondents: 83		

Q5 Please comment on any other pre-disaster strategies that the planning committee should consider for reducing future losses caused by natural disasters.

Answered: 25 Skipped: 65

#	Responses	Date
1	emergency communication	12/20/2016 3:37 PM
2	All agencies training at some point using the incident command system.	12/5/2016 2:58 PM
3	I wasn't aware flooding was an issue, but I certainly believe it. My responses to question 4 are biased to a lack of information about flooding and damming in the area. You are all awesome, thanks!!	11/22/2016 10:06 PM
4	Better road maintenance on county dirt roads AND a program to assist county residents who live on private roads with maintenance and/or surfacing.	11/22/2016 6:48 PM
5	All of the WUI communities should have adequately wide access, turnarounds, and wherever possible, alternate exits where residents can evacuate on one road, while fire suppression personnel can approach on the other. Examples include connecting the El Salto roads at the north end, probably with a gate so they do not become used for anything more than emergencies....and the Gallina Canyon and Deer Mesa Roads at the north end. These roads all need the vegetation removed and/or thinned at least 50' from the center line on each side.	10/27/2016 7:31 PM
6	Forest fuels mitigation, rock slide mitigation	10/17/2016 9:37 AM
7	Program of property review for brush control while still controlling erosion in times of drought. Concern is protecting structures from brush fires but still control of cliff erosion.	10/17/2016 7:05 AM
8	Wild Fire, Acequia Protection from erosion, River contamination from TSV work project, Drainage improvement North of Acequia de San Antonio in Valdez, NM	10/16/2016 6:28 PM
9	Protection of the watershed	10/14/2016 11:18 AM
10	Unincorp Taos: Animal evacuation plan: horses etc	10/13/2016 12:44 PM
11	Coordinate with neighboring counties.	10/13/2016 10:39 AM
12	Strengthened construction/property maintenance guidelines in line with wildfire mitigation objectives. Evacuation planning and education Communications systems for emergency needs	10/13/2016 10:14 AM
13	Develop operational pre-plans for most likely/common scenarios	10/13/2016 9:46 AM
14	Forest Thinning; Wildfire prevention	10/12/2016 8:35 AM
15	Immediate shelter for residents of wind damaged homes.	10/11/2016 11:47 PM
16	Comprehensive GIS mapping of properties in town and county, incorporating build dates and building permitting plans. Incorporate FEMA flood and soils data as well as wildfire risk maps. Develop or utilize high quality lidar data to better map flood plains in approx. A zone.	10/11/2016 12:20 PM
17	Allow thinning of our forests; especially watersheds. Our overgrown forests have so much fire fuel that virtually every fire becomes an ecological and economical disaster.	10/11/2016 12:05 PM
18	none	10/11/2016 11:40 AM
19	None at this time.	10/11/2016 11:16 AM
20	Traffic going north and south through Taos, on a good day, is terrible at best. The backup at US64 and Kit Carson is not conducive to an orderly and steady evacuation. Alternate routes, or widening the road to 4 lanes, needs to be considered.	10/11/2016 10:35 AM
21	drought is a rising concern, possible restrictions	10/11/2016 10:25 AM
22	Taos County has many pieces of equipment that are intended for disaster relief efforts, unfortunately most of it is stored away and has not been properly maintained	10/11/2016 9:36 AM
23	Impacts of sewage increase causing downstream impact (TSV). Fracking impacts-not allow.	10/11/2016 9:31 AM

From: Bobby Lucero
To: [Edward Vigil](#); [Timothy Corner](#); [Dominic Martinez](#); [Mike Cordova](#); [Brent Jaramillo](#); [Leandro Cordova](#); [Elsa Vigil](#); [Joaquin Gonzales](#); [Jerry Hogrefe](#)
Cc: [Brislawn, Jeff P](#); [Mark Ortega](#)
Subject: Mitigation Public Review
Date: Monday, March 20, 2017 4:15:12 PM

Good afternoon All,

Just sending out a quick email to inform you that the Hazard Mitigation Plan is up on the Taos County Website for public review, and will be there for the remainder of the month. Also I am working on announcing it on our LEPC facebook page, as well as the Taos County facebook page. I am hoping for some good feedback from the community. Have a great week!

Respectfully,

Bobby Lucero
Director
Emergency Management
105 Albright Street – Suite S
Taos NM, 87571
Bobby.lucero@taoscounty.org
Work: 575-737-6459
Cell: 575-779-9381

From: Bobby Lucero
To: AAMontoya@rio-arriba.org; kmurtagh@angelfiren.gov; rodney@co.conejos.co.us;
chris.rodriguez@costillacounty-co.gov; lmiller@arcplanning.com; [Thomas Vigil](#); pvigil@tswcd.org
Cc: [Brislawn, Jeff P](#)
Subject: Taos County Hazard Mitigation Plan
Date: Wednesday, March 29, 2017 11:57:02 AM

Good afternoon all,

I am the Director Of Emergency Management for Taos County, and this email is in regards to our Hazard Mitigation Plan that is up for public review on our Taos County website, and would like our neighboring districts to review it and get some feedback. I appreciate your time in this matter. Have a great day!

Respectfully,

Bobby Lucero
Director
Emergency Management
105 Albright Street – Suite S
Taos NM, 87571
Bobby.lucero@taoscounty.org
Work: 575-737-6459
Cell: 575-779-9381



- Home Government Departments Services Public Safety Community Event Calendar Contact

Welcome to Taos County

"Open County Government protecting the health, safety, welfare and environment of its citizens"



In our website you will find agendas for our scheduled meetings, minutes of all our meetings, job openings, hours of operation, forms and applications, access to our growth management plan, land use plan, information about all departments and their employees. This has been a collaborative effort with all employees to bring this information to the public and to better serve the community.

The County Commission Agendas are available to the public by clicking [HERE](#).

