OTERO COUNTY ALL HAZARD MITIGATION PLAN

March 2011

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Otero County, New Mexico

ALL HAZARD MITIGATION PLAN

March 2011

Prepared for:

Otero County Mitigation Planning Group

Office of Emergency Services

Assisted by:

ecology and environment, inc.
Celebrating 40 Years of Green Solutions

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Introduction

Across the United States, natural disasters have led to mounting levels of casualties, injury, property damage, and disruption of business and government services. The effect on families and individuals can be enormous and damaged businesses cannot contribute to the economy. The time, money and effort in responding to and recovering from these events redirect public resources and attention from other important programs and problems.

For Otero County, this experience is recent and directly felt through major events such as the flooding in Alamogordo of recent years and flash flooding that followed wildfires in northern parts of the county. Smaller events lead to more commonplace disruptions such as flooding of bridges and roadways challenging access to those homes and businesses beyond these impasses. Some events, such as droughts and heat waves present more subtle indirect impacts to the community.

The elected and appointed officials of Otero County know that mitigation actions in the form of projects and programs can become long-term, cost effective means for reducing the effects of natural hazards.

The goal of mitigation is to save lives, reduce injuries, property damage and recovery times. Mitigation can reduce the enormous cost of disasters to property owners and all levels of government. In addition, mitigation can protect critical facilities, reduce exposure to liability and minimize community disruption. Preparedness, response, and recovery measures support the concept of mitigation and may directly support identified mitigation actions.

The Otero County Hazard Mitigation Plan utilizes a multi-agency planning process to identify hazards that can affect the state and to devise mitigation strategies to reduce or eliminate the effects of those hazards. It draws upon the State Plan which provides guidance to local governments in preparing their own mitigation plans by prioritizing mitigation goals and objectives, proposing solutions to certain mitigation problems, and identifying possible funding sources for mitigation projects.

This plan has been prepared in compliance with Section 322 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act), 42 U.S. C. 5165, enacted under Sec. 104 the Disaster Mitigation Act of 2000, (DMA2K) Public Law 106-390 of October 30, 2000. This plan identifies hazard mitigation measures intended to eliminate or reduce the effects of future disasters throughout the county. DMA2K requires rigorous local and state mitigation planning as a condition of receiving grant funding for disaster recovery and mitigation.

The plan was prepared by Ecology & Environment, Inc., of Baton Rouge, LA, for the version of the plan. This work was partially funded by FEMA, and updates previous efforts.

This plan does not necessarily represent the views, policies, and procedures of FEMA, although all attempts have been made to comply with common mitigation policies, procedures, and methods employed throughout the country.

Otero County will continue to comply with all applicable federal laws and statutes during the periods for which it receives grant funding, in compliance with 44 CFR 13.11(c), and will amend this plan whenever necessary to reflect changes in state or federal laws and statutes as required in 44 CFR 13.11(d).

It is important to note that this document is designed as an instrument of mitigation primarily for natural disasters, hazardous materials and transportation accidents. Although some human involvement is implied with many of the hazards profiled herein, this document is not intended to address the prevention or mitigation of the possible impacts of terrorist activity or any other human-caused hazard.

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Adopting Resolution

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1 County Profile

1.1 Location and Geography

Otero County is located in the south-central portion of the state of New Mexico in the southwestern region of the United States. Otero County is bordered by Lincoln County to the north, Chaves and Eddy counties to the east, Culberson County (TX) to the southeast, Hudspeth County (TX) to the south, El Paso County (TX) to the southwest, Dona Ana County to the west, and Sierra County to the northwest (see Figure 1-1). The county's total land area is approximately 4.2 million acres (6,627 square miles). Otero county comprises three incorporated municipalities-Alamogordo, Tularosa and Cloudcroft- as well as the communities of Bent, High Rolls/Mountain Park, Holloman Air Force Base, La Luz, Mayhill, Mescalero, Orogrande, Pinon, Sacramento, Sunspot, Timberon, and Weed.

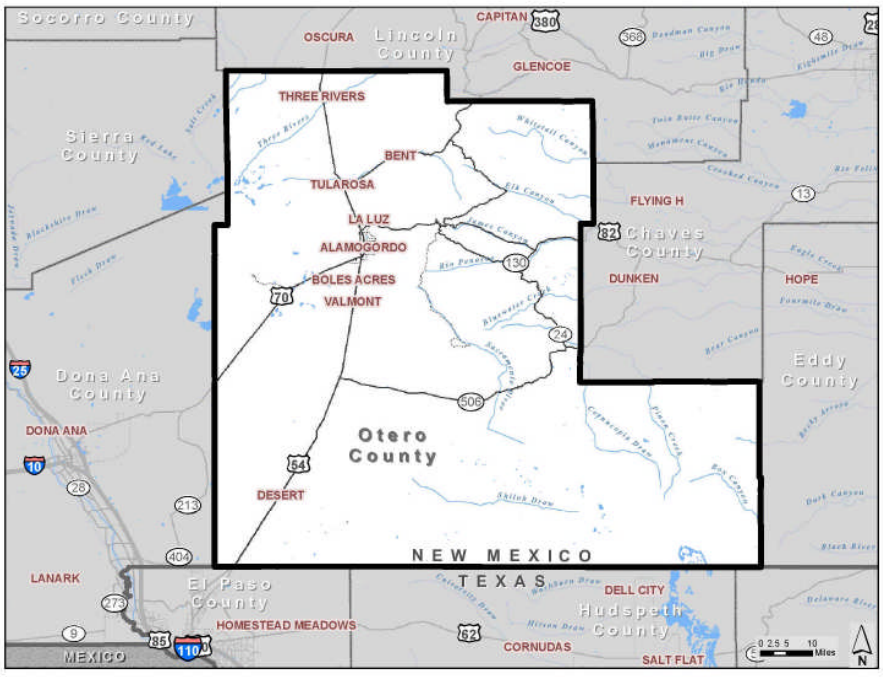


Figure 1-1 Map of Otero County

Otero County is located in the Sacramento section of the Basin and Range physiographic region overlaying the Permian Basin. This area of southeastern New Mexico has hot arid plains with sweeping vistas and cooler mountainous areas with regular annual snowfall. The Sacramento Mountains and Guadalupe Mountains cut through the County and form the eastern boundary of the largest city in Otero County, Alamogordo. These mountains are home to the Lincoln National Forest, a popular recreation destination in southeastern New Mexico. Otero County elevation ranges from 3,700 feet in the southeast part of the County to 12,003 feet in the north.

Another principal feature is the Tularosa Basin, a north-south sloping graben partially filled with bolson deposits and gypsum sand dunes, which comprises most of western Otero County. The White Sands National Monument is a national landmark known for its unusually bright white gypsum sands. The basin extends west from the Sacramento Mountains to the San Andres Mountains of Sierra County and the Organ Mountains of Dona Ana County. Additional but lesser known landmarks in the area are the Cornudas Mountains and the Jarilla Mountains located in the southern part of the County.

1.2 Climate

The climate of Otero County is moderate. Summertime high temperatures range in the 80-100°F, with lows in the 50s and 60s. Winter temperatures vary from highs in the upper 50s and 60s to lows below freezing and approaching 0°F, particularly in the mountains. The County receives more than 300 days of sunshine per year.

Average annual precipitation ranges from 6 inches in the low-lying western edge of the County in the White Sands area to 25 inches in the mountainous area from Mescalero northward in Lincoln County. The greatest annual rainfall on record for the County (and the State) was 62 inches at White Tail in 1941, and the least annual rainfall was 3 inches at White Sands National Monument in 1956. Precipitation consists of both rain and snow. The greatest amount of precipitation occurs during the warm months from May through September. Most of this precipitation occurs in the form of short, local, high-intensity summer thunderstorms originating in the moist air derived from the Gulf of Mexico. Mid-winter snows and rain form an additional high precipitation period. Late winter through early spring is typically the driest period of the year in Otero County.

The prevailing winds are westerly most of the year but are interrupted during the rainy season. During this time the winds are primarily from the south and east. However, the wind direction varies widely due to the great temperature fluctuations between the valley heat and the cooler mountains. The average wind speed is nine miles per hour during the windiest months of March, April and May. During the windy season there are frequent dust storms occurring over the TularosaBasin and White Sands National Monument with winds averaging 25 to 45

miles per hour and occasionally gusting to 60 and 70 miles per hour. Sometimes brief dust storms accompany thundershowers. Approximately three weeks a year the visibility is greatly reduced, often to six miles or less, due to blowing dust.

1.3 Economy

The majority of land in the County is owned by the US Government (68%) and State government (10%) with much of the County's economy depended on business activities on these lands. In 2002, government provided nearly 40 percent of the jobs in the County with the military accounting for nearly 16 percent, and State / local government 17 percent. Federal civilian jobs accounted for seven percent. The percentages of total earnings of these government employment and contributing industries in the County were approximately 60 percent of total wages, with nearly 30 percent from military employment, and 16.8 percent from State and local government jobs combined. The next largest number of jobs was in retail trade (11 percent) and health care and social assistance (9 percent). Providing 6 percent of jobs were administrative and waste services, accommodation and food services, construction, and other services, except public administration.

While farming provided only 2 percent of the jobs in Otero County, and an even smaller percentage of earnings, it also spawns related services and helps attract tourists. Otero's orchards grow pecans and pistachios, apples and cherries. The County also grows alfalfa, pumpkins, and has several ranches and wineries. Year-round recreational resort facilities, tourism, historical communities, and the service and retail trades are a significant portion of revenues earned. The US military, including Holloman Air Force Base and White Sands Missile Range combined make up a military/civilian annual payroll of more than $255 million and an economic impact of over $485 million to the local economy. Despite some diversification in economic sectors, the County is heavily dependent on Holloman Air Force Base (AFB) for its contribution to the County's economy.

Tourism is one of Otero County's top industries. County attractions include the White Sands National Monument, the New Mexico Museum of Space History, Lincoln National Forest, and the Mescalero Apache Indian Reservation. Additionally, there is the Alameda Park and Zoo, the Toy Train Depot, the Tularosa Basin Historical Museum, Founder's Park, Old Town Alamogordo, the Desert Lakes Golf Course, Oliver Lee Memorial State Park, hunting and fishing, and a performing arts center. Annual events include two Trinity Site tours and the White Sands Balloon Festival.

Major Employers

Employment in Otero County is diverse, with many industries represented, e.g., agriculture, construction, manufacturing, wholesale trade, retail trade, transportation and warehousing, information, finance, professional, educational, arts, and public administration. Compared with the State, Otero County residents had more jobs in public administration, construction; manufacturing, transportation, and warehousing and utilities.

Of the Otero County population 59.8 percent or 27,478 persons were in the labor force during the 2005-2009 US Census American Community Survey (ACS). Approximately 47.8 percent of the workforce (21,934 persons) were employed in the civilian labor force, 7.8 percent (3,599 persons) were in the Armed Forces, and the County has an unemployment rate of 7.9%. Private businesses accounted for the largest proportion (60.8 percent) of wages and salaries for Otero County residents (2000 Census). An additional 29.3 percent had government jobs and 9.4 percent were self-employed.

Major employers of Otero County (as of 2004) include the military (Holloman AFB White Sands Missile Range, and German Air Force Flying Training Center); education (the Alamogordo public schools, New Mexico State University [NMSU] at Alamogordo, and the National Sunspot Observatory); government (city of Alamogordo and Otero County); entertainment and tourism (Inn of the Mountain Gods casino and The Lodge at Cloudcroft); and retail stores such as Walmart, Lowe's, Home Depot, Big K-Mart, and other retail outlets located in venues such as the White Sands Mall. Table 1-1 presents the employment and earnings data for Otero County by industry.

Table 1-1 Otero County Jobs and Earnings by Industry

	2002 Jobs	Percent	2002 Earnings (x$1000)	Percent
County-wide	27,515	100.0%	$863,407	100.0%
Government and government enterprises	10,862	39.5%	$518,300	60.0%
Military	4,283	15.6%	$256,197	29.7%
State	947	3.4%	$27,284	3.2%
Local government	3,675	13.4%	$117,769	13.6%
Federal, civilian	1,957	7.1%	$117,050	13.6%
Retail trade	2,920	10.6%	$57,923	6.7%
Health care & social assistance	2,349	8.5%	$57,953	6.7%
Administrative & waste services	1,615	5.9%	$38,134	4.4%
Accommodation & food services	1,481	5.4%	$15,635	1.8%
Construction	1,338	4.9%	$36,556	4.2%
Professional & tech. services	1,012	3.7%	$29,782	3.4%
Other services, except public administration	1,294	4.7%	$19,752	2.3%
Transportation & Warehousing	731	2.7%	$23,534	2.7%
Real estate, rental, leasing	947	3.4%	$7,286	0.8%
Finance & Insurance	678	2.5%	$17,364	2.0%

Table 1-1 Otero County Jobs and Earnings by Industry

	2002 Jobs	Percent	2002 Earnings (x$1000)	Percent
Manufacturing	433	1.6%	$12,360	1.4%
Farm Employment	544	2.0%	$415	0.0%
Information	296	1.1%	$9,680	1.1%
Utilities	77	0.3%	$4,480	0.5%
Wholesale trade	246	0.9%	$4,094	0.5%
Arts, entertainment, & recreation	232	0.8%	$1,605	0.2%
Educational services	116	0.4%	$2,358	0.3%
Management of companies & enterprises	51	0.2%	$1,720	0.2%
Forestry, fishing, related activities, other	Undisclosed			
Mining	Undisclosed			

Source: US Bureau of Economic Analysis (BEA), 2002

1.4 Demographic Features

Population

The population of Otero County grew from 52,034 in 1990 and further increased to 62,298 in 2000 according to the US Census. The increase from 1990 to 2000 represents an average annual increase of 1.8 percent. Table 1-2 below shows population recorded by the US Census from 1980 to 2010 for the State, Otero County and its incorporated municipalities. The 2015 population projection for the State (2.3 million) and Otero County (68,814) is provided by the University of New Mexico, Bureau of Business and Economic Research. The majority of the population is concentrated around the Alamogordo and Tularosa corridor. Fewer people are scattered on private land in the western half of the County.

Table 1-2 Population 1980 – 2000

	1980 Population	1990 Population	2000 Population	2010 Population Estimation	2015 Population Projection*
Otero County	44, 665	51,928	62,298	63,206	68,814
Alamogordo	24,024	27,986	35,582	35,900	
Tularosa	2,536	2,753	2,864	3,053	
Cloudcroft	521	612	749	N/A	
Holloman AFB	7,245	5,891	2,076	1,860	
Unincorporated County	12,339	14,686	21,027		
New Mexico	1,303,303	1,515,069	1,819,046	1,964,860	2,356,236

Source: US Census, 2000,
*University of New Mexico, Bureau of Business and Economic Research, 2005

Housing

The 2000 US Census indicates that Otero County has a total housing inventory of 29,272 housing units. Nearly 58 percent or 16,774 units of the total housing in the County are single-family detached dwellings. Mobile homes accounted for 29 percent and multi-family units for 7.6 percent of the housing stock. In comparison, 61 percent of the housing in the State of New Mexico was single-family detached dwellings and only 18.6 percent was mobile homes based on 2000 US Census data. Occupied housing units in Otero County accounted for 78.5 percent or 22,984 of the total housing units in 2000 with vacant housing units making up the remaining 21.5 percent or 6,288 units. Homeowner and rental vacancy rates for year-round housing are higher in Otero County than in the State as a whole. In Otero County 3.5 percent of homeowner housing is vacant for sale, and 16.4 percent of year-round rental housing is vacant. Slightly higher than average vacancy rates are desirable to accommodate the housing needs of Holloman Air Force Base.

The 2000 US Census indicates that the average household size in Otero County was 2.68 persons for owner-occupied units and 2.62 persons for renter-occupied units. The average State of New Mexico household size of owner-occupied units was slightly higher at 2.72 persons and somewhat lower for renter-occupied units at 2.41 persons.

Income

Based on 2000 US Census data, the median household income in Otero County was $30,861. This is 90.4 percent of the median household income of $34,133 for the State of New Mexico. In Otero County, 8,986 households or 39 percent of the total population earned less than $24,999 annually, 8,291 households or 36 percent earned $25,000 to $49,999, and 5,707 households or 24.9 percent earning $50,000 or more.

Otero County had a slightly higher proportion of lower income households than in the State where 36.7 percent of households earned $25,000 or less. More than 19 percent (11,737) of individuals and 15.6 percent (2,644) of families in Otero County had incomes below the Federal poverty level in 1999. The poverty rate for families in 1999 was 15.6 percent in Otero County and 13.2 percent in Alamogordo. The statewide poverty rate was between these two rates at 14.5 percent.

1.5 Utilities and Infrastructure

Electricity

Otero County relies on two separate power companies to generate electricity. Power New Mexico (PNM) and Otero County Electric Co-Op each have a substation in Alamogordo. There are two transmission lines in the county, one line in from El Paso and the other from Doña Ana to Holloman AFB. There is one nu-

clear power plant on White Sands Missile Range. There are microwave towers throughout the county that interconnect electrical substations.

Natural Gas

Otero County is located in the Permian Basin, bordering between southeastern New Mexico and Texas with active gas and oil surface development operations. There are several natural gas distributors serving the population of Otero County. PNM and New Mexico Gas Company are major distributors, along with the El Paso Natural Gas Company. A major gas pipeline runs along the U.S. Highway 54 corridor through the county. Twelve distribution liquid propane tanks are located within the county owned by the Mountain Propane Company, Cortez Gas, Scotty Propane, and ServiGas / Ikard & Newsom.

Water Supply

Otero County receives the majority of its water supply from the Tularosa Basin via groundwater sources, which comprises approximately 5% of the greater Rio Grande drainage systems though no surface flow connects the Basin to the Rio Grande. The main perennial streams of the basin which provide surface water capture are the upper reaches of Three Rivers, Tularosa Creek and El Rito de La Luz which provide water to County residents with surface water available in Lost River and Lake Holloman. Water from Bonita Lake provide critical supplements to the area. Groundwater recharge occurs largely from rainfall and snowmelt in the basin and the west front of the Sacramento Mountains. There are 65 water systems in the county. Alamogordo's water supply comes from Bonito Lake and is piped to the city along the U.S. Highway 54 corridor. Tularosa derives its water from wells and the Tularosa Creek. Timberon derives its water from the Sacramento River and wells. Orogrande receives its water from Chaparral (well derived). Mescalero and Holloman AFB all have their own water systems. Many residents rely on well sources to supplement water provided by municipal services.

Persistent drought and increasing population represent one of the most significant challenges to the county. Otero County, Alamogordo, Tularosa, and Holloman AFB have each developed land use plans with goals of ensuring sustainable and suitable water sources to meet the needs of residents and infrastructure in the county (Otero County Comprehensive Plan, 2009). The State of New Mexico and the federal government are sponsoring a desalinization plan study in an effort to address the long term needs of the county. (Regional Water Plan 2000-2040, Tularosa Basin and Salt Basin, South Central Mountain Resource Conservation and Development Council, Inc., (RC&D), May 2002).

Waste Management

The Otero-Lincoln County Landfill is a permitted waste facility designed to dispose of residential, commercial and construction waste for Otero County and the city of Alamogordo. Located 24 miles south of Alamogordo, it is at marker 43 on US Highway 54. The landfill has approximately 92 acres permitted for receipt of

solid waste with approximately 18-20 acres currently filled. The landfill receives an average of 250 tons per day, approximately 72,000 tons per year.

Transportation

Roadways. Both federal and state highways run through Otero County. Federal highways include U.S. Highways 54, 70, and 82. These highways are utilized in the hazardous materials movement through the county. State highways include State Routes 10, 24, 244, and 6563. US Routes and NM Route 24 are the principle roadways that serve the county.

Railroads. The major Union Pacific route originates in El Paso and parallels U.S. Highway 54 through Alamogordo. No commuter services are provided, and Union Pacific no longer stops in Alamogordo, but railways are occasionally used to transport hazardous materials, a major concern for populated areas along the rails.

Airports. Otero County has two municipal airports: Alamogordo-White Sands Regional Airport (Alamogordo) and Timberon Airport (Timberon). There are two private airports and one private airstrip in the County: Otero Mill Airport (La Luz), Mesa Verde (Alamogordo) and Keelin Heliport (Alamogordo). The Holloman AFB Airport is located approximately 6 miles SW of Alamogordo.

1.6 Agriculture

Major agricultural crops include alfalfa, hay, vineyards, chile, nuts, apples, and cherries. Nut production has increased in Otero County, with pecan fields estimated at 1,540 acres. Pistachio fields are estimated to cover 470 acres. Apple and cherry production is still common in the mountain communities.

Ninety percent of Otero County is rangeland that surrounds a few small towns and the quickly expanding city of Alamogordo and Holloman AFB. Much of the rangeland in Otero County is under government control as White Sands Missile Range or the McGrager Range (http://oteroextension.nmsu.edu/agandhort.html).

1.7 FEMA Disaster Declarations

When a disaster occurs, local government officials may determine that the effort needed for recovery or response appears to be beyond the combined resources of both the local and state governments and that federal assistance may be required. After a process of assessing damage caused by a disaster, FEMA determines the need for federal aid and makes a recommendation to the president for supple-

mental assistance. Disaster declarations are affirmed by the President of the United States under the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act). Forms of assistance include those for response efforts, emergency resources, and public and individual assistance program. Table 1-3 provides a list of previous Presidential Disaster Declarations where Otero County was indicated as part of the declared disaster area.

Table 1-3 Presidential Disaster Declarations that include Otero County

Year	Date	Disaster Number	Disaster Type	Assistance Type
2009	7-May	2818	Buckwood Fire	Public Assistance
2008	14-Aug	1783	Severe Storms & Flooding	Individual Assistance, Public Assistance
2005	29-Aug-1-Oct	3229	Hurricane Katrina Evacuation	Public Assistance
2006	30-Aug	1659	Severe Storms & Flooding	Individual Assistance, Public Assistance
2002	1-May	2402	Penasco Fire	Public Assistance
2001	3-Jun	2364	Trap & Skeet Fire	Public Assistance
2000	11-May-19-Jun	2297	Scott-Able Fire	Public Assistance
2000	13-May	1329	Wildfire	Individual Assistance, Public Assistance
2000	5-May-7-Jul	3154	Fire	Public Assistance
1984	8-Aug-26-Aug	722	Severe Storms, Flooding	Public Assistance

2 Mitigation Planning Process

2.1 Plan Authorities

Local governments play an essential role in the implementation of effective mitigation, both before and after disaster events. The Otero County Hazard Mitigation Plan seeks to formulate the approach, focus and goal for communities to alleviate or eliminate risk to the impact of natural hazards with consideration of the infrastructure, resource, and [x] vulnerabilities in accordance with Federal and State mitigation planning requirements.

2.1.1 Federal Mitigation Planning Requirements

Section 409 of Public Law 93-288, Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act) as amended by Public Law 100-707, 42 U.S.C. 5121 et seq, Disaster Mitigation Act 2000 and the Hazard Mitigation and Relocation Assistance Act of 1993 requires State and Local governments to develop and adopt natural hazard mitigation plans in order to be eligible for some types of federal assistance, including mitigation grants. The Act authorizes up to seven percent of Hazard Mitigation Gran Program (HMGP) funds available to a State after a disaster to be used for the development of State, tribal and local mitigation Plans.

Mitigation planning requirements are additionally set forth in various FEMA policies and guidance documents, including the Interim Final Rule of February 26, 2002, the "386" series of mitigation planning how-to-guidance, and the July 2008 "Blue Book." Section [x-x] provides a description of FEMA's six hazard mitigation programs, all of which require mitigation plans in order for communities to be eligible for grants.

2.1.2 State Hazard Mitigation Plan

The 2009 State of New Mexico Hazard Mitigation Plan fulfills the requirements of the Stafford Act and the Disaster Act of 2000. The State plan acknowledges that people and property in New Mexico are at risk from a variety of hazards that have a potential to cause widespread loss of life and damage to property, infrastructure and environment. The plan establishes hazard mitigation goals, strategies and specific measures designed to reduce the occurrence or severity of these identified hazards. It also documents procedures for implementation and administration of certain mitigation grant programs.

2.2 Mitigation Planning Process

Hazard mitigation planning is the process of figuring out how to reduce or eliminate the loss of life and property damage resulting from hazards such as ice storms and floods. The primary purpose of hazard mitigation planning is to identify community policies, actions, and tools for implementation over the long-term that will result in a reduction in risk and potential for future losses community-wide. This is accomplished by using a systematic process of learning about the hazards that can affect a community, setting clear goals, identifying appropriate actions, following through with an effective mitigation strategy, and keeping the plan current. These activities are summarized in four basic phases:

- Organize resources
- Assess risks
- Develop a mitigation plan
- Implement the plan and monitor progress

The Disaster Mitigation Act of 2000 (DMA2K) signed into law on October 30, 2000, amended the Robert T. Stafford Disaster Relief and Emergency Assistance Act by adding a new section, 322 – Mitigation Planning. Section 322 places emphasis on local mitigation planning. It requires local governments to develop and submit mitigation plans as a condition of receiving Hazard Mitigation Grant Program (HMGP) project grants. An Interim Final Rule for implementing Section 322 ((44 Code of Federal Regulations (CFR) Parts 201 and 206) was published in the Federal Register (FR), Volume 67, Number 38, pages 8844 – 8854, on February 26, 2002. The requirements for local plans, or Local Mitigation Plan Criteria, are found in part 201.6.

2.3 Local Mitigation Plan Criteria

The remainder of this HMP focuses on responding to each of the Local Mitigation Plan Criteria defined by the U. S. Congress in DMA 2000:

- Prerequisites
- Planning Process
- Risk Assessment
- Mitigation Strategy
- Plan Maintenance Procedures

2.3.1 Prerequisites

The Local Mitigation Plan Criteria state that the plan must satisfy three prerequisites before the plan will be reviewed by the state and FEMA. If these prerequisites have not been fulfilled, the plan will not be reviewed. The three prerequisites are:

- Adoption by the local governing body
- For multi-jurisdictional plans, each jurisdiction must adopt the plan
- For multi-jurisdictional plans, each jurisdiction must participate in the planning process.

Otero County's plan is not a multi-jurisdictional plan; therefore, the only criterion to be met, adoption by the local governing body, has been addressed. The resolution showing adoption of this plan by the Otero County Commissioners appears in the introductory elements (before the Table of Contents) of this plan.

2.4 Local Planning Process

The Otero County Hazard Mitigation Plan is a collaborative effort of local agency representatives who comprise the Mitigation Planning Group (MPG). The MPG, under the direction of the Otero County Fire and Emergency Services Director, was formed in August 2008. The County retained the services of Ecology & Environment, Inc. (the contractor) to support the planning process and produce the plan. The hazard mitigation planning process followed the FEMA guidance document, *Local Multi-Hazard Mitigation Planning Guidance (July 1, 2008).* The county received a Hazard Mitigation Grant Program (HMGP) grant in June 2008 to help the community mitigate against future damage. FEMA and the New Mexico DHSEM dispersed the HMGP funds for mitigation activities.

2.4.1 Mitigation Planning Participants

The members of the MPG and other subject matter experts who were consulted in the planning process brought institutional knowledge and specific program experience of their current job positions to assist in the mitigation planning effort. These people, agencies, and interested groups participated by attending meetings, sharing information by email, and contributing general and specific information as needed. A list of the MPG members is provided in Table 2-1.

The MPG addressed specific topics related to the development of the Otero County Hazard Mitigation Plan including a detailed review of County-owned infrastructure, and analysis of previous hazardous incidents, and evaluation of risk and vulnerabilities.

Table 2-1 Mitigation Planning Group

Name	Organization	Address	Phone	Fax	Email
Roberta Hannemann	Otero County Safety Department	1000 New York Ave, Alamogordo, NM	575-439-2623	575-443-2904	bhannemann@co.otero.nm.us
Todd Cullers	NM Department of Public Safety/ Motor Transportation Division (NMDPS/MTD)	411 10th Street, Alamogordo, NM	575-439-5714	575-434-6299	Todd.cullers@state.nm.us
David Kirby	NM Environmental Department Drinking Water Bureau (NMED - DWB)	1015 Cuba, Alamogordo, NM	575-437-7115	575-434-1813	David.kirby@state.nm.us
Shirley Kay	NM Client Assistance Program (CAP)	3050 US HWY 54, Alamogordo, NM	575-437-1004		Cloudrkg21@yahoo.com
Paul Quairoli	Otero County Office of Emergency Services (OES)	1000 New York Ave., Alamogordo, NM	575-439-2612	575-443-2904	pquairoli@co.otero.nm.us

2.4.2 Planning Meetings

To begin the planning process, the county invited members of the community with a variety of backgrounds (i.e., business, law enforcement, schools, utilities, and emergency response) to attend a project plan meeting on August 13, 2008. This was apart of the County Local Emergency Preparedness Committee (LEPC) meeting aimed at informing interested stakeholders about the formation of the MPG of the planning process. At this meeting, the concept of mitigation planning was explained to an audience of approximately 13 people, and ideas on what the community felt about mitigation were addressed.

The Otero County Emergency Services Director coordinated the formation of this plan and sought out the input and participation of the Local Emergency Planning Committee. Upon formation of the MPG, a meeting was held to discuss the content of the plan. A letter of invitation was sent requesting participation from various local, tribal, state, and federal departments and agencies. Between meetings, members provided information to the County Fire and Emergency Services Director

The Emergency Services Director kept agencies and subject matter experts that did not participate with the MPG on a regular basis informed of the status and content of the plan. They will receive copies of the approved plan soon after it is approved in order for them to comment and correct errors and omissions for future updates. The Emergency Services Director will continue to expand the list of interested parties as opportunities arise and will send to them copies of the plan and invite their participation. In addition, the plan will be available on the county website.

The Otero County Hazard Mitigation Plan endorses the efforts of other local, state, and federal, agencies in addressing mitigation issues for specific hazards in their own strategic and operational plans, procedures, and regulations. The Otero County Emergency Services Director has asked, and will continue to ask, MPG members and other subject matter experts to provide input related to their specific agency plans, procedures, and regulations. Subsequent meetings of the MPG will discuss and possibly incorporate specific recommendations into future updates of the plan.

2.2.3 Planning Process Approach

In order to prepare the plan, three additional meetings with the MPG were held. The third meeting was conducted via web conference call. At that meeting a list of critical assets (facilities) was determined and

The consultant facilitated each meeting, addressing the planning process and gaining input from the MPG on local conditions and the MPG's desires. After each meeting, ideas presented in the meeting were researched and their findings were

summarized for input by the MPG. This approach allowed the MPG to play a valuable role in getting ideas and issues addressed in the plan. Each member of the MPG was an equal member in the overall process.

This plan was developed over a period of 12 months. Appendix A contains copies of the sign-in sheets for each meeting, as well as meeting minutes/notes and copies of materials handed out / used.

The role of the MPG was to attend the planning meetings where they provided valuable information on the county, developed parts of the plan, and reviewed the results of the research conducted by the consultant. Tasks completed by the MPG included:

- Developing a list of potential hazards in the county (e.g., flooding, wildfires and thunderstorms)
- Assembling a list of the critical facilities in the county, e.g., hospitals, police stations and shelters
- Evaluating potential loss of vulnerable assets in the county
- Establishing goals and objectives for the county
- Determining mitigation measures that would be prudent

2.3 Public Involvement and Plan Development

The county hazard mitigation planning process is closely integrated with and is in fact dependant on FEMA's mitigation programs and initiatives including the integration of public participation in the development of the Otero County Hazard Mitigation Plan.

2.3.1 Public Involvement

Support from the community is vital for the success of any hazard mitigation plan. The MPG provided opportunities for public participation and input throughout the planning process, prior to this draft and before approval of the finalized plan. Examples of input request include the following:

- Flyers
- Advertisements for public comment
- Public Meetings
- Online notices
- Articles in the Alamogordo Daily News

For more public involvement materials see Appendix A of this Plan.

This provided Otero citizens, stakeholders, neighboring communities, agencies, businesses, academia, non-profit organizations and other interested parties an opportunity to be involved in the planning process and to take part in the decision-making process that affects the future of the communities in which they live. Public notices for meetings were posted in communities and municipalities to encourage citizens to participate in the planning process. Information on the development process, questionnaires, and other supplemental information was posted for the public. Copies of the press releases can be found in Appendix A.

At the fourth MPG meeting, which was open to the public, the progress of the MPG and the plan were reviewed and announcement of the final meeting was made. A press release was prepared informing the public about the hazard mitigation planning process, urging the public to be involved in the review process and informing the public of who to contact regarding the plan. After the last meeting a press release was prepared to keep the public involved, informing them that the draft plan was completed.

At the fourth MPG meeting, a preliminary draft was reviewed. Representatives from the agencies in the county were invited to the MPG meetings but some were unable to a before recommending it for approval. A final review of the HMP was conducted and the MPG agreed to recommend the HMP for adoption by the local governing body, pending FEMA and New Mexico DHSEM final approval.

2.3.2 Plan Preparation and Development

The plan development process took place in multiple steps:

MPG and Contractor	Detailed review of risks and vulnerabilities
Contractor	Draft of planning process and technical sections
MPG and Contractor	Review of complete first draft
MPG	Discussion, modification, and approval of plan
Contractor	Modification based on review, stakeholder feedback
Contractor	Final draft
Contractor	Prepare and submit final draft
NMEHSEM and FEMA	Review and letter of approvability
MPG and County Commission	Final approval and adoption

The Emergency Services Director, disseminated plan related information to members of the MPG who were kept informed via contact by email. Input was shared with the MPG members through discussion at MPG meetings, by email, and through personal contact. The contractor assembled the final draft of the plan for distribution to MPG members for review. The Otero County Hazard Mitigation Plan meets the required content for a “standard” local hazard mitigation plan.

2.4 Review and Incorporation of Existing Plans, Studies, Reports and Working Groups

2.4.1 Existing Planning Document Review

Existing planning documents, reports and technical information were reviewed during the development of the Hazard Mitigation Plan. Data was collected about county ordinances, wildfire protection, flood prevention, watershed planning, and general zoning for incorporation into the Otero County Hazard Mitigation Plan. The mitigation actions proposed in the plans were re-evaluated based on existing conditions to determine their current suitability in this plan.

In addition, the 2005 Otero County Comprehensive Plan and Regional Water Plan were evaluated to provide a reconnaissance of flood prone areas to identify and recommend measures for mitigation implementation. Highlights of existing plans and regulations evaluated are as follows:

- Otero County Comprehensive Plan, 2005
- Otero County Flood Insurance Rate Maps (FIRMs).
- Otero County Emergency Operations Plan
- Otero County Ordinance No. 93-06 County Fire Protection
- Otero County Ordinance No. 1975-1 Flood Control and Protection
- Otero County Ordinance. No. 78-01 Flood Damage Prevention
- Otero County Ordinance. No. 02-05 Interim Comprehensive Land Use Plan for Oil and Gas Activities
- Regional Water Plan 2000-2040, Tularosa Basin and Salt Basin
- Urban/Wildland Fire Interface 10-year Comprehensive Strategy
- Tularosa Basin National Desalination Design Report
- Otero County and Timberon Water & Sanitation District Memorandum of Understanding
- United States Geological Survey (USGS) Water-Resources Investigations Report. Simulated water-level declines caused by ground water withdrawals near Holloman Air Force Base, Otero County, New Mexico. 1990
- New Mexico State University Climate Center, Drought in New Mexico Report, 1999
- New Mexico Drought Response and Assessment Plan

Details of these plans were taken into consideration to determine the need to include some the findings into the mitigation actions proposed for the Hazard Mitigation Plan.