Proclamation of Special Election to be held February 14, 2017, on the question of the imposition of a Countywide Emergency Communications Tax [\(Click Here\)](#)

2016 Taos County CWPP Plan Update [\(Click Here\)](#)

2017 Taos County Economic Development Plan [\(Click Here\)](#)

2017 Taos County Comprehensive Plan Update [\(Click Here\)](#)

Taos County Hazard Mitigation Public Review Draft [\(Click Here\)](#)

TAOS COUNTY HAZARD MITIGATION AVAILABLE FOR PUBLIC REVIEW AND COMMENT

March 8, 2017 – Would you like to learn more about what Taos County is doing to minimize the impacts of floods, dam failures, wildfires, hazardous materials incidents, and other hazards? A draft of the County's Hazard Mitigation Plan is being made available for public review and comment. The plan assesses risks posed by natural and man-made hazards, identifies ways to reduce those risks, and allows the County to become eligible for mitigation funding from FEMA. A Hazard Mitigation Planning Committee (HMPC) that includes representatives from various county departments and the municipalities of Taos, Red River, Questa and Taos Ski Valley developed the plan over the past 9 months with assistance from a consultant. The plan identifies hazard mitigation goals and a variety of mitigation projects with the intent of reducing losses from hazard events before they occur again. The HMPC is now soliciting public comment on the plan before it is finalized and submitted for FEMA review and approval.

The comment period will be March 9 – March 30, 2017.

The plan can be accessed at the following website:

Taos County Hazard Mitigation Survey [\(Click Here\)](#)

Hardcopies will also be available for review upon request through Taos County Emergency Management.

For more information, contact Bobby Lucero at 575-737-6459 or bobby.lucero@taoscounty.org.

Search box with the text 'search...' and a magnifying glass icon.

Upcoming Events
No events
[View Full Calendar](#)

- Job Openings
Taos County Employment Opportunity: Public Works Superintendent
Taos County Employment Opportunity: Juvenile Detention Officer I
Taos County Employment Opportunity: Juvenile Detention Officer I TEMP
Taos County Employment: Adult Detention Officer Cadet
Taos County Employment Opportunity: Intermediate - Emergency Medical Technician (EMT)

- Most Read Content
Welcome to Taos County
Staff Directory
Taos County Property Search
Taos County Assessor's Office
Taos County Clerk's Office

Taos County Hazard Mitigation Plan Feedback

Feedback on Draft Taos County Hazard Mitigation Plan

Taos County and the municipalities within have developed a Hazard Mitigation Plan designed to reduce the impacts of hazards to the citizens and property within the county. The draft plan is being made available for public review and comment prior to finalizing the document in the spring of 2017. The form below can be used to submit comments on the plan. Please provide comments by March 30, 2017

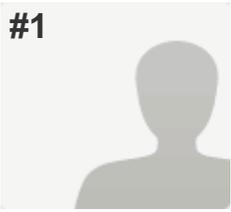
1. Please provide comments regarding the draft Taos County Hazard Mitigation Plan here:

2. Select affiliation

- Member of the public
- Private industry
- Non profit
- Government - Local
- Government - State
- Government - Federal
- Tribal

Done

#1



COMPLETE

Collector: Web Link 1 (Web Link)
Started: Wednesday, March 08, 2017 3:17:31 PM
Last Modified: Wednesday, March 08, 2017 3:17:59 PM
Time Spent: 00:00:28
IP Address: 209.188.113.130

PAGE 1: Feedback on Draft Taos County Hazard Mitigation Plan

Q1: Please provide comments regarding the draft Taos County Hazard Mitigation Plan here:

Respondent skipped this question

Q2: Select affiliation

Government - Local

#2



COMPLETE

Collector: Web Link 1 (Web Link)
Started: Tuesday, March 21, 2017 12:15:27 PM
Last Modified: Tuesday, March 21, 2017 12:15:44 PM
Time Spent: 00:00:17
IP Address: 192.12.184.7

PAGE 1: Feedback on Draft Taos County Hazard Mitigation Plan

Q1: Please provide comments regarding the draft Taos County Hazard Mitigation Plan here:

Respondent skipped this question

Q2: Select affiliation

Member of the public

#3



COMPLETE

Collector: Web Link 1 (Web Link)
Started: Tuesday, March 28, 2017 8:44:10 AM
Last Modified: Tuesday, March 28, 2017 8:44:23 AM
Time Spent: 00:00:13
IP Address: 209.188.121.118

PAGE 1: Feedback on Draft Taos County Hazard Mitigation Plan

Q1: Please provide comments regarding the draft Taos County Hazard Mitigation Plan here:

Respondent skipped this question

Q2: Select affiliation

Member of the public

From: Bobby Lucero <bobby.lucero@taoscounty.org>
Sent: Wednesday, March 29, 2017 11:57 AM
To: AAMontoya@rio-arriba.org; kmurtagh@angelfirenm.gov;
rodney@co.conejos.co.us; chris.rodriguez@costillacounty-co.gov;
lmiller@arcplanning.com; Thomas Vigil; pvigil@tswcd.org
Cc: Brislawn, Jeff P
Subject: Taos County Hazard Mitigation Plan

Good afternoon all,

I am the Director Of Emergency Management for Taos County, and this email is in regards to our Hazard Mitigation Plan that is up for public review on our Taos County website, and would like our neighboring districts to review it and get some feedback. I appreciate your time in this matter. Have a great day!