2.4.2 Local Planning Workgroup Review

Additionally, an investigation of the efforts of existing workgroups and committees that could contribute to mitigation planning was conducted to ensure the goals and objectives of suggested projects were in alignment with these efforts. The following workgroups were either consulted or investigated:

- *Otero County Electric Cooperative*. As a major contributor to utility infrastructure, the corporative provides community-based education and resources to meet utility demands of its members while engaging in emergency response efforts in Otero, Lincoln, Chaves and Socorro Counties.
- *Otero Soil and Water Conservation District (SWCD) Local Work Group (LWG)*. The LWG consists of local and federal agency representatives coordinating efforts on water quantity and quality, watershed health, soil erosion, and conservation projects to increase irrigation efficiencies and support sustainable resource preservation.
- *Otero County Economic Development Council, Inc (OCEDC)*. With goals of promoting and facilitating the creation of new industries and expansion of businesses in Otero County, OCEDC monitors and engages in economic activities focused on infrastructure and strengthening the existing business community.
- *Otero County Local Emergency Planning Committee (OCLEPC) and Alamogordo Local Emergency Planning Committee (ALEPC).* Both committees provide oversight for all hazardous emergency management through the promotion of training, education, planning and professional development and the enhancement of programs promoting the safety and health of the residents of Otero County.
- *Lincoln County and Otero County Wildland/Urban Interface Working Group*. The core strategy of this working group is to reduce community risk from and promote a collaborative community-based approach to wildland fire. The group is represented by over 60 local, state and federal governmental agencies and Native American tribes, school districts, private businesses and non-governmental organizations .
- *South Central Mountain Resource Conservation and Development Council.* Serving Lincoln and Otero Counties, the Council focuses on regional water planning, watershed restoration, forest health and conservation education efforts, programs and projects to benefit rural communities.
- *Tularosa Basin National Desalination Research Facility (TBNDRF)*. This research facility is investigating technologies for the treatment of saline groundwater to assist in addressing current and projected water shortage issues of the region.
- *New Mexico State University Water Resource Research Institute (NMWRRI)*. This institute continually investigates water-related problems along the US/Mexico border with efforts to cooperate with local jurisdictions through established partnerships to alleviate water problems.
- *New Mexico Drought Monitoring Work Group*. As an extension of the state Drought Task Force, the Work Group issues monthly drought status reports that support strategies for reducing the state's vulnerability to drought and its impact on agriculture, wildlife, economic development, tourism and wildfire. The status reports monitor and help quantify drought impact additionally advising when the state should declare drought.

2.4.3 Other Local Planning Mechanisms

As required by the FEMA Interim Final Rule that governs mitigation planning, the project requirements from the Otero County Hazard Mitigation Plan shall be incorporated into other planning mechanisms, as applicable, during the routine re-evaluation and update of County plans. The County did not consider integrating components of the plan into other planning mechanisms. The MPG and E&E reviewed plans listed in Section 2.4.1 to identify opportunities where components of the Hazard Mitigation Plan can be integrated or reinforced with these other plans, studies or reports.

Otero County is a participant in the National Flood Insurance Program (NFIP), and on December 6, 2010, Otero County was approved and issued revised Flood Insurance Rate Maps (FIRM) by FEMA to assist the jurisdiction in flood prevention and mitigation efforts. Participation in NFIP by municipalities, counties, and tribal organizations is voluntary. Currently the City of Alamogordo in a participating jurisdiction in both the NFIP and the Community Rating System (CRS), a program whereby individual communities may reduce their flood insurance rates by performing certain specified activities to enhance flood mitigation. The goals of the CRS are to reduce flood losses, facilitate accurate insurance rating, and promote the awareness of flood insurance in communities using a point system program to reduce flood insurance premiums for citizens of participating communities. Participation in CRS activities such as flood damage reduction or flood preparedness will be integrated in future mitigation plan updates.

3 Hazard Identification and Risk Analysis

3.1 Hazard Identification and Risk Assessment Overview

Section 201.6(c)(2) of the mitigation planning regulation requires local jurisdictions to provide sufficient hazard and risk information from which to identify and prioritize appropriate mitigation actions to reduce losses from identified hazards. This information should include detailed descriptions of all the hazards that can affect the county and an analysis of the county's vulnerability to those hazards. This chapter identifies the natural hazards that can occur within the county and provides a systematic analysis of risk and vulnerability to which the population and critical infrastructure of the county are subject.

The four major steps in this risk assessment were hazard identification, hazard profiling, vulnerability assessment, and loss estimation. Vulnerability and loss information for Otero County are addressed in Section 4 of this plan.

- **Hazard Identification.** Because it is assumed that hazards that occurred in the county in the past may occur in the future, the hazard identification process includes reviewing the history and examining the occurrences of various hazards within the county over the past several decades. Information about past hazards was obtained from historical documents and newspapers, state and county plans and reports, interviews with local agencies, and internet websites.

- **Hazard Profiling.** This step involved determining the frequency or probability of future events, their severity, and factors that may affect their severity. Each hazard type has unique characteristics that can affect the county in different ways. The same hazard event could affect different jurisdictions in unique manners depending on building types, the age of buildings, demographics, and many other factors.

- **Vulnerability Assessment.** The results of the hazard identification and profiling indicated that some of the hazards warranted a vulnerability assessment because of their frequency of occurrence or because those hazards have caused major damage in the county. A vulnerability assessment was performed to determine the impact of frequently occurring hazards on the built

environment and how they can affect the safety of the residents of Otero County.

The vulnerability assessment identified locations where the county could suffer the greatest injury or property damage in the event of a disaster. This assessment identified the effects of hazard events by estimating the relative exposure of people, buildings, and infrastructure to hazardous conditions.

- **Loss Estimation.** The last step of the risk assessment was loss estimation. Loss estimation provides a relative ranking of the risk to county-owned property and critical infrastructure from the identified hazards.

3.2 Hazard Analysis

This section details the hazard identification and hazard profile steps taken in the risk assessment. It includes an identification of the natural hazards that could occur throughout the county, a description of those hazards, the damage they could cause, a historical review of hazard occurrences, and a discussion of the probability of future occurrences.

3.2.1 Hazard Identification

The Mitigation Planning Group (MPG) identified several hazards using empirical data, historical occurrences and research of susceptible locations within Otero County to separate hazards. Data was compiled from the National Weather Service, Federal Emergency Management Agency, existing county, regional and state plans as wells as information from local officials. The data indicates that Otero County is susceptible to most of the natural hazards identified in requirement 201.6(c)(2)(i)

Otero county identified many hazards that affected the community in the past and that may possibly affect the county in the future. These hazards were addressed individually through a widespread process that included input from the MPG members, public involvement, researching archived articles published or documented within the county pertaining to those disasters, past disaster declarations in the county, and a review of current Flood Insurance Rate Maps (FIRM) and flood insurance studies. Table 3-1 identifies the hazards and priority for mitigation planning purposes.

Table 3-1 Hazard Identification Table

Hazard	How Identified	Why Identified	Priority
Flood	▪ Input from Local Emergency Management ▪ Input from other county representatives ▪ NCDC and other internet research	▪ Significant impact on the county ▪ Damage to homes and businesses ▪ Federally declared disasters in 2006 and 2008	High
Wildfire	▪ Input from Local Emergency Management ▪ Input from other county representatives ▪ NCDC and other internet research	▪ Significant impact on the county ▪ Federally declared disasters ▪ Potential for wildfires is high for the county ▪ Possible damage to homes and businesses	High
Severe Weather	▪ Input from Local Emergency Management ▪ Input from other county representatives ▪ NCDC and other internet research	▪ Significant impact on the county ▪ Possible damage to homes and businesses ▪ Straight line winds in 2008 cause more than $700K in damages in Tularosa ▪ High winds in 2004 in the Highway 70 area damaged a Primate Research Center ▪ Many hail storms ▪ Damage to homes and businesses ▪ Past storms in 2006-2007 and 2007-2008 with sustained freezing temps ▪ Heavy snow event in 1991 gave Alamogordo about 6 inches of snow	High
Dam Failure	▪ Input from Local Emergency Management ▪ Input from other county representatives	▪ Significant impact on the county ▪ Flood event in 2008 made the Bonito Dam and Rainbow Lake overflow	Low

Table 3-1 Hazard Identification Table

Hazard	How Identified	Why Identified	Priority
Drought	▪ Input from Local Emergency Management ▪ Input from other county representatives ▪ Internet research	▪ Significant impact on the county ▪ Parts of Otero County were in a severe stage of drought into 2009.	Medium
Extreme Heat	▪ Input from Local Emergency Management ▪ Input from other county representatives	▪ Although there are no declared disasters in Otero County for extreme heat, there are areas close to the county that have been declared as such.	Medium
Tornadoes	▪ Input from Local Emergency Management ▪ Input from other county representatives ▪ NCDC and other internet research	▪ Possible significant impact on the county ▪ Damages to homes and businesses ▪ In 1982, Otero County had an F2 tornado that caused more than $250K in damages	Medium
Earthquake	▪ Input from Local Emergency Management ▪ Input from other county representatives ▪ Internet research	▪ Although there are parts of New Mexico that are at high risk for an earthquake, Otero County's risk is relatively low ▪ It is possible that parts of Otero County would feel aftershock from the Rio Grande Rift earthquakes	Low

Due to its geographical location, Otero County is vulnerable to many hazards that have the potential to disrupt life and property. The county is vulnerable, at varying levels to the [inset # of state] hazards listed by the New Mexico State Hazard Mitigation Plan. Although the County is affected by many natural hazards, there are some that do not affect the region due to their location, soil profile and geologic structure. Data indicated that the county is not susceptible to avalanche, coastal storms or erosion, tsunami, hurricanes, and volcanic activity. These hazards will not be described in the plan. Some natural hazards have been grouped together for the purpose of hazard profiling in the risk assessment process.

3.2.2 Hazard Summary

The hazards that may impact Otero County are profiled below. Hazard profiles describe different hazard characteristics to provide information on the vulnerability of Otero County to a specific hazard as determined by type, location, extent, previous occurrence and probability of future occurrence. For hazards, such as flooding and landslides which would affect a specific geographic area in the county, the hazard profile includes a map identifying areas of the county where the hazard could occur.

3.2.2.1 Previous Occurrences

The county reviewed records of past disasters and internet articles describing hazard events to prepare the hazard profile found below. GIS maps were prepared that show floodplains and repetitive-loss structures, which demonstrate where flood events have been concentrated.

Note that the databases used contained very little information regarding sightings and damage reports. Table 3-2 provides a summary of the hazards that have recently impacted the county, including the date and location.

Table 3-2 Summary of Recent Hazard Events that have Occurred in Otero County

Hazard Event Date and Location	Description
Tornado May 27, 1982 Otero County	■ An F2 tornado ripped through the county, causing more than $250 K in damages.
Heavy Snow December 1991 Alamogordo	■ More than 6 inches of snow fell on Alamogordo, causing power outages and damages
High Wind Event July 27, 1995 Alamogordo	■ Dry microburst winds peeled roof sections off several large metal buildings ■ Gusts of 50 mph were measured at the nearby White Sands Regional Airport
Fire Mgmt. Assist. Declaration #2297 Wildfire May 11, 2000 Scott-Able Fire (Cloudcroft)	■ Two human lives lost ■ 16,500 acres burned ■ 64 homes lost (plus 16 outbuildings) ■ $2,800,000 in property losses. The cost of firefighting efforts is $3,545,000
Flash Flood June 1, 2000 Sacramento	■ A thunderstorm dropped heavy rain on an area scarred from a recent forest fire. ■ Mudslides, ash and debris covered roads and damaged some buildings around Sacramento. ■ Caused more than $50K in damages

Table 3-2 Summary of Recent Hazard Events that have Occurred in Otero County

Hazard Event Date and Location	Description
Fire Mgmt. Assist. Declaration #2364 Wildfire June 3, 2001 Trap & Skeet Fire (Mescalero)	■ 50 to 75 homes near Ruidoso evacuated ■ No loss of life or property. ■ 463 acres burned
Fire Mgmt. Assist. Declaration #2402 Wildfire May 1, 2002 Penasco Fire (Mayhill)	■ 16,000 acres consumed ■ Over 40 structure (including 17 homes) lost ■ Caused evacuation of Mayhill ■ Estimated $6,000,000 in damage.
High Wind July 2, 2002 Alamogordo	■ Thunderstorm outflow blew down billboards, power lines and trees and left at least one house without a roof. ■ Damages estimated at more than $25K
Fire Mgmt. Assist. Declaration #2467 Wildfire May 10, 2003 Walker Fire (Walker)	■ 3,434 acre consumed ■ Destroyed 3 residences and a 16 other structures ■ Two subdivisions were evacuated
Presidential Declaration DR# 1659 Severe Storm/Flood August 30, 2006 County-wide	■ Heavy rainfall along the western slopes of the southern Sacramento Mountains led to excessive runoff and major flooding in Alamogordo and Boles Acres. ■ Numerous roads throughout the area were closed, covered with water and debris. ■ There were also some rescues of people trapped in their homes. ■ A stationary thunderstorm dropped several inches of rain on Mayhill, with some residents and area ranchers reporting up to 5 inches in an hour. ■ This resulted in a wall of water 9 to 10 feet high down the Rio Penasco River. ■ Extensive flash flooding closed Highway 82 and damaged roads, bridges and homes.
Presidential Declaration DR# 1783 Severe Storm/Flood August 14, 2008 County Wide	■ Remnants of Hurricane Dolly fell over Otero County and caused extensive flooding ■ Individual assistance was more than$1.8 million

3.2.2.2 Probability of Occurrence

Table 3-3 Probability of Hazard Recurrence (Total Events – Minor and Major)

Hazard	N	N (Yrs)	T (once every __ yrs)	P	Source / Comments
Flood	22	59	2.68	0.37	NCDC
	3	10	3.33	0.33	FEMA – PDD, Major Events
Wildfires	2084	32	0.02	65.12	NM State Fire Management Officer
	4	9	2.25	0.44	FEMA – FMAD, Major Events
Severe Weather (High Winds)	Routine	150	Several, depending on location	>1	No data in proper form however, Figure 3-20 indicates special wind zones exist in higher elevations
Severe Weather (Thunderstorms)	33	59	1.79	0.56	NCDC
	3	10	3.33	0.33	FEMA – PDD, Major Event
Severe Weather (Lightning)	Routine	150	Several, depending on location	>1	No data in proper form however, Figure 3-7 identifies some locations greater than 4 flashes (striking ground) per square kilometer per year.
Severe Weather (Hail)	62	9	0.14	6.89	NCDC
Severe Weather (Winter Storm)	Several	150	At least once per year, severity depending on location	~1	No data in proper form however, data could be modeled from Figure 3-9 (10-20 days/year divided by 365 days in a year for P - 0.055. This is not accurate because winter storms are not defined this way).
Dam Failure	0	150	>>1	<<1	None Recorded

Table 3-3 Probability of Hazard Recurrence (Total Events – Minor and Major)

Hazard	N	N (Yrs)	T (once every __ yrs)	P	Source / Comments
Drought	20	59	2.95	0.33	NM Drought Plan – note each event lasted for more than one year, data here in normalized (counted total number of years in drought as n)
Extreme Heat	14	29	2.07	0.48	NM State HMP
Tornadoes	15	59	3.93	0.25	NCDC
	10	44	4.4	0.23	NWC, Albuquerque
Earthquakes	0	Recorded History (300 yrs)	500	$2x10^{-3}$	USGS estimates a 10% chance for a 5%g (PGA) quake in the next 50 years, data to left is based upon this projection alone

Key:

n = number of events
N = number of years in record
T = Recurrence Interval (T = N / n)
P = Probability (events per year, or average, P = 1/T)

3.2.2.3 Potential Impacts

Table 3-4 Estimated Percent of Otero County that Could Be Impacted By Non-Geographical Hazards at Any One Time

Hazard	Average Percentage Used in Calculating Community-Wide Loss Scenarios	Logic/Source
Flood	20.7	An average of all census tracts per HAZUS-MH, plus visual determination to adjust by sector (see Appendix C)
Wildfire	33.3	An average of places that have never had a fire, places that have had one fire and places that have had more than one fire, with each of those numbers built up as an average by category using census tract-based data per HAZUS-MH, plus visual determination to adjust by sector (see Appendix C)
Severe Weather (High Wind)	0.05	Visual determination using overlays and situational analysis (Section 3)

Table 3-4 Estimated Percent of Otero County that Could Be Impacted By Non-Geographical Hazards at Any One Time

Hazard	Average Percentage Used in Calculating Community-Wide Loss Scenarios	Logic/Source
Severe Weather (Thunderstorms)	26.9	Average of flood and wildfire
Severe Weather (Winter Storms)	0.1	Visual determination using overlays and situational analysis (Section 3)
Dam Failure	0.05	Visual determination using overlays and situational analysis (Section 3)
Drought	0.05	Visual determination using overlays and situational analysis (Section 3)
Extreme Heat	5.0	Visual determination using overlays and situational analysis (Section 3)
Tornadoes	3.0	Visual determination using overlays and situational analysis (Section 3)
Earthquakes	9.9	Visual determination using overlays and situational analysis (Section 3)

3.2.3 Hazard Profiles

3.2.3.1 Floods

Hazard Description

Flooding is the most frequent and costly natural hazard in the United States, and poses a significant hazard to Otero County. Floods are generally the result of excess precipitations and can be classified as general floods and flash foods. General floods occur when precipitations occurring over a given river basin for long periods of time. Flash floods are the product of heavy localized precipitation in a short period of time over a given location. Flooding events are typically determined by a combination of factors, including river or stream basin topography and physiographic, precipitation and weather patterns, soil moisture conditions and the degree of vegetation clearing and impervious surface.

Primary types of general flooding which impact Otero County include riverine, and urban flooding and flash flooding. Riverine flooding is a function of excessive precipitation levels and water runoff volumes within the watershed of a stream or river. Urban flooding occurs where manmade development obstructions the natural flow of water and decreases the ability of natural ground cover to absorb and retain surface water runoff. Most flash flood events are caused by slow-moving thunderstorms in a local area or by heavy rains associated with severe weather storms. Flash folding events may also occur from a dam or levee failure within minutes or hours of heavy amounts of rainfall, or from a sudden release of water held by a retention basin or other storm water control mechanism.

Periodic flooding of lands adjacent to rivers, streams and floodplains is a natural and inevitable occurrence that can be expected to take place based upon established recurrence intervals. The recurrence interval of a flood is defined as the average time interval, in years, expected between a flood event of a particular magnitude and an equal or larger flood. Flood magnitude increases within increasing recurrence intervals, and floodplains are designated by the frequency of the flood that is large enough to cover them.

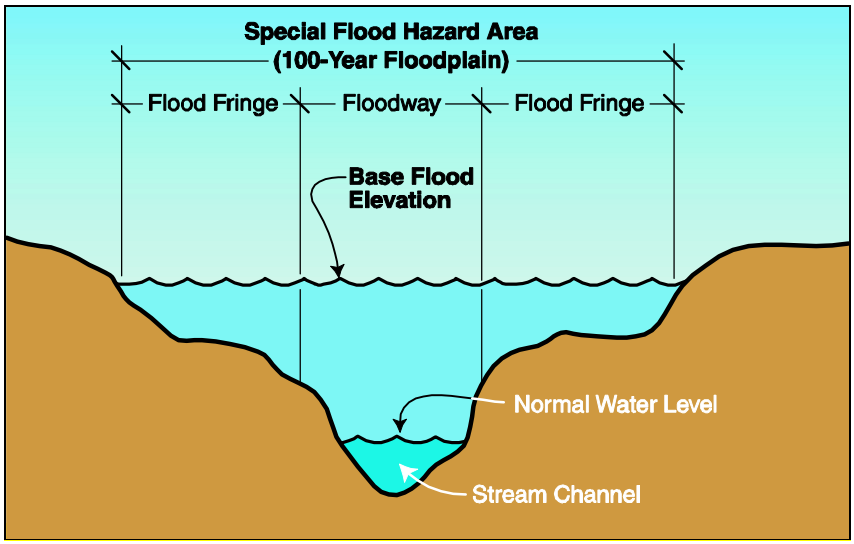


Figure 3-1 Flood Definition

Location and Extent

Historically, floods are and continue to be a significant hazard for the State of New Mexico, with alluvial fan flood hazards and flash floods resulting from rapid snow met contributing to hazard extent. Otero County is especially susceptible to flash flooding along mountain streams in the eastern portions of the County, with flooding in adjacent urbanized areas where the ground is covered by impervious surfaces. During the summer (May through August), thunderstorm frequency in certain parts of New Mexico is among the highest in the nation. Excessive moisture during the summer can lead to large volume runoffs enhanced by the terrain. Flash floods experienced in Otero are often associated with the summer monsoon season. Approximately 60% of all flash floods in the state occur in July and August. The monsoon season generally dissipates in the northern part of the state in early September. Otero county has significant moderate to high risk floodplain areas with upwards of 26% chance of flooding over a 100-year period.

One hundred-sixteen (116) NFIP policies were in force in Otero County at the beginning of 2009, for a total flood insurance coverage of more than $27 million (Table 3-5). Nearly $130,000 has been paid out in Otero County for flood damage since the establishment of the NFIP in 1978. At present, there are no identified repetitive-loss properties in Otero County.

Table 3-5 National Flood Insurance Program Statistics

NFIP Flood Insurance Statistics for Otero County (1/1/78-06/30/09)	
Policies in-force	116
Insurance in-force	$27,269,200
Premiums in-force	$50,730
Total losses	8

Table 3-5 National Flood Insurance Program Statistics

NFIP Flood Insurance Statistics for Otero County (1/1/78-06/30/09)	
Total payments	$129,481

Currently (as of the summer of 2009), Flood Insurance Rate Maps (FIRM) are under revision

The intensity of flash flooding is a function of the intensity and duration of rainfall, steepness of the watershed, stream gradients, watershed vegetation, natural and artificial flood storage areas, and configuration of the streambed and floodplain. Dam failure and ice jams may also lead to flash flooding. Urban areas are increasingly subject to flash flooding due to the removal of vegetation, replacement of ground cover with impermeable surfaces, and construction of drainage systems. Local drainage floods may occur outside of recognized drainage channels or delineated floodplains from a combination of locally heavy precipitation, a lack of infiltration, inadequate facilities for drainage and storm water conveyance, and increased surface runoff.

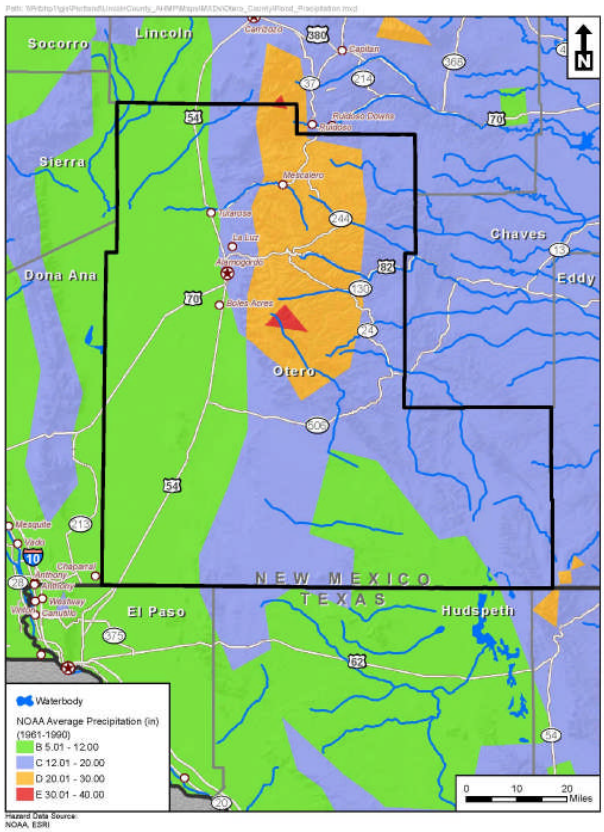


Figure 3-2 Potential Flood Impact Areas and Precipitation

Historical Occurrence

Information from the National Climatic Data Center (NCDC) indicated that 22 flood events were reported in Otero County between January 1950 and February 2009. The total property damages associated with these events were estimated at $3.12 million, no deaths and no injuries. Of these 22 occurrences, 3 were flood events and the remaining 19 events were flash floods. Notable flood events need particular mention because of the damages associated with them include the following:

July 2008
Remnants of Hurricane Dolly resulted in sufficient flooding in the final week of July 2008 that a Presidential disaster declaration (FEMA-1783-DR) was issued on August 14th. Rainfall, up to 2 inches, fell in early July (prior to the arrival of Dolly) initiating flooding on the South Tularosa fire burn scar above Mescalero. Logs washed on to Route 10, and much debris blocked residences. A fish hatchery was destroyed, killing all the fish. Losses from this event totaled more than $200,000. Later in July, moisture associated with the remnants of Hurricane Dolly resulted in very heavy rain over the South Tularosa canyon fire burn scar. Flood waters over-topped containment ponds, leading to a widespread flash flood event. Parts of U.S. 70 were closed, the road to the Mescalero Fire Station was washed out, and numerous secondary roads were closed because of high water. Two dams failed at Mud Canyon. Several buildings were affected by the flood waters. Losses from this event totaled more than $100,000. In 2008, flash and river floods claimed 82 lives. The 2008 flood casualty total is above the 10-year average of 74 deaths but below the 30 year average of 99 fatalities. Of the 82 deaths, 40 (49%) were caught in a vehicle other than a boat and 22 (27%) were swept away by flood waters. Missouri had the most victims, 12, closely followed by Indiana with 11 deaths.

July-September 2006
Severe storms and flooding between July 26 and September 18, 2006 led to a Presidential disaster declaration (FEMA-1659-DR, issued August 30, 2006). In what was determined to be a 500-year event, strong thunderstorms developed over the southern Sacramento Mountains and along the eastern heights of Alamogordo. One storm in particular dropped about 1.5 inches of rain in 40 minutes over Marble Canyon, which drains into eastern Alamogordo. Roads along the eastern heights turned into raging torrents, which flowed westward into the center of town. Nineteen counties were declared eligible for public assistance funds and Doña Ana and Otero counties were declared eligible for individual assistance. Federal funding for this disaster exceeded $20 million.

The National Climate Data Center (NCDC) records that Otero County has experienced 27 flood events between 1950 and 2010. The total flood events have result-

ed in property damage to the County of $3.35 million dollars, of these flood events, 13 have resulted in property damages in excess of $25,000. No deaths or injuries were reported by NCDC. The 13 flood events with damages greater than $25,000 are summarized below in Table 3-6.

Table 3-6 Flood Events in Otero County, New Mexico Resulting in Property Damage in Excess of $25,000, 1950-2010

Location or County	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
4 Sacramento	06/01/2000	10:00 AM	Flash Flood	N/A	0	0	50K	0
7 Northeast Portion	09/12/2002	04:45 PM	Flash Flood	N/A	0	0	40K	0
9 Alamogordo	06/22/2006	03:45 PM	Flash Flood	N/A	0	0	1.3M	0
10 East Portion	08/01/2006	09:30 AM	Flash Flood	N/A	0	0	400K	0
11 Boles	08/04/2006	04:30 PM	Flash Flood	N/A	0	0	50K	0
12 Central Portion	08/06/2006	01:20 PM	Flash Flood	N/A	0	0	50K	0
13 Mayhill	08/13/2006	11:00 AM	Flash Flood	N/A	0	0	300K	0
16 Alamogordo	08/16/2006	06:35 PM	Flash Flood	N/A	0	0	600K	0
20 Mayhill	07/09/2008	10:00 AM	Flash Flood	N/A	0	0	20K	0K
21 Mescalero	07/17/2008	13:18 PM	Flash Flood	N/A	0	0	200K	0K
22 Mescalero	07/27/2008	08:00 AM	Flash Flood	N/A	0	0	100K	0K
23 Wooten	06/23/2009	11:05 AM	Flash Flood	N/A	0	0	200K	0K
25 Three Rivers	07/05/2009	18:05 PM	Flood	N/A	0	0	25K	0K
				TOTALS:	0	0	3.350M	0

Source: NOAA/NCDC

Probability of Occurrence

The probability of occurrence, shown in Table 3-7, is expressed as the percentage chance that a flood of a specific extent will occur in any given year. Alluvial fans and alluvial fan flood hazards do exist in the state. Alluvial fan flood hazard characteristics include heavy sediment/debris loads and high velocity flows. Flash floods are usually the result of excessive precipitation or rapid snowmelt and can occur suddenly and occur the most frequently in Otero County. Flash floods frequently occur on alluvial fans with devastating results. The combination of rapidly rising floodwater, high velocities, and heavy sediment/debris loads contributed to the damage in Alamogordo in 2006.

Table 3-7 Flood Hazard Probability

Hazard	n	N	T	P	Source/Comments
Flood	22	59	2.68	0.37	NCDC
	3	10	3.33	0.33	FEMA – PDD, Major Events
KEY	n = number of events	N = number of years in record	T = Recurrence Interval (T = N/n)	P = Probability (P=1/T)	

3.2.3.2 Dam Failure

Hazard Description

Another flood hazard that can affect parts of Otero County is dam failure. A dam impounds water in an upstream area or reservoir. The amount of water impounded is measured in acre-feet (i.e., the volume of water that covers an acre of land to a depth of 1 foot). Any malfunction or abnormality outside the design assumptions and parameters that adversely affects a dam's primary function is considered a dam failure. A catastrophic dam failure is characterized by a sudden, rapid, and uncontrolled release of impounded water. The sudden release of water may result in downstream flooding affecting life, property, or both. Flooding, earthquakes, blockages, landslides, lack of maintenance, improper operation, poor construction, vandalism, or acts of terrorism can cause dam failures. The sudden release of the impounded water can occur during a flood that overtops or damages a dam, or it can occur on a clear day if the dam has not been properly constructed or maintained. The threat of a dam failure increases as existing dams get older.

Many dams have been built as retention basins and amenity ponds in new developments. Many small dams are on streams or drainages that are not mapped as floodplains or subject to floodplain regulations. Even when the stream is mapped, the floodplain is usually not based on a dam-breach inundation map, leaving downstream residents unaware of the potential dangers.

The Office of the State Engineer, Dam Safety Bureau regulates the design, construction, reconstruction, modification, removal, abandonment, inspection, operation, and maintenance of dams more than 10 feet high or dams that store more than 10 acre-feet of water. Federal dam owners are required to obtain a permit for a new dam; however, the Office of the State Engineer by law does regulate the continued safety of federal dams. Dams 10 feet or less in height or dams that store 10 acre-feet or less generally are not regulated and are considered nonjurisdictional dams. However, if a nonjurisdictional 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.

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, such as critical transportation systems and utilities. The Dam Hazard Potential Classification definitions are shown in Table 3-8.

Table 3-8 Dam Hazard Potential Classifications

Category	Loss of Life	State Ranking
Low	None Expected	Low economic or environmental losses. Losses principally limited to dam owner's property
Significant	None Expected	Economic loss, environmental damage and disruption of lifeline facilities. Predominantly located in rural areas
High	Expected	Based only on loss of life

In 2005, the Office of the State Engineer adopted new regulations for dams. The regulations address the requirements for design and construction of new dams, modifications, or alterations to existing dams and the continued safe operation and maintenance of existing dams.

A new requirement for owners of dams that are classified as having a high or significant hazard potential is preparation, maintenance, and exercise of an emergency action plan (EAP). An EAP identifies defensive action to prevent or minimize property damage, injury, or loss of life due to an emergency at the dam. Dam owners who have not developed EAPs will need assistance in fulfilling this new requirement.

The development of EAPs is addressed in the Mitigation Strategies as an action item. Each EAP has an inundation map based on modeling the dam failure under various operating conditions and an evacuation map that has been prepared from the inundation map. There is no state map showing all inundation zones.

Location and Extent

Of the 495 dams in the state, 395 dams come under the jurisdiction of the Office of the State Engineer, Dam Safety Bureau. Of these, 178 dams are classified as having a high hazard potential and 88 dams are classified as having a significant hazard potential. The remaining 100 dams are under federal jurisdiction, including the Bureau of Indian Affairs (BIA), the Bureau of Reclamations, and the U.S. Army Corps of Engineers (USACE). There are 17 dams located in Otero County, according to the New Mexico State Office of Homeland Security and Emergency Management.

Since 2005, the Dam Safety Bureau has been using the new dam safety regulations to assess whether dams are deficient. As of spring 2007, the Dam Safety Bureau identified 63 deficient dams classified as having a high hazard potential and 23 deficient dams classified as having a significant hazard potential.

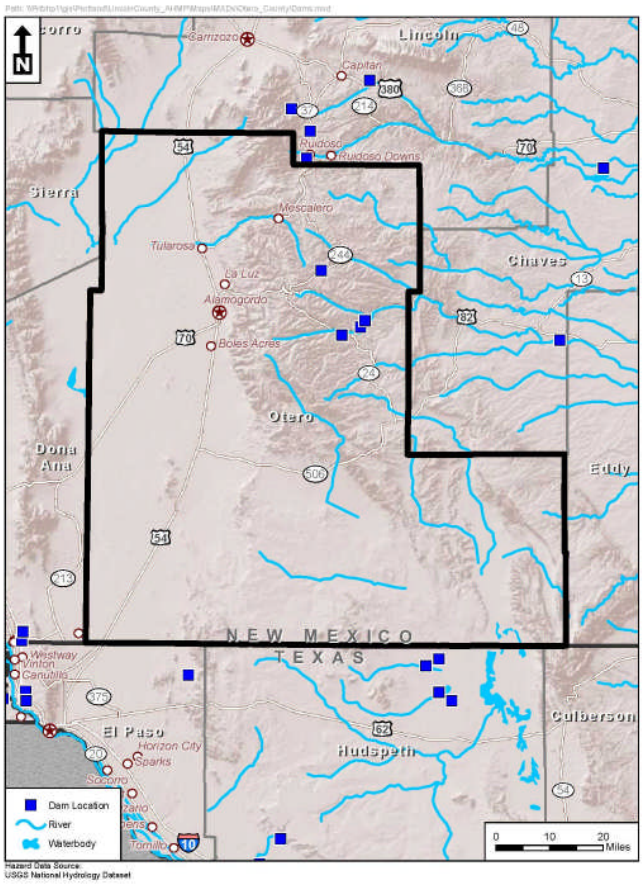


Figure 3-3 Dams in Otero County

Historical Occurrence

There have been no recorded Dam Failure events in Otero County.

Probability of Occurrence

The probability of a Dam Failure event in Otero County is less than one percent. However, due to the presence of dam facilities in the County it was deemed appropriate for inclusion in this plan.

Table 3-9 Dam Failure Hazard Probability

Hazard	n	N	T	P	Source/Comments
Flood	0	150	>>1	<<1	None Recorded
KEY	n = number of events	N = number of years in record	T = Recurrence Interval (T = N/n)	P = Probability (P=1/T)	

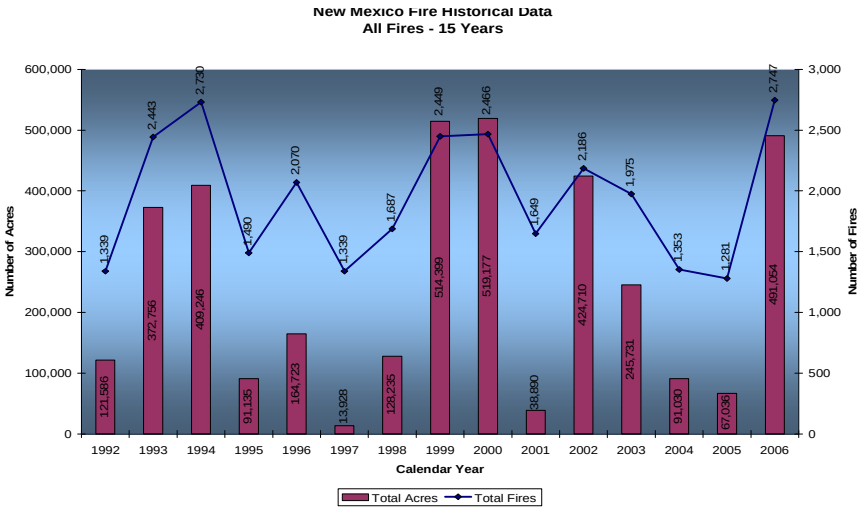
3.2.3.3 Wildfires

Description of Hazard

A wildfire is any fire occurring in a wildland area (e.g. grassland, forest, brush land) except for fire under prescription and mitigation. Wildfires are part of the natural management of forest ecosystems, but may also be caused by human factors. According to the National Fire Protection Association (NFPA) over 80% of forest fires are started as a result of negligent human behavior such as smoking in wooded areas or improper extinguishing of campfires. Lightning is the second most common cause for wildfire.

There are three classes of wildland fires: surface fires, ground forest, and crown fires. A surface fire is the most common of these three classes and burns along the floor of a forest, moving slowly and killing or damaging trees. A ground fire (muck fire) is usually started by lightning or human carelessness and burns on or below the forest floor. Crown fires spread rapidly by wind and move quickly by jumping along the tops of trees.

Wildfires are capable of causing significant injury, death, and damage to property. The potential for property damage from fire increases each year as more recreational properties are developed on forested land and more people use these areas. Fires can extensively affect the economy of an area, especially the logging, recreation, and tourism industries, upon which many counties depend. Major direct costs associated with wildfires are the salvage and removal of downed timber and debris and restoration of the burned area. The indirect effects of wildfires can also be catastrophic. In addition to stripping the land of vegetation and destroying forest resources, large, intense fires can harm the soil, waterways and the land itself. Soil exposed to intense heat may lose its ability to absorb moisture and support life. If burned out woodlands and grasslands are not replanted quickly, widespread soil erosion, mudflows, and siltation of rivers could result, thereby enhancing flood potential, harming aquatic life, and degrading water quality. Lands stripped of vegetation by wildfires are also subject to increased landslide hazards. The only natural cause of wildfire is lightning; however, human carelessness and arson account for a large portion of all wildfires.



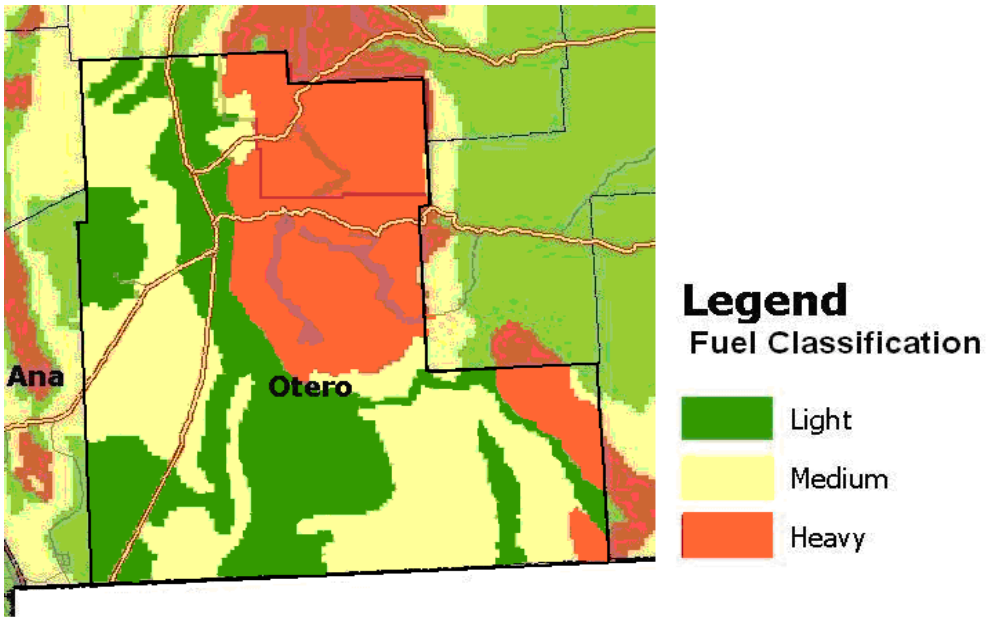
Source: NM State Fire Management Officer

Figure 3-4 New Mexico Fire History

Location and Extent

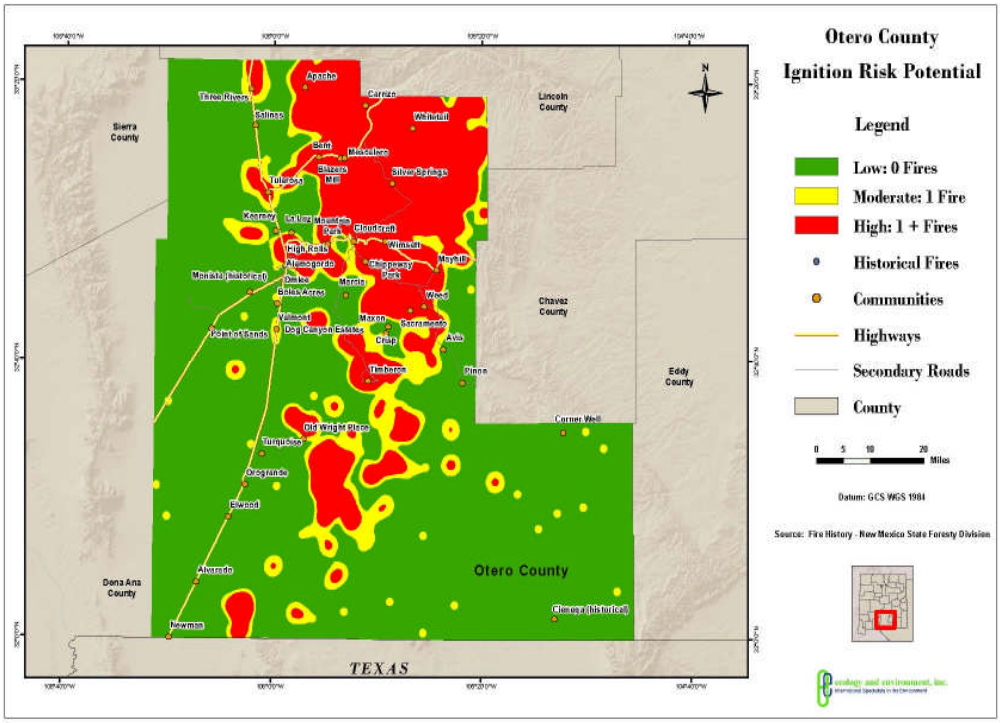
Wildfire poses a major risk for New Mexico each year. The state experiences, on average, 1,947 wildland fires each year that burn an average 126.5 acres apiece (246 thousand acres per year). Figure 3-4 illustrates historical fire data for the state of New Mexico from 1992 to 2006.

Forest brush and grass fires pose the greatest fire danger threat throughout New Mexico and Otero County. The potential for wildland fires is increased during times of the year with dry conditions, with a peak fire season in Otero County from March through June. Otero County is susceptible to wildfires in undeveloped, grassland areas prone to wildfires. Generally, fires are more likely when vegetation is dry from a winter with little snow and/or a spring and summer with sparse rainfall.



Source: New Mexico Resource Geographic Information System Program, http://rgis.unm.edu/intro.cfm

Figure 3-5 Potential Wildfire Hazard Areas



Source: Univ. of Wisconsin, Madison SILVIS Lab http://www.silvis.forest.wisc.edu/projects/WUI_Main.asp

Figure 3-6 Potential Wildfire Hazard Areas

Historical Occurrences

Wildfire history (Table 3-10) in Otero County was based on the number of wildfire that the Bureau of Indian Affairs, Bureau of Land Management, and New Mexico State Forestry Division responded to for the years 1975 through 2007. During this 33-year period there were 2,084 fires that burned approximately 291,956 acres. On average there were 63 wildfires per year with 8,847 acres burned per year. Approximately 59 percent of all wildfires in Otero County burn less than 0.25 acres, while less than 1 percent of all fires burn over 5,000 acres regardless of ignition source. Lightning caused 32 percent of wildfires while 68 percent were human-caused. Human-caused fire is significant because these fires usually occur within the WUI and pose significant risks to social, economical, and ecological values. Even though the vast majority of wildfires in Otero County are suppressed before they burn large areas, wildfire risk to communities and structures is considerable given the number of annual fires that occur.

Table 3-10 Otero County Wildfire History (1975-2007)

Fire Size Class (Acres)	Burned Acres	Number of Fires	Fire Ignition Source	
			Lightning	Human
A 0 – 0.25	166	1227	364	863
B 0.26 – 9.9	1376	677	235	442
C 10 – 99.9	3363	102	45	57
D 100 – 299.9	3912	24	10	14
E 300 – 999.9	6605	13	5	8
F 1,000 – 4,999.9	79953	24	6	18
G 5,000 – 9,999.9	196581	17	5	12
Total	291956	2084	670	1414

According to FEMA, four wildfires Fire Management Assistance Declarations in Otero County resulting in more than $9 million dollars in damage and fire :

- #2297 on May 11, 2000 (the Scott-Able Fire),
- #2364 on June 3, 2001 (the Trap & Skeet Fire),
- #2402 on May 1, 2002 (the Penasco Fire), and
- #2467 on May 10, 2003 (the Walker Fire).

The Scott Able Fire was started by high winds knocking down a live electrical wire near the Scott Able 4-H Campgrounds at about 3:30PM on May 11th. Most of the homes lost in the blaze (64) were destroyed in the first hours of the fire while focus was on evacuation of personnel. High winds kept slurry planes on the ground for much of the life of the fire and slowed firefighting efforts. Total losses included two human lives, 16,500 acres burned, 64 homes lost (plus 16 outbuildings), one bus, one boat, and 11 motorized vehicles. The estimated loss due to the fire is $2,800,000. The cost of firefighting efforts is $3,545,000.

The 463 acre Trap & Skeet Fire started under suspicious circumstances on the Mescalero Reservation and ultimately caused the evacuation of 50 to 75 homes

near Ruidoso. When contained on June 6, 2001, there was no loss of life or property.

After 8 days, the Penasco Fire had consumed almost 16,000 acres, resulted in the loss of over 40 structure (including 17 homes), resulted in the evacuation of the residents of Mayhill and caused an estimated $6,000,000 damage.

The Walker Fire was a 3,434 acre fire located 14 miles northeast of Cloudcroft that ultimately destroyed 3 residences and a 16 other structures. The Walker Fire started on May 9 and was completely contained by May 14th. Two Otero County subdivisions were evacuated during the course of the fire.

Factors that determine the potential for fire include relative humidity, moisture content of the fuel, atmospheric stability, drought, available energy of the fuel, probability of ignition, rate of spread, and the slope and fuel levels of the area. These factors are taken into account when determining the fire danger for a specific area.

The threat of wildland/urban interface fires continues to be the top natural hazard facing the state (see Figure 3-5). The annual probability of a large fire event is 100%. There are literally hundreds of communities that are embedded in the forest, are surrounded by the forest, or have their major routes of egress surrounded by forest. The U.S. Forest Service estimates that approximately 942 thousand acres are in the New Mexican wildland/urban interface (WUI). With drought conditions persisting and more and more people locating their residences in the forest, it seems inevitable that more areas will become susceptible, more fires will occur, and that some of them will have dire consequences.

Probability of Occurrence

Given the vast amount of undeveloped land, the probability of future wildfires occurring in Otero County is certain. Based on past fire reporting, some areas in Otero County are particularly prone to interface fires in the mountain communities as illustrated in Figures 3-5 and 3-6. Ignition risk potential (IRP) is the potential for either lightning or human-caused fire to start and is defined as the number of wildfires per 1,000 acres per 10 years. High fire ignition risk mainly occurs in the northeast and central parts of the county. The IRP varies throughout Otero County. The low class is the most common while the moderate class is the least common.

Lightning is suspected to have started the May 2004 Pippin wildfire in the Capitan Mountains about 15 miles northeast of Otero, which had consumed nearly 48,000 acres by the end of the month and destroyed about 15 historic cabins dating back to about1920. The Lookout wildfire flared from an improperly extinguished campfire in the Gallinas Mountains just west of Corona. This 5,500-acre

wildfire claimed a ranch headquarters and mountain top communications facilities before it was contained. Total damage was $600,000.

Table 3-11 Wildfire Hazard Probability

Hazard	n	N	T	P	Source/Comments
Wildfire	2084	32	0.02	65.12	NM State Fire Management Officer
	4	9	2.25	0.44	FEMA – FMAD, Major Events
KEY	n = number of events	N = number of years in record	T = Recurrence Interval (T = N/n)	P = Probability (P=1/T)	

3.2.3.4 Severe Weather

Severe weather such as windstorms, thunderstorms and winter storms are primarily threatens human life and safety. Livestock, agricultural crops and livestock, and occasional threat of property and infrastructure are also impacted by severe weather.

3.2.3.4.1 Windstorms

Description of Hazard

Extreme wind is commonly associated with severe thunderstorm winds that exceed over 58 miles per hour (mph), tornadoes, winter storms, hurricanes, tropical storms, and nor'easters. Extreme winds, often referred as windstorms, can also occur with the absence of these definable hazards, and occur suddenly without warning.

Although various scales can be used to measure the effects of wind, the Beaufort Wind Scale is specifically adapted to wind effects on land. Table 3-12 summarizes the correlation of wind speed with visible effects of the wind speed (land conditions) and how these correspond to the Beaufort Scale. Otero County has experienced all 12 categories listed below.

Table 3-12 Beaufort Scale

Beaufort Number	Wind Speed (mph)	Description	Land Conditions
0	0	Calm	Calm. Smoke rises vertically.
1	1-3	Light air	Wind motion visible in smoke.
2	4-7	Light breeze	Wind felt on exposed skin. Leaves rustle.
3	8-12	Gentle breeze	Leaves and smaller twigs in constant motion.
4	13-18	Moderate breeze	Dust and loose paper rises. Small branches begin to move.
5	19-24	Fresh breeze	Smaller trees sway.
6	25-31	Strong breeze	Large branches in motion. Whistling heard in overhead wires. Umbrella use becomes difficult.
7	32-38	Near gale	Whole trees in motion. Effort needed to walk against the wind.
8	39-46	Gale	Twigs broken from trees. Cars veer on road.
9	47-54	Strong gale	Light structure damage.
10	55-63	Storm	Trees uprooted. Considerable structural damage.
11	64-73	Violent storm	Widespread structural damage.
12	73-95	Hurricane	Considerable and widespread damage to structures.

Windstorms are defined here as both high-velocity straight-line winds and violent wind gusts not associated with thunderstorms. Dust storms are strong windstorms

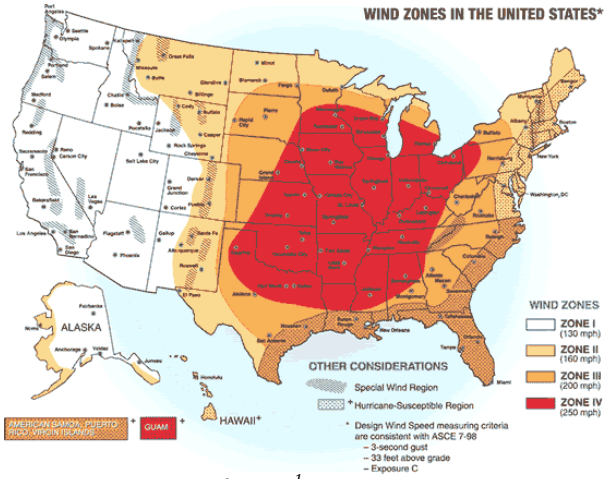
that fill the air with thick dust, sometimes reducing visibility to resemble a dense fog. Other wind events include wet or dry microbursts that may produce damaging convective winds and dust devils, even on a clear and otherwise calm day. Table 3-13 illustrates the scales, severity and typical effects of various wind speed for extreme wind events.

Table 3-13 Severity and Typical Effects of Various Wind Speeds

Maximum Wind Speeds (mph)	Equivalent Fujita Scale (Tornadoes)*	Severity	Typical Effects
40-72	F0	MINIMAL	Some damage to chimneys; breaks twigs and branches off trees; pushes over shallow-rooted trees; damages sign boards; some windows broken.
73-112	F1	MODERATE	Peels surfaces off roofs; mobile homes push off foundations or overturned; outbuildings demolished; moving autos pushed off the roads; trees snapped or broken.
113-157	F3	CONSIDERABLE	Roofs torn off frame houses; mobile homes demolished; frame houses with weak foundations lifted and moved; boxcars pushed over; large trees snapped or uprooted; light object missiles generated.
158-206	F4	SEVERE	Roofs and some walls torn off well-constructed houses; trains overturned; most trees in forests uprooted; heavy cars lifted off the ground and thrown; weak pavement blown off roads.
207-260	F4	DEVASTATING	Well constructed homes destroyed; structures with weak foundations blown off some distance; cars thrown and disintegrated; large missiles generated; trees uprooted and carried some distance away.
261-318	F5	INCREDIBLE	Strong frame houses lifted off foundations and carried considerable distance to disintegrate; automobile-size missiles fly through the air in excess of 300 feet; trees debarked; incredible phenomena will occur.
319+	N/A	INCONCEIVABLE	The maximum wind speeds of tornadoes are not expected to reach this level.
Source: National Oceanic and Atmospheric Administration(NOAA) Note: The Fujita Scare are described further in the Tornado Section			

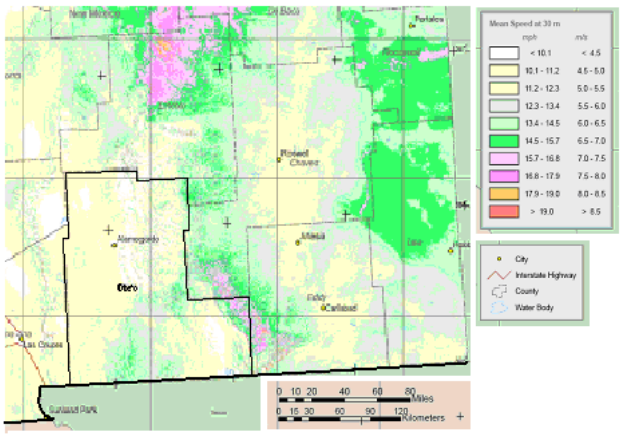
Location and Extent

Extreme wind events are experienced in every region of the United States, as illustrated in figure 3-7. The county is divided into four wind zones, representing frequency and magnitude of potential extreme wind events (severe thunderstorms, tornadoes and hurricanes). This figure shows that New Mexico are in Zones I-III with severe wind events between 130-200 mph. Eastern portions of the state, where Otero County is located is within Zones II and III and are susceptible to wind speeds of 200 mph. The majority of windstorms in the region occur in June and July with many spring and fall events associated with dry microbursts, small concentrated downbursts of damaging winds at the surfaces with maximum wind speeds up to 168 mph.



Source: Federal Emergency Mangement Agency[1]

Figure 3-7 Wind Zones in the United States



Source:
http://www.awstruewind.com/inner/windmaps/maps/NorthAmerica/UnitedStates/NewMexico/NM_SPD30m.pdf

Figure 3-8 Average Wind Speeds in New Mexico

[1] http://www.fema.gov/plan/prevent/saferoom/tsfs02_wind_zones.shtm

In the months of March, April, and May, Otero County experiences a large number of events during the windy season. Two additional types of severe wind events which occur in the region is the gap wind and spillover wind phenomenon. Gap or canyon wind occurs as the wind rushes over mountain passes, "gaps," in the ridgeline of a mountain chain. Wind speeds are generally strongest at narrow canyon openings. Spillover wind occurs when cold air to the east of the mountains has a sufficient depth (approximately 10,000 feet above sea level) to overtop the Sandia and Manzano Mountain ranges and spill over to the west, typically down slope toward the Albuquerque metropolitan area. As a consequence of severe wind, large-scale dust storms occasionally occur in the White Sands region of New Mexico, in the northeastern portions of the County. During the windy season thre are frequent dust storms occurring over the Tularosa Basin and White Sands National Monument with wind averaging 25 to 45 mph and occasionally gusting to 60 to 70 mph. Approximately three weeks a year the visibility is greatly reduced, often to six miles or less, due to blowing dust. Major dust events can transport mineral aerosols (dust) for long distances, obscuring vision for motorists and causing breathing problems for people with respiratory difficulties.

All areas of Otero County are susceptible to damaging high winds, especially in the spring, but extremely high-velocity wind over a prolonged period is rare. Microburst wind damage is more common since it is often associated with powerful downdrafts originating from thunderstorms. Such events can result in downed power lines, roof damage, trees being blown down, and difficulty in controlling vehicles on the highways. Certain eastern areas of the County are subject to hazardous dust storms when high winds blow over terrain that is relatively devoid of vegetation. Localized dust storms can arise unexpectedly when high winds pick up dust and debris from construction sites.

Historical Occurrences

Otero County has experienced numerous types of damaging wind storm events in the past, which have included severe thunderstorms. According to the National Climatic Data Center (NCDC), 38 recorded high wind events have affected Otero County since 1957 (data includes thunderstorm and high wind speed events). Some notable events occurring in Otero County as recorded by NCDC, are described in the following paragraphs.

March, 1977
A large dust storm was reported in March 1977 that originated in the White Sands area. Dust from White Sands was visible on the geostationary operational environmental satellite (GOES) imagery. It formed a plume more than 250 miles long and blew eastward through Roswell, across eastern New Mexico to Clovis and then into the Texas Panhandle, where it eventually dissipated.

July 27, 1995
"Dry microburst winds peeled roof sections off several large metal buildings. Gusts of 50 mph were measured at the nearby White Sands Regional Airport. No thunder or rain was reported." This event caused approximately $30,000 in property damages.

April 9, 1999
A major dust storm event occurred in the White Sands area on April 9, 1999, when large clouds of milky white dust were observed overtopping the nearby Sacramento Mountains and blowing to the northeast. The dust storm started quickly and lasted for more than 8 hours, with visibilities reduced to as low as 1.5 miles and winds gusting to at least 38 knots (44 mph). The National Oceanic and Atmospheric Administration (NOAA) wind data from White Sands National Monument indicated winds at approximately 10,000 feet above ground level in excess of 50 knots. Reduced visibility continued long after the active production of blowing dust ended.

Probability of Occurrence

Windstorm events will remain a very frequent occurrence in Otero County. Based on the geographic location and the frequency of past events, probability of future occurrences in Otero County is high. Significant portions of southern Otero County are susceptible to a wide variety of recurring events that cause extreme wind conditions. Figure 3-8 shows average wind speeds in Otero County.

3.2.3.4.2 Thunderstorms

Description of Hazard

The National Weather Service (NWS) defines a thunderstorm as "severe" if it produces any of the following: downbursts with winds of 58 miles (50 knots) per hour or more (often with gusts of 74 miles per hour or more); hail 0.75 of an inch in diameter or more; or a tornado. Typical thunderstorms can be 3 miles wide at the base, rise to 40,000 to 60,000 feet into the troposphere, and contain half a million tons of condensed water. Severe thunderstorms are reported each year in all New Mexico counties including Otero County which experiences high wind hazard effects. Frequent lightning and hail usually occurs during severe thunderstorms, which also produce flash flooding, and strong winds, with the potential of tornadoes in Otero County.

Lightning is defined as a sudden and violent discharge of electricity, usually from within a thunderstorm, due to a difference in electrical charges. Lightning is a flow of electrical current from cloud to cloud or cloud to ground. Nationwide, lightning causes extensive damage to buildings and structures kills or injures people and livestock, starts forest and wildfires, and disrupts electromagnetic transmissions. Lightning is extremely dangerous during dry lightning storms because

people often remain outside rather than taking shelter. Lightning-caused damage, injuries, and deaths establish lightning as a significant hazard associated with any thunderstorm.

Hail are frozen water droplets formed inside a thunderstorm cloud during the strong updrafts of warm air and downdrafts of cold air, when the water droplets are carried well above the freezing level to temperatures below 32°F; the frozen droplet begins to fall, carried by cold downdrafts, and may begin to thaw as it moves into warmer air toward the bottom of the thunderstorm. This movement up and down inside the cloud through cold then warmer temperatures causes the droplet to add layers of ice, sometimes becoming quite large, sometimes round or oval shaped and sometimes irregularly shaped, before it finally falls to the ground as hail. The hail size ranges from smaller than a pea to as large as a softball and can be very destructive to buildings, vehicles, and crops. Even small hail can cause significant damage to young and tender plants. Hail usually lasts an average of 10 to 20 minutes but may last much longer in some storms. Hail causes $1 billion in damage to crops and property each year in the U.S.

Location and Extent

In Otero County, thunderstorms tend to be more organized, long-lived, and occasionally severe, producing large hail, high winds, and tornadoes. New Mexico ranks sixth in the nation in lightning fatalities with 0.55 deaths per million people annually. According to the National Severe Storms Laboratory, New Mexico had 88 lightning related fatalities between 1959 and 2003. Recent storms monitored by the New Mexico Institute of Mining and Technology (NMT) produced between 65 and 1,062 lightning flashes per minute. Additionally, lightning strikes the ground or objects on average once for every five to ten cloud flashes. While the entire state is at risk for lightning events, some areas of the state have higher concentrations of these events Figure 3-9 shows areas of lightning density in the state.

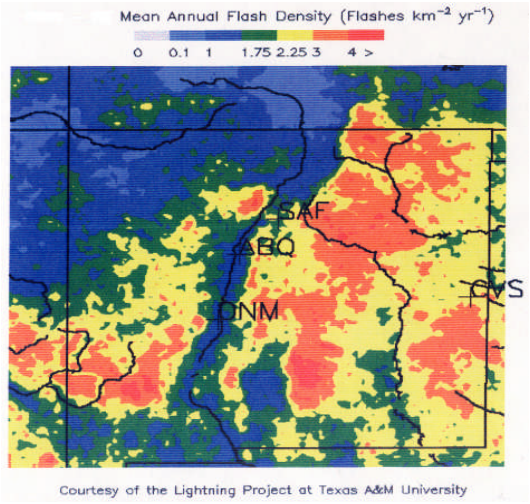


Figure 3-9 Lightning Density

The frequency and character of cloud-to-ground lightning is categorized on a scale of 1 to 6 by NOAA, with increasing intensity. Otero County consistently experiences storms rating 5 or higher, experiencing towering cumulus and thunderstorms which obscure the sky with frequent and intense lightning.

The entire state of New Mexico is susceptible to hail during severe thunderstorm events. Mountainous areas within Otero County usually experience storms less severe and produce smaller hail while flatter plains of the County experience increasing severity in storms and production of hail. In the plains and over the desert, monsoon thunderstorms sometimes reach severe levels and can produce large hail. Hail as large as 3.0 inches has been reported in Otero County, but the county should expect to have hail the sizes of the entire TORRO range.

Historical Occurrences

Thunderstorm frequency is measured in terms of incidence of thunderstorm days or days on which thunderstorms are observed. The NCDC reports 33 thunderstorm events since January 1950 causing no deaths, four injuries, $420,000 in property damage, and $10,000 in crop damages. Between 1993 and 2010, NCDC reported 67 lightning storm incidents which has cause 11 deaths, 46 injuries, and over $712,000 in property damage in Otero County. According to NCDC, Otero County had 67 reported hail events between January 1, 1959 and May, 27, 2010, totaling $2.5 million in property and $20,000 in crop damages. One hail storm caused a death. Some notable events occurring in Otero County as recorded by NCDC, are described in the following paragraphs

September 1994
The NCDC reports one lightning event in Otero County in September 1994, which caused the death of a 19 year-old male exiting his vehicle in Alamogordo.

May 2008
According to the NCDC, in May 2008 in Otero County, a wet microburst estimated at 80 mph destroyed a double-wide mobile home, flipped several others, unroofed a few homes, and blew down several trees, power poles, and power lines. A high precipitation supercell split over the Holloman air Force base (AFB) area, with the left-moving cell tracking northeastward into Tularosa and the right-moving cell eastward into Alamogordo. Hail up to tennis ball size (but mostly half-dollar size) accumulated to a depth of nearly 3 inches in Tularosa accompanied by a wet microburst with wind gusts estimated at 80 mph. The other cell produced golf ball to lime size hail in Alamogordo, though with much less intensity than the Tularosa cell. Estimated damages from this thunderstorm event were calculated at $360,000.

May 2008
In May 2008 in Tularosa, quarter to golf-ball sized hails, with occasional hail stones the size of tennis balls, accumulated to about 3 inches. The hail was driven

by wind gusts up to 80 mph, and broke windows, damaged roofs and sidings to more than 500 homes in Tularosa. A high precipitation supercell split over the Holloman AFB area, with the left moving cell tracking northeastward into Tularosa and the right moving cell eastward into Alamogordo. Hail up to tennis ball size (but mostly half-dollar size) accumulated to a depth of nearly 3 inches in Tularosa accompanied by a wet microburst with wind gusts estimated at 80 mph. The other cell produced golf ball to lime size hail in Alamogordo, though with much less intensity than the Tularosa cell.

Probability of Occurrence

The probability of occurrence of future thunderstorm events involving lightning and hail in Otero County is extremely high. According to the National Oceanic Atmospheric Administration, Otero County is located in an area of the country that experiences frequent lightning flashes per square kilometer per year. Given the regular frequency of occurrence of severe thunderstorms, future lightning and hail events will continue to threaten life and cause property damage throughout Otero County.

3.2.3.4.3 Winter Storms

Description of Hazard

Severe winter storms can vary in size and strength and include heavy snowstorms, blizzards, ice storms, freezing drizzle or rain, sleet, and blowing and drifting snow. Extremely cold temperatures accompanied by strong winds result in potentially lethal wind chills. A variety of weather phenomena and conditions can occur during winter storms. The following are NWS-approved definitions of winter storm elements:

- **Heavy snowfall** - the accumulation of 6 or more inches of snow in a 12-hour period or 8 or more inches in a 24-hour period.
- **Blizzard** - the occurrence of sustained wind speeds in excess of 35 mph accompanied by heavy snowfall or large amounts of blowing or drifting snow.
- **Ice storm** - an occurrence where rain falls from warmer upper layers of the atmosphere to the colder ground, freezing upon contact with the ground and exposed objects near the ground.
- **Freezing drizzle/freezing rain** - the effect of drizzle or rain freezing upon impact on objects that have a temperature of 32° F or below.
- **Sleet** - solid grains or pellets of ice formed by the freezing of raindrops or the refreezing of largely melted snowflakes. This ice does not cling to surfaces.

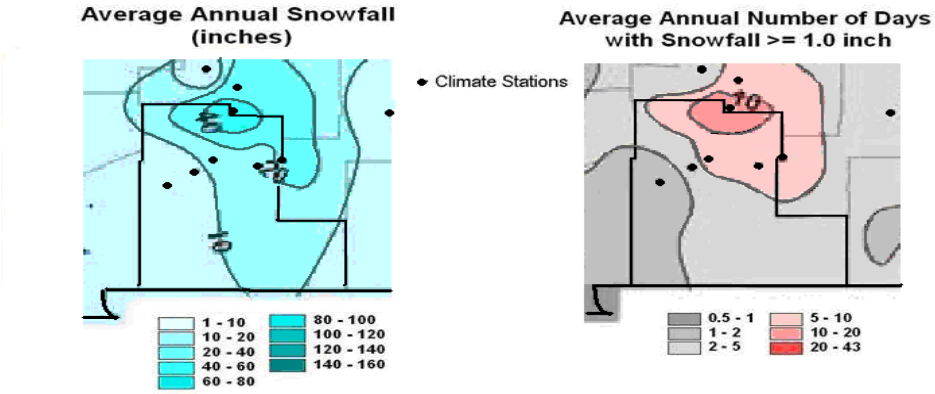
- **Wind chill** - an apparent temperature that describes the combined effect of wind and low air temperatures on exposed skin.

Location and Extent

Most winter precipitation in New Mexico is associated with Pacific Ocean storms as they move across the state from west to east. As the storms move inland, moisture falls on the coastal and inland mountain ranges of California, Nevada, Arizona, and Utah. If conditions are right, the remaining moisture falls on the slopes of New Mexico's high mountain chains. Much of the precipitation that falls as snow in the mountain areas may occur as either rain or snow in the valleys.

Average annual snowfall ranges from about 3 inches in the southern desert and southeastern plains in Otero County. It can, on rare occasions, exceed 300 inches in the highest mountainous areas. January is usually the coldest month, with average daytime temperatures ranging from the middle 50s in the southern and central valleys to the middle 30s in the higher elevations. Minimum temperatures below freezing are common in all sections of the state during the winter. Subzero temperatures are rare, except in the mountains.

A severe winter storm for Otero County is considered as a storm with four or more inches of snowfall below 7,500 feet elevation or 6 or more inches of snowfall above 7,500 feet elevation in a 12- hour period, or 6 or more inches of snowfall below 7,500 feet elevation or 9 inches of snowfall above 7,500 feet elevation in a 24-hour period.



Source: National Weather Service, Albuquerque Office

Figure 3-10 Statewide Snowfall Distributions

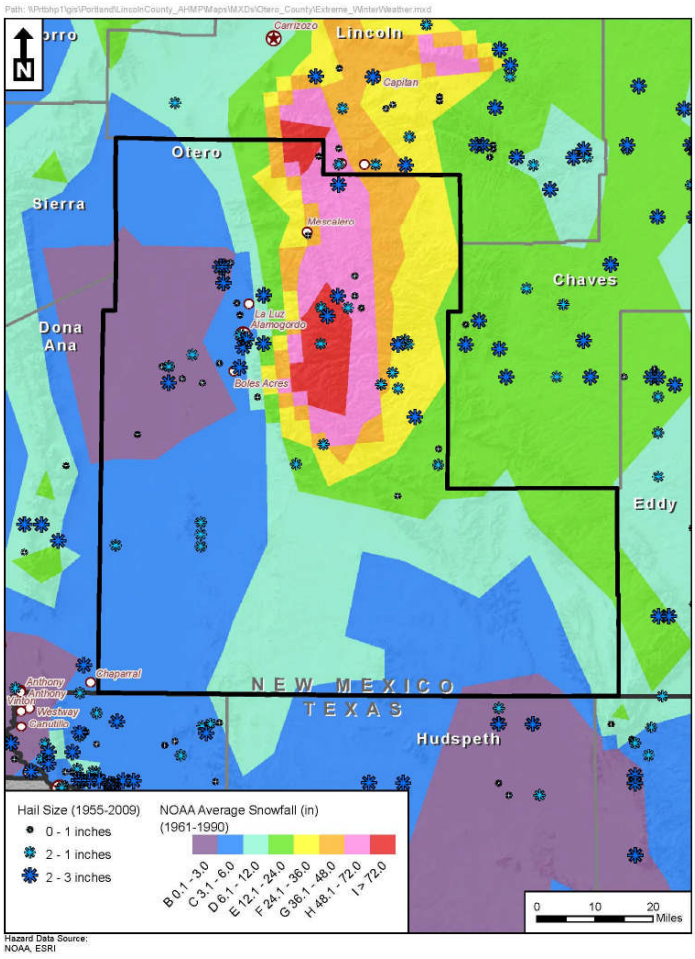


Table 3-11 Average Snowfall and Hail Events

Historical Occurrence

Thought the NCDC has not reported any severe winter weather events in Otero County, discussions with the MPG indicated severe winter storm events have occurred in Otero County in the recent past, as follows:

December 2006
Otero County experienced several days of sustained freezing temperatures to 4 inches below surface grade from December 2006 through January 2007 and from January through February 2008 that resulted in waterline ruptures throughout the county. Sixty-five water systems in the mountainous areas of the county were damaged.