Respectfully,

Bobby Lucero
Director
Emergency Management
105 Albright Street – Suite S
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Cell: 575-779-9381

From: Bobby Lucero <bobby.lucero@taoscounty.org>
Sent: Tuesday, May 30, 2017 9:53 AM
To: Leandro Cordova; Brent Jaramillo; Jim Fambro; Dominic Martinez; Timothy Corner; Jason Trujillo; elsa.vigil@taosocunty.org; Joaquin Gonzales; michael.cordova@taoscounty.org; Jerry Hogrefe; Earl Salazar; Edward Vigil; laurie.weather@taoscounty.org; dbarrone@taosgov.com; rbellis@taosgov.com; jthompson@taosgov.com; rparmer@taosgov.com; lgonzales@taosgov.com; fespinoza@taosgov.com; taosmitch@yahoo.com; mayor@redriver.org; grael@redriver.org; dsmith@redriver.org; rburnham@redriver.org; mgallegos@villageofquesta.org; ltrujillo@villageofquesta.org; policechief@villageofquesta.org; mortega@villageofquesta.org; nealkingtsv@cs.com; mfratrick@vtsv.org; dwallace@vtsv.org; rkeen@vtsv.org; warchief@taospueblo.com; governor@taospueblo.com; glefthand@taospueblo.com; sarmijo@picurispueblo.org; sarmijo@picurispueblo.org; dvmartinez@fs.fed.us; smiranda@fs.fed.us; ppacheco@blm.gov; rsach@fs.usda.gov; pablo.montenegro@state.nm.us; chris.romo@state.nm.us; melissad.montoya@state.nm.us; Henry.Jolly@state.nm.us; eduardo.martinez@state.nm.us; miguel.gabaldon@state.nm.us; tima.reeder@state.nm.us; Judith.pierce@state.nm.us; clare.ryan@redcross.org; adam@youthcorps.org; info@bbbsmountainregion.org; nb5r@yahoo.com; latircote@gmail.com; PBabby@taoshospital.org; rsudborough@taoshospital.org; bnaliboff@taoshospital.org; lillian.torrez@taoschools.org; driskell@taosnet.com; abertges@angelfirenm.gov; rtjblaz@yahoo.com; amaliafire@kitcarson.net; senas_de_ojo@hotmail.com; dwillis@redriver.org; sahdpenasco@hotmail.com; rivera@taosnet.com
Cc: Brislaw, Jeff P
Subject: Taos County Hazard Mitigation Plan
Attachments: Taos County HazMit Cover.pdf; Taos HMP 1 Table of Contents.docx; Taos HMP Chapter 1 Introduction.docx; Taos HMP Chapter 2 Community Profile.docx; Taos HMP Chapter 3 Planning Process.docx; Taos HMP Chapter 5 Mitigation Strategy.docx; Taos HMP Chapter 6 Plan Adoption.docx; Taos HMP Chapter 7 Implementation and Maintenance.docx; Taos HMP X Appendix D - Asset Inventory Data.docx

Good morning all,

Taos County Hazard Mitigation Planning Committee:

We are near the end of the planning process but would like to planning committee to review the plan one final time before it gets submitted to the State and FEMA for formal review and approval. Please provide any final comments back by June 16th, 2017.

FEMA did an informal review of the draft document and noted that the mitigation action strategy needs the following to make it pass the FEMA Region VI review. FEMA Region VI and State DHSEM is requiring that the plan must include at least (2) actions/projects per hazard per jurisdiction. That action/project must address either lessening or eliminating the effects of that hazard on the community and the Lead Agency must be from that community. Emergency response or preparedness actions are not considered mitigation although they may remain in the Tables for the benefit of planning and budgeting for that community.

If necessary a follow-up conference call will be scheduled with Amec Foster Wheeler and the jurisdictions to discuss remaining deficiencies and answer questions.

Bobby Lucero
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Work: 575-737-6459
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TAOS COUNTY HAZARD MITIGATION PLAN

APPENDIX B

**HAZARD MITIGATION PLANNING COMMITTEE
MEMBERSHIP**



Taos County Office of Emergency Management

Community Stakeholders

<u>Name</u>	<u>Title & Agency</u>	<u>Location</u>	<u>Contact Phone #</u>	<u>Contact Email</u>	<u>TYPE</u>
Leandro Cordova	County Manager	Taos	575-737-6307	leandro.cordova@taoscounty.org	ADMIN
Brent Jaramillo	Deputy County Manager	Taos	575-737-6304	brent.jaramillo@taoscounty.org	ADMIN
Jim Fambro	Commissioner District I	Taos	575-779-2445	jim.fambro@taoscounty.org	Sr. Official
Dominic Martinez	Director OEM/E911	Taos	575-737-6451	dominic.martinez@taoscounty.org	OEM
Bobby Lucero	Emergency Manager	Taos	575-737-6459	bobby.lucero@taoscounty.org	OEM
Tim Corner	GIS Specialist/Floodplan	Taos	575-737-3839	timothy.corner@taoscounty.org	Planning
Jason Trujillo	Risk Manager	Taos	575-737-6436	jason.trujillo@taoscounty.org	Sr. Official
Elsa Vigil	Taos County Finance	Taos	575-737-6319	elsa.vigil@taosocunty.org	ADMIN
Joaquin Gonzales	Director EMS	Taos	575-737-6431	joaquin.gonzales@taoscounty.org	Fire/EMS
Michael Cordova	County Fire Chief	Taos		michael.cordova@taoscounty.org	Fire
Jerry Hogrefe	Taos County Sherriff	Taos	575-737-6482	jerry.hogrefe@taoscounty.org	LEO
Earl Salazar	Director Public Works	Taos	575-737-6472	earl.salazar@taoscounty.org	Public Works
Edward Vigil	Director Planning	Taos	575-737-6444	edward.vigil@taoscounty.org	Planning
Laurie Weathers	Supervisor E911	Taos	575-737-3831	laurie.weathers.taoscounty.org	Sr. Official
TOWN OF TAOS					
Dan Barrone	Mayor Town of Taos	Taos	575-751-2002	dbarrone@taosgov.com	Sr. Official
Rick Bellis	Manager Town of Taos	Taos	575-751-2002	rbellis@taosgov.com	ADMIN
John Thompson	TOT Airport Manager	Taos	575-758-4995	jthompson@taosgov.com	ADMIN
Randall Parmer	Chief Taos Police Dept.	Taos	575-758-4656	rparmer@taosgov.com	LEO
Leroy Gonzales	Chief Taos Fire Dept.	Taos	575-758-3386	lgonzales@taosgov.com	Fire/EMS
Francisco Espinoza	Director TOT Public Works	Taos	575-758-2047	fespinoza@taosgov.com	Public Works
Mitch Miller	TOT OEM/ Events Planning	Taos	575-770-0814	taosmitch@yahoo.com	OEM\ARES
VILLAGE OF RED RIVER					
Linda Calhoun	Mayor Red River	Red River	575-754-2277	mayor@redriver.org	Sr. Official
Georgiana Rael	RR Town Administrator	Red River	575-754-2277	grael@redriver.org	ADMIN
David Smith	Red River Town Marshall	Red River	575-754-6166	dsmith@redriver.org	LEO
Ron Burnham	Red River Fire Chief	Red River	575-754-2333	rburnham@redriver.org	Fire/EMS



Taos County Office of Emergency Management

Community Stakeholders

<u>Name</u>	<u>Title & Agency</u>	<u>Location</u>	<u>Contact Phone #</u>	<u>Contact Email</u>	<u>TYPE</u>
VILLAGE OF QUESTA					
Mark Gallegos	Mayor Village of Questa	Questa	575-586-0694	mgallegos@villageofquesta.org	Sr. Official
Loretta Trujillo	Questa Village Admin.	Questa	575-586-0694	ltrujiillo@villageofquesta.org	ADMIN
Nick Lamendola	Chief Village of Questa PD	Questa	575-586-1196	policechief@villageofquesta.org	LEO
Max Ortega	Chief Village of Questa FD	Questa	575-586-0250	mortega@villageofquesta.org	Fire/EMS
TAOS SKI VALLEY					
Neal King	Mayor Taos Ski Valley	TSV	575-776-8220	neal.king@tsv.com	Sr. Official
Mark G. Fratrack	TSV Village Administrator	TSV	575-776-8220	mfratrack@vtsv.org	ADMIN
Dave Wallace	TSV Director of Public Safety	TSV	575-741-1510	dwallace@vtsv.org	LEO/FIRE/EMS
Raymond Keen	Director TSV Public Works	TSV	575-770-2351	rkeen@vtsv.org	Public Works
TAOS PUEBLO					
Richard Archuleta	Taos Pueblo War Chief	Taos Pueblo	575-758-3883	warchief@taospueblo.com	Sr. Official
Benito Sandoval	Taos Pueblo Governor	Taos Pueblo	575-758-9593	governor@taospueblo.com	Sr. Official
Gary Lefthand	Taos Pueblo Police Chief	Taos Pueblo	575-758-8645	glefthand@taospueblo.com	Sr. Official
PICURIS PUEBLO					
Gary Pyne	Picuris Governor	Picuris Pueblo	575-587-2519	sarmijo@picurispueblo.org	Sr. Official
Craig Quanchello	Picuris Lt. Governor	Picuris Pueblo	575-587-2519	sarmijo@picurispueblo.org	Sr. Official
Dorotea Martinez	Carson Nat'l Forestry	Taos	575-741-1516	dvmartinez@fs.fed.us	FEDERAL
Steven Miranda	Carson Nat'l Forestry	Taos	575-613-0367	smiranda@fs.fed.us	FEDERAL
Rudolph Pacheco	BLM Fire Mgt. Officer	Taos	575-751-4717	ppacheco@blm.gov	FEDERAL
Richard Sack	Supervisor Carson Hotshots	Taos	575-758-6243	rsach@fs.usda.gov	FEDERAL
Pablo Montenegro	FMO - NM State Forestry	Chama	575-588-7831	pablo.montenegro@state.nm.us	STATE
Chris Romo	FMO - NM State Forestry	Cimarron	575-376-2204	chris.romo@state.nm.us	STATE
Melissa Montoya	Taos County Protective Sacs	Taos	575-770-7975	melissad.montoya@state.nm.us	STATE

Henry S. Jolly	State Hamza	Santa Fe	505-469-8012	Henry.Jolly@state.nm.us	STATE
Lt. Eduardo Martinez	NM State Police	Taos	575-758-1466	eduardo.martinez@state.nm.us	LEO/STATE
Miguel Gabaldon	NMDOT District V Engineer	Santa Fe	505-995-7700	miguel.gabaldon@state.nm.us	STATE
Tim Reeder	NM DOH - EM Prep. Specilist	Santa Fe	505.476.2673	tima.reeder@state.nm.us	STATE
Judith pierce MSN, RN	NM DOH - Nurse Manager	Taos	575.758.2073	Judith.pierce@state.nm.us	STATE
Clare Ryan	American Red Cross	Santa Fe	505-424-1611	clare.ryan@redcross.org	STATE