January 1998
In January 1998, the state received a federal declaration (FEMA-1202) for a severe winter storm that had affected Chaves, DeBaca, Eddy, Guadalupe, Otero,

Mora, Quay, Torrance, and Union counties on December 22-25, 1997. Interstate 40 was closed for an extended period between Albuquerque and Santa Rosa. Approximately 400 tons of hay were airlifted to livestock, and more than 10,000 sheep and cattle were lost. Total losses (property and crop) were valued at $6.5 million, and the cost for clearing and repairing roads and highways was estimated at $4 million.

December 1991
A December 1991 snow storm left approximately 6 inches of snow in Alamogordo. There was also an ice storm in December of 1990.

Probability of Occurrences

All of Otero County is susceptible to severe winter storms, including extreme cold, heavy snow, ice storms, or other cold weather conditions. The mountainous areas of the county are more likely to receive snow and cold than the plains and desert, but residents of high altitude areas are also susceptible. Severe winter weather is much more likely to have a serious impact on major population centers and transportation routes. The plains and desert areas are more susceptible to high winds that contribute to the drifting of snow, and a snow storm that would hardly be noticed in the higher altitudes could present a serious hazard to people in the lower altitudes. Figure 3-10 illustrates average annual snowfall in inches and the average number of days of snowfall greater than or equal to one inch as documented by the National Weather Service. Eastern portions of Otero County are particularly vulnerable to increased amounts of snowfall (more than 40 inches a year) with northern portions of the county experiencing greater than 5 days of increased snowfall.

Given this regular frequency of occurrence, future severe winter storms will continue to threaten life and cause property damages in significant portions of Otero County.

Table 3-14 Severe Weather Hazard Probability

Hazard	n	N	T	P	Source/Comments
Severe Weather (High Winds)	Routine	150	Several, depending on location	>1	No data in proper form however, Figure 3-20 indicates special wind zones exist in higher elevations
Severe Weather (Thunderstorms)	33	59	1.79	0.56	NCDC
	3	10	3.33	0.33	FEMA – PDD, Major Event
Severe Weather (Lightning)	Routine	150	Several, depend-	>1	No data in proper form however, Fig-

Table 3-14 Severe Weather Hazard Probability

Hazard	n	N	T	P	Source/Comments
			ing on location		ure 3-7 identifies some locations greater than 4 flashes (striking ground) per square kilometer per year.
Severe Weather (Hail)	62	9	0.14	6.89	NCDC
Severe Weather (Winter Storm)	Several	150	At least once per year, severity depending on location	~1	No data in proper form however, data could be modeled from Figure 3-9 (10-20 days/year divided by 365 days in a year for P - 0.055. This is not accurate because winter storms are not defined this way).
KEY	n = number of events	N = number of years in record	T = Recurrence Interval (T = N/n)	P = Probability (P=1/T)	

3.2.3.5 Extreme Heat

Description of Hazard

Extreme heat, or heat wave, is defined by the NWS as a temperature of 10° or more above the average high temperature for the region, lasting for several weeks. This condition is definitely a public health concern. During extended periods of very high temperatures or high temperatures with high humidity, individuals can suffer a variety of ailments, including heatstroke, heat exhaustion, heat syncope, and heat cramps.

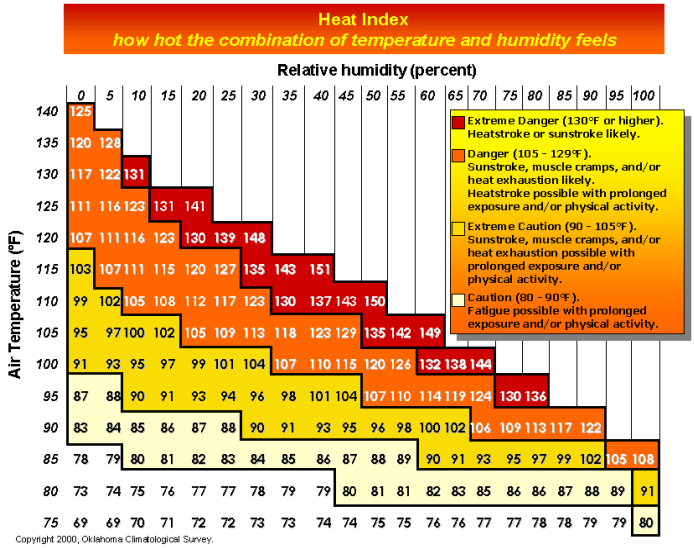
- **Heatstroke** is a life-threatening condition that requires immediate medical attention. It exists when the body's core temperature rises above 105°F as a result of environmental temperatures. Patients may be delirious, stuporous, or comatose. The death-to-care ratio in reported cases in the U.S. averages about 15%.

- **Heat exhaustion** is much less severe than heatstroke. The body temperature may be normal or slightly elevated. A person suffering from heat exhaustion may complain of dizziness, weakness, or fatigue. The primary cause of heat exhaustion is fluid and electrolyte imbalance. The normalization of fluids will typically alleviate the situation.

- **Heat syncope** is typically associated with exercise by people who are not acclimated to exercise. The symptom is a sudden loss of consciousness. Consciousness returns promptly when the person lies down. The cause is primarily associated with circulatory instability because of heat. The condition typically causes little or no harm to the individual.

- **Heat cramps** are typically a problem for individuals who exercise outdoors but are unaccustomed to heat. Similar to heat exhaustion, it is thought to be a result of a mild imbalance of fluids and electrolytes.

The National Weather Services bases their guidance on the "Heat Index (HI)" as depicted in Figure 3-12. The HI is used to measure how it feels when relative humidity is factored into the actual air temperature. The National Weather Service will initiate alert procedures when the HI is expected to exceed 105-110 degrees for at least two consecutive days.



Source: http://www.ima.army.mil/southwest/sites/divisions/Safety/Heat%20Index.gif

Figure 3-12 Heat Index Calculation

Location and Extent

New Mexico is partially an arid desert state, and summer temperatures often exceed 100°F under normal conditions. Nighttime temperatures are typically cool due to low humidity, and even though daytime temperatures may be high, people experience relief at night. Heat waves in which daily high temperatures exceed 110° F for many days in a row are not common. Otero County is highly susceptible to extreme heat and during period of these conditions, effects would be felt over widespread geographical areas. It is generally assumed that Otero County and all of its municipalities are uniformly exposed to any extreme heat event occurring in the region.

A unique aspect of the effects of extreme heat in New Mexico is that UVB radiation also increases with increasing altitude, or distance above the surface of the earth. For every 1,000 feet of altitude, the UV radiation increases by about 4%. This means that approximately 20% more UV radiation reaches the earth's surface in Santa Fé than in a city that is at similar latitude but at sea level. This can exacerbate heat effects at high altitude in northeastern Otero County.

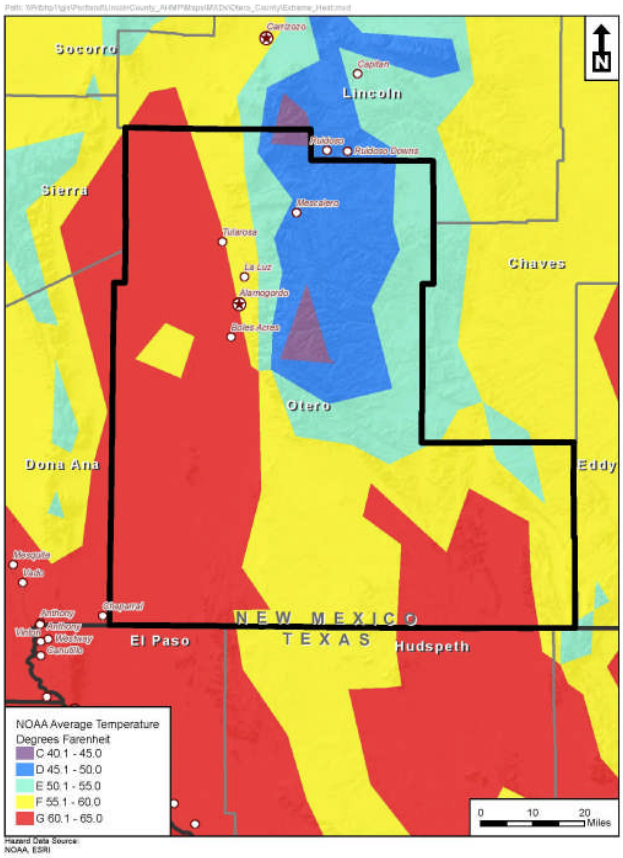


Figure 3-13 Otero County Average Temperatures

Historical Occurrences

According to the Office of the Medical Investigator, there are no recorded events of extreme heat causing death or injury within Otero County or the state of New Mexico. The New Mexico Department of Homeland Security and Emergency Management reports 14 extreme heat events have occurred since 1980. The following are notable extreme heat events.

July 2003
July 2003 was the hottest month since records began. There was a string of 14 days with highs of 100° or more. A new all-time high low temperature of 78° was set. 21 days passed without nighttime temperature dropping below 70°. An average temperature of 84.6° for the entire month shatters the 1980 record of 82.7°.

May 24, 2000
New daily high temperature records were set across the state as temperatures soared into the high 90°s and 100°s all across the east and south. Record highs in the mid- and upper 80°s were also set in the higher elevation communities of both the south central, central and northern mountains.

June 1998
Much of New Mexico experienced record heat and continued dryness during the last ten days of June 1998. Conditions had been unusually warm and dry throughout the month, but the heat intensified beginning on June 20 with daily high temperatures climbing well above 100° except in mountain communities at elevations above 7,500 feet. Readings in the southeast section of the state peaked at 108° to 113° as these locations exceeded ten consecutive days with daily highs above 100°. New records for duration of 100°+ degree-days were set from Carlsbad north to Clovis and Tucumcari. The heat broke records that had lasted 60 to 70 years. By the end of the month a number of locations in the east had observed 16 to 20 days with a daily high above 100°.

Summer 1980
Record heat from June through August with 25 days of 100° or more in the Albuquerque metropolitan area (prior record was 12 days) was experienced. The July 1980 average daytime high was 99.1°.

Probability of Occurrence

Extreme heat events will remain a very frequent occurrence in Otero County, and the probability of future event is high.

Table 3-15 Extreme Heat Hazard Probability

Hazard	n	N	T	P	Source/Comments
Extreme Heat	14	29	2.07	0.48	NM State HMP
KEY	n = number of events	N = number of years in record	T = Recurrence Interval (T = N/n)	P = Probability (P=1/T)	

3.2.3.6 Tornadoes

Description of Hazard

A tornado is an intense rotating column of air, extending from a thunderstorm cloud system. Average winds in a tornado, although never accurately measured, are thought to range between 100 and 200 mph, but some may exceed 300 mph. The following are NWS definitions of a tornado and associated terms:

- **Tornado** - A violently rotating column of air that is touching the ground.
- **Funnel cloud** - A rapidly rotating column of air that does not touch the ground.
- **Downburst** - A strong downdraft, initiated by a thunderstorm that induces an outburst of straight-line winds on or near the ground. They may last anywhere from a few minutes in small-scale microbursts to 20 minutes in larger, longer macro-bursts. Wind speeds in downbursts can reach 150 mph and therefore can result in damages similar to tornado damages.

Depending on the size and intensity of a tornado, damage can range from light to devastating. The Enhanced Fujita Scale, shown in Table 3-16, was created to measure and classify tornado strength and associated damages.

Table 3-16 Enhanced Fujita (EF) Scale

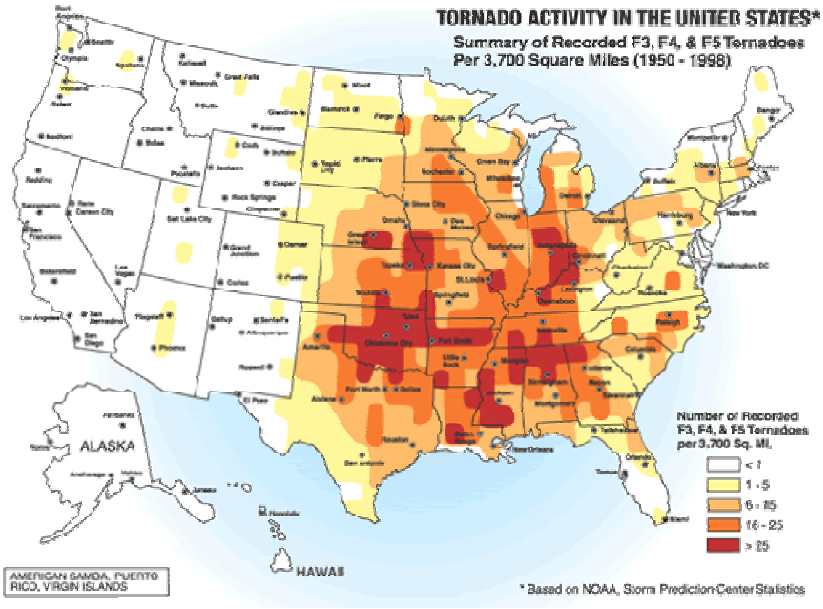
Storm Category	Damage Level	3 Second Gust (mph)	Description of Potential Damage
F0	Gale	65- 85	**Light damage.** Peels surface off some roofs; some damage to gutters or siding; branches broken off trees; shallow-rooted trees pushed over.
F1	Weak	86-110	**Moderate damage.** Roofs severely stripped; mobile homes overturned or badly damaged; loss of exterior doors; windows and other glass broken.
F2	Strong	111-135	**Considerable damage.** Roofs torn off well-constructed houses; foundations of frame homes shifted; mobile homes completely destroyed; large trees snapped or uprooted; light-object missiles generated; cars lifted off ground.
F3	Sever	136-165	**Severe damage.** Entire stories of well-constructed houses destroyed; severe damage to large buildings such as shopping malls; trains overturned; trees debarked; heavy cars lifted off the ground and thrown; structures with weak foundations blown away some distance.
F4	Devastating	166-200	**Devastating damage.** Well-constructed houses and whole frame houses completely leveled; cars thrown and small missiles generated.
F5	Incredible	200+	**Incredible damage.** Strong frame houses leveled off foundations and swept away; automobile-sized missiles fly through the air more than 109yards; high-rise buildings have significant structural deformation; incredible phenomena will occur.

Source: National Oceanic and Atmospheric Administration; Federal Emergency Management Agency

More than 800 tornadoes are reported nationwide according to the National Weather Service, resulting in an average of 80 deaths and 1,500 injuries each year. Nearly 70% of the deaths from tornadoes occur inside residential structures. Of these, more than 40% are in mobile homes, which are easily overturned and destroyed due to the low wind resistance of the structure. A tornado path averages 4 miles, but on rare occasions may reach up to 300 miles in length. Widths average 300 to 400 yards, but severe tornadoes have cut swaths a mile or more in width or have formed groups of two or three funnels traveling together. Occurrences for tornadoes are more likely during the months of March through May and tend to form in the late afternoon to early evening.

Location and Extent

New Mexico averages 1-5 severe tornadoes annual. Figure 3-14 is a summery of recorded F3-F5 tornado activity in the United States based on the number of recorded tornadoes per 3,700 square miles from 1950 to 1998. Otero County is located in an area susceptible to more frequent, less severe tornado events.



Source: Federal Emergency Management Agency

Figure 3-14 Tornado Activity in the United States

New Mexico lies along the southwestern edge of the nation's maximum frequency belt for tornadoes, often referred to as "tornado alley," which extends from the Great Plains through the central portion of the U.S. Eastern portions of New Mexico have a higher frequency of tornadoes; however, every county in the state has the potential to experience tornadoes. As Otero County frequently experiences severe wind and thunderstorm events on a frequent basis, the probability of tornadoe incidents is increased as a consequence. Otero County is within a wind zone

that is described by the Federal Emergency Mangement Agency as moderate to high risk for tornadoes. Figure 3-15 illustrates wind zones in New Mexico and indentifies Otero County in Zone II with wind speeds upwards of 160 mph for the entire county. The far eastern portion of the state along the Texas border is in Wind Zone III and portions of Otero County lie within Special Wind Zone that indicates an area of higher winds, highly dependent on terrain.

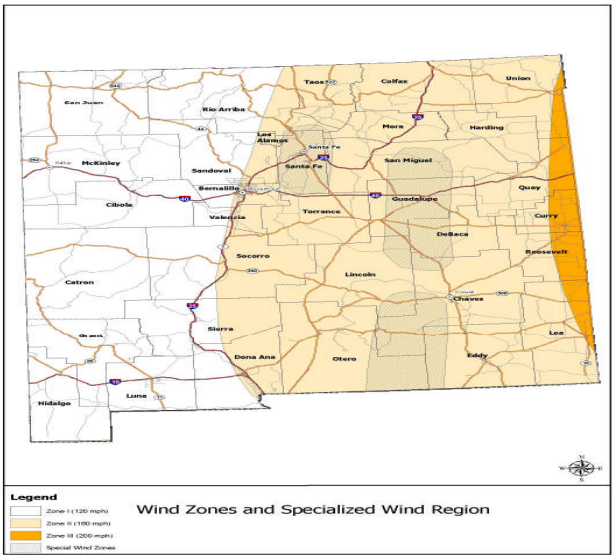


Figure 3-15 New Mexico Wind Zones
NOTE: SPECIAL WIND ZONE denotes special wind regions that, along with mountainous terrain and gorges, should be examined for unusual wind conditions.

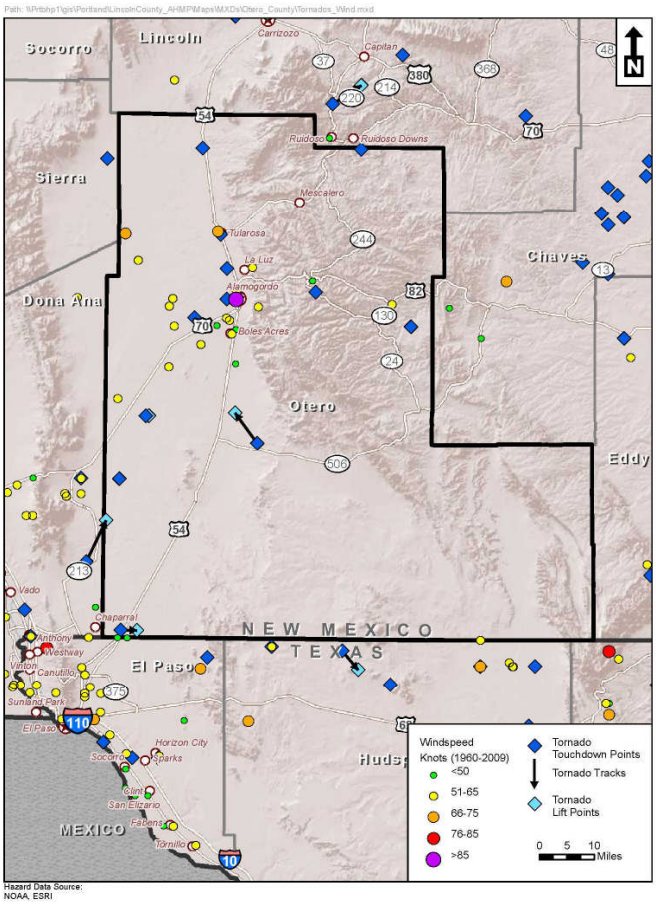


Figure 3-16 Tornado Events in Otero County

Historical Occurrences

According to the National Climatic Data Center, there have been 15 recorded tornado events between January 1950 and December 2010 that have caused no injuries or deaths and $305,000 in property damage in Otero County. According to the NCDC recent significant tornado events include an F2 tornado that hit Otero County in March 2007, causing more than $250,000 in damages and a F1 tornadoe in July 1989 and April 1991, each causing $25,000 in damage. Table 3-x describes reported tornadoes for Otero County.

Table 3-17 Otero County, New Mexico: Tornado Events, 1950-2010

Location or County	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
1 OTERO	06/03/1959	1650	Tornado	F1	0	0	3K	0
2 OTERO	06/03/1959	1700	Tornado	F1	0	0	3K	0
3 OTERO	07/19/1972	1945	Tornado	F0	0	0	0K	0

Table 3-17 Otero County, New Mexico: Tornado Events, 1950-2010

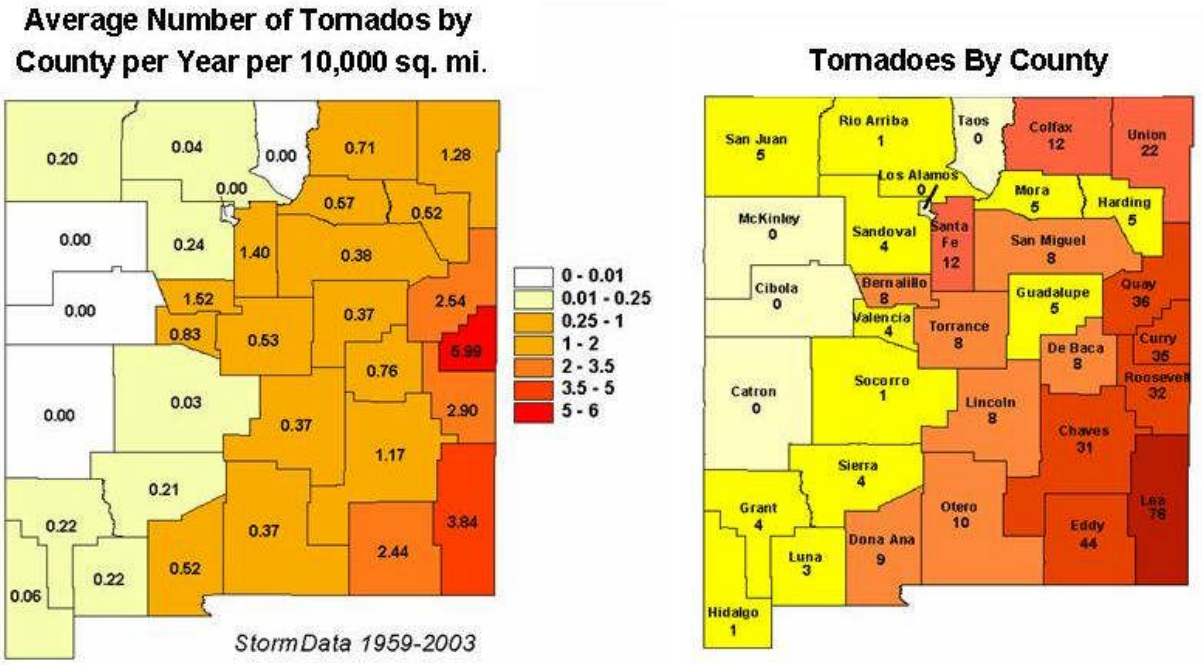
Location or County	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
4 OTERO	08/02/1979	1604	Tornado	F0	0	0	0K	0
5 OTERO	08/02/1981	2200	Tornado	F0	0	0	0K	0
6 OTERO	08/05/1981	1215	Tornado	F0	0	0	0K	0
7 OTERO	05/27/1982	1615	Tornado	F2	0	0	250K	0
8 OTERO	06/26/1987	2305	Tornado	F0	0	0	0K	0
9 OTERO	07/22/1989	1505	Tornado	F1	0	0	25K	0
10 OTERO	04/04/1991	1330	Tornado	F1	0	0	25K	0
11 Mescalero	06/05/2003	04:45 PM	Tornado	F0	0	0	0	0
12 Orogrande	10/15/2006	13:47 PM	Tornado	F0	0	0	0K	0K
13 Desert	05/02/2007	12:10 PM	Tornado	F0	0	0	0K	0K
14 Dunes	05/02/2007	12:45 PM	Tornado	F0	0	0	0K	0K
15 Cloudcroft	06/25/2007	13:47 PM	Tornado	F0	0	0	0K	0K
				TOTALS:	0	0	305K	0

Source: NOAA/NCDC

Mag: Magntiude; Dth: Deaths; Inj: Injuries; PrD: Property Damage; CrD: Crop Damage

Probability of Occurrences

Based on its geographic location and frequency of past events, Otero County is certain to continue to experience moderate frequency of tornado events. Figure 3-17 illustrates the average number of tornadoes experienced per 10,000 square miles and approximate number of tornadoes by county. Otero County has on average .37 tornadoes per 10,000 square miles and 10 tornadoes annually according to the National Weather Service. Tornadoes will continue to pose a threat to property, infrastructure and public safety in Otero County.



Source: National Weather Service, Albuquerque Office

Figure 3-17 County Distribution of Tornadoes

Table 3-18 Tornado Hazard Probability

Hazard	n	N	T	P	Source/Comments
Tornado	15	59	3.93	0.25	NCDC
	10	44	4.4	0.23	NWC, Albuquerque
KEY	n = number of events	N = number of years in record	T = Recurrence Interval (T = N/n)	P = Probability (P=1/T)	

3.2.3.7 Drought

Description of Hazard

Drought is a natural condition of climatic dryness that reduces soil moisture, water, or snow levels below the minimum necessary for sustaining plant, animal, and economic systems. Though drought conditions are usually not uniform throughout New Mexico, local and regional differences in weather, soil condition, geology, vegetation, and human influence impact its probability. The most commonly used drought definitions are based on meteorological, agricultural, hydrological, and socio-economic effects.

- **Meteorological** drought is defined as a period of substantially diminished precipitation duration and/or intensity. The commonly used definition of meteorological drought is an interval of time, generally on the order of months or years, during which the actual moisture supply at a given place consistently falls below the climatically appropriate moisture supply.

- **Agricultural** drought occurs when soil moisture is inadequate and does not meet the needs of a particular crop at a particular time. Agricultural drought usually occurs after or during meteorological drought but before hydrological drought and can affect livestock and other dry-land agricultural operations.

- **Hydrological** drought refers to deficiencies in surface and subsurface water supplies. It is measured as stream flow, snow pack, and as lake, reservoir, and groundwater levels. There is usually a delay between lack of rain or snow and less measurable water in streams, lakes, and reservoirs. Therefore, hydrological measurements tend to lag behind other drought indicators.

- **Socioeconomic** drought occurs when physical water shortages start to affect the health, well-being, and quality of life of the people or when the drought starts to affect the supply and demand of an economic product.

Although different types of drought may occur at the same time, they can also occur independently of one another. Drought differs from other natural hazards in three ways. First, the onset and end of a drought are difficult to determine due to the slow accumulation and lingering effects of an event after its apparent end. Second, the lack of an exact and universally accepted definition adds to the confusion of its existence and severity. Third, in contrast to other natural hazards, the impact of drought is less obvious and may be spread over a larger geographic area. Drought conditions do not cause property damage or threaten lives, but rather its effects are more directly felt by agricultural sectors. Community-wide impacts resulting from acute water shortages, regulatory use restrictions, and drinking water supply increase the magnitude of drought on Otero County.

Drought status is calculated using several indices that measure how much precipitation for a given period of time has deviated from historically established norms. The Palmer drought severity index (PDSI) is used by the U.S. Department of Agriculture (USDA) to determine allocations of grant funds for emergency drought assistance. The PDSI provides a measurement of moisture conditions that are "standardized" so that comparisons using the index can be made between locations and months.

Table 3-19 Palmer Drought Severity Index

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

Source: http://drought.unl.edu/whatis/indices.htm

Location and Extent

New Mexico is entering the fifth year of a drought, challenging the balance of limited water supply with growing demand. Water in New Mexico is distributed among a variety of users: 5% to livestock, commercial, industrial, mining, and power companies; 9% to public supplies and domestic use; about 10% is lost to evaporation; and 76% to irrigated agriculture. Over the past 10 years (120 months), New Mexico has had 50 months of drought. Otero County experiences at least some drought condition every other year depending on temperature and precipitation in all parts of the county.

According to the 2005 Otero County Comprehensive Plan, the County experiences 2.5 acre feet depletion of Tularosa Basin/Great Salt Basin, its aquifer water supply, per year. The Otero County Soil and Water Conservation District monitors current and anticipated water shortages to provide potable water to meet the needs of its residents. Drought poses a significant threat to the entire County's ability to meet water supply needs in a sufficient and sustainable manner. Figure 3-18 illustrates annual precipitation averages for Otero County, indicating that significant western and southern portions of county experience less than 12 inches of rain a year.

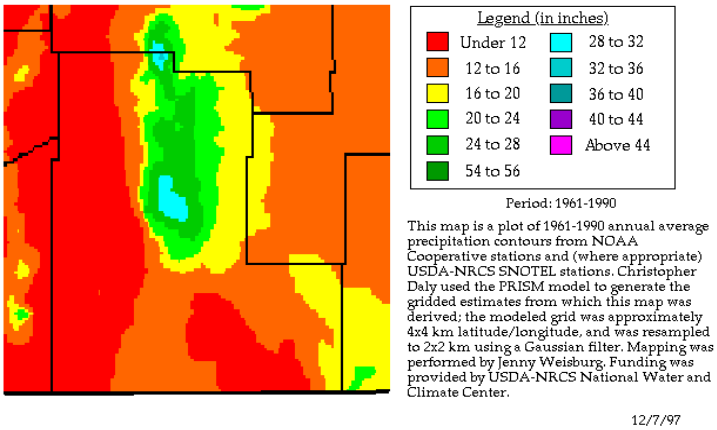
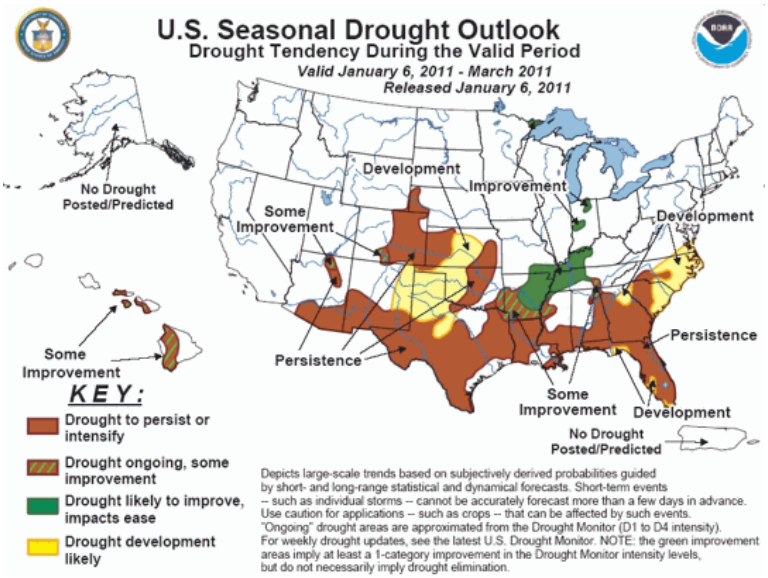


Figure 3-18 Otero County Precipitation Map



Source: National Weather Service, Climate Prediction Center

Figure 3-19 United States Drought Outlook

Historical Occurrence

Drought is a regular event in the majority of Otero County, occurring throughout the state in recurring cycles. Although no drought events for Otero County have been recorded by the NCDC, the State of New Mexico has recorded periods of drought for the past few years. According to the New Mexico Drought Plan, the state has experienced droughts since prehistoric times. Extended drought conditions in the region evidently led to the collapse of many early civilizations. Periods of drought since 1950 have been documented from 1950 to 1957, 1963 to1964, 1976 to1978, 1989, 1996, 1998 to 1999, 1999 to 2003, and 2003-2006. A short-term drought from October 2005 to July 2006 also has been identified.

Between 1995 and May 2007 there were three state-declared disasters for effects related to drought, primarily for loss of domestic drinking water: May 1996, May 2000, and June 2002. The total cost of drought-related events for this time period is $279,459. However, indirect costs are estimated to be between $50 and $100 million.

Probability of Occurrence

Otero County is in an area that frequently experieinces a PDSI less than -2.00 for moderate drought conditions. The probability of further drought conditions is high. Seasonal indicators such as streamflow, precipitation and mountain snow-pack have show lower averages and the reservoir levels throughout the state are below normal capacity according to the New Mexico Drought Monitoring Work Group. NOAA forecasts that drought persistence is expected across the south-western portion of the US which includes significant portions of New Mexico as illustrated in Figure 3-x. Based on approximated US Drought Monitor intensity levels, Otero County lies in an area predicted to have drought persistency or in-tensity which will continue to pose a high threat to agricultural practices, water supply and increased susceptibility of wildfire in dry areas of the county.

Table 3-20 Drought Hazard Probability

Hazard	n	N	T	P	Source/Comments
Drought	20	59	2.95	0.33	NM Drought Plan – note each event lasted for more than one year, data here in normalized (counted total number of years in drought as n)
KEY	n = num-ber of events	N = number of years in record	T = Recur-rence Inter-val (T = N/n)	P = Proba-bility (P=1/T)	

3.2.3.8 Earthquake

Description of Hazard

An earthquake is a shaking of the earth resulting from the release of energy due to sudden slip along a fault, which initiates at the earthquake hypocenter. This energy release propagates as elastic seismic waves that transport energy to the earth's surface. Earthquakes typically strike without warning and may range in intensity from tiny motions only detectable by sensitive instruments to slight tremors to highly damaging shocks. 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 fires, dam failures, landslides, or releases of hazardous material, compounding their hazards.

Earthquakes are commonly measured in terms of magnitude and intensity. Magnitude is measured using the Richter Scale, an open-ended logarithmic scale that describes the energy release of an earthquake through a measure of shock wave amplitude. Each unit increase in magnitude on the Richter Scale corresponds to a 10-fold increase in wave amplitude or a 32-fold increase in energy. Intensity is most commonly measured using the Modified Mercalli Intensity (MMI) scale based on the amount of direct and indirect seismic effects, such as shaking and specific kinds of damage to manmade objects or structures. This scale has 12 classes and ranges from I (not felt) to catastrophic level XII (total destruction). Table 3-18 provides a detailed description of the MMI and its correspondence to the Richter Scale of magnitude.