Taos County Office of Emergency Management

Community Stakeholders

<u>Name</u>	<u>Title & Agency</u>	<u>Location</u>	<u>Contact Phone #</u>	<u>Contact Email</u>	<u>TYPE</u>
Adam Splittek	Rocky Mountain Youth Corps	Taos	575-751-1420	adam@youthcorps.org	Volunteer
Big Brothers Big Sisters	Mountain Region	Santa Fe	505-983-8360	info@bbbsmountainregion.org	Volunteer
Brian Williams	ARES/ Taos SAR	Taos	830-832-3010	nb5r@yahoo.com	ARES/SAR
Chris Cote	Latir Fire, CWPP	Latir	575-779-5937	latircote@gmail.com	Fire/EMS
Phil Babby	Holy Cross Hospital	Taos	970-217-2837	PBabby@taoshospital.org	MEDICAL
Renee Sudborough	Holy Cross Hospital	Taos	575-751-5793	rsudborough@taoshospital.org	MEDICAL
Brenda Naliboff	Holy Cross Hospital	Taos	850-238-9069	bnaliboff@taoshospital.org	MEDICAL
Dr. Lillian Torrez	Super. Taos Municipal Schools	Taos	575-758-5200	lillian.torrez@taoschools.org	SCHOOLS
Russ Driskell	Chief Rio Fernando VFD	Rio Fernando	575-751-0552	driskell@taosnet.com	Fire/EMS
Andy Bertges	Angelfire Fire/EMS	Angelfire	575-377-3347	abertges@angelfirenm.gov	Fire/EMS
John Black	Dixon VFD	Dixon	505-927-6427		Fire/EMS
Edmundo Jaramillo	Chief Hondo- Seco FD	Arroyo Hondo	575-776-8871		Fire/EMS
Jona Olsson	Chief Latir VFD	Latir	575-586-2488		Fire/EMS
Roy Blaz	Chief Lama VFD	Lama	575-586-1009	rtjblaz@yahoo.com	Fire/EMS
Joseph Goddfrey	Dep. Chief San Cristobal VFD	San Cristobal	575-776-2040		Fire/EMS
Raymond Gallegos	Chief Cerro VFD	Cerro	575-586-1825		Fire/EMS
Tim Segura	Chief Amalia\Ventero VFD	Amalia	575-586-2275	amaliafire@kitcarson.net	Fire/EMS
Duke Cozart	Chief Tres Piedras VFD	Tres Piedras	575-758-1594		Fire/EMS
Nick Sena	Chief Ojo Caliente VFD	Ojo Caliente	575-583-2487	senas_de_ojo@hotmail.com	Fire/EMS
Deke Willis	Chief Wheeler Peak VFD	Wheeler Peak	575-754-6107	dwillis@redriver.org	Fire/EMS
Lawrence Lovato	Chief Costilla VFD	Costilla	575-586-0015		Fire/EMS
Randy Sahn	Chief Penasco VFD	Penasco	575-587-2211	sahdpenasco@hotmail.com	Fire/EMS
	Rivera Funeral Home	Taos	575-758-3841	rivera@taosnet.com	DEATH

TAOS COUNTY HAZARD MITIGATION PLAN
APPENDIX C
ADOPTION RESOLUTION

Appendix C ADOPTION RESOLUTION

A model resolution is provided below:

Resolution # _____

Adopting the Taos County Hazard Mitigation Plan

Whereas, Taos County recognizes the threat that hazards pose to people and property within our community; and

Whereas, undertaking hazard mitigation actions will reduce the potential for harm to people and property from future hazard occurrences; and

Whereas, the U.S. Congress passed the Disaster Mitigation Act of 2000 (“Disaster Mitigation Act”) emphasizing the need for pre-disaster mitigation of potential hazards;

Whereas, the Disaster Mitigation Act made available hazard mitigation grants to state and local governments;

Whereas, an adopted local Hazard Mitigation Plan is required as a condition of future funding for mitigation projects under multiple FEMA pre- and post-disaster mitigation grant programs; and

Whereas, Taos County fully participated in the FEMA-prescribed mitigation planning process to prepare this hazard mitigation plan; and

Whereas, the New Mexico Department of Homeland Security and Emergency Management and Federal Emergency Management Agency Region VI officials have reviewed the Taos County Hazard Mitigation Plan and approved it contingent upon this official adoption of the participating governing body;

Whereas, Taos County desires to comply with the requirements of the Disaster Mitigation Act and to augment its emergency planning efforts by formally adopting the Taos County Hazard Mitigation Plan;

Whereas, adoption by Taos County demonstrates the County’s commitment to fulfilling the mitigation goals and objectives outlined in this Hazard Mitigation Plan.

Whereas, adoption of this legitimacies the plan and authorizes responsible agencies to carry out their responsibilities under the plan.

Now, therefore, be it resolved, that the County Commissioners adopts the Taos County Hazard Mitigation Plan as an official plan; and

Be it further resolved, Taos County will submit this adoption resolution to the New Mexico Department of Homeland Security and Emergency Management and Federal Emergency Management Agency Region VI officials to enable the plan’s final approval in accordance with the requirements of the Disaster Mitigation Act of 2000.

Passed: _____
(Date)

Certifying Official

TAOS COUNTY HAZARD MITIGATION PLAN

APPENDIX D

ASSET INVENTORY

Appendix – D Asset Inventory Data Collection

Name of Department / Jurisdiction: Planning, Community and Economic Development
 Department Town of Taos

Town of Taos Asset Inventory

Name of Assets	Type*	Replacement Value	Hazard Specific Vulnerabilities
Holy Cross Hospital and Helicopter Pad	VF	UNKNOWN	Flood, Extreme Winter Storms, High Wind, Thunderstorms, Drought, Soil expansion and subsidence, Hazardous Materials
Taos Police Department	VF	UNKNOWN	Extreme Winter Storms, High Wind, Thunderstorms, , Drought
Taos Volunteer Fire Department	VF	UNKNOWN	Extreme Winter Storms, High Wind, Thunderstorms, Drought, Soil expansion and subsidence
Taos Volunteer Fire Department sub-station	VF	UNKNOWN	Extreme Winter Storms, High Wind, Thunderstorms, Flooding/Flash Flooding, Drought, Soil expansion and subsidence
State Police Department	VF	UNKNOWN	Extreme Winter Storms, High Wind, Thunderstorms, Flooding/Flash Flooding, Drought, Soil expansion and subsidence
Taos Retirement Village		UNKNOWN	Extreme Winter Storms, High Wind, Thunderstorms, Drought, Soil expansion and subsidence
Taos Living Center		UNKNOWN	Extreme Winter Storms, High Wind, Thunderstorms, Flooding/Flash Flooding, Drought, Soil expansion and subsidence
El Centro Family Health	VF	UNKNOWN	Extreme Winter Storms, High Wind, Thunderstorms, Drought, Soil expansion and subsidence
Taos Medical Group PA	VF	UNKNOWN	Extreme Winter Storms, High Wind, Thunderstorms, Drought, Soil expansion and subsidence
Taos Urgent Care	VF	UNKNOWN	Extreme Winter Storms, High Wind, Thunderstorms, Drought, Soil expansion and subsidence
Family Practice Associates of Taos	VF	UNKNOWN	Extreme Winter Storms, High Wind, Thunderstorms, Drought, Soil expansion and subsidence
Kit Carson Electrical Cooperative	VF	UNKNOWN	Extreme Winter Storms, High Wind, Thunderstorms, Drought, Soil expansion and subsidence
Taos County Courthouse / Jail	VF	UNKNOWN	Extreme Winter Storms, High Wind, Thunderstorms, Flooding/Flash Flooding, Drought, Soil expansion and subsidence
Town of Taos – Town Hall	VF	UNKNOWN	Extreme Winter Storms, High Wind, Thunderstorms, Drought, Soil expansion and subsidence
Town of Taos – Public Works Yard	VF	UNKNOWN	Extreme Winter Storms, High Wind, Thunderstorms, Flooding/Flash Flooding, Drought, Soil expansion and subsidence
Paseo Del Canon E Flood Control Network	EI	UNKNOWN	Flooding/Flash Flooding, Soil expansion and subsidence

Taos High School	VF	UNKNOWN	Extreme Winter Storms, High Wind, Thunderstorms, Drought, Soil expansion and subsidence
Taos Middle School	VF	UNKNOWN	Extreme Winter Storms, High Wind, Thunderstorms, Flooding/Flash Flooding, Drought, Soil expansion and subsidence
Enos Garcia Elementary School	VF	UNKNOWN	Extreme Winter Storms, High Wind, Thunderstorms, Drought, Soil expansion and subsidence
Taos Men's Shelter	VF	UNKNOWN	Extreme Winter Storms, High Wind, Thunderstorms, Drought, Soil expansion and subsidence
Taos Library	VF	UNKNOWN	Extreme Winter Storms, High Wind, Thunderstorms, Drought, Soil expansion and subsidence
Vista Grande Prep School	VF	UNKNOWN	Extreme Winter Storms, High Wind, Thunderstorms, Flooding/Flash Flooding, Drought, Soil expansion and subsidence
Taos Charter School	VF	UNKNOWN	Extreme Winter Storms, High Wind, Thunderstorms, Flooding/Flash Flooding, Drought, Soil expansion and subsidence
Taos Academy Charter School	VF	UNKNOWN	Extreme Winter Storms, High Wind, Thunderstorms, Drought, Soil expansion and subsidence
Taos Net	EI	UNKNOWN	Extreme Winter Storms, High Wind, Thunderstorms, Drought, Soil expansion and subsidence
Brownrice Internet	EI	UNKNOWN	Extreme Winter Storms, High Wind, Thunderstorms, Drought, Soil expansion and subsidence
LMNOC Broadcasting - Radio	EI	UNKNOWN	Extreme Winter Storms, High Wind, Thunderstorms, Flooding/Flash Flooding, Drought, Soil expansion and subsidence
Inspire Preschool	VF	UNKNOWN	Extreme Winter Storms, High Wind, Thunderstorms, Drought, Soil expansion and subsidence
UNM – Civic Plaza Dr	VF	UNKNOWN	Extreme Winter Storms, High Wind, Thunderstorms, Drought, Soil expansion and subsidence
Town of Taos Council Chambers and Facilities	VF	UNKNOWN	Extreme Winter Storms, High Wind, Thunderstorms, Drought, Soil expansion and subsidence
Public Health Building	VF	UNKNOWN	Extreme Winter Storms, High Wind, Thunderstorms, Flooding/Flash Flooding, Drought, Soil expansion and subsidence
Northside Allsup	EI VF	UNKNOWN	Extreme Winter Storms, High Wind, Thunderstorms, Drought, Soil expansion and subsidence, Hazardous Materials
Southside Allsup	EI VF	UNKNOWN	Extreme Winter Storms, High Wind, Thunderstorms, Drought, Soil expansion and subsidence, Hazardous Materials
Smith's Fuel Station	EI VF	UNKNOWN	Extreme Winter Storms, High Wind, Thunderstorms, Flooding/Flash Flooding, Drought, Soil expansion and subsidence, Hazardous Materials
Chevron Quick Stop	EI VF	UNKNOWN	Extreme Winter Storms, High Wind, Thunderstorms, Drought, Soil expansion and subsidence, Hazardous Materials
Shell Canon Bypass	EI VF	UNKNOWN	Extreme Winter Storms, High Wind, Thunderstorms, Drought, Soil expansion and subsidence, Hazardous Materials