Table 3-21 Mercalli Intensity(MMI) Comparison for Earthquakes

Mercalli Scale	Intensity	Description of Effects	Corresponding Richter Scale Magnitude
I.	INSTRUMENTAL	Not felt. Marginal and long period effects of large earthquakes.	<4.2
II.	FEEBLE	Felt by persons at rest, on upper floors, or favorably placed.	
III.	SLIGHT	Felt indoors. Hanging objects swing. Vibration similar to passing of light trucks. Duration estimated. May not be recognized as an earthquake.	<4.8
IV.	MODERATE	Hanging objects swing. Vibration similar to passing of heavy trucks. Standing motor cars rock. Windows, dishes, doors rattle. Glasses clink in the upper range of IV, wooden walls and frame creak.	
V.	SLIGHTLY STRONG	Felt outdoors; direction estimated. Sleepers wakened. Liquids disturbed, some spilled. Small unstable objects displaced or upset. Doors swing, close, open. Pendulum clocks stop, start.	
VI.	STRONG	Felt by all. Many people are frightened and run outdoors. People walk unsteadily. Windows, dishes, glassware broken. Books, etc., fall off shelves. Pic-	<5.4

Table 3-21 Mercalli Intensity(MMI) Comparison for Earthquakes

Mercalli Scale	Intensity	Description of Effects	Corresponding Richter Scale Magnitude
		tures fall off walls. Furniture moved. Weak plaster and masonry D cracked. Small bells ring. Trees, bushes shaken.	
VII.	VERY STRONG	Difficult to stand. Noticed by drivers of motor cars. Hanging objects quiver. Furniture broken. Damage to masonry D, including cracks. Weak chimneys broken at roofline. Fall of plaster, loose bricks, stones, tiles, cornices. Some cracks in masonry C. Waves on ponds. Small slides and caving in along sand or gravel banks. Large bells ring. Concrete irrigation ditches damaged.	<6.1
VIII.	DESTRUCTIVE	Steering of motor cars affected. Damage to masonry C; partial collapse. Some damage to masonry B. Fall of stucco and some masonry walls. Twisting, fall of chimneys, factory stacks, monuments, towers, elevated tanks. Frame houses moved on foundations. Decayed piling broken off. Branches broken from trees. Changes in flow or temperature of springs and wells. Cracks in wet ground and on steep slopes.	
IX.	RUINOUS	General panic. Masonry D destroyed; masonry C heavily damaged, sometimes with complete collapse; masonry B seriously damaged. (General damage to foundations.) Serious damage to reservoirs. Underground pipes broken. Conspicuous cracks in ground. In alluvial areas sand and mud ejected, earthquake fountains, sand craters.	<6.9
X.	DISASTROUS	Most masonry and frame structures destroyed with their foundations. Some well-built wooden structures and bridges destroyed. Serious damage to dams, dikes, embankments. Large landslides. Water thrown on banks of canals, rivers, lakes, etc. Sand and mud shifted horizontally on beaches and flat land. Rails bent slightly.	<7.3
XI.	VERY DISASTROUS	Rails bent greatly. Underground pipelines completely out of service.	<8.1
XII.	CATASTROPHIC	Damage nearly total. Large rock masses displaced. Lines of sight and level distorted. Objects thrown into the air.	>8.1

Source: Federal Emergency Management Agency

Location and Extent

Otero County is within the Sacramento section of the Basin and Range physiographic region overlaying the Permian Basin. Sources for earthquake activity within the county could include the San Andres Mountain Fault and the Alamogordo Fault (see Figure 3-20). The Alamogordo fault is located in Otero and Lincoln Counties, New Mexico. The fault extends from the surface to 15 km below the surface. It is 121 km long with projections to have a possible maximum

earthquake of 7.5 on the Richter Scale and a minimum earthquake of 6.5, although it has had no activity within the historical record. The San Andres Mountains fault extends from the surface to 15 km below the surface. It is 130 km long with projections to have a possible maximum earthquake of 7.5 on the Richter Scale and a minimum earthquake of 6.5, and it has had no activity within the historical record. The Tularosa Basin is found between these two fault zones as shown in Figure 3-21.

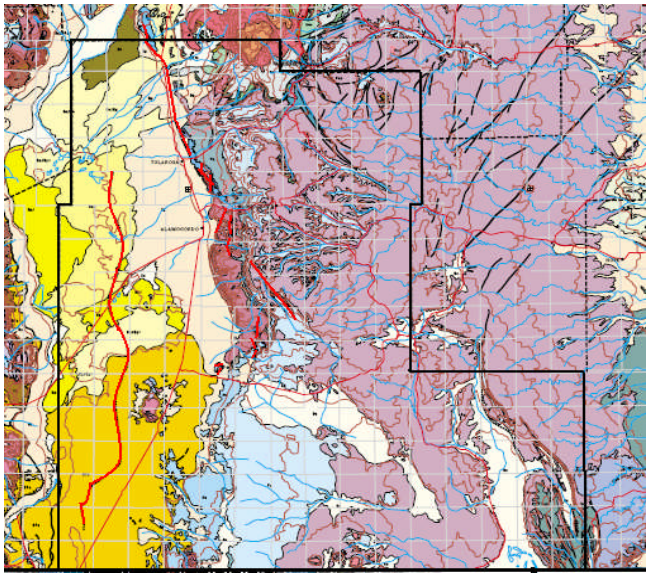
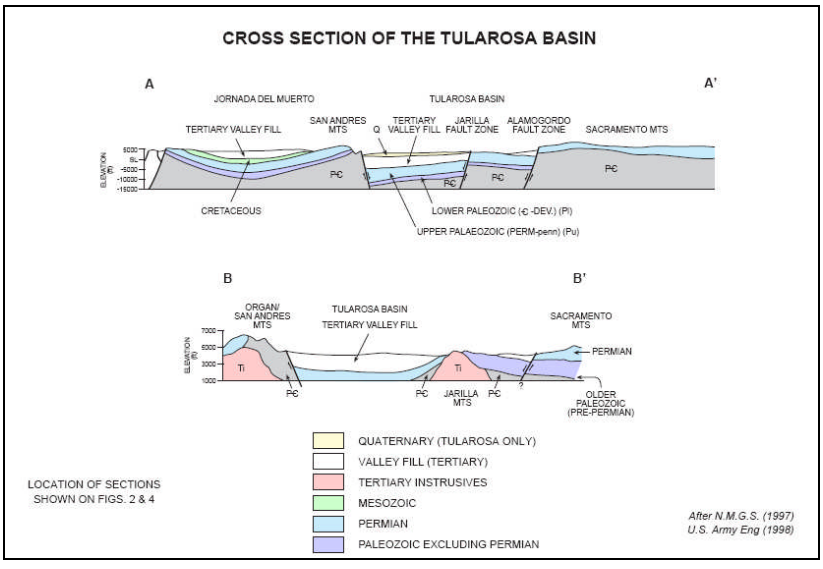


Figure 3-20 Geologic Map of Otero County – San Andres Mountains Fault (red line, left) and Alamogordo Fault (series of red lines along center line)



Source: http://www.nps.gov/archive/whsa/Geology%20of%20White%20Sands/Chap01/Chap01%20Main.html]

Figure 3-21 Cross Sections of the Tularosa Basin – Cross Section A-A' is North of Cross Section B-B'

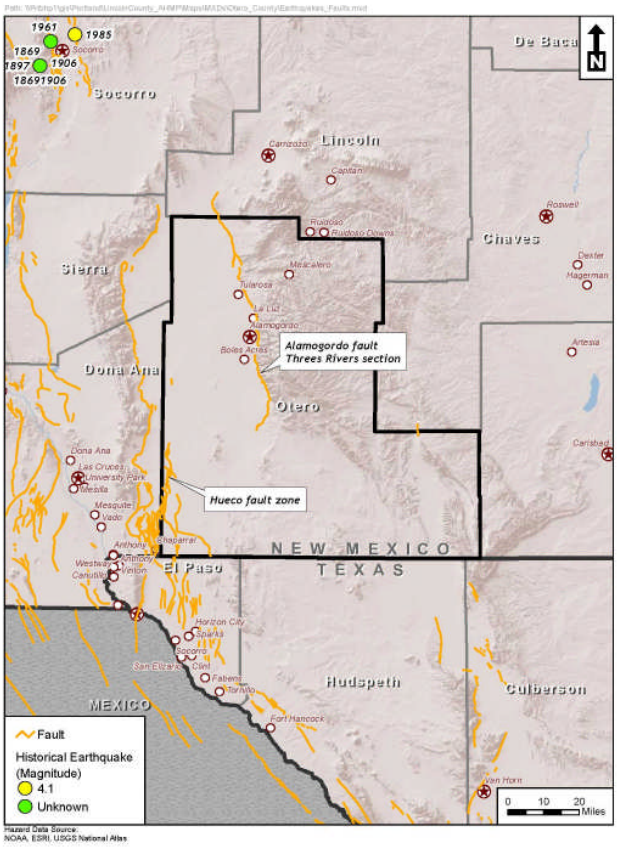


Figure 3-22 Otero County Fault Lines

Historical Occurrence

The NCDC has not recorded an earthquake in Otero County in the recent past nor have any been included in any federally declared disasters.

Probability of Occurrence

The National Seismic Hazard Mapping Project identifies a 10% chance of an earthquake with between 4 and 5%g peak acceleration within the next 50 years. The probability of future occurrence is low. There is no historic occurrence data available to gauge potential severity, and infrequency of past events does not present a significant threat to the county.

Table 3-22 Earthquake Hazard Probability

Hazard	n	N	T	P	Source/Comments
Earthquake	0	Recorded History	500	$2x10^{-3}$	USGS estimates a 10% chance for a

Table 3-22 Earthquake Hazard Probability

Hazard	n	N	T	P	Source/Comments
		(300 yrs)			5%g (PGA) quake in the next 50 years, data to left is based upon this projection alone
KEY	n = number of events	N = number of years in record	T = Recurrence Interval (T = N/n)	P = Probability (P=1/T)	

4 Vulnerability Assessment

This section of the Otero County Hazard Mitigation Plan provides a vulnerability assessment for the natural hazards that, based on the Risk Index calculation, are considered to pose a high, moderate, or low risk to Otero County. No further analysis will be conducted on natural hazards classified to pose no risk for Otero County

4.1 Identification of Assets

An inventory of Otero County's geo-referenced assets was identified and created in order to identify and characterize population and property potentially at risk to the identified hazards. By understanding the type and number of assets that exist and where they are located in relation to known hazard areas, the relative risk and vulnerability for such assets can be assessed. Three categories of assets were evaluated using statistical analysis and research to determine vulnerabilities, as follows:

- Socioeconomic: Includes demographic data regarding the people residing in Otero County as delineated by US Census 2000, American Community Survey (ACS) 2005-2009 and the Bureau of Business and Economic Research 2005 data.
- Physical Environment: Includes a description of physical properties of residential, commercial, industrial, agricultural, religious and educational structures.
- Critical Facilities and Infrastructure: Includes medical facilities, fire service, government, natural gas, water, wastewater and utility facilities. These also include non-emergency facilities that provide critical services and functions to vulnerable sectors of the Otero County population. Data for critical facilities was obtained from HAZUS-MH, MPG, and participating jurisdictions.

4.2 Socioeconomic Assets

4.2.1 Population Characteristics

According to the US Census 2000 block data, the total population of Otero County in 2000 was 62,298 and increased in 2009 to 63,201 based on the Census American Community Survey (ACS).

Table 4-1 describes the population of Otero County and its jurisdictions from 1980-2000. The majority of the population is concentrated around the Alamogordo and Tularosa areas, while the western portions of the County are sparsely populated on private land.

Table 4-1: Population by Jurisdiction, 1980-2000

	1980 Population	1990 Population	2000 Population
Otero County	44,665	51,928	62,298
Alamogordo	24,024	27,986	35,582
Tularosa	2,536	2,753	2,864
Cloudcroft	521	612	749
Holloman AFB	7,245	5,891	2,076
Unincorporated County	12,339	14,686	21,027
Source: US Census Bureau			

Between 1940 and 1960, the County experienced upwards of a 24% increase in population resulting from an expansion of U.S. military operations in the area. However, as these operations have decreased over the last few decades, the Bureau of Business and Economic Research at the University of New Mexico projects that the population growth rate will be 4 to 5 percent a decade from 2010 to 2030 (BBER 2005). Table 4-2 and Figure 4-1 depict population growth trends for Otero County from 2010 to 2030.

Table 4-2 Otero County Population Projections, 2010-2030

Name	2000 Population	2010 Projection	2020 Projection	2030 Projection
Otero County	62,298	67,018	70,508	73,348

Source: Bureau of Business and Economic Research, University of New Mexico

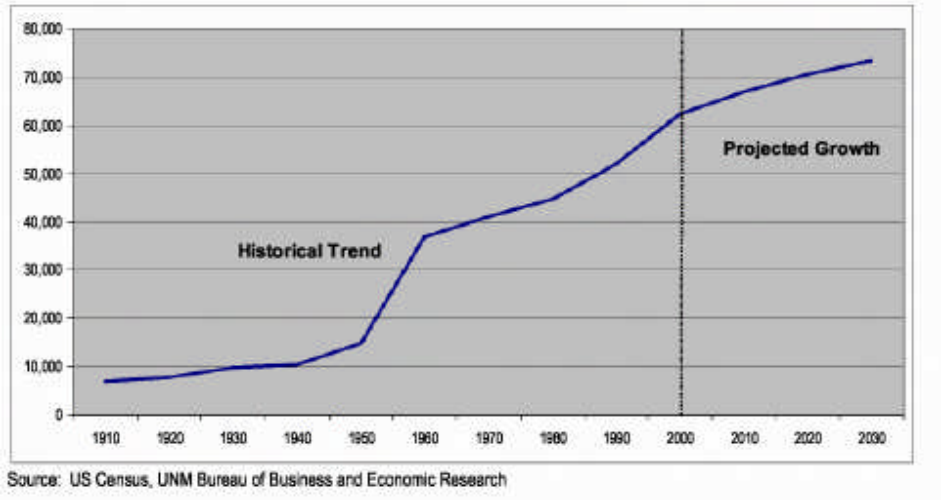


Figure 4-1 Historic and Projected Population Growth

4.2.2 Socioeconomic Characteristics

Certain socioeconomic factors can influence the relative risk that some populations may experience over others during a disasters. Factors such as personal wealth, age, gender, and race may describe vulnerable subgroups of populations for Otero County. The impacts to these population groups will depend on the particular disaster or emergency under consideration. Table 4-3 outlines the quantities of several of these population groups as identified in the 2000 Census.. Socioeconomic characteristics that could be a factor in hazard analysis include:

- Income and Wealth: Lack of individual and community wealth can mean fewer available financial resources for recovery. Locations where families live below the poverty level may indicate areas that could be impacted more severely by disaster events because of a lack of personal financial resources. For example, a poor family may not own a vehicle that would enable them to immediately evacuate the area. They also may not have sufficient funds or credit to cover long-term temporary lodging costs if their home became uninhabitable. In 2000, the number of families below the poverty level in Otero County was 12,806 or 20% of the population.

- Age: Otero County residents under the age of 18 or over 65 years old are more likely to need additional assistance during a disaster. Large concentrations of populations in either of these age groups could complicate response and recovery operations during a disaster. According to 2007 estimated U.S. Census data, there were 16,007 persons (25.5%) under 18 years old and 8,537 persons (13.6%) over than age 65.

- Gender: Women may be more vulnerable to disasters as they may more likely bear the brunt of productivity loss due to damage to the home, or bear loss of income impact due to increased focus of restoration of a home and home-based businesses. The 2007 estimated census reports the female population at 50% (31,388 females).

- Ethnicity: Race and ethnicity may be tied to income disparities, and it may also be accompanied by language barriers. The percentage of the population of non-white residents in Otero County is approximately 14.6 % (9,165 persons). It is not uncommon for minorities to reside in areas more prone to floods or certain other disasters.

Table 4-3 Vulnerable Subgroups in the State, by County, as a percent of state population.

County	Population 2008 est.	Persons Below Poverty	Children 18 Years And Under	Persons 65 Years and Over	Female	Non-White
Otero	62,776	12,806 (20.4%)	16,007 (25.5%)	8,537 (13.6%)	31,388 (50%)	9,165 (14.6%)

Source: U.S. Census 2000.

4.3 Physical Environment Assets

In this plan, physical environment assets refer to buildings and structures within the county. Physical vulnerabilities, therefore, relate to the potential for damage or destruction of these structures from hazards. Vulnerabilities could be related to the construction materials used in manufacturing the structure, or the type or use of the structure itself. In development of data in this section, the Hazards U.S. Multi-Hazard (HAZUS-MH) loss estimation tool was employed to determine potential impacts by the classifications of residential, commercial, industrial, agricultural, religious (and non-profit) and educational structures, as well as the cumulative impact for the County as a whole. Table 4-4 outlines the quantities of buildings in Otero County by construction material.

Table 4-4 Buildings in Otero County by Construction Material

County	Concrete	Manufactured Housing	Masonry	Precast	Un-reinforced Masonry	Wood	Total
Otero	49	8,453	4,150	15	357	12,870	25,894

Source: NM HMP from Federal Emergency Management Agency Hazards U.S. – Multi-Hazard (HAZUS-MH)

Table 4-5 illustrates the value of residential, commercial, industrial, agricultural, religious (or other non-profit), governmental and educational structures in Otero County. The table was developed from information in HAZUS-MH (Level 1) based on national data sets for state-specific broad modeling assumptions. The values in the table are only indicators for information purposes and used for analytical purposes as Level 2 local data included underestimates of structural values. According to the data, the approximate total assessed value of all buildings in Otero County is $5.9 billion.

Table 4-5 Building Stock Exposure (value in millions of dollars) in Otero County

County	Resid.	Comm.	Indus.	Agri.	Relig.	Gov.	Educ.	Total
Otero[1]	$3,100	$220	$15	$3.0	$17	-	$6.2	$3,361
Otero[2]	$4,107	$1,477	$113	$30	$147	$8.9	$86	$5,969

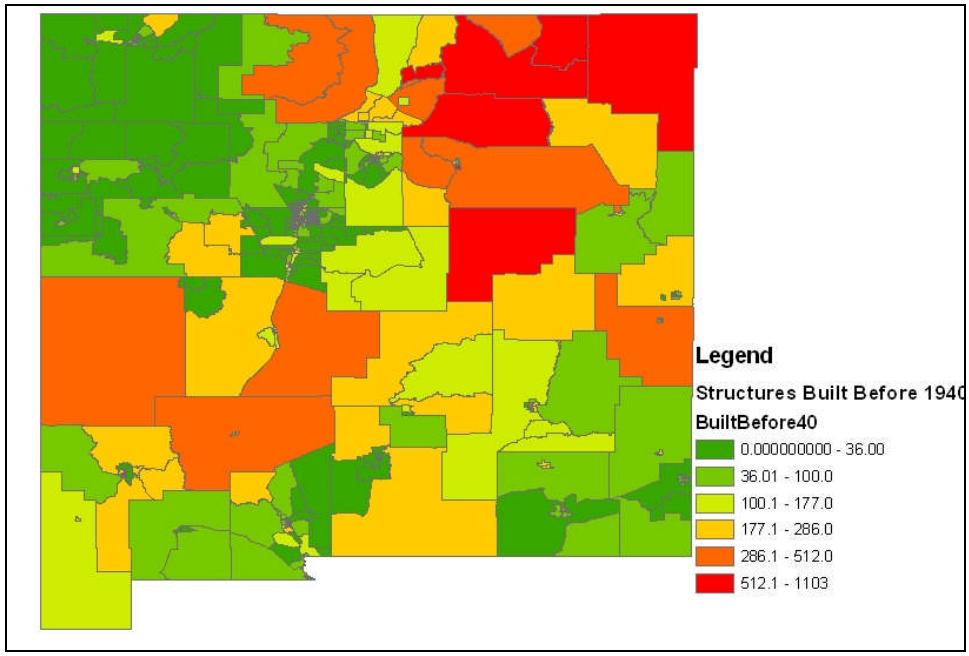
Source: (1) NM State HMP from U.S. Bureau of the Census 2000; (2) HAZUS-MH using US Census 2000, RSMeans and other sources – see Appendix C for greater detail – particularly where underestimation has occurred (particularly for governmental and educational infrastructure).

Note: The Census data lacked a square footage tabulation for higher education facilities, (e.g., the NMSU-A campus). Additionally, emergency services facilities – presumably fire and police stations – were not present in the data. In the analysis performed for this plan, residential value includes owner occupied, rental and hotel space.

4.3.1 Vulnerabilities of the Built Environment

The condition of the structure is a key determinant of its hazard vulnerability. Generally, older structures are more vulnerable to damage from high winds and ground movements, particularly if they were built prior to the adoption of stringent building codes. Figure 4-2 shows the census tracts that have a larger percentage of older structures. Of a total number of 30,922 housing units in the

county, approximately 4% of these structures were built prior to 1940. Census tracts 01 and 02 (downtown Alamogordo), 07 (Tularosa and northward) and 09 (southeast corner of the county) indicate the greatest concentration of structures built before 1940. These older structures may be in poor condition and not able to weather storms due to poor building quality, plumbing, etc. and may be more prone to damage by wind, winter storms, and earthquakes.



Source: NM HMP from Federal Emergency Management Agency Hazards U.S. – Multi-Hazard (HAZUS-MH)

Figure 4-2 Structures built before 1940

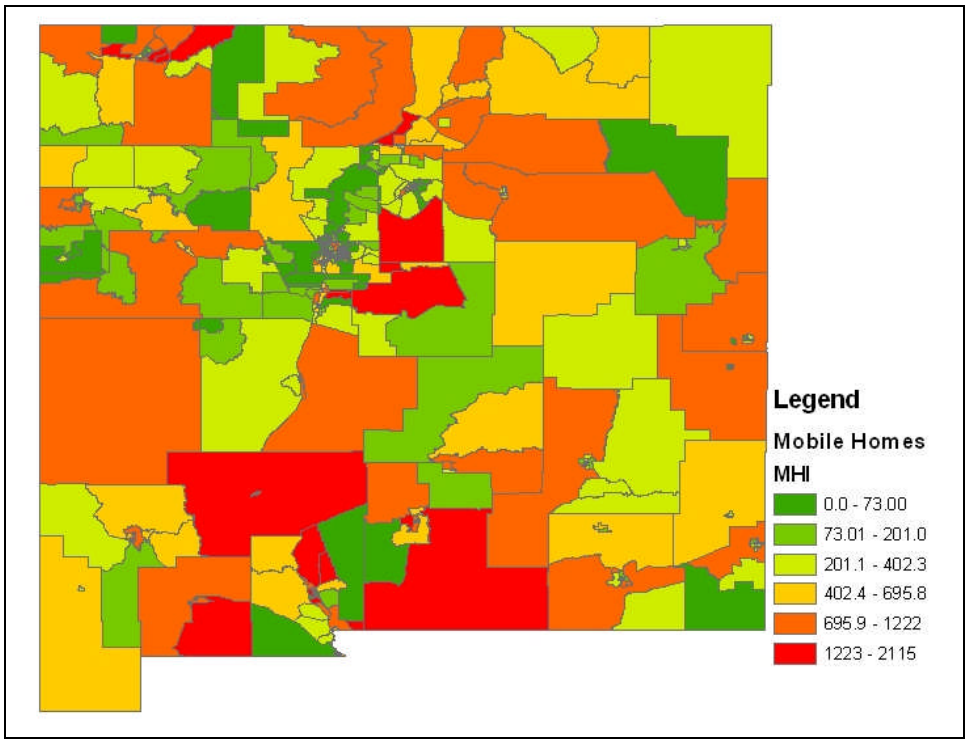
Another important factor is how likely structures are to fail when they are subjected to wind pressure that exceeds their design. In general, building damages can range from cosmetic to complete structural failure, depending on wind speed, movement, and the location of the building. Strong winds can rip roofs off houses, overturn manufactured homes, or cause total failure of poorly constructed structures. Unreinforced masonry buildings typically fail under severe earthquake conditions and gable-ended roofs are especially vulnerable to strong winds.

Approximately 50% of all the structures in the county are constructed of wood, followed by manufactured housing and masonry structures (Table 4-4). Building made of wood are vulnerable to wildfires. Less than 2% of the structures in the county are made of un-reinforced masonry, such as adobe structures, which can be vulnerable to damage from earthquakes.

Manufactured housing units are of particular concern due to their light weight, lower overall strength, and potential location in areas susceptible to flooding.

Figure 4-3 maps the number of manufactured homes by census tract. Otero County has approximately 8,452 manufactured homes (31% of residential structures surveyed).

Half (50%) of all the structures in the county are constructed of wood (subject to damage by wildfires), followed by manufactured housing and masonry structures (Table 4-3). Less than 2% of the structures in the county are made of unreinforced masonry, which is very vulnerable to damage from earthquakes. These are typically adobe structures.



Source: NM HMP from Federal Emergency Management Agency Hazards U.S. – Multi-Hazard

Figure 4-3 Manufactured Homes by Census Tract

Otero County faces increasing vulnerability due to construction without defensible spaces (relative to urban-wildfire interface), and growth of "colonias" or residential neighborhoods that spring up with limited infrastructure support and often with poor housing stock. Also challenging the county is the ongoing placement of unpermitted building (or placement of trailers) in unsuitable places, such as flood prone areas.

New homes are being built primarily on the outskirts of existing communities, expanding into what was wild land and increasing exposure to wildland-urban interfaces. Local leaders must be cognizant of the new risks and work towards implementing zoning and building codes to reduce the exposure to wildfire hazards. Communities such as Tularosa are already controlling growth due to current

limitations on water supply. Even Alamogordo's water supply, currently augmented through management practices such as use of wastewater in parks, will prove insufficient with projected growth.

4.4 Critical Facilities

Local hazard mitigation plans are required to identify critical facilities, whether public or private, within their jurisdictions and to propose mitigation strategies to protect them. These critical facilities in both the private and public sectors are defined as facilities that provide essential products and services to the general public, are necessary to preserve the welfare and quality of life in the county, or fulfills important public safety, emergency response, and/or disaster recovery functions. Critical facilities in the county include police and fire stations, schools, water systems, and municipal buildings. See Appendix D for a detailed list of critical facilities in Otero County. The critical facilities listed in Appendix D are all of the facilities that could be identified by the community after intensive surveying of internet sources and community representatives. Their locations are indicated on maps located in Appendix B.

Vulnerable Priority Critical Facilities. The Mitigation Planning Group (MPG) further identifies "priority" critical facilities as those that are vulnerable to a hazard and the loss that facility would significantly impact the community's ability to recover from a hazard event.

Critical facilities as used here are assets owned by the state, county, City of Alamogordo, or non-governmental organizations that are vital to the health, safety, and wellbeing of Otero County citizens during a natural disaster. Critical facilities, as determined by the MPG include:

- Medical Facilities
  - Gerald Champion Regional Medical Center (Alamogordo)
  - Ben Archer Health Center (Alamogordo)
- Shelters
  - Tays Center (NMSU-Alamogordo)
  - Alamo Senior Center (City of Alamogordo)
  - Weed Community Center (Weed)
- Fire Services
  - Boles Acres Fire Station (also HazMat and EMS)
  - Oro Vista Fire Station (San Pedro station – also EMS)
  - Dungan Fire Station (also HazMat and EMS)
- Government
  - Otero County Administration Building
  - Otero County Public Works Facility
  - Otero County Prison Facility

- Utilities
  - PNM Substation (Alamogordo)
  - OTEC Substation (Alamogordo)
- Retail
  - Wal-Mart Super Center (Alamogordo)

The exclusion of a building from the list, such as state-owned facilities not part of a local response, does not mean that it houses an unimportant function. The MPG and department representatives determined that the activities and functions carried out at those locations were not vital to the immediate health and safety of the residents of Otero County. Any buildings excluded from this list will be reevaluated during future updates.

Critical Facility Maps are provided in Appendix E of this plan.

4.5 Vulnerability Assessment Methodology

Otero County's vulnerability assessment was conducted using a statistical risk analysis of HAZUS-MH data and qualitative analysis methodology. To assess the vulnerability of the population, the built environment and critical facilities and infrastructure, the MGP evaluated identified hazards based on the availability of information, specific areas of risk, and historical record. After completing the county-wide assessment of vulnerable infrastructure, the MPG focused its analysis on those facilities that were determined to be "critical." GIS software was used by the contractor to map these critical facilities and to determine which are the most likely to be affected by hazards.

For identified critical facilities and infrastructure, a loss-estimation analysis was conducted to determine the impact each identified hazard would have. The MPG was asked to determine locations where critical functions are carried out, and these locations were then compared with known hazard areas (based on the risk assessment section). The potential damages to each location were estimated based on a number of factors, including square footage and annual operating budgets.

FEMA guidance on the relationship of square footage to facility replacement value was applied, as well as FEMA guidance on the relationship of facility function to content value. Facility management was then contacted to confirm content value, and where guidance did not accurately reflect known content value, the actual values were utilized. Finally, facility management was asked to supply annual operating budget totals for estimation of daily impact due to loss of operational capacity.

4.5.1 Summary of Vulnerability Assessment

According to Requirement 201.6(c)(2)(ii), *"the risk assessment shall include a description of the jurisdiction's vulnerability to the hazards that can affect the jurisdiction. This description shall include an overall summary of each hazard*

and its impact on the community." In compliance with the requirement, the vulnerability assessment was conducted for Otero County to reflect the risks within the County.

4.5.1.1 Flood

Virtually every jurisdiction in the state is subject to flooding, given the right conditions. The concentration of Otero County's population along the US Highway 54 between Alamogordo and Tularosa, along an alluvial plain at the base of the Sacramento Mountains, the seasonal nature of heavy rainfall and proximity of communities to rivers and streams presents a situation where regular flood events lead to direct impacts to the built environment. Due to recent events, Otero County is determined to have a high risk.

4.5.1.2 Wildfire and Wildland/Urban Interface Fire

Several areas have been identified by the New Mexico Energy, Minerals, and Natural Resources Department Forestry Division as being highly vulnerable to wildland-urban interface fire. The significance of the desirable living / vacationing locals, such as Cloudcroft with seasonal utilization serve to heighten this threat. A significant number of people would be impacted by a wildfire, especially populations living or working close to forested areas, residents with asthma or other respiratory sensitivity, and very young and elderly residents. The vulnerability to wildfire is judged highest in 14 counties state-wide, with Otero County being one of these.

4.5.1.3 Severe Weather

Severe weather is difficult to predict precisely in pattern, frequency, and degree of severity. The impact from severe weather events (thunderstorms, hail, high wind, winter storms, extreme heat, and tornadoes) has been moderate, with localized flooding occurring from severe thunderstorms and minor damages to specific locations from hail and lightning. The impact from winter storms and freezes can affect a widespread area of crops and livestock, depending on the time of year when it occurs. The impact of a tornado varies greatly with severity and location. Highly vulnerable populations include those in mobile home parks, recreational vehicles, and aged or dilapidated housing. The impact from extreme summer heat is minor. Vulnerable populations include elderly, transient, and low-income residents. Crops and livestock can also be vulnerable to extreme heat. Although Otero County was not one of the counties with the highest risk in the state to these hazards, it is certainly susceptible to them.

4.5.1.4 Dam Failure

The greatest vulnerability associated with dams in Otero County is washout due to overtopping in flash flood events. Most dams identified on the State's bad dams list are products of USFS wildfire mitigation strategy and are not necessarily prone to washout as these tend to be designed to retain only a minimal amount of water to promote recharge of subsurface moisture reserves and not as surface water reservoirs. These dams tend to be older and not well maintained.

Of known reservoirs that contain significant volumes of water, probably Silver Lake poses the greatest threat of possible collapse. Silver Lake is located north-east of Cloudcroft, just north of NM Highway 244. Lake Mescalero which is located in extreme northern Otero County is identified as a dam needing attention in neighboring Lincoln County's hazard mitigation planning committee. Issues identified relate to need for sensors and automated controls to allow for more responsive management practices. Issues posed in this situation include the need for closer coordination between two counties and a sovereign (Native) nation.

4.5.1.5 Drought

Every jurisdiction in the state is vulnerable to drought however the Tularosa Basin has been significantly impacted by drought and poor land management practices from the cattle industry during the late 1800's and early 21st century. Once known for lush grasslands with grass reaching the height of several feet is now a range dominated by creosote bush. Harvesting of groundwater earlier in the last century has intensified poisoning of the basin's soil with salts to the point that the area has been identified by the federal government as a location for a desalinization plant.

Since the county's groundwater supply have been compromised (turned brackish) within the closed Tularosa Basin and the recharge system of the Sacramento Mountains has been negatively impacted by prolonged drought, the current water use challenges are projected to continue indefinitely into the future presenting chronic vulnerability to the built environment and to agricultural industry. Surface water will continue to decrease (shorter wet season flows in streams) and water tables will drop or wells will see increasing saline content (in the basin floor). Challenges presented by drought are the underlying factor for limitation of growth within the county.

4.5.1.6 Earthquake

Much of the state and local infrastructure, many public buildings, and most private residences and businesses have not been designed with earthquake resistance in mind. An earthquake of even moderate scale in the right place could cause extensive damage. Based on peak acceleration values, it is apparent that the region roughly along the Rio Grande from southern Socorro County north into Rio Arriba County is where seismic activity would be expected. Otero County is in a lower risk area for earthquake activity however the Alamogordo Fault parallels US Highway 54 through the highest population areas of the county. This fault has not been active in recorded history.

4.5.2 Assessing Vulnerability: Identifying Assets

Infrastructure

In order to inventory assets (infrastructure) in the county, the MPG used the loss estimation methodology. This method uses Hazard U.S. Multi-Hazard (HAZUS-

MH) software to determine the total number and value of buildings and people in both the entire county and in the hazard area. The potential flood losses were based on the 100-year and 500-year floodplains and how the floodplains were mapped in comparison with where the population resided. The MPG accepted the data from HAZUS. This information was compiled and is found in the County-wide Asset Inventory Worksheets located in Appendix C. It is summarized below.

- Potential Flood Losses: $422,073,348
- Potential Wildfire Losses: $238,789,380
- Potential High Winds Losses: $186,052
- Potential Thunderstorms Losses: $543,515,563
- Potential Dam Failure Losses: $463,149
- Potential Sever Winter Storms Losses: $930,838
- Potential Drought Losses: $930,838
- Potential Landslide Losses: $29,998
- Potential Extreme Heat Losses: $44,502,190
- Potential Expansive Soils Losses: $15,130,827
- Potential Tornadoes Losses: $36,844,617
- Potential Land Subsidence Losses: $1,004,250
- Potential Earthquake Losses: $41,053,265
- Potential Volcanoes Losses: $17,902,378

These same guidelines were used to estimate potential dollar losses for other hazards such as floods, tornadoes, land subsidence, nuisance pests, hazardous material incidents on highways and at fixed facilities, wildfires, thunderstorms and lightning, terrorism, drought, winter storms, and hailstorms. Table 4-7 provides an estimate of the percent of the county that could be impacted by a non-geographical hazard at any one time.

Table 4-6 Estimated Percent of Otero County that Could Be Impacted By Non-Geographical Hazards at Any One Time

Hazard	Average Percentage Used in Calculating Community-Wide Loss Scenarios	Logic/Source
Flood	20.7	An average of all census tracts per HAZUS-MH, plus visual determination to

Table 4-6 Estimated Percent of Otero County that Could Be Impacted By Non-Geographical Hazards at Any One Time

Hazard	Average Percentage Used in Calculating Community-Wide Loss Scenarios	Logic/Source
		adjust by sector (see Appendix C)
Wildfire	33.3	An average of places that have never had a fire, places that have had one fire and places that have had more than one fire, with each of those numbers built up as an average by category using census tract-based data per HAZUS-MH, plus visual determination to adjust by sector (see Appendix C)
High Wind	0.05	Visual determination using overlays and situational analysis (Section 3)
Thunderstorms	26.9	Average of flood and wildfire
Dam Failure	0.05	Visual determination using overlays and situational analysis (Section 3)
Severe Winter Storms	0.1	Visual determination using overlays and situational analysis (Section 3)
Drought	0.05	Visual determination using overlays and situational analysis (Section 3)
Landslide	0.01	Visual determination using overlays and situational analysis (Section 3)
Extreme Heat	5.0	Visual determination using overlays and situational analysis (Section 3)
Expansive Soils	1.0	Visual determination using overlays and situational analysis (Section 3)
Tornadoes	3.0	Visual determination using overlays and situational analysis (Section 3)
Land Subsidence	0.05	Visual determination using overlays and situational analysis (Section 3)
Earthquakes	9.9	Visual determination using overlays and situational analysis (Section 3)
Volcanoes	4.9	Visual determination using overlays and situational analysis (Section 3)

Table 4-8 shows the potential dollar losses to the community from each hazard based on the percentages found in Table 4-7. It is unlikely that a hazard would occur that would adversely affect all of them at the same time, but the potential for damage exists.