US Highway 68 / Paseo Del Pueblo Norte and Sur	EI	UNKNOWN	Extreme Winter Storms, High Wind, Thunderstorms, Flooding/Flash Flooding, Soil expansion and subsidence, Hazardous Materials
SR 240 / Ranchitos Road	EI	UNKNOWN	Extreme Winter Storms, High Wind, Thunderstorms, Flooding/Flash Flooding Extreme Winter Storms, High Wind, Thunderstorms, Flooding/Flash Flooding, Soil expansion and subsidence, Hazardous Materials
US Highway 64 / Kit Carson Rd	EI	UNKNOWN	Extreme Winter Storms, High Wind, Thunderstorms, Flooding/Flash Flooding, Soil expansion and subsidence, Hazardous Materials
Salazar Rd	EI	UNKNOWN	Extreme Winter Storms, High Wind, Thunderstorms, Flooding/Flash Flooding, Soil expansion and subsidence, Hazardous Materials
Gusdorf Rd	EI	UNKNOWN	Extreme Winter Storms, High Wind, Thunderstorms, Flooding/Flash Flooding, Soil expansion and subsidence, Hazardous Materials
Paseo Del Canon E and W	EI	UNKNOWN	Extreme Winter Storms, High Wind, Thunderstorms, Flooding/Flash Flooding, Soil expansion and subsidence, Hazardous Materials
Upper Ranchitos Rd	EI	UNKNOWN	Extreme Winter Storms, High Wind, Thunderstorms, Flooding/Flash Flooding, Soil expansion and subsidence, Hazardous Materials
Town of Taos, Wiemer Water Tank	EI	UNKNOWN	Extreme Winter Storms, High Wind, Thunderstorms, Flooding/Flash Flooding, Drought, Soil expansion and subsidence
USFS Carson national Forest Office	VF	UNKNOWN	Extreme Winter Storms, High Wind, Thunderstorms, Drought, Soil expansion and subsidence
BLM Taos Office	VF	UNKNOWN	Extreme Winter Storms, High Wind, Thunderstorms, Drought, Soil expansion and subsidence
Comcast Service Center	EI	UNKNOWN	Extreme Winter Storms, High Wind, Thunderstorms, Drought, Soil expansion and subsidence
Century Link Taos	EI	UNKNOWN	Extreme Winter Storms, High Wind, Thunderstorms, Drought, Soil expansion and subsidence
Stray Hearts Animal Shelter	VF	UNKNOWN	Extreme Winter Storms, High Wind, Thunderstorms, Flooding/Flash Flooding, Drought, Soil expansion and subsidence
New Mexico Gas Company	EI	UNKNOWN	Extreme Winter Storms, High Wind, Thunderstorms, Drought, Soil expansion and subsidence, Hazardous Materials
Rio Grande Propane	EI	UNKNOWN	Extreme Winter Storms, High Wind, Thunderstorms, Drought, Soil expansion and subsidence, Hazardous Materials
New Mexico Propane	EI	UNKNOWN	Extreme Winter Storms, High Wind, Thunderstorms, Drought, Soil expansion and subsidence, Hazardous Materials
Kit Carson Propane	EI	UNKNOWN	Extreme Winter Storms, High Wind, Thunderstorms, Drought, Soil expansion and subsidence, Hazardous Materials

Chile Line Public Transportation	EI	UNKNOWN	Extreme Winter Storms, High Wind, Thunderstorms, Flooding/Flash Flooding, Drought, Soil expansion and subsidence
Loma Parda Apartments	VF	UNKNOWN	Extreme Winter Storms, High Wind, Thunderstorms, Drought, Soil expansion and subsidence
Mitchell Pasture Wetlands	NA	UNKNOWN	Drought
Acequia Del Sur del Canon	NA	UNKNOWN	Drought
Acequia Madre Del Pueblo	NA	UNKNOWN	Drought
Rio Lucero Wetlands	NA	UNKNOWN	Drought
Rio Pueblo Wetlands	NA	UNKNOWN	Drought
Taos Plaza	VF	UNKNOWN	Extreme Winter Storms, High Wind, Thunderstorms, Drought, Soil expansion and subsidence
Historic Overlay Zone	VF	UNKNOWN	Extreme Winter Storms, High Wind, Thunderstorms, Drought, Soil expansion and subsidence, Hazardous Materials

Name of Department / Jurisdiction: Public Works, Town of Taos

Name of Asset	Type*	Replacement value	Hazard-specific vulnerabilities
Waste Water Treatment Plant	EI		
Water Well 1 – Bedford			
Water Well 2 – Bedford			
Water Well 3a – Post Office	EI		Water pumped directly into distribution system
Water Well 3b – Post Office	EI		Water pumped directly into distribution system
Water Well 4 – Jack Denver	EI		Water pumped directly into distribution system
Water Well 5 – Sierra Sports	EI		Main water producer
Water Well 8 – Rio Pueblo	EI		
Arsenic Treatment Facility			
1,000,000 gallon water storage tank – Weimer	EI		
500,000 gallon water storage tank – Weimer	EI		
50,000 gallon water storage tank – Los Cordovas	EI		
Bedford Tank Booster Station			
1,000,000 gallon tank booster station			
Arsenic Facility booster station			
The Town of Taos Water System provides emergency water supply connections to El Prado Water and Sanitation District, Canon Mutual Domestic Water Association, and El Valle de los Ranchos Water and Sanitation District			

Name of Department / Jurisdiction: Questa Fire Department/Questa

Name of Asset	Type*	Replacement value	Hazard-specific vulnerabilities
Questa Police Dept.	EI		
Questa Fire Dept.	EI	\$4.5 M	
Questa Health Center	EI		Terrorism
Village of Questa	EI		Terrorism or public shooting
Questa Ind. Schools	VF		School shooting or terrorism
Cabresto Dam	VF		Dam Breach
Village Water System	EI		System Failure or terrorism
Questa Airport	VF		Terrorism
NM State Hwy 522	NA		Accident, haz mat spill, severe weather
NM State Hwy 78	NA		Accident, haz mat spill, severe weather
Chevron Mine Water Treatment	VF		Terrorism
St Anthony Church	NA		Historic Site

Name of Department / Jurisdiction: Taos Ski Valley

Name of Asset	Type*	Replacement value	Hazard-specific vulnerabilities
Wastewater Plant	EI	\$6,000,000	Wildfire
Taos County Watershed	EI	Invaluable	Wildfire, drought
TSV Inc.	VF	Billions	Wildfire, drought