Table 4-7 Potential Dollar Losses to the Community

	Potential Losses (in $)							
Hazard	Residential	Commercial	Industrial	Agricultural	Religious / Non-Profit	Government	Education	Utilities[1]
Flood	$837,843,809	$301,208,169	$56,439,235	$14,998,995	$29,951,995	$1,814,056	$17,660,898	N/A
Wildfire	$1,367,656,806	$147,651,063	$11,287,847	$1,499,900	$48,892,226	$889,243	$28,569,100	N/A
High Winds	$2,053,539	$147,651	$11,288	$14,999	$7,341	$445	$4,329	N/A
Thunderstorms	$1,102,750,307	$442,953,190	$33,863,541	$2,249,849	$39,422,110	$1,911,873	$23,114,999	N/A
Dam Failure	$2,053,539	$14,765	$1,129	$300	$1,468	$444,622	$866	N/A
Sever Winter Storms	$2,053,539	$738,255	$56,439	$14,999	$73,412	$4,446	$43,287	N/A
Drought	$2,053,539	$738,255	$56,439	$14,999	$73,412	$4,446	$43,287	N/A
Landslide	$410,708	$0	$0	$29,998	$0	$0	$0	N/A
Extreme Heat	$205,353,875	$29,530,213	$2,257,569	$599,960	$7,341,175	$444,622	$4,328,652	N/A
Expansive Soils	$41,070,775	$14,765,106	$112,878	$14,999	$146,824	$4,446	$86,573	N/A
Tornadoes	$123,212,325	$29,530,213	$2,257,569	$299,980	$2,936,470	$88,924	$1,731,461	N/A
Land Subsid-ence	$20,535,387	$738,255	$56,439	$14,999	$146,824	$4,446	$43,287	N/A
Earthquake	$410,707,749	$29,530,213	$2,257,569	$14,999	$7,341,175	$177,849	$1,731,461	N/A
Volcanoes	$205,353,875	$14,765,106	$564,392	$149,990	$1,468,235	$88,924	$865,730	N/A

Notes: 1 – US Census data not specified for utilities.

4.5.3 Assessing Vulnerability: Estimating Potential Losses

In order to estimate the potential dollar losses to vulnerable structures, the MPG used the process outlined in FEMA's "Understanding Your Risks; Identifying Hazards and Estimating Losses." This process calls for completing two worksheets: the Vulnerable Asset Inventory Worksheet and the Loss Estimate Worksheet.

Thirteen vulnerable critical facilities were identified in the asset inventory. Loss estimates worksheets were completed for each hazard and included the vulnerable critical facilities that might be affected by that hazard. The purpose of providing the vulnerable critical facilities was to generate a list of the most needed projects - retrofitting of critical facilities, which is a state priority. This exercise was an attempt to perform a preliminary cost-benefit analysis to determine what mitigation projects would be cost beneficial. It was not the intent of the MPG to make gross assumptions to estimate total losses. Gross losses are based on the county-wide asset inventory.

4.5.3.1 Vulnerable Asset Inventory Worksheet

To complete this worksheet, information is collected on each facility that was identified as vulnerable. This information is used to calculate the estimated losses on the next worksheet. Each data element on the spreadsheet and its source is described below:

- Size of Building – squared footage is gained from a site visit
- Replacement Value – expressed in cost per square foot and reflects the present day cost of labor and materials to construct a similar building
- Contents Value – based on the type of facility and then multiplying it by the replacement value
- Function, Use, or Value – represents the value of a building's use or function that would be lost if it were damaged or closed, if available, the Annual Operating Budget of the priority critical facility is used for this element
- Displacement Cost – average time in days that the building's occupants typically must operate from a temporary location while repairs are made to the original building due to a hazard event
- Occupancy or Capacity – how many people the structure is designed to hold or service

Asset Inventory Worksheets for Otero County are provided in Appendix B of this plan.

4.5.3.2 Loss Estimate Worksheet

After obtaining the above information for each vulnerable facility, an estimated loss for each hazard event was calculated to arrive at a total loss (in dollars) to the community for each type of hazard. In order to arrive at a total loss, four components were examined:

- Structure Loss – determined by taking the structure's replacement value and multiplying it by the percent damage
- Contents Loss – determined by taking the contents loss and multiplying it by the percent damage
- Structure Use Loss – daily average operating cost multiplied by the functional downtime, which is the average time in days during which a business or service is unable to provide its services due to a hazard event
- Function Loss - daily average operating cost multiplied by the displacement time, which is the average time in days that the building's occupants typically must operate from a temporary location while repairs are made to the original building due to a hazard event

The four categories of loss are then summed to arrive at the total loss for the hazard examined.

The total potential loss for all structures in Otero County is approximately $5.969B (see Appendix C). The potential loss includes residential properties, commercial, religious/non-profit, governmental, and educational facilities. It is unlikely that a hazard would occur that would adversely affect all of them at the same time but the potential for damage exists.

The loss estimation was performed for each hazard, taking into account the possibility that a vulnerable critical facility may be affected by a hazard and the estimated percentage of damage due to that hazard. As indicated on the Loss Estimation Worksheets (Appendix D), the following are the total estimated losses for the vulnerable priority critical facilities and for each hazard:

- Flood: $24,737,22
- Wildfire: $4,211,169
- High Wind: $774,049
- Thunderstorms: $24,048,273
- Dam Failure: $0
- Severe Winter Storms: $3,336,075
- Drought: $969,686

- Landslide: $0
- Extreme Heat: $11,104,041
- Expansive Soils: $0
- Tornadoes: $46,005,214
- Land Subsidence: $0
- Earthquakes: $98,159
- Volcanoes: $14,710

Each hazard has a unique set of characteristics that can produce different effects and impact the community differently, depending on the magnitude, duration, and intensity. Furthermore, the same hazard events will affect different parts of the county in different ways, based on geography, development, population distribution, and age of buildings.

Flooding is easily mapped from previous trends; however, the other hazards (wildfires, tornadoes, and thunderstorms/lightning) are harder to map due to the potential to affect areas of the county differently, the inconsistency of existing data, lack of trend data, and the lack of feasibility that these hazards would affect the entire county. For example, the nature of tornadoes is that they strike at random and the number and severity of past events is not necessarily a predictor of future occurrences. Therefore, loss estimation is more difficult to predict for these types of hazards.

Existing disaster data is limited for use in predicting potential losses. The FEMA How-to-Guide gives no guidance on estimating potential losses for winter storms, hurricanes, hazardous materials incidents, hailstorms, drought, thunderstorms/lightning, or terrorism. Very limited guidance is given for tornadoes and wildfires. To complete the loss estimate worksheets, vulnerable critical facilities that the MPG identified were used to complete a potential dollar loss per hazard event based on educated assumptions.

Loss estimate worksheets for Otero County are provided in Appendix C of this plan.

4.5.4 Assessing Vulnerability: Analyzing Development Trends

The geography of Otero County varies with the elevation throughout the county, which averages 4,500 feet above sea level. The Sacramento Mountain Range composes the central part of the county with numerous intermittent streams draining to the east and west. The western half of the county is within the Tularosa Basin which includes a prehistoric lake bed. Soils are composed of clays, sand and rock.

Ninety percent of Otero County is rangeland, which surrounds a few small towns, and the city of Alamogordo and the Holloman AFB. Much of the rangeland in Otero County is under government control as White Sands Missile Range or the McGregor Ranges.

Topography plays an important role in the flooding problems of the county. Flash flooding arising from seasonal thunderstorms quickly fill smaller streams and overflow their banks, particularly where development (such as Alamogordo) has constrained natural flood plains at points where topography levels out.

Approximately 20% of the total land area of Otero County is located within the FEMA-mapped 100-year floodplain. The majority of the floodplain that coincides with significant habitation is found along the rivers and creeks (and arroyos) of the western slopes of the Sacramento Mountains where these begin to enter the flatter Tularosa Basin – Census tracts in this area peak out at between 89 and 94% of land in a floodplain. The floodplain is illustrated on Map 3 (Appendix B).

The majority of commercial development and residential growth is located in Alamogordo. In addition, as seen on Table 6-8, Otero County's population has increased since 1990. There has been at total increase of 18,111 people in the county since the 1980 census.

Cattle and sheep ranching are the most common agribusinesses. Many of the ranchers in Otero County depend on federal and state land for grazing permits for part of the grazing needed for their animals. Much of Otero County is unavailable for agricultural use because it is part of White Sands Missile Range and the McGregor Ranges along with Holloman AFB.
http://oteroextension.nmsu.edu/agandhort.html

The specific dollar amount for the cost of recovery for natural hazards is not known. Table 4-9 illustrates the estimated dollar losses each year from hazards identified by the MPG. Estimated dollar amounts were gathered using data from the NCDC.

Table 4-8 Estimated Dollar Losses Per Year

Hazard	Cost (dollars)	n	N	Projected Yearly Cost ($)	Source/Comments
Flood	3,120,000	22	59	52,881	NCDC
Flood	20,300,000	2	3	6,766,667	FEMA - PDD Major Event
Wildfires	14,345,000	4	9	1,593,889	FEMA and local news
High Winds					No data available
Thunderstorms	780,000	34	59	13,220	NCDC
Lightning					Associated with wildfires
Hail	2,502,000	62	9	278,000	NCDC
Dam Failure		0			No occurrence

Table 4-8 Estimated Dollar Losses Per Year

Hazard	Cost (dollars)	n	N	Projected Yearly Cost ($)	Source/Comments
Winter Storm	1,166,667	1	12	97,222	FEMA - PDD Major Event (Otero was one of 9 counties impacted - normalized (divided by 9)
Drought	3,030,303	3	13	233,100	NM - State declared emergency (Major Event) - cost represents state-wide indirect cost estimate, normalized (divided by 33)
Land Slide					No data available
Extreme Heat					No data available but significant indirect costs exists
Expansive Soils					No data available but significant indirect costs exists
Tornadoes	305,000	15	59	5,169	NCDC - note that costs are more heavily weighted towards more recent events, indicating projected costs are likely to rise.
Land Subsidence					No data available
Earthquakes		0			No occurrence
Volcanoes		0			No occurrence
			Total	**9,040,149**	

Key:
n = number of events
N = number of years in record

4.6 Analysis of Vulnerability

4.6.1 Jurisdictional Vulnerability

Otero County was scored according to its non-hazard vulnerability points based on the information presented below (Table 4-10) to determine the cumulative impact of population, socioeconomic, building structural ages and types have on vulnerability. These points were assigned as one point for low, two points for medium, and three points for high vulnerability to the various subgroups. These points were then added together for the county to determine the total non-hazard vulnerability points.

Table 4-9 Non-Hazard Vulnerability Points

County	Total Population	Social Vulnerability	Structural Age Vulnerability	Economic Vulnerability	Structural Type Vulnerability	Total Non-Hazard Vulnerability Points
Otero	**M**	**M**	**L**	**M**	**M**	**9**
Low (L)	<40,000	<120%[1]	<5%	<$1M	<25%	
Medium (M)	40 – 100,000	120%-130%[1]	5% – 15%	$1M – $8M	25% – 35%	
High (H)	>100,000	>130%[1]	>15%	>$8M	>35%	

Source: NM State Hazard Mitigation Plan
Note: (1) Social vulnerability categories may have double-counted segments of the population, leading to more than 100%.

4.6.2 Critical Infrastructure Vulnerability

Transportation Systems

The interstate system, as well as other major highways in the state, carries a variety of traffic ranging from commuters to hazardous materials (HazMat). According to the Otero County Office of Emergency Services, local plans are in place for response to hazardous material accidents on highways and railroads. However, a need for HazMat routing review has been identified and is currently under discussion across the state. US Highway 54 is a major north-south corridor utilized in such movements.

There are several railroad junctions in the county, which, if not fully operational, could become chokepoints to freight service. Union Pacific Railroad owns the line that parallels US Highway 54 and operates freight service between El Paso, TX and Kansas City, MO with this line.

The county had a total transportation system dollar exposure of $2.98 billion (Table 4-4). Of these transportation systems, highways make up more than 90% of the cost. Railways and runways make up the balance of the total exposure value.

Table 4-10 Transportation System Dollar Exposure (value in thousands of dollars)

County	Highway	Railway	Bus Facilities	Airports	Runways	Total
Otero	$2,558,058	$142,267	$1,046	$36,624	$238,694	$2,976,689

Source: NM State HMP from FEMA HAZUS-MH

Note: The following is a list of transportation system components used in HAZUS:
- A railway transportation system consists of tracks, bridges, tunnels, stations, fuel, dispatch, and maintenance facilities.
- A bus transportation system consists of urban stations, fuel facilities, dispatch, and maintenance facilities.
- An airport transportation system consists of control towers, runways, terminal buildings, parking structures, fuel facilities, and maintenance and hanger facilities.

Utilities

Utility infrastructure is also subject to various natural hazards. Significant damage to drinking water systems have been experienced in recent years due to cold weather in association to a lack of normal snowfall. The apparent insulating benefits of the snowfall that has been lost due to persistent drought in the region has caused rupture of water lines and potential challenge for firefighting and emer-

gency vehicle access to remote locations, particularly in the mountainous areas of the county.

Prolonged drought and depletion of underground water supplies in the Tularosa Basin is prompting federal government investment in desalinization technology, but all communities and the county itself have been considering water use and strategic planning for almost 2 decades. The continuing growth of the colonias represents a challenge to the county in particular.

Conversely, demands upon the electrical grid during extreme heat events can result in localized brownouts or temporary loss of service if substations experience circuit tripping or transformer overheating. To minimize these potential disruptions, the Otero County Electrical Cooperative (OCEC) is developing redundancy to its substation in Alamogordo. This capital improvement project will be located south of Alamogordo.

In terms of dollar exposure of utility systems, the total value for the state is approximately $6 billion. The total value for Otero County is $106M (Table 4-5). Within the area of utilities, the major vulnerability is severe winter storms (and associated cold snaps), extreme heat (and associated increase in demand of electricity), as well as the standard high wind/thunderstorm damage that is normally expected with above ground delivery systems.

Table 4-11 Utility System Dollar Exposure (value in thousands of dollars)

County	Potable Water	Waste Water	Oil Systems	Natural Gas	Electric Power	Communications	Total
Otero	-	-	-	-	105,600	768	106,368

Source: NM HMP from Federal Emergency Management Agency Hazards U.S. – Multi-Hazard (HAZUS-MH)

Note: The following is a list of utility system components used in HAZUS:

- A potable water system consists of pipelines, water treatment plants, control vaults and control stations, wells, storage tanks, and pumping stations.
- A wastewater system consists of pipelines, wastewater treatment plants, control vaults and control stations, and lift stations.
- An oil system consists of pipelines, refineries, control vaults and control stations, and tank farms.
- A natural gas system consists of pipelines, control vaults and control stations, and compressor stations.
- An electric power system consists of generating plants, substations distribution circuits, and transmission towers.
- A communication system consists of communications facilities, communications lines, control vaults, switching stations, radio/TV stations, weather stations, or other facilities.

4.6.3 Critical Facility Vulnerabilities by Hazard

Based on the information presented in this section, public-owned or operated buildings, infrastructure, and critical facilities were ranked according to their vulnerability from the high-risk hazards. As additional data and mapped locations of buildings, infrastructure, and critical facilities is collected, better details on their vulnerability will be generated and updated in future revisions of this document.

The best way to identify which properties are subject to specific hazards is to overlay a map on which those facilities are located onto a map showing the probability of each hazard. Unfortunately, those maps do not exist. We do not have maps, digital or otherwise, showing state facility locations. We do have maps of

some hazard probabilities (earthquake, flood), but all maps need to be in the same scale to be readily comparable. The following are comments on the Critical Facilities with respect to the identified natural hazards:

- The Critical Facilities identified are no more exposed to natural hazards than are any other buildings or infrastructure (facilities).

- Several of the identified Critical Facilities, being public buildings, adhere to a more stringent building code than private residences and businesses.

4.6.4 Flood

The Critical Facilities listed are not located in flood-prone areas, although certain segments of county/state property may be subject to occasional flooding, such as low points on highways.

4.6.5 Wildfire and Wildland/Urban Interface Fire

Most of the identified Critical Facilities practice the use of defensible spaces and are constructed of materials resistant to fire. The fire stations identified all support communities or colonias that are subject to wildfire or WUI fires. Smoke from wildfires could endanger the health of patients in health care facilities and can force evacuation of residents if the smoke becomes extreme. Evacuation of correctional facilities would pose a serious logistical problem, whether due to direct fire danger or smoke. Impact of fires on electrical transmission lines or substations (external to the ones listed as Critical Facilities) could impact use capacity of these facilities.

4.6.6 Severe Weather

State-owned property is as vulnerable to severe weather as all other property. Special concerns may arise over critical facilities such as electricity transmission lines and communications towers being affected by lightning, ice, and windstorms and highways closing due to severe winter conditions, and power failures that occur as a secondary effect of severe weather would affect confined populations, communications systems, and just about every other segment of the population.

4.6.7 Earthquake

The effect of earthquakes on state-owned property and critical facilities is largely an unknown because there have been no serious earthquakes in the state recently. Nevertheless, the central corridor of the state from Socorro County to Rio Arriba County is a moderate earthquake zone. Recently built facilities are constructed to a relatively high earthquake standard, but there are many older buildings and critical facilities that were not designed with earthquake resistance in mind. It is not known whether any of these facilities have been or need to be examined for mitigation action. Areas of particular concern are highway bridges and overpasses, railroad facilities, hazardous material locations such as tank farms, and pipelines.

4.6.8 Drought

While drought does not cause damage to buildings and critical facilities in general, all places where people live and work are subject to drought effects. Significant drought events could affect the County's ability to combat wildfires and could increase the probability of wildfire occurrence. State properties can engage in drought mitigation through water conservation plans, practices, and educational programs. Hospitals and other places with confined populations need to develop contingency plans to address a critical water shortage.

4.6.9 Extreme Heat

Heat can affect roadways, runways, and some equipment, but it is generally a health risk, not a structural hazard. Periods of extreme heat can also place additional demands upon the electrical grid. Brown outs and black outs could dramatically increase vulnerability, particularly to those facilities associated with the housing and care of vulnerable populations.

4.6.10 Dam Failure

Most critical facilities in the state do not appear to be located in floodways or in inundation zones. However, most inundation zone maps are outdated and may not be accurate. As future maps become available, these facilities will be re-evaluated.

4.6.11 Landslide

Most critical facilities that are susceptible to landslides, such as communications towers, are in mountainous areas and along mountain roads. Some communities have allowed development in these areas, but most critical facilities are not in these places.

4.6.12 Constraints of Vulnerability Analysis for Local Jurisdictions

The potential losses to identified vulnerable structures in each county are best determined at the local level and reported in local mitigation plans. Not every community or incorporated city within Otero County has a mitigation plan in place, and those that do have not consistently provided critical facilities data. The Disaster Mitigation Act of 2000 (DMA2K) does not require this of local mitigation plans. Due to the lack of data on local critical facilities, potential losses have been generalized statewide based on data from FEMA's Hazards U.S. Multi-Hazard (HAZUS-MH) beta version.

HAZUS-MH is one of the principal planning tools available to state and local governments. However, with Level 1 data being the only HAZUS data for New Mexico at this time, HAZUS is of little use beyond some very general assumptions. HAZUS Level 1 data does not necessarily present an accurate picture of reality. The state must input specific data in a wide range of parameters to make Level 1 data more accurate. Given sufficient funding, the Department of Homeland Security and Emergency Management will focus significant effort on improving HAZUS data in order for it to be helpful to state and local mitigation planners.

4.7 Conclusions

This hazard analysis and risk assessment is based on best-available data from state and local sources. It presents a reasonable range of hazards that have affected Otero County in the past or has the potential to impact the County in the future. The hazards most likely to impact the county are floods and wildfires, although severe thunderstorms were ranked equally high as these initiate floods and wildfires.

There are a number of conclusions that can be made based on the hazard analysis and risk assessment:

- County, State-owned and private critical facilities are no more exposed to natural hazards than are other structures in the same general vicinity. In many ways, these structures are less exposed to natural hazards than other structures due to existing understanding of commonly occurring events, such as floods, and the deliberate consideration of these hazards in the siting and construction of these structures.

- Critical facilities deserve additional mitigation attention because of the higher potential life and property loss or environmental harm in the unlikely event that they suffer significant damage.

- As one of the top three counties with the greatest number of public sector facilities, Otero County hazard mitigation activities respective to this sector and future funding of these activities stands to lessen the impact to the citizens of Otero, New Mexico and nationally where emergency response and recovery costs for Otero County are disproportionately weighted to the sector relative that seen in other counties of the state.

- Otero County building stock is weighted more heavily in the area of second homes (vacation homes) than most other counties in the state. This means that a larger than average number of unoccupied structures require greater vigilance to prevent adverse impacts than might otherwise be seen in other counties of the state. This is particularly true for wildfires and the WUI.

- As with other counties in the state, Otero has within its borders a sovereign tribal government that places additional challenges in the furtherance of hazard mitigation planning and actions. Otero County requires support in the coordination of these activities with both State of New Mexico and the Bureau of Indian Affairs. This is particularly true in mitigation activities and Mescalero Lake Dam, which also adds the complexity that the inundation zone for this dam is Lincoln County. This plan includes a mitigation project that addresses this issue and represents a prime opportunity for collaborative interaction between Lincoln County, the Mescalero Tribe and Otero County.

It is important to note that although some hazards are classified as low or moderate in probability of occurrence, it does not mean that they cannot affect Otero County in any significant way. It only indicates that the probability of occurrence is relatively less likely. The hazard analysis in this document provides helpful insights for planning purposes and determination of priorities, but it cannot offer guarantees.

Critical Facilities

The analysis of the county-wide assessment of vulnerable infrastructure revealed the following:

- The Weed Community Center, a former high school structure, is vulnerable due to the projected replacement cost of the structure, its size, and the community's limited ability to replace a complete loss due to small tax base. The facility might not fare well in competition with other county assets in a widespread event that is not localized to Weed.

- The University's Tays Center is build upon a flood zone and may still be subjected to loss due to flooding, however existing Flood Insurance Rate Maps are older and satellite imagery indicated significant changes to the topography due to the center's construction and the improvements to Scenic Drive.

- Planned capital improvements by Otero County Electrical Cooperative in the building of a second substation south of Alamogordo will provide contingency capability if the existing substation (and the one adjacent that is owned by PNM) is flooded (they are both identified as being in a flood zone). As both facilities utilize construction techniques that are both industry standards and result in sensitive equipment being raised above the ground, flooding threat is thought to become minimal. The construction of reserve capacity also bodes well to mitigation of varied threats such as extreme heat, tornadoes, etc.

5 Mitigation Strategies

5.1 Goals and Objectives of Hazard Mitigation

The ultimate purpose of all hazard mitigation is the protection and preservation of life and property from the risk or effects of natural hazards. Local governments can make progress toward this goal through coordinated planning and financing to achieve the specific objectives set forth in their hazard mitigation plans. To this end, the Mitigation Planning Group's (MPG) strategy has been to develop several methods for mitigating the hazards identified in Chapter 3, Hazard Identification and Risk Analysis, as the most likely hazards to have severe consequences in Otero County: flood, wildfire, severe weather storms, dam failure, , drought, extreme heat, tornadoes, earthquakes, and volcanic activity. The MPG has developed goals and objectives and has suggested action items that can provide directions and methods for mitigating these hazards.

5.1.1 Mitigation Goals

The overarching goal of mitigation identified by the MPG is to:

- Reduce or eliminate hazardous conditions that cause loss of life or inflict injury;
- Reduce or eliminate hazardous conditions that cause property damage;
- Reduce or eliminate hazardous conditions that degrade important natural resources; and
- Reduce or eliminate hazardous conditions that impact the community's recovery time in emergency response.

The focus of these goals are to reduce especially repetitive costs associated with disasters to property owners and all levels of government including the protection or retrofit of critical facilities, reducing exposure to liability and minimizing community disruption.

5.1.2 Mitigation Strategy Objectives

Mitigation strategies in this Hazard Mitigation Plan address critical facilities and any known repetitive-loss structures. Preparedness, response, and recovery measures that were identified to support the concept of mitigation and may directly support identified mitigation actions by

1. *Increasing awareness of hazards and their effects*;
2. *Decreasing the possibility of impact from the most significant threats*;
3. *Decreasing the vulnerability of critical and non-critical facilities*;

4. *Increasing established response mechanisms by enhancing partnerships*; and
5. *Increasing coordination between levels of government regarding incidents and response mechanisms*.

The HMP is intended to facilitate these goals and actions and to focus on the county's top priorities for hazard mitigation projects and action items. If other hazards that currently are not deemed significant do become significant in the future, updates to this plan will include mitigation strategies to address them. Critical facilities that lie within high-hazard areas will receive special attention, and especially property that has suffered repeated losses, regardless of whether or not the loss was during a state- or federal-declared disaster.

Mitigation strategy objectives described above reflect what Otero County, state, and federal governmental agencies and non-governmental organizations (NGO) within Otero County have considered based on the needs of the community. The Hazard Mitigation Planning Group met to analyze the results of the risk assessment and to discuss possible mitigative measures that could reduce the effects of disasters. The risk assessment consisted of identifying the hazards that affect the county and the critical facilities that are vulnerable to these hazards. Because floods, wildfires, and high winds are the predominant hazards in the county, they were the focus of the discussions. From these discussions, an Action Plan was prepared that identifies specific actions to achieve identified goals that address ways to reduce the impact of the identified hazards on the identified critical facilities; an appropriate lead person for each action; a schedule for accomplishment; an estimate of cost; and suggested funding sources.

5.2 Mitigation Strategies

5.2.1 Identification and Analysis of Mitigation Measures

Otero County has identified several hazard mitigation projects that would benefit the county. These were identified in the MPG meetings, which included input from representatives from governmental organizations, local business, and private citizens. These are addressed in detail below and summarized in Section 7.

5.2.1.1 Public Awareness

Insurance industry and emergency management research has demonstrated that awareness of hazards is not enough. People must know how to prepare for, respond to, and take preventive measures against threats from natural and technological hazards. This research has also shown that a properly run local information program is more effective than national advertising or public campaigns.

Although concerted local and statewide efforts to inform the public exist, lives and property continue to be threatened when segments of the population remain uninformed or chose to ignore the information available. Educating the public about these life- and property-saving techniques must remain a high priority item

at the local, state, and federal level. Projects identified by the MPG (see the Action Plan in Chapter 7) are as follows:

- Public education campaign focusing on public service announcements (PSA) covering drainage maintenance, tree trimming, information on special flood hazard areas and mitigation measures through utility bill inserts, phone book publications, websites, and public school programs. There is a single television station within the County and it has been willing in the past to assist in communicating to the public through the media. Cable services are mainly focused on Alamogordo and represent a significant resource for public outreach, however it should be recognized that the reach of this service is not everywhere.

- Public meetings have also been identified as a possible awareness heightening tool. The County now utilizes two meetings a month schedule with location of these meetings rotating among the various communities of the County. Public awareness relating to known hazard seasons (such as fire season, flood season, winter storm season) could be incorporated into these meeting agendas. Topics could include use of local and visiting subject matter experts to educate the public on how to decrease their risk during a given disaster by understanding the hazard and the potential devastation it can create. The County can also team with local and chain home improvement stores to give classes to educate citizens on measures they can take to protect their own homes against certain disasters.

5.2.1.2 Floodplain Management and Construction/Use Ordinances

Improved floodplain management, including land-use planning, zoning, and enforcement at the local level can reduce flood related damages. The use of the National Flood Insurance Program (NFIP) is critical to the reduction of future flood damage costs to the taxpayer.

Otero County joined the NFIP on August 8, 1974 (Table 6-9). The county developed a Floodplain Damage Prevention Ordinance as part of its county regulations, which addresses methods and practices to minimize flood damage to new and substantial home improvement projects, as well as zoning and sub-division regulations.

Table 5-1 National Flood Insurance Program

Name	Community Identification Number	Initial FHBM[1] Identified	Initial FIRM[2] Identified	Current Effective Map Date
Otero County	350044#	08/09/74	08/01/87	08/01/87[3]
Alamogordo	350045#	07/19/74	03/02/83	08/02/90

Notes: 1. FHBM = Flood Hazard Boundary Map. 2. FIRM = Flood Insurance Rate Map. 3. Original FIRM by Letter - All Zone A, C and X. Otero County 100-year flood plain is currently in revision for select areas as associated with recent flooding.
Source: http://www.fema.gov/cis/NM.html.

Public education plays an important role in floodplain management. An effective education program should be implemented to show citizens the importance of building codes and ordinances and how cost-effective they could be in reducing future damages.

The Community Rating System (CRS) is a program through the NFIP that counties and municipalities can elect to join. Counties that join the CRS receive a discount on their flood insurance. A requirement of being part of the CRS is active pursuit of public outreach programs. For example, an annual outreach project, such as a Repetitive Loss Outreach Program, would focus on repetitive-loss areas within the county and would consist of three main components: 1) advise homeowners that they live in a repetitive-loss area and could be subject to flooding; 2) give the homeowner appropriate property protection measure guidelines; and 3) make the homeowner aware of the basic facts about flood insurance. The City of Alamogordo is currently a member of this program with a classification of 9 which carries a 5% rate reduction in NFIP premiums.

Projects identified by the MPG (see the Action Plan in Chapter 7) are as follows:

- Given the role of the State in development and administration of building codes, the county does not have responsibility in the area of issuing and enforcement of building permits. The county however does have review and pre-issuance right to oppose projects that are not well thought out. The county will seek to proactively utilize this right and explore the increase in capacity to review these applications to the state in a timely manner. Through this activity, expansion of existing colonias and initiation of new colonias / subdivisions can be addressed to begin the process of improving the quality of construction, proper siting of new development and assurance that group is supported with emergency services and infrastructure capable of withstanding impact from hazards.

- Review and improve roads repetitively subjected to washouts. By addressing roads and bridges that have been repeatedly subject to damage during flooding, the County improves response and evacuation capability. Recovery time following flood events also decrease.

- Review and eliminate low water crossings based on prioritization that is driven from emergency needs. Numerous low water crossings exist within the County and are quickly impacted during rain events. By reviewing and acting, the County decreases response time during emergencies. It should be noted that this improvement does not necessarily relate to flood events.

5.2.1.3 Response Process Improvement

Improved response processes decrease the severity of community emergencies such as floods and wild fires, as well as personal emergencies such as ambulance runs and household fires. Otero County Commission and the response organizations of the county actively pursue response process improvement through inter-

nal sources of funding as well as grant funds made available from the state and federal government. In regards to response improvement, the MPG identified several projects that relate to mitigation (see Section 7):

- Assess existing backup generator capacity as these relate to critical infrastructure capability to maintain operations in times of prolonged loss of power. The county will then explore how to utilize available grant funding to purchase mobile or fixed backup generators.

- Establish and prioritize needed improvements of key communication systems and response equipment. Communications between the various response organizations continues to be challenged by equipment that is old and not interoperable. The County will continue to pursue both internal and external funding sources for improvement of communications to ensure true interoperability.

- Review existing and develop new Memoranda of Understanding (MOU) and Mutual Aid Agreements (MAA) between County, Governmental Organizations and Non-Governmental Organizations. The County Commission and Emergency Management have worked to develop MOU/MAA that are easily updated and require minimal challenges to approval. This process will be utilized to assure the County's MOU/MAA include all potential partners and are as up-to-date as possible.

- Review and improve roads repetitively subjected to washouts. As addressed earlier, those roads and bridges subject to repeated washout are known and will be studied for action as soon as capital improvement funding is identified.

- Review and eliminate low water crossings based on prioritization that is driven from emergency needs. The County will scope and elimination of low water crossing deemed critical for improvement of response processes.

- Seek Geographic Positioning System (GPS) capability in all emergency response vehicles. Although emergency vehicles operate now with either some form of GPS or by experienced personnel with knowledge of their service areas, emergency response vehicles should all be equipped with GPS capability. This technology would make locating remote areas of the County easier, more time efficient, and possibly save lives and property, which are the goals of mitigation.

- Create an improvement program for the public works response capability. The County has direct experience in programs that seek improvements among response elements that do not as frequently see action, for example the programs where Public Health and hospitals/clinic personnel were trained in response processes, and school bus drivers were trained in their roles of supporting evacuation. The public works response capability to the community is not as developed as the capabilities of other agencies in the County. By having

County agencies aware of their needs to improve mitigation efforts they can take to assist the County can help attain the goal of reducing the effect of hazards on life and property.

- Work with Lincoln County and Mescalero Tribal government to identify monitoring and reporting process improvements for Mescalero Lake Dam.

5.2.1.4 Protection of the Public from Man-Made Hazards

US Route 54 is a well-traveled highway that passes through the most populated areas of the county. The route is a critical transportation corridor connecting El Paso, Texas to location in Otero County before moving northeastward to the Texas panhandle and locations east. In proximity to Alamogordo, a bypass exists to the west of the city. A traffic accident involving hazardous materials on this Highway would affect many citizens of the county. In regards to this threat, the MPG identified the following project:

- Explore development of a hazardous cargo route alternate to Highway 54 corridor. The county will study to where this route could be placed such that the alternate route will not prove detrimental to habitats, residences, and businesses. By having a less traveled alternate route for hazardous cargo, if an incident were to occur, the possible effect on life would be lessened, if the route was in an isolated area, away from commuters, homes, and businesses.

5.2.1.5 Early Warning

With sufficient warning of a flood, a community and its residents can take protective measures such as moving personal property, cars, and people out of harms way. This system, when developed must be coupled with other methods of warning the general public, carrying out appropriate tasks, and coordinating the flood response plan with operators of critical facilities. A comprehensive education and outreach program is critical to the success of early warning systems so that the general public, operators of critical facilities, and emergency response personnel will know what actions to take when warning is disseminated.

Otero County's Emergency Operations Plan gives details of its public alert system. The activation of this system and timely release of emergency information to the public by all available media is vitally important. A project identified by the MPG (see the Action Plan in Chapter 7) follows:

- Conduct a study on the best and most cost effective placement of evacuation and notification sirens for the County. Siren systems can be used to alert citizens that there is a need to evacuate the area. It should be determined if the coverage will be effective in rural areas of the County, as well. By warning of the need to evacuate, the County can possibly reduce the amount of injuries and deaths of its citizens.

According to *Requirement 201.6(c)(3)(iii) the action plan should describe how actions will be prioritized, implemented, and administered by the local jurisdictions. Prioritizing 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.* In compliance with that requirement, the MPG and public were provided with opportunities to suggest mitigation actions regarding the priority of the hazard, description of the mitigation action, cost-effectiveness, potential funding source, responsible party, implementation schedule, and effects on new and existing buildings. The following Table 7-2 is a summary of mitigation actions that the MPG believes will reduce the effect that a disaster could have on Otero County.