Town of Red River Fixed Asset Inventory 2016

	Cost	Prior Depreciation	Depreciation	Net Value
Land	\$ 2,176,627.00			\$ 2,176,627.00
Buildings				
Admin	\$ 1,133,613.26	\$ 1,065,618.90	\$ 1,068,531.53	\$ 65,081.73
Fire	\$ 1,545,606.59	\$ 293,475.90	\$ 344,995.98	\$ 1,200,610.61
Library	\$ 231,319.70	\$ 151,095.00	\$ 158,807.00	\$ 72,512.70
Parks	\$ 102,456.40	\$ 59,500.00	\$ 62,587.00	\$ 39,869.40
Conference Center	\$ 1,139,964.00	\$ 509,370.00	\$ 547,369.00	\$ 592,595.00
Cemetery	\$ 4,702.00	\$ 1,711.00	\$ 1,868.00	\$ 2,834.00
Public Works	\$ 68,891.00	\$ 68,891.00	\$ 68,891.00	\$ -
Marshal	\$ 9,527.00	\$ 1,508.74	\$ 2,461.74	\$ 7,065.26
Total Gov't Buildings	\$ 4,236,879.95	\$ 2,151,170.54	\$ 2,285,513.25	\$ 1,989,568.78
Sewer	\$ 6,559,120.07	\$ 5,365,990.00	\$ 5,498,272.00	\$ 1,060,848.07
Water	\$ 1,523,893.85	\$ 1,216,289.96	\$ 1,251,079.85	\$ 272,814.00
Total Business Buildings	\$ 8,083,013.92	\$ 6,582,279.96	\$ 6,749,351.85	\$ 1,333,662.07
Equipment				
Admin	\$ 22,515.00	\$ 20,024.00	\$ 22,515.00	\$ -
Public Works	\$ 714,827.15	\$ 584,123.41	\$ 624,923.88	\$ 89,904.07
Marshal	\$ 156,954.13	\$ 106,894.13	\$ 115,237.13	\$ 41,717.00
Dispatch	\$ 685,786.37	\$ 642,927.37	\$ 685,786.37	\$ -
Fire	\$ 200,287.91	\$ 200,287.91	\$ 200,287.91	\$ -
Parks	\$ 253,565.89	\$ 230,925.59	\$ 235,624.59	\$ 17,941.30
Conference Center	\$ 81,587.00	\$ 81,587.00	\$ 81,587.00	\$ -
Library	\$ 5,649.99	\$ 5,649.99	\$ 5,649.99	\$ -
Ambulance	\$ 92,718.20	\$ 92,718.20	\$ 92,718.20	\$ -
Total Gov't Equipment	\$ 2,211,891.64	\$ 1,965,137.64	\$ 2,064,329.37	\$ 149,562.37
AWWT	\$ 154,196.07	\$ 140,649.97	\$ 146,221.07	\$ 7,975.00
Water	\$ 33,882.85	\$ 22,332.85	\$ 25,482.85	\$ 8,400.00
Solid Waste	\$ 180,397.41	\$ 180,397.41	\$ 180,397.41	\$ -
Total Business Equipment	\$ 368,476.33	\$ 343,380.23	\$ 352,101.33	\$ 16,375.00
Vehicles				
Admin	\$ 74,380.70	\$ 55,911.70	\$ 61,901.70	\$ 12,479.00
Public Works	\$ 111,000.00	\$ -	\$ 92,359.00	\$ 18,641.00
Marshal	\$ 131,979.00	\$ 76,146.00	\$ 91,304.00	\$ 40,675.00
Fire	\$ 1,443,582.99	\$ 1,197,709.99	\$ 1,328,222.66	\$ 115,360.33
Transit	\$ 234,040.00	\$ 153,651.00	\$ 177,943.00	\$ 56,097.00
Ambulance	\$ 309,094.00	\$ 222,842.00	\$ 268,070.00	\$ 41,024.00
Total Gov't Vehicles	\$ 2,394,076.69	\$ 1,706,260.69	\$ 2,019,890.36	\$ 384,276.33
AWWT	\$ 44,780.00	\$ 35,087.00	\$ 37,995.00	\$ 6,785.00
Solid Waste	\$ 388,466.00	\$ 355,511.00	\$ 388,466.00	\$ -
Total Business Vehicles	\$ 433,246.00	\$ 390,598.00	\$ 426,461.00	\$ 6,785.00
Infrastructure	\$ 3,967,782.02	\$ 1,179,357.46	\$ 1,262,605.44	\$ 1,705,276.58
	\$ 22,783,193.55	\$ 14,318,184.48	\$ 15,130,060.70	\$ 7,653,132.85

General Government	\$	4,331,664.33	\$	1,939,343.97	\$	2,018,545.60	\$	2,313,118.73
Public Safety	\$	3,487,937.62	\$	1,876,022.67	\$	2,082,509.42	\$	1,405,428.20
Culture & Recreation	\$	1,814,542.98	\$	1,038,127.58	\$	1,091,624.58	\$	722,918.40
Health & Welfare	\$	401,812.20	\$	315,560.20	\$	360,788.20	\$	41,024.00
Public Works	\$	3,862,500.17	\$	1,832,371.87	\$	2,048,678.72	\$	1,813,821.45
Business	\$	8,884,736.25	\$	7,316,258.19	\$	7,527,914.18	\$	1,356,822.07
	\$	22,783,193.55	\$	14,318,184.48	\$	15,130,060.70	\$	7,653,132.85

Added/Deleted Items FYE 2016:

Description	Initial Cost	Prior Dep	Total Depreciation	Added/Deleted
1997 Ford Truck Engine # 3	\$ 33,551.00	\$ 33,551.00	\$ 33,551.00	Deleted
2001 Dodge truck Unit 30	\$ 17,918.00	\$ 17,918.00	\$ 17,918.00	Deleted
Pioneer Street	\$ 316,650.84	\$ -	\$ 25,776.72	Added