5.2.2 Evaluation Methodology

In order to evaluate potential actions, the MPG used the STAPLEE criteria, outlined in FEMA's *Developing the Mitigation Plan* (FEMA 386-3), which provides a systematic approach to weighing the pros and cons of potential mitigation actions. STAPLEE stands for Social, Technical, Administrative, Political, Legal, Economic, and Environmental. Each of these criteria consists of several factors that should be considered when evaluating the appropriateness of each potential action. The methodology used to determine action item priorities was based upon a consensus of the MPG. Factors considered were cost effectiveness, environmental impact, and technical feasibility. The priorities identified in this plan are to be viewed as guidelines for Otero County and its partners in hazard mitigation implementation process within the county, as described below in Table 7-1.

Table 5-2 STAPLEE Criteria Evaluation by MPG

Staplee Category	Category Description	Evaluation Criteria
Social	Public support of the overall implementation strategy and specific mitigation actions.	• Compatibility with present and future community values • Affect on cultural values or resources. • Affect on segments of the population • Affect on established neighborhoods, voting districts, or relocation impact
Technical	Actions with reasonable solutions, given the present technological requirements of the proposed project.	• Feasibility of action- can actually be accomplished • Long-term solution • Reduction of primary or secondary impacts.

Table 5-2 STAPLEE Criteria Evaluation by MPG

Staplee Category	Category Description	Evaluation Criteria
Administrative	Availability of anticipated administrative capabilities including staffing, funding, and maintenance requirements for the proposed mitigation action.	• Current administrative capability (staff, technical experts, and/or funding) to implement the action, or whether it can be readily obtained. • Ability to maintain projects.
Political	Current community and state political support related to the environment, economic development, safety, and emergency management.	• Political support for implementation and monitoring • Availability of department, agency or representative willing to help see the action to completion • Public support to ensure the success of the action.
Legal	Legal authority at the state, tribal, or local level to implement the action.	• State, tribe, or community authority to implement the proposed action. • Potential legal consequences (liability) to the action.
Economic	Benefit and costs associated with proposed actions.	• Costs seen reasonable considering likely benefits • Probability of financial burden placed on the tax base or local economy to implement this action • Contribution to other community economic goals, such as capital improvements or economic development • Availability of outside sources of funding
Environmental	Impact on the environment consistent with sustainable and environmentally healthy communities	• Affect on the environment and natural resources • Affect on endangered species • Compliance with local, state, and federal environmental laws or regulations • Consistency with community environmental goals.

5.2.2.1 STAPLEE Criteria Scoring

Each potential mitigation action was assessed by ranking each factor in each of the categories (social, technical, administrative, political, etc.) and by then adding up the total score. The MPG members met to review the scoring results and reached consensus on the final ranking of the projects relative to one another. Rankings were as follows:

0 = Poor: The mitigation method does not meet basic criteria established under the evaluation category.

1 = Fair: The mitigation method meets the basic criteria established under the evaluation category.

2 = Good: The mitigation method exceeds the basic criteria established under the evaluation category.

3 = Excellent: The mitigation method exceeds the basic established criteria in an innovative or new way.

5.2.3 Implementing Mitigation Measures

The inclusion of any specific action item in this document does not commit the county to implementation. Each item will be considered in terms of the available staff and funding resources. Certain items may require regulatory changes or other decisions that must be implemented through standard processes, such as changing regulations. This plan is intended to offer priorities based on an examination of hazards.

Benefit-cost analysis (BCA) compares the benefits of mitigation measures to the costs, and is a technique used for evaluating the cost-effectiveness of mitigation measures. FEMA requires a BCA for all mitigation projects that receive FEMA funding.

The MPG discussed the potential costs associated with each type of mitigation measure identified in Appendix D, and decided that any project could be cost effective if it's scope were properly tailored to the situation.

After discussing the possible costs of the various mitigation measures, the MPG decided that instead of working on developing a very generic BCA at this time for projects that may not ever be authorized, we would wait until a project was determined to be feasible. An estimated cost to implement the action item was, however, provided in the action plan.

5.2.4 Mitigation Action Financing

The mitigation strategies described here, including funding for mitigation actions, are part of an overall, general plan for preventing or mitigating potentially hazardous situations beforehand. The New Mexico Department of Homeland Security and Emergency Management (DHSEM) is able to offer grant applicants tech-

nical assistance in planning and executing specific projects, but federal pre-disaster mitigation funding must be authorized annually by Congress. Post-disaster mitigation funding is based on disaster costs arising from a Stafford Act disaster declaration.

Often grant funding is for specific types of projects, and potential grant recipients must use what is available to them, regardless of priority. The Federal Emergency Management Agency (FEMA) allocates grants to local governments based upon recommendations from the state. The state in turn prioritizes grant applications based upon the needs of a given applicant in a given situation.

Considering these limitations, it is not possible to predict the amount of mitigation grant funding that will be available in the future, and so funding has not been considered a limiting factor in developing mitigation strategies and action items for this plan.

Federal

- Farm Bill Conservation Program / Farm and Ranch Land Protection Program
- FEMA Public Assistance (PA) Grants
- FEMA Hazard Mitigation Grant Program (HMGP)
- FEMA Pre-Disaster Mitigation (PDM) Grants
- FEMA / National Flood Insurance Program (NFIP) Repetitive Flood Claims (RFC) Grants
- FEMA / NFIP Severe Repetitive Loss (SRL) Grants
- FEMA / NFIP Flood Mitigation Assistance (FMA) Grants
- National Dam Safety Program/ Water Resources Development Act (WRDA)
- Housing and Urban Development Community Development Block Grants (CDBG)
- Land and Water Conservation Fund
- United States Department of Agriculture Forest Legacy Program

State

- Community Wildfire Hazard Mitigation Assistance Program
- Farmland Preservation Program
- Freshwater Wetland Protection Act/ Wetland Mitigation Fund
- Dam Restoration and Inland Water Projects Loan Program
- Sewerage Infrastructure Improvement Act Grants
- Environmental Infrastructure Financing Program
- Transportation Trust Fund Municipal Aid
- Transportation Trust Fund

5.3 Summary of Mitigation Strategies

The following are suggested actions that the MPG believes will reduce the effect that a disaster could have on Otero County. These are presented in order of priority for action based upon the MPG and selected government / emergency services representatives.

5.3.1 All Hazards Mitigation Actions

- **Communications – Establish and prioritize needed improvements of key communication systems and response equipment.**

  Hazards: All hazards.

  Comments: County response personnel all need to use the same equipment to respond effectively to a disaster.

  How this Action Contributes to the Mitigation Strategy: A more effective response leads to less damage and increases safety, both important goals of mitigation.

  Responsible Organizations/Individuals: Local emergency manager, LEPC members, and other county emergency response agencies.

  Estimated Expenses: Materials (new communications equipment) and Time (development of strategy on coordination of use of the older and newer equipment inter-operably).

  Timeframe: 6 months to 2 years for securing necessary funding (through competitive grants), then within a year of award (action is contingent on grant award), then 1 to 2 years to achieve demonstrable improvements (through response use or through simulations - exercises).

  Funding Sources: County and state budgets, state grants, and FEMA grants.

  STAPLEE Score: 46

  Prioritization: 2

- **Create an improvement program for the Public Works department's response capability.**

  Hazard: All hazards.

Comments: The Public Works Department's ability to respond to disastrous events in the community is not as well-developed as the capabilities of other agencies in the county.

How this Action Contributes to the Mitigation Strategy: County agencies that are aware of the need to improve mitigation efforts can assist the county toward the goal of reducing the effect of hazards on life and property.

Responsible Organizations/Individuals: the New Mexico DHSEM, the state floodplain coordinator, local floodplain managers, and local jurisdictional agencies

Estimated Expenses: Employee Time and possibly contractor support for educational program design and development.

Timeframe: 6 to 12 months for educational program design and development of program materials, 6 to 12 months for initial execution, 1-3 months for program evaluation and after action reporting, ongoing cycles of development/delivery/evaluation from thereon. Something that can be accomplished in 12 to 18 months with progress improvements realized prior to this.

Funding Sources: County Budget, selected grant programs (particularly where tied to emergency management grant or water system security improvement grants.

STAPLEE Score: 44

Prioritization: 4

- **Review existing and develop new Memoranda of Understanding (MOU) and Mutual Aid Agreements (MAAs) between the county, governmental organizations, and non-governmental organizations (NGOS).**

Hazards: All hazards.

Comments: All MOUs and MAAs should be updated and adopted before a disaster strikes to ensure that all responding agencies are using the same methods to save life and property.

How this Action Contributes to the Mitigation Strategy: Good, working agreements between the county, government organizations, and NGOs are essential for smooth response and recovery from a disaster. Strengthening these before an incident occurs is an effective way to mitigate the effects of a disaster. Exercises in emergency and disaster response can en-

sure that all parties are aware of the responsibilities that they have agreed upon.

Responsible Organizations/Individuals: Local emergency manager, any responding county or state agency, and other NGOs that are a part of an emergency response.

Estimated Expenses: Employee Time

Timeframe: On-going process, speeded by most recent design of MOU that do not require action at the political level, one year at most.

Funding Sources: County budget, possibly selected grants

STAPLEE Score: 48

Prioritization: 5

- **Review and assess the county's right to compel owners and operators of facilities and infrastructure to make improvements where these facilities present credible threats to the county.**

Hazards: All hazards.

Comments: The MPG can meet with county officials and the county commissioners to see how the county can enforce its current codes. This can be done in conjunction with the public awareness campaign to compel owners and workers to take necessary steps to successfully mitigate certain structures in the county.

How this Action Contributes to the Mitigation Strategy: By knowing which codes the county can enforce, the county can take appropriate measures to protect life and property.

Responsible Organizations/Individuals: County commissioners, local emergency manager, and other county officials and agencies.

Estimated Expenses: Employee time

Timeframe: As soon as political champion can muster necessary support for regulatory action then some time (6 months?) for appropriate agencies (building department?) to formulate code and inspection tools, then ongoing throughout the 60-month action period of this plan.

Funding Sources: County budget

STAPLEE Score: 31

Prioritization: 7

- **Develop public service announcements about specific threats for dissemenations via the media.**

  Hazard: All hazards.

  Comments: These announcements can be developed and kept on file to update and disseminate to the public as warranted. Such announcements can be made via television and radio, pamphlets, training sessions, and demonstrated activities. If the threat is an ongoing risk, the message can be relayed throughout the year to the county. Special populations such as non-English speaking populations and the homebound can be identified for specific messages. Topics covered that relate to many hazards would include evacuation and sheltering-in-place.

  How this Action Contributes to the Mitigation Strategy: Adequate warning for certain hazards can mean life or death for individuals living and/or working in certain areas. The goal of mitigation is to reduce the effects of the hazard on life and property. Armed with knowledge of how to safely and correctly respond to a hazard, people can make educated and informed choices during a disaster.

  Responsible Organizations/Individuals: Local emergency manager and media outlets.

  Estimated Expenses: Time and Materials plus expense of airing PSA's on local media.

  Funding Sources: County or state budget, FEMA grants

  Timeframe: As soon as materials can be developed and throughout the 60-month action period.

  STAPLEE Score: 54

  Prioritization: 8

- **Conduct a study of the best and most cost-effective placement of evacuation and notification sirens for the county.**

  Hazard: All hazards

  Comments: Siren systems can be used to alert citizens that the area should be evacuated. It should be determined if the coverage also will be effective in rural areas of the county.

How this Action Contributes to the Mitigation Strategy: By warning of the need to evacuate, the county can possibly reduce the number of injuries and deaths.

Responsible Organization/Individual: Local emergency manager

Estimated Expenses: Employee Time, contractor support for design / build, equipment and supplies

Timeframe: 1 year after funding becomes available (competitive grant process may take 2 to 3 years) for execution of study and reporting, 1-2 years for working funding into budget, 1 year for design / build. All told, at least 60 months.

Funding Sources: County budget, selected grants (particularly where coordinated with development of traffic towers & situational awareness development)

STAPLEE Score: 44

Prioritization: 9

- **Obtain global positioning system (GPS) capability for emergency response vehicles.**

Hazard: All hazards

Comments: Emergency response vehicles should all be equipped with GPS capability.

How this Action Contributes to the Mitigation Strategy: This technology would make locating remote areas of the county easier, more time efficient, and possibly save lives and property.

Responsible Organizations/Individuals: Local emergency manager and response agencies (e.g., police, fire, EMS)

Estimated Expenses: GPS equipment for vehicles, installation

Timeframe: 12 to 24 months from when funding is available

Funding Sources: County budget and possible grant source

STAPLEE Score: 60

Prioritization: 11

- **Conduct public meetings to raise awareness of threats and how citizens can decrease the impact of disasters.**

  Hazard: All hazards.

  Comments: This action can include a series of public meetings with local and visiting subject matter experts to educate the public on how to decrease their risk during a given disaster by understanding the hazard in question and the potential devastation it can create. The county can also team with home improvement stores to give classes to educate citizens on measures they can take to protect their own homes against certain disasters.

  How this Action Contributes to the Mitigation Strategy: The public can be armed with information about certain types of disasters and the measures that they can take on their own personal property to lessen the effect on both life and property and, in turn, on the county.

  Responsible Organizations/Individuals: MPG members, local emergency managers, Local Emergency Planning Committee (LEPC) members, county commissioners, other county agencies, the New Mexico DHSEM, and other state agencies with roles in emergency management.

  Estimated Expenses: Time and materials

  Funding Sources: County or state budget, FEMA grants

  Timeframe: Starting as soon as desired and progressing throughout the HMP's 60-month action cycle.

  STAPLEE Score: 50

  Prioritization: 12

- **Assess and develop/augment mobile and/or fixed facility backup power generation capacity.**

  Hazard: All hazards, particularly where these events impact power supply to critical infrastructure.

  Comments: Review capacity of local communities and their critical infrastructure to maintain continuity of operations with the loss of power, particularly infrastructure such as water service and sewer treatment but also including facilities utilized in the sheltering of special populations. Utilize existing and future grant funding opportunities to purchase/install these generators or develop the capability move generators to multiple

places and quickly connect through standardized electrical connections for these generators.

How this Action Contributes to the Mitigation Strategy: Decrease in downtime of critical infrastructure may aid in the speed of recovery following larger responses and help assure provision of water supply for fire fighting in the urban setting.

Responsible Organizations/Individuals: Otero County government and the various critical infrastructure owner/operators where these are not within the public sector.

Estimated Expenses: Employee Time and possibly contractor, if formalized scoping is needed. Purchase of equipment and connection hardware.

Timeframe: 6 to 12 months for study of needs, 1 to 3 years to identify and seek funding, 1 to 3 months for procurement of design / build contractor, 3 to 6 months execution of project.

Funding Sources: Grants, county and infrastructure organizational budgets.

STAPLEE Score: 43

Prioritization: 14 (added to bottom of list – not actually subjected to ranking yet.

5.3.2 Flood Mitigation Actions

- **Public Awareness – Conduct public meetings and develop public service announcements to raise awareness of flood-related threats and how citizens can decrease the impact of flood disasters.**

  NOTE: See All Hazard Mitigation Items

- **Communications – Establish and prioritize needed improvements of key communication systems and response equipment in regard to flood events.**

  NOTE: See All Hazard Mitigation Items

- **Increase level of effort and proactively utilize county right to object in issuance of building permits by the state as related to flood events.**

  Hazards: Flooding (all hazards)

Comments: The county administration can work with the commission to formulate an approach and expense management of a more proactive review process as part of the state's building permit system for unincorporated parts of the county.

How this Action Contributes to the Mitigation Strategy: By utilizing its right to review pending state building permits and proactively injects itself to stop proposed projects that prove detrimental to the ability of existing and proposed communities to respond and recover quickly to natural and manmade emergencies, the county can utilize existing systems to impact future building in a cost effective manner.

Responsible Organizations/Individuals: Local emergency manager, LEPC members, county commissioners, county administration

Estimated Expenses: Employee Time

Funding Sources: Local planning grants and state funds

Timeframe: Immediately, through the 60-month action period

- **Review and improve roads that are repeatedly subjected to washouts.**

Hazards: Flood

Comments: Some areas in the county are repeatedly subjected to washouts during intense periods of rainfall.

How this Action Contributes to the Mitigation Strategy: Upkeep of these roads can moderate the effect of a washout on the roads and adjoining property.

Responsible Organizations/Individuals: Local emergency manager, the county transportation department, and the county public works department.

Estimated Expenses: Employee time and later contracted support for design and execution of plans.

Timeframe: 1 year for action (study) by county/state and formulation of action plan, 1-3 years for working action plan into budget cycle, 1-2 years for design / build. All told, at least 60 months.

Funding Sources: County budget, State budget (if applicable), Federal grants

STAPLEE Score: 35

Prioritization: 3

- **Review and eliminate low-water crossing structures and/or develop improvements that can be made to these areas.**

  Hazards: Flood

  Comments: Areas that become low-water crossings during a rain event can leave people stranded and needing rescue by emergency response personnel.

  How this Action Contributes to the Mitigation Strategy: By eliminating these areas through certain mitigation measures, response personnel can focus their efforts on other areas that will also need assistance during a flood.

  Responsible Organizations/Individuals: MGP, local emergency manager, the county transportation department, and the county public works department

  Estimated Expenses: Employee time and later contracted support for design and execution of plans.

  Timeframe: 1 year for action (study) by county/state and formulation of action plan, 1-3 years for working action plan into budget cycle, 1-2 years for design / build. All told, at least 60 months.

  Funding Sources: County budget, State budget (if applicable), Federal grants

  STAPLEE Score: 35

  Prioritization: 6

5.3.3 Dam Failure Mitigation Actions

- **Public Awareness – Conduct public meetings and develop public service announcements to raise awareness of dam failure-related threats and how citizens can decrease the impact of dam failure disasters.**

  NOTE: See All Hazard Mitigation Items

- **Communications – Establish and prioritize needed improvements of key communication systems and response equipment in regard to dam failure events.**

NOTE: See All Hazard Mitigation Items

- **Improvement of detection and communications of need for action at the Mescalero Lake Dam.**

  Hazard: Dam failure (flooding)

  Comments: Review and seek improvements in detection and alerting between Otero County (jurisdiction where the dam is located), Lincoln County (jurisdiction threatened by dam overtopping/failure/management practices) and the Mescalero Tribal Government (owners of the dam)

  How this Action Contributes to the Mitigation Strategy: County agencies that are aware of the need to improve mitigation efforts can assist the county toward the goal of reducing the effect of hazards on life and property.

  Responsible Organizations/Individuals: New Mexico State Engineer's office, Bureau of Indian Affairs, Lincoln County government, Otero County government and the Mescalero Tribal government

  Estimated Expenses: Employee Time and possibly contractor, if SCADA improvements are warranted, equipment and internet connectivity on all parties' part.

  Timeframe: 6 to 12 months for study of issues, 1 to 3 years to identify and seek funding, 1 to 3 months for procurement of design / build contractor, 3 to 6 months execution of project, 1 to 6 months for testing and improvement of design (including an exercise program).

  Funding Sources: Grants, BIA budget, tribal and county budgets.

  STAPLEE Score: 43

  Prioritization: 13

5.3.4 Wildfire Mitigation Action

- **Public Awareness – Conduct public meetings and develop public service announcements to raise awareness of wildfire-related threats and how citizens can decrease the impact of dam wildfire disasters.**

  NOTE: See All Hazard Mitigation Items

- **Communications – Establish and prioritize needed improvements of key communication systems and response equipment in regard to wildfire events.**

NOTE: See All Hazard Mitigation Items

- **Increase level of effort and proactively utilize county right to object in issuance of building permits by the state as related to wildfire events.**

  Hazards: Wildfire (all hazards)

  Comments: The county administration can work with the commission to formulate an approach and expense management of a more proactive review process as part of the state's building permit system for unincorporated parts of the county.

  How this Action Contributes to the Mitigation Strategy: By utilizing its right to review pending state building permits and proactively injects itself to stop proposed projects that prove detrimental to the ability of existing and proposed communities to respond and recover quickly to natural and manmade emergencies, the county can utilize existing systems to impact future building in a cost effective manner.

  Responsible Organizations/Individuals: Local emergency manager, LEPC members, county commissioners, county administration

  Estimated Expenses: Employee Time

  Funding Sources: Local planning grants and state funds

  Timeframe: Immediately, through the 60-month action period

  STAPLEE Score: 33

  Prioritization: 1

5.3.5 Severe Weather Mitigation Actions

- **Public Awareness – Conduct public meetings and develop public service announcements to raise awareness of severe weather-related threats and how citizens can decrease the impact of severe weather disasters.**

  NOTE: See All Hazard Mitigation Items

- **Communications – Establish and prioritize needed improvements of key communication systems and response equipment in regard to severe weather events.**

  NOTE: See All Hazard Mitigation Items

5.3.6 Extreme Heat Mitigation Actions

- **Public Awareness – Conduct public meetings and develop public service announcements to raise awareness of extreme heat-related threats and how citizens can decrease the impact of extreme heat disasters.**

  NOTE: See All Hazard Mitigation Items

- **Communications – Establish and prioritize needed improvements of key communication systems and response equipment in regard to extreme heat events.**

  NOTE: See All Hazard Mitigation Items

- **Create a list of special populations (elderly and homebound) to ensure that they are taken care of during an extreme heat event.**

  Hazards: Extreme Heat (any hazard that might limit mobility)

  Comments: The county will need to work closely with organizations that support special populations.

  How this Action Contributes to the Mitigation Strategy: This effort will enhance the visibility of special needs populations in the county which assists in future planning of how best to handle and take care of the populations to ensure safety of life issues are maintained.

  Responsible Organizations/Individuals: Local emergency manager, LEPC members, and private sector organizations such as elderly and homebound support organizations.

  Estimated Expenses: Employee Time

  Funding Sources: Self-funded; Federal and State grant programs

  Timeframe: Immediately, through the 60-month action period

  STAPLEE Score: Not scored

  Prioritization: Not ranked

5.3.7 Tornadoes Mitigation Actions

- **Public Awareness – Conduct public meetings to raise awareness of tornado-related threats and how citizens can decrease the impact of tornado disasters.**

  NOTE: See All Hazard Mitigation Items

- **Communications – Establish and prioritize needed improvements of key communication systems and response equipment in regard to tornado events.**

  NOTE: See All Hazard Mitigation Items

5.3.8 Drought Mitigation Actions

- **Public Awareness – Conduct public meetings and develop public service announcements to raise awareness of drought-related threats and how citizens can decrease the impact of drought disasters.**

  NOTE: See All Hazard Mitigation Items

- **Communications – Establish and prioritize needed improvements of key communication systems and response equipment in regard to drought events.**

  NOTE: See All Hazard Mitigation Items

5.3.9 Earthquake Mitigation Actions

- **Public Awareness – Conduct public meetings and develop public service announcements to raise awareness of earthquake-related threats and how citizens can decrease the impact of earthquake disasters.**

  NOTE: See All Hazard Mitigation Items

- **Communications – Establish and prioritize needed improvements of key communication systems and response equipment in regard to earthquake events.**

  NOTE: See All Hazard Mitigation Items

- **Conduct non-technical assessment to determine relative vulnerability and risk to critical facilities.**

Hazards: Earthquake

Comments: County departments will need to identify those facilities that may be vulnerable during an earthquake event.

How this Action Contributes to the Mitigation Strategy: This effort will identify those risks and vulnerabilities to critical facilities and determine best approaches to enhance and decrease/eliminate risk and vulnerabilities.

Responsible Organizations/Individuals: Local emergency manager, and those departments and agencies that have an identified critical facility.

Estimated Expenses: Employee Time/Contractor

Funding Sources: Self-funded; Federal and State grant programs

Timeframe: 2012 - 2015

STAPLEE Score: Not scored

Prioritization: Not ranked

5.3.10 Hazardous Materials Incident Mitigation Strategies

- **Explore development of a hazardous-cargo route alternative to the Highway 54 corridor.**

Hazards: Hazardous Materials Incidents

Comments: Highway 54 is a much-traveled highway that runs through the county, and an incident on this highway could affect many citizens. A study of feasible alternatives to Highway 54 is needed to ensure that the alternate route is not detrimental to surrounding habitats, residences, and businesses.

How this Action Contributes to the Mitigation Strategy: Using a less-traveled alternate route in an isolated area would decrease the probability of an adverse effect of a hazardous material incident on human life and property.

Responsible Organizations/Individual: County and local transportation agencies, state transportation agency, local emergency manager, and other county and local agencies and personnel

Estimated Expenses: Employee Time and possibly contracted services (commodity study and traffic engineering).

Timeframe: 6 months to 1 year for securing funding for studies, 3 months from then for procurement (if external support is needed), and then 1 year for study and reporting back to appropriate agencies, 1 year for action by appropriate agencies (at state level). Al told, as much as 36 months.

Funding Sources: County and state transportation budgets and possible grant sources

STAPLEE Score: 39

Prioritization: 10

6 Plan Maintenance

Section 201.6(c)(4) of 44 CFR requires that the Otero County Hazard Mitigation Plan incorporates a plan maintenance process to ensure the relevancy and implementation of mitigation goals, objectives and strategies outlined in the plan. This section provides the methodology for plan monitoring, evaluation and updating to ensure that the plan is incorporated into existing planning mechanisms with continued public participation for future plan maintenance.

6.1 Plan Monitoring and Evaluation

The Otero County Emergency Services Director is responsible for overall monitoring and evaluation of the implementation of mitigation projects and activities. MPG members and other interested stakeholders will monitor progress the of mitigation action items on semi-annual basis or following a disaster. Monitoring is important for future eligibility for mitigation funding that may be available and to ensure the mitigation process is progressing for the benefit of communities facing hazard risks. To ensure that Otero County Hazard Mitigation Plan is fulfilling the program requirements, an annual evaluation of plan implementation requirements will be conducted by the Emergency Services Director.

Otero County has developed a method to ensure that regular review and update of the HMP which encompasses decision making, direction, and documentation:

- The Otero County Commissioners will approve projects / action items will be implemented based on mitigation priority, a benefit cost analysis and availability of funding;
- MPG will be responsible for identifying projects/action items for Commission approval and evaluating the progress of mitigation goals, strategies and action throughout the year to ensure outcomes have occurred as expected; and
- Review and revision of the HMP will be directed by the Otero County Office of Emergency Services which will also serve as a conduit for assessing and monitoring implementation issues of mitigation projects and actions.

Although the membership composition of the MPG may change from year to year, future MPGs will continue to execute the same job functions as the current MPG. Agencies and partners participating in the mitigation process for the Coun-

ty may change as the nature, magnitude and type of risks faced by the County changes. Based on the availability of resources appropriate for the implementation of mitigation projects and action items, priorities of these items may be modified.

6.2 Plan Update Process

The plan will be reviewed, revised, and updated every five years from the date of FEMA's approval. If a disaster occurs or as action items are met, the plan will be reviewed, revised, and updated following that event. The MPG will reconvene approximately one year prior to the end of this five-year period to assist with the evaluation of plan implementation and update of the plan.

HMP review and update will comprise a review of each mitigation objective and action item to determine the relevance to changing situations in the county and/or changes to state or federal policy and to ensure that current and expected conditions are being addressed. Key topics and questions that will be addressed include the following:

- Identification of hazards. Are there new hazards that affect the community?
- Modification of hazard profiles. Are additional maps or new hazard studies available? Have recent hazard events impacted the extent of damage experienced by the County?
- Assessment of Risk. Have chances of future events changed? Have recent and future development in the community been assessed for their effect on hazard areas?
- Inventory of assets. Have inventories of existing structures in hazard areas changed and been updated? Are there any new special high-risk populations? Is future land development accounted for in the inventories?
- Estimation of losses. Have losses been updated to account for recent changes?

Based on this review, the update process will focus on addressing regulatory and programmatic changes which impact the HMP. The Emergency Services Director is responsible for the overall five- year update of the HMP in coordination with the MPG. However, revisions or updates to the HMP may also be required for monitoring or evaluation purposes on a more frequent basis, e.g., the identification of specific new mitigation action items, the completion of listed mitigation action items, or a change in mitigation plan requirements for funding programs.

Following the plan update, the Emergency Services Director submit the HMP to the Otero County Commission for approval and provided to the New Mexico Department of Homeland Security and Emergency Management. This evaluation, monitoring and review process will continue for the life-cycle of the plan.

6.3 Implementation through Existing Programs

HMP mitigation planning goals, objectives and action shall be incorporated into other Otero County plans, as appropriate, during the normal review and update of those plans. Implementation of mitigation action items is the responsibility of the County Commissioners, and they may delegate specific County departments to coordinate tasks associated with of incorporating mitigation action item in general County planning efforts. The Commissioners will coordinate with the County Emergency Services Director and Department Head for each mitigation action item. The Department Head will follow any existing procedures the county has while completing the action items.

To ensure that County comprehensive planning, improvement plans, and resource use plans (e.g., water) incorporate applicable elements of HMP, departments will integrate corresponding planning projects, zoning and building permitting and improvement plans with the goals of the HMP. The following local planning mechanisms may be used to incorporate the HMP:

- Otero County Comprehensive Plan
- Regional Water Use Plan
- Comprehensive Emergency Mangement Plan
- Building Code and Permitting in Flood-Prone Areas
- Watershed Conservation Plan
- Inter-jurisdictional Wildfire Mitigation Planning

The Department Head leading efforts to incorporate hazard mitigation may write corresponding projects into the appropriate department's budget, for submittal to the Commission. During annual department budget hearings, efforts would be made to identify projects which cross departments and are available for mitigation funding.

6.4 Continued Public Involvement

Otero County is dedicated to involving the public directly in implementing and updating the HMP. Although the MPG represents the public to the extent or organizational representation, during its review of the plan, the public will be able to comment directly on and provide feedback about the plan during the review period.

Public meetings will provide a forum wherein the public can express concerns, opinions, or ideas about the plan. The Otero County Office of Emergency Services will publicize and host those meetings where public input are deemed valuable to mitigation project or action item implementation. The Otero County Emergency Services Director will be responsible for keeping track of public comments about the plan.

Copies of the plan will be catalogued and kept on hand at all of the county public libraries. The existence and location of these copies will be publicized in the

Alamogordo Daily News. The review and any changes that are made during the review will also be publicized in the *Alamogordo Daily News.*

A Plan Process Documents

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Otero County
Hazard Mitigation Plan
October 24, 2008

Meeting Objectives

Provide guidance on developing a Hazard Mitigation Plan

- *Crosswalk provided by FEMA*
- *NM State Plan*
- *Other NM County approved plans*

Develop a Hazard Identification for the County

- *Hazard Identification was given and ranked by the County Emergency Management Director and should be confirmed by the Committee*

Develop a list of critical facilities for the County

- *Identify **critical facilities** that are important to your community. These may include:*

Essential Facilities – these are essential to the health and welfare of the whole population and are especially important following hazard events. The potential consequences of losing these are so great, that they should carefully inventoried.
Transportation Systems – these include airways – airports, heliports; highways – bridges, tunnels, roadbeds, overpasses, transfer centers; railways – trackage, tunnels, bridges, rail yards, depots; and waterways – canals, locks, seaports, ferries, harbors, drydocks, piers.
Lifeline Utility Systems – these include potable water, wastewater, oil, natural gas, electric power and communication systems.
High Potential Loss Facilities – these are facilities that would have a high loss associated with them, such as nuclear power plants, dams, and military installations.
Hazardous Material Facilities – these include facilities housing industrial/hazardous materials, such as corrosives, explosives, flammable materials, radioactive materials, and toxins.

Identify **vulnerable populations** who may require special response assistance or special medical care after a disaster. These may include (but are not limited to) elderly populations and non-English speaking populations

Identify **economic elements** that could affect the local or regional economy if significantly disrupted. These may include (but are not limited to) major employers and financial centers in the County.

Identify **areas with special considerations** that, if damaged, could result in high death tolls and injury rates such as areas of high-density residential or commercial development.

Identify **historic, cultural, and natural resource areas** including areas that may be identified and protected under state or federal law.

Identify **other important facilities** which help ensure a full recovery of your community following a hazard event. These may include (but are not limited to) government functions, major employers, banks, and certain commercial establishments such as grocery stores, hardware stores, and gas stations.

Collect County-specific information for the County profile

- *History, demographics, land use and industry*
- *Identify and provide information on past disasters*
- *Repetitive loss information*

Develop Mitigation Goals and Actions

- *See below examples of **goals**, general guidelines that describe what a community wants to achieve in terms of hazard loss and prevention:*
  - Reduce damage to critical and non-critical facilities.
  - Increase public awareness of hazards.
  - Reduce the possibility of damage and losses due to (flooding, fire, etc…)
  - Establish effective response mechanisms (Fire, Disease outbreak, etc…)
- *See below examples of **actions**, activities, measures, or projects that help achieve the goals of a mitigation plan:*
  - Establish and organize an annual workshop where information about disaster preparedness and mitigation is provided, for example, information on non-structural earthquake safety and information on preparedness activities for holding drills at schools.
  - Distribute information to identify household mitigation measures.
  - Pass local ordinances
  - Establish an alert system
  - Develop hazard maps.
  - Support plan updates
  - Establish a public education campaign for ____ hazard.

Introduce participants to hazard mitigation programs, plans and processes

- *Approval and adoption of the HMP will lead to possible funding for these mitigation projects to improve your community!*

Critical Facilities

Identify **critical facilities** that are important to your community. These may include:

- **Essential Facilities** – these are essential to the health and welfare of the whole population and are especially important following hazard events. The potential consequences of losing these are so great, that they should carefully inventoried.
- **Transportation Systems** – these include airways – airports, heliports; highways – bridges, tunnels, roadbeds, overpasses, transfer centers; railways – trackage, tunnels, bridges, rail yards, depots; and waterways – canals, locks, seaports, ferries, harbors, drydocks, piers.
- **Lifeline Utility Systems** – these include potable water, wastewater, oil, natural gas, electric power and communication systems.
- **High Potential Loss Facilities** – these are facilities that would have a high loss associated with them, such as nuclear power plants, dams, and military installations.
- **Hazardous Material Facilities** – these include facilities housing industrial/hazardous materials, such as corrosives, explosives, flammable materials, radioactive materials, and toxins.

Identify **vulnerable populations** who may require special response assistance or special medical care after a disaster. These may include:

- Elderly people
- Non-English speaking people

Identify **economic elements** that could affect the local or regional economy if significantly disrupted. These may include:

- Major employers
- Financial centers

Identify **areas with special considerations** that, if damaged, could result in high death tolls and injury rates such as:

- Areas of high-density residential or commercial development

Identify **historic, cultural, and natural resource areas** including:

- Areas that may be identified and protected under state or federal law.

Identify **other important facilities** which help ensure a full recovery of your community following a hazard event. These may include:

- Government functions
- Major employers
- Banks
- Certain commercial establishments such as grocery stores, hardware stores, and gas stations.

OTERO COUNTY LOCAL HAZARD MITIGATION PLAN
STEERING COMMITTEE MEETING MINUTES

The first meeting of the Otero County Local Hazard Mitigation Plan Steering Committee was held on Friday, October 24, 2008 from 9:00 am until 3:00 pm at the Otero County Sheriff's Office, 3208 N. White Sands Blvd, Alamogordo, NM, 88310.

Steering Committee Members that were present included:

Name	Organization	Address	Phone	Fax	Email
Roberta Hannemann	Otero County	1000 New York Ave, Alamogordo	575-439-2623	575-443-2904	bhannemann@co.otero.nm.us
Todd Cullers	NMDPS/MTD	411 10th ST, Alamogordo	575-439-5714	575-434-6299	Todd.cullers@state.nm.us
David Kirby	NMED - DWB	1015 Cuba, Alamogordo	575-437-7115	575-434-1813	David.kirby@state.nm.us
Shirley Kay	CAP	3050 US HWY 54	575-437-1004		Cloudrkgz1@yahoo.com
Paul Quairoli	Otero County OES	1000 New York Ave, Alamogordo	575-439-2612	575-443-2904	pquairoli@co.otero.nm.us
Bill Perry	E&E	11550 Newcastle Ave, Baton Rouge, LA 70816	225-298-5080	225-298-5081	wperry@ene.com
Cara Stevens	E&E	11550 Newcastle Ave, Baton Rouge, LA 70816	225-298-5080	225-298-5081	cstevens@ene.com

Items Discussed:

Hazard Ranking and Scoring: Hazards were called out from FEMA's Local HMP Crosswalk and Committee members were asked to rank the hazards in the order of applicability to the County and score them, given how likely it would be that this hazard would impact the County. See Table 1.

Hazard Ranking and Scoring		
Hazard	**Rank**	**Score***
Flooding	1	H
Wildfire	2	H
High Wind	3	H
Thunderstorms	4	M
Dam Failure	5	L
Severe Winter Storms	6	M
Drought	7	M
Landslide	8	M
Extreme Heat	9	M
Expansive Soils	10	L
Tornadoes	11	L
Land Subsidence	12	L
Earthquake	13	L
Volcano	14	L

* Scoring parameters are Low (L), Medium (M), and High (H)

Critical Facilities: FEMA does not give a universal definition to the term "Critical Facility" and there are no specific requirements within DMA 2000 for the naming and/or listing of these facilities. Otero County's critical facilities are those that were listed at the Steering Committee meeting.

Major Employers include:

- Holloman AFB
- City of Alamogordo (City Hall/Courts)

- Otero County (Courthouse, Sheriff's Office, Public Works, Courthouse Administration Building)
- 1-800 Flowers (4500 Seasonal employees)
- Murray Building (State Police, Veteran's Office, State Environmental Agency)
- Hospital (also several Clinics)
- Facilities on the Hospital's Campus (4 – Daycare, Cancer Center, University,)
- School System
- Cookie Factory
- White Sands National Monument
- Cloudcroft

Transportation related facilities include:

- Alamogordo Airport
- Timberon Airport
- Heliports at the Airport and Hospital
- Mesa Verde Airstrip
- Union Pacific Railroad and related Bridges
- HWY 82 Tunnel
- US Highways 54, 70, and 82
- NM State Highways 130, 2440, and 6563

Facilities involving **Utilities** include:

- Water Systems (65 total, Alamogordo water is shared with Holloman)
- Wastewater Treatment Plants (4 total, Tularosa, Alamogordo, Mescalero, and Holloman)
- Pipelines (El Paso to bulk terminal South of Alamogordo, Natural Gas by Power New Mexico)
- Propane system in Alamogordo, 6 more throughout the County
- Electrical Substations (2 Substations in Alamogordo, PNM and Otero County Co-op)
- Transmission Lines (1 El Paso, 1 Doña Ana to bases)
- Nuclear Power (White Sands Missile Range – Alamogordo is within fallout range)
- Microwaves – Mainly Public Safety but also power (No backup for this if it is rendered inoperable. Wildfire is the biggest threat)

Facilities involving **Communications** include:

- One provider (Quest) in Alamogordo. Uses underground lines.
- 5 smaller phone companies (PVTN, Tularosa Basin Telephone, Windstream, Dell Telephone Co-Op, and Mescalero Apache Tribe System)
- Cell towers: AllTel, Verizon
- 2 cable carriers (Baja Broadband - Alamogordo and Tularosa)
- 6 Radio Stations
- 1 Television Station
- 7 Public Safety towers

Facilities with **High Potential for Loss** include:

- Holloman AFB

- White Sands Missile Range
- McGreggor Range (Southern portion of the County)
- Ft. Bliss
- Nuclear Power Plant on White Sands
- Dams

Facilities with **HAZMAT** include:

- *See Paul for list

Vulnerable Populations include:

- Public Health list
- School for Visually Handicapped
- Non – English speaking
- Elderly (Mountain Communities are mostly retirees)

Economic Elements include:

- All major employers within the County

Other **Areas of Special Consideration** include:

- Holloman AFB
- 2 Public housing areas
- 4 elderly population homes
- HWY 54 Corridor
- Supply Sources (Lowe's, Home Depot, Wal-Mart, grocery stores)
- Public Works and Road Yards (2 State {Tularosa and Mayhill} and 2 County {Alamogordo and Piñon)

Goals and Actions of this Hazard Mitigation Plan were identified at this meeting also.

Goals of the Steering Committee include:

- Increasing Awareness
- Decreasing the possibility of impact from the most significant threats
- Decreasing vulnerability of critical and non-critical facilities
- Increasing established response mechanisms (enhancing partnerships)
- Increasing coordination between levels of government regarding incidents and response mechanisms

Actions to help meet the goals named by the Steering Committee include:

- Conduct public meetings to raise awareness of threats and how citizens cab decrease the impact of disasters
- Develop Public Service Announcements specific to threats for dissemination through the media.

- Review/revise and increase utilization of the County's construction codes to decrease vulnerability of Critical and non-critical infrastructure. (Subdivision ordinances, building codes, control of growth respective to the maintenance of runoff, etc…)
- Review/assess the County rights to compel owners/operators of facilities and infrastructure to make improvements where these present credible threats to the County.
- Establish and prioritize needed improvements of key communication systems and response equipment.
- Explore development of an HC route alternate to HWY 54 Corridor.
- Review/develop improved Memoranda of Understanding (MOU) and Mutual Aid Agreements (MAA) between County, Government Organizations and Non-Government Organizations.
- Review and improve roads repetitively subjected to washouts.
- Review and eliminate low water crossings based on prioritization that is driven from emergency needs. Scope and evaluate repetitive washout for bridges and improvements that can be made to these areas.
- Obtain GPS capability in Emergency Response vehicles.
- Conduct a study on the best and most cost effective placement of evacuation and notification sirens for the County.
- Create an improvement program for the Public Works response capability.

OTERO COUNTY HAZARD MITIGATION PLAN (HMP) PROJECT

Overview of Hazard Mitigation:

Why do this?

- FEMA's Hazard Mitigation Grant Program (HMGP) provides grants to States, local governments, and Indian tribes for long-term hazard mitigation projects following a major disaster declaration.
- Reduce the loss of life and property in future disasters by funding mitigation measures during the recovery phase of a natural disaster.
- Planning identifies hazards, assesses community needs, and describes a community-wide strategy for reducing risks associated with natural disasters.
- Federal law requires States and local jurisdictions to have a mitigation plan prior to receipt of HMGP funds.

For additional HMGP resources and information, visit:

www.fema.gov/government/grant/hmgp/index.

FEMA

HMP Goals for Otero County:

What will we accomplish?

- Otero County HMP will be modeled on the New Mexico State Hazard Mitigation Plan

  The State HMP was written by the State Hazard Mitigation Officer (SHMO) and local plans are encouraged to mirror this plan.

  Attached is the Crosswalk, or guidance for mandatory elements of the HMP. This is the tool that FEMA will use to review the Plan for approval.

- County will undertake a 2-day workshop with the Planning Committee with the end result being a draft HMP.
- After the workshop, final touches to the plan will be made and sent to all planning committee members for approval.
- A public input meeting will be held once the draft plan is approved by the committee.

Some Points to Consider Prior to the Workshop:

- Review the read ahead package (to follow by email)
- Bring background information on the County
- Bring other important information such as major employers, Law and Fire assets, Schools, Hospitals, Media, etc…
- Any relevant graphics are welcomed, please bring them along
- Any background hazard information such as damage assessments or information on previous disasters should be brought forward (and to the Workshop).
- If most of these are provided before the Workshop, we can focus on the hazard sections and the County Profile can be briefly reviewed for accuracy.

NOTE: Attendance and active participation in workshop will assure that your voice and the interests of your department is present in the final plan. This will help the County access federal funds faster in the event of a disaster!

Contact Information:

Paul Quairoli
Otero County Emergency
Services Coordinator

1000 New York Ave.
Rm. 106
Alamogordo, NM 88310

(505) 437-7427 (Office)
(505) 443-2904 (Fax)

Alternate POC:

Cara Stevens

Ecology & Environment Inc.
11550 Newcastle Ave. #250
Baton Rouge, LA 70816

(225) 298-5080 (Office)
(225) 298-5081 (Fax)
(225) 939-3746 (Cell)

CStevens@ene.com

From: Perry, William
Sent: Tuesday, May 26, 2009 1:23 PM
To: 'Paul Quairoli'
Cc: Stevens, Cara; Scott, Doug; Barker, Jerry
Subject: Attendee's link to this Thursday's web conference

Paul,

Please forward to the MPG members.

Bill Perry

==========

Paul Quairoli has invited you to attend an online meeting using Live Meeting.

Join the meeting. - Otero County Hazard Mitigation Planning

Thursday, May 28, 2009 1:30 PM-3:30 PM Mountain Time.

Audio Information
888-804-4584
485132# (access code)

First Time Users:
To save time before the meeting, check your system to make sure it is ready to use Microsoft Office Live Meeting.
Notes

Troubleshooting
Unable to join the meeting? Follow these steps:

1. Copy this address and paste it into your web browser:
   https://www.livemeeting.com/cc/ene2/join
2. Copy and paste the required information:
   Meeting ID: 8H9CHJ
   Entry Code: D/H+]3n4M
   Location: https://www.livemeeting.com/cc/ene2

From: Perry, William
Sent: Tuesday, May 26, 2009 11:06 AM
To: 'Paul Quairoli'
Cc: Scott, Doug
Subject: Items for Thursday Conference Call

Attachments: Otero County CHAPTER 7 - Goals Objectives and Action Items wrp.doc; Otero HMP Project Scoring Sheets (v1).pdf; Project Ranking (Otero) v1.xls

Paul,

Attached are the read ahead items for Thursday's call. These need your review. I have STAPLEE scored as best I could without having your perspective. Agenda for the call:

1. Review projects list (add others as needed and revise list as applicable)
2. Review scoring (STAPLEE method discussed in Chapter 7).
3. Finalize Score, rank projects (1 - ##)
4. Finalize timetable for action and relative costs (looking for a low, medium or high - I will explain further during the call).

I will set call (web conference) up for 2 hours. If you think this will take longer, please let me know. Next email will include connection information for both video (web conference) and audio (conference call).

I can be reached at 225-715-6796 if you have questions.

Also, we are on schedule to get you the remaining parts of the plan by the end of the day. One section, Chapter 3 - Hazard Identification and Risk Analysis, needs your attention most of all.

Bill P

From: Paul Quairoli [mailto:pquairoli@co.otero.nm.us]
Sent: Friday, May 22, 2009 12:41 PM
To: Perry, William
Subject: RE: Items from our call this morning

Bill,

Thanks for the follow-up and I look forward to the upcoming info and progress.

Paul Quairoli
Emergency Services Director
Otero County Office of Emergency Services
1101 New York Ave. Suite 202
Alamogordo, NM 88310
Office: 575-439-2612
Fax: 575-443-2904
Cell: 575-491-5942
E-mail: pquairoli@co.otero.nm.us

From: Perry, William [mailto:WPerry@ene.com]
Sent: Friday, May 22, 2009 10:31 AM

To: pquairoli@co.otero.nm.us
Cc: Stevens, Cara; Barker, Jerry; Scott, Doug
Subject: Items from our call this morning

Paul,

Good to talk with you. My understanding of our conversation is as follows:

1. Two meetings needed to begin wrap up of project: a) Project Scoring and Ranking Meeting, and b) Public Review Meeting.

> Project Scoring / Ranking Meeting - meeting of the MPG (planning committee), via web conference, agreed upon date and time - May 28 (next Thursday) @ 1:30 PM MST. E & E will supply conference call bridge (audio) and web conferencing URL, etc by Tuesday. Cara and I will share scoring sheets (one per project) by next Tuesday (end of day) as well for your review and comment/distribution to others. Meeting can occur at individual's offices or collectively on your end. We will be first reviewing scoring (my interpretation) for revision by the group. Once scoring is reviewed and approved, then we will discuss ranking of projects. Your group will be able to change order - you will not be trapped by STAPLEE scoring results. We will also produce formal meeting materials as a read ahead. Duration: 1 to 2 hours, unless significant discussion is encountered, then possibly up to 4 hours, but this is highly unlikely.
>
> Public Review Meeting - public review of HMP, identified projects and explanation of likely impacts to jurisdiction. To coincide with next Commissioner's Meeting - June 10. Further details on timing to be worked out with Pam Heltner, pheltner@co.otero.nm.us; 575-439-2602.

2. Items (HMP drafts) will be coming to you starting Tuesday (we understand that you will be out of the office during first week of June). What you will see is text that Cara has worked on that I have reviewed. We will need you to ground truth what we are saying. Basis of text is the latest State HMP text. My understanding is that we will email you a pdf (probably due to total size) of the draft HMP as soon as we get your reviews of our soft versions (probably in sections for size purposes). I think you will see that pdf at the very latest on June 8 (the Monday before). We (I and Jerry Barker) will be at the meeting with at least one hardcopy, in color. Our presentation will include color PPT.

3. Jerry Barker and his group are working on the maps, etc. but Cara will probably email you a list, as she sees it, for the different types of maps needed. That email will be your opportunity to clarify the level/amount of graphics you see as being needed.

More on Tuesday.

Bill Perry

Otero County HMP

Creating a Hazard Mitigation Plan That Meets Federal Requirements

Project Activities

- Form Mitigation Planning Committee (DONE)
- Identify/Rank Threats and Actions (DONE)
- Identify Critical Assets and Impact Upon Community (Underway)
- Write Plan (Almost Complete)
- Review Plan (Underway)
- Seek Public Comment (Next Month)

Threats Identified

1. **Flood**
2. **Wildfire**
3. **High Wind**
4. **Thunderstorms**
5. **Dam Failure**
6. **Severe Winter Storms**
7. **Drought**
8. **Landslide**
9. **Extreme Heat**
10. **Expansive Soils**
11. **Tornadoes**
12. **Land Subsidence**
13. **Earthquakes**
14. **Volcanoes**

Projects Identified

1. Review/Revise County Construction Codes as Needed
2. Improve Key Communications & Response Equipment
3. Improve Repetitive Washout Roadway
4. Develop/Implement PW Response Improvement Program
5. Revise / Renew MOU / MAA
6. Review/Replace Low Water Crossings
7. Compel Owner/Operators to Improve
8. Develop Public Services Agreements
9. Evac./Notification Sirens
10. Hwy 54 Corridor as HM Route
11. ER Vehicle GPS Capability Develop.
12. Awareness Public Meetings

From: Perry, William
Sent: Friday, June 12, 2009 9:33 AM
To: Paul Quairoli
Subject: New SHMO Contact Info

Paul,

Sophia started about two weeks ago and we spoke this morning about your plan and where it is in the process. I also told her we would be having a public meeting next month. I know some SHMOs are sensitive about being invited and didn't want that mis-step to occur.

She is sending over the crosswalk for the HMP and I believe Cara had this some months ago. I will be forwarding it to you to help you in your review of the copy I left with you (again, its in your mail box, down on the first floor copy room).

I will look over the plan one more time (I am now wrapping up the Section 6 that is not with your copy). All sections can be emailed except Section 3. I will be monitoring email all weekend and on Monday for edits that you would like me to make. I would also like to talk on Monday before I print the plan to PDF. I believe you will be able to share the plan with the commissioners and others by next Tuesday. Sophia suggested (and I agree) that we should share the crosswalk with them to aid their review. As she said, its another good check in the box item.

Look for Section 6 shortly.

Bill P

From: Beym, Sophia A, DHSEM [mailto:SophiaA.Beym@state.nm.us]
Sent: Friday, June 12, 2009 9:20 AM
To: Perry, William
Subject: Test

hello

Sophia A Beym
State Hazard Mitigation Officer
Department of Homeland Security & Emergency Management (DHSEM)
PO Box 27111
Santa Fe, NM 87502
505.476.9607
SophiaA.Beym@state.nm.us

From: Perry, William
Sent: Wednesday, June 17, 2009 1:14 PM
To: 'Paul Quairoli'
Cc: 'Travis Atwell'
Subject: Interest from Lincoln County in adding a Mescalero project to your HMP

Recommendation was a SCADA system on their dam with accessibility by all parties (via internet). Since this fall in Otero County, would you like me to look into this? I know your plan is not multi-jurisdiction but LC is also working on a proposal for closer cross jurisdictional coordination/planning/etc.

Also, is today a better day to talk?

Comments from Preliminary Review of Otero County Hazard Mitigation Plan

----- Original Message -----
From: Paul Quairoli
To: 'Pamela S. Heltner' ; rrardin@co.otero.nm.us ; 'clarissa mcginn' ; Doug Moore ; Tim Smith ; 'Ray Backstrom' ; 'John Blansett' ; Norbert Sanchez ; 'Wheeler, Dave (New Mexico)' ; Michael.Shabkie@amr.net ; aocasio@bahcnm.org ; Bill Alexander ; Bill Price ; Ceballos, Rosa Civ USAF ACC 49 MDG/SGOMHF ; Chris Mydock ; Cindy Curry ; cindycurry880@msn.com ; David Kirby ; Erich Wuersching ; Gary Cozzens ; Greg Cordova ; HimebrookR@totacc.com ; Ikard, Melanie, DOH ; James Villard ; Janet West ; Jerry Nowell ; Jim O'Leary ; Joe Bailey ; Joe Savage ; john.fausett@noaa.gov ; Julie Baker ; Ken Gipson ; Lee Ann Loney ; Mark Kleane ; Nicole Viau ; Nitcher, Pamela L, CYFD ; Paul Small ; 'Ray Backstrom' ; Richard Widmark ; Sharon Hodges ; Shirley Kay ; Sue Dreikosen ; Val MacBlain ; Wayne Glidden
Sent: Monday, June 15, 2009 4:30 PM
Subject: Hazard Mitigation Plan draft

As promised here is a copy of the Hazard Mitigation plan so far. It has a few holes that need to be filled, so please feel free to send me your comments or additions. Please review and reply with comments on the draft copy of this plan no later than Tuesday the 23rd.

Paul Quairoli
Emergency Services Director
Otero County Office of Emergency Services
1101 New York Ave. Suite 202
Alamogordo, NM 88310
Office: 575-439-2612
Fax: 575-443-2904
Cell: 575-491-5942
E-mail: pquairoli@co.otero.nm.us

Responses (by Section)

Overall (or multiple sections)

From: Bert Hanneman [mailto:bhanneman@co.otero.nm.us]
Sent: Monday, June 22, 2009 12:27 PM
To: Paul Quairoli
Subject: Fw: Hazard Mitigation Plan draft

Paul,
After changing these attachment at home, here is my input:
1. Page 1-2, 1.2 summertime high temps should be 80-100s not just 80
2. Page 1-4, 1.5 Natural Gas section - "Six Propane tanks" should it not be providers as I know we have more than 6 propane tanks in the county department alone.
3. Page1-4, 1.5 Water Supply section - What about the water the city gets from Maruchi Springs and Section 22 water sources? The 12" pipes running down Cottonwood Canyon, La Luz Canyon, and Laborcita Canyon Roads. These all end up in the La Luz reservoir.
4. Page 2-3My office - Safety Office or Human Resource Risk Management.
5. Page 4-7 There are 2 Tables 4-4 if we make the second one 4-5 then the table on the next page would become 4-6, with the reference changed in 4.4.
This is all that jumped out at me while I read through it.

Bert

Roberta E. Hanneman
Otero County Safety Officer
1101 New York Ave. Rm. 109
Alamogordo, NM 88310
575-439-2623 (direct line)
575-443-2904 (fax)

-----Original Message-----
From: shirley [mailto:cloudrkg21@yahoo.com]
Sent: Tuesday, June 23, 2009 7:31 PM
To: Paul Quairoli
Subject: Re: Hazard Mitigation Plan draft

Paul

I setup the documents to track changes and comments for your quick reference. "I inserted a photo of Bonita Lake dam. The rough photo is included also.

Second file to come with S7 and S8 plus Lake

Shirley Kay
CAP

[FOUR ATTACHEMENTS – SECTIONS WITH TRACK CHANGES]

-----Original Message-----
From: shirley [mailto:cloudrkg21@yahoo.com]
Sent: Tuesday, June 23, 2009 7:34 PM
To: Paul Quairoli
Subject: Spam:*****, HAZ S7and S8

Tracking enabled to see change.

Shirley Kay
CAP

[TWO ATTACHEMENTS – SECTIONS WITH TRACK CHANGES, AND ONE PHOTO]

Section 1

From: clarissa mcginn [mailto:clarissamcginn@yahoo.com]
Sent: Tuesday, June 16, 2009 2:53 PM
To: pquairoli@co.otero.nm.us
Subject: Haz Plan s1

Alot of the demographics such as in S1 can be copied from the County Comprehensive Plan-not all-but can use existing approved document without having to recreate much of this info. – pulled language in from Comprehensive Plan

---

From: mark klaene [mailto:mark@apo.nmsu.edu]
Sent: Tuesday, June 16, 2009 9:14 AM
To: Paul Quairoli
Cc: clarissamcginn@yahoo.com
Subject: comments on S1

county profile

1.1 sierra blanca is not in Otero County – Per USGS TOPO summit is within county, mentioned due to hazard identification of volcanoes

sacramento mtns to east --not north - CORRECT

1.2 summer time temps to 100's (not 80's) – average high in July is 87 - fixed
winter time temps to 0 deg F (not 20's) – average low in January is 24 - fixed

15" preceip around alamogordo sounds high , especially when next statement is alamogordo rain is 6" – average is 16" rain (but also mentions 16" snow). - fixed

1.3 economy centers around "military" (not economy centers on year-round recreational resort facilities, tourism, historical communities, and the service and retail trades) - fixed

major employers --- the 2 observatories at Sunspot employ nearly 80 , more folks than "the lodge " I think - added

1.5

ELECTRICITY what does microwave tower have to do with electricity ? these should be included along with fiber links, radio towers in another section

NATURAL GAS a whole lot more than 6 propane tanks in the county (need to be specific on size)

WATER SUPPLY this section be much larger to include the many small water systems and statement about private wells. This is really an important point.

AIRPORTS shouldn't it at least mention HAFB?

where is telephone and internet? these are critical infrastructures

TRANSPORTATION a lot more than 4 state routes, should include XX miles of county Roads (and city I guess)

1.6 No mention of LNF as range land even though it says (Ninety percent of Otero County is rangeland). I can't see Whites Sands and McGreggor as rangeland, if they don't allow grazing on it. No mention of timber

General thoughts --did they every set foot in Otero County !!!

I think they missed or failed to empathize much including role military, USFS, health care plays, construction industry, NMSU-A, astronomy and small businesses including ranging and hunting. Also when it comes to weather it is the severity of sudden storms and the drought that is important.

I think the whole report has nothing new in it --waste of $$$ if you ask me. It needs specifics, it needs real numbers not boiler plate, general statements, and "beyond the scope " statements.

http://departments.firehouse.com/dept/HighRollsNM
Mark Klaene Po Box 493
Chief High Rolls NM
High Rolls Volunteer Fire Department 88325
Day Phone 575 437 6822
Station phone 575 682 3634
Night Phone 575 682 2865

Section 2

Section 3

Section 4

From: mark klaene [mailto:mark@apo.nmsu.edu]
Sent: Tuesday, June 16, 2009 9:16 AM
To: Paul Quairoli
Cc: clarissamcginn@yahoo.com
Subject: comments on S2

4.3 lets address issues in otero county hwy 70 to ruidoso is just 1 small choke point . there are others that affect the citizens of this county that should be mentioned

4.3.2 Utilities needs to say a lot more than dollar value , what about loss of these services and the economic impact that has along with effect on health care and critical infrastructure like water and heat ?

4.2.3 BUILT ENVIRONMENT sounds like only new homes are in teh WUI which of course that is not teh case

DROUGHT what about creeks drying up, wells going dry , this needs more details to include overgrown forest effects (also needed in wildfire section), effect drought has on soil retention when severe storms hit

4.2.1 ECONOMIC VULNERABILITY -- (downtowns and central business districts may be considered vulnerable) what about military and other sources of businesses, ranches, USFS, observatories, county /state government, NMSU-A, hospital ?

http://departments.firehouse.com/dept/HighRollsNM
Mark Klaene Po Box 493
Chief High Rolls NM
High Rolls Volunteer Fire Department 88325
Day Phone 575 437 6822
Station phone 575 682 3634
Night Phone 575 682 2865

Section 5

From: mark klaene [mailto:mark@apo.nmsu.edu]
Sent: Tuesday, June 16, 2009 9:18 AM
To: Paul Quairoli
Cc: clarissamcginn@yahoo.com
Subject: comments on S5

Critical facilities that are owned by the federal or local governments are beyond the scope of this plan

I think this statement is BS they have to be included else this whole section is useless. the federal resources will provide substantial support to teh area in teh event of a large scale emergency

5.3.1 Wildfire and Wildland/Urban Interface Fire

.... However, critical facilities, especially transportation routes, pipelines , electricity transmission lines, communications towers, and Forestry Division offices(Energy, Minerals, and Natural Resources Department [EMNRD]) are sometimes located in a forest environment

"sometimes located " are located , except pipelines !

5.5 Conclusions

why does it include all the other NM counties ? should it not say more about Otero ?

http://departments.firehouse.com/dept/HighRollsNM
Mark Klaene Po Box 493
Chief High Rolls NM
High Rolls Volunteer Fire Department 88325

Day Phone 575 437 6822
Station phone 575 682 3634
Night Phone 575 682 2865

Section 6

Section 7

From: clarissa mcginn [mailto:clarissamcginn@yahoo.com]
Sent: Tuesday, June 16, 2009 3:09 PM
To: pquairoli@co.otero.nm.us
Subject: Fw: comment on S7

I commented on this part already with my email on prioritizing in groups:
1. first priority emergency response- communications equip., reactive and proactive strategies, warning systems etc. 2. infrastructure improvements.... etc.
I didnt save what I wrote...but I think it made sense, at least to me. So I made the deadline of June23.

From: mark klaene [mailto:mark@apo.nmsu.edu]
Sent: Tuesday, June 16, 2009 10:02 AM
To: Paul Quairoli
Cc: clarissamcginn@yahoo.com
Subject: comment on S7

1. **Conduct public meetings to raise awareness of threats and how citizens can decrease the impact of disasters.**

my opinion : waste of time

2. **Develop public service announcements about specific threats for disseminations via the media.**

my opinion : waste of time for one they should address what media ? How exactly do we reach people in remote areas of teh county. there is no local TV , people get radio from las cruces,alamogordo, el paso, roswell and really who listens to radio any more ? mountain papers only publishes monthly and no delivery, ADN is not highly respected nor covers much outside of the basin. I am putting our best chances with reverse 911 but there will be issues with that as well I am sure

3. **Review/revise and increase use of the county's construction codes to decrease vulnerability of critical and non-critical infrastructure.e**

my opinion : politically a hard (impossible?) sell but worth looking at as I think the benfits are great especially in wildfire protection

4. **Review and assess the county's right to compel owners and operators of facilities and infrastructure to make improvements where these facilities present credible threats to the county.**

my opinion : what facilities threaten the county ?

5. **Establish and prioritize needed improvements of key communication systems and response equipment.**

my opinion : Ok (relatively easy and is/has been done already)

6. **Explore development of a hazardous-cargo route alternative to the Highway 54 corridor.**

my opinion : I can't envision a reasonable alternative to US54/70 , even if a new road is made what about rail hazardous cargo
what about haz cargo on us 82 ? Where is the data that says this is even required? Like amount /year, area and population threatened ? I think IF this is a problem there has to be other control measures put in place. (like all vehicle inspections, limit time of day travel, etc...)

7. **Review existing and develop new Memoranda of Understanding (MOU) and Mutual Aid Agreements (MAAs) between the county, governmental organizations, and non-governmental organizations (NGOS).**

my opinion : Ok but generally these are so generalized that they have no real use other than "CYA" What we really need is working plans and practice this plans between governments and other agencies

8. **Review and improve roads that are repeatedly subjected to washouts.**

my opinion : absolutely, Roads and public right a ways are a huge problem in this county. Add affects for wildfire and evacuations as well

9. **Review and eliminate low-water crossing structures and/or develop improvements that can be made to these areas.**

my opinion : eliminate -- absolutely

10. **Obtain global positioning system (GPS) capability for emergency response vehicles.**

my opinion : Ok it's a high tech trend but low in priority personally. lets get up-to-date maps that are easily read and copied (not like the current ones) with critical infrastructure (like fire stations/hydrants/water sources, evacuation centers...) labeled on them

11. Conduct a study of the best and most cost-effective placement of evacuation and notification sirens for the county.

my opinion : not practical to cover all (even most) of county , need to focus on certain areas and certain hazards (ie. wildfire or flood) even then likely not practical. need to consider alternative warning capability (ie: weather alert radio)

12. Create an improvement program for the public works department's response capability.

my opinion : absolutely , shouldn't need this plan to tell us that

general comment : there are 2-3 reasonable solutions, rest is a waste of time or already in work

we need to focus on the things that have bitten us in the past and will likely in the future some of which are not even mentioned:

wildfire, severe storms hazards (snow, cold, wind, heavy rainfall, lightning) , floods, road and rail accidents with haz. cargo, drought, drinking water loss/contamination, sustained electric outages, loss of communication services, Nuclear accident at WSMR power plant (after all we are down wind from it)

Health care --lets face it we have a big problem in this area with quality and efficient health care. Wait is terrible at ER and clinics, we have lots of EMT's but do we use them effectively for non emergencies?

Attachments

From: Perry, William
Sent: Thursday, July 09, 2009 11:17 AM
To: 'Paul Quairoli'
Subject: Draft Final HMP for use on website and FOUO Section 5 Insert

Importance: High

Attachments: OC HMP Draft Final (PUBLIC).pdf; S5 (FOUO Insert).pdf
Paul,

HMP file can be opened for advanced editing with password: "OTEROMPG". The file should open to read and print without password. This version has a few minor changes from what I sent over yesterday. It also has all the necessary prefacing materials and covers for the appendices (appendices will be added at the end to conserve file size and ensure capture of these remaining activities).

The FOUO part of Section 5 needs a password to open for view. That password is: "OTEROFOUO". Once open no further password is needed for advanced editing.

I will bring 5 copies (in black and white) of these documents with me to the meeting. I will also bring you a complete copy of all files (soft and pdf) on a CD. Unless we talk sooner, I will see you next week.

I am researching the mobile home number question raised yesterday.

Bill P

Otero County HMP

Creating a Hazard Mitigation Plan That Meets Federal Requirements

Hazard Mitigation Plan

- Plan composed of:
  - County Description
  - Planning Process Overview
  - Hazard Identification and Risk Analysis
  - Vulnerability Analysis
  - Critical Facilities Review
  - Mitigation Program Description
  - Plan Maintenance Program
- Attachment to Plan include maps, records from planning process and output of hazard assessment tool

Project Activities

- Form Mitigation Planning Committee (completed)
- Identify/Rank Threats and Propose Actions (completed)
- Identify Critical Assets and Impact Upon Community (completed)
- Write Plan (draft completed)
- Review Plan (underway)
- Seek Public Comment (underway)

Hazards Identified / Ranking

1. **Flood**
2. **Wildfire**
3. **High Wind**
4. **Thunderstorms**
5. **Dam Failure**
6. **Severe Winter Storms**
7. **Drought**
8. **Landslide**
9. **Extreme Heat**
10. **Expansive Soils**
11. **Tornadoes**
12. **Land Subsidence**
13. **Earthquakes**
14. **Volcanoes**

Community Vulnerability

Table 4-2 Building Stock Exposure (value in millions of dollars) in Otero County

County	Residential	Commercial	Industrial	Agricult.	Religious	Gover.	Educ.	Total
Otero[1]	$3,100	$220	$15	$3.0	$17	-	$6.2	$3,361
Otero[2]	$4,107	$1,477	$113	$30	$147	$8.9	$86	$5,969

Source: (1) NM State HMP from U.S. Bureau of the Census 2000; (2) HAZUS-MH using US Census 2000, RSMeans and other sources – see Appendix C for greater detail – particularly where underestimation has occurred (particularly for governmental and educational infrastructure).

Critical Facilities Identified

- Medical Facilities
  - Gerald Champion Regional Medical Center (Alamogordo)
  - Ben Archer Health Center (Alamogordo)
- Shelters
  - Tays Center (NMSU-Alamogordo)
  - Alamo Senior Center (City of Alamogordo)
  - Weed Community Center (Weed)
- Fire Services
  - Boles Acres Fire Station (also HazMat and EMS)
  - Oro Vista Fire Station (San Pedro station – also EMS)
  - Dungan Fire Station (also HazMat and EMS)
- Government
  - Otero County Administration Building
  - Otero County Public Works Facility
  - Otero County Prison Facility
- Utilities
  - PNM Substation (Alamogordo)
  - OTEC Substation (Alamogordo)
- Retail
  - Wal-Mart Super Center (Alamogordo)

Projects Proposed

1. Review/Revise County Construction Codes as Needed
2. Improve Key Communications & Response Equipment
3. Improve Repetitive Washout Roadway
4. Develop/Implement PW Response Improvement Program
5. Revise / Renew MOU / MAA
6. Review/Replace Low Water Crossings
7. Compel Owner/Operators to Improve
8. Develop Public Services Agreements
9. Develop and Improve Emergency Siren System
10. Decrease Risk on Hwy 54 Corridor from Hazardous Materials
11. Develop / Improve ER Vehicle GPS Capability
12. Conduct Public Awareness Meetings
13. Develop / Improve Mescalero Dam Alerting System

Places to Review Plan

- County web-site
- Local Libraries
- Others

Comment period runs for the next 4 weeks.

County discusses hazard plan

Sat. July 18, 2009; Posted: 02:47 AM

Jul 18, 2009 (Alamogordo Daily News - McClatchy-Tribune Information Services via COMTEX) -- EEI | Quote | Chart | News | PowerRating -- A public hearing for the Otero County Hazard Mitigation Plan was conducted during the county's regular meeting Thursday night.

The plan was prepared by Ecology & Environment Inc., of Baton Rouge, La. Paul Quairoli, county emergency management coordinator, and William Perry, of Ecology & Environment, made a presentation about the plan.

Perry said public comment period on the plan runs for the next four weeks. The public can review a draft of the plan at the county's Web site, www.co.otero.nm.us, and at local libraries.

Quairoli said the county received a grant from the Federal Emergency Management Association after the flooding disaster of 2006 to create the plan. The plan must be reviewed in public, adopted by the county and then sent to the state and to FEMA. Quairoli said another public hearing on the plan would be conducted at the next county meeting in August.

Perry said the plan reviews different threats to people and property and how often a given threat will occur during a year. The plan profiles 14 hazards. The top five listed are flood, wildfire, high wind, thunderstorms and dam failure.

County Commissioner Doug Moore said he did not see several hazards listed in the plan, like hazardous material spills, overturned trucks or downed military aircraft. Quairoli said the hazard mitigation plan is geared more to natural threats.

Perry said there are several hazard mitigation grant programs that are focused on fire, flood, earthquakes and other things.

"Right now, nationally, they're going through a process they want to consolidate all of these," Perry said, "so that a community that may have a wildfire threat, but doesn't have an earthquake threat, still has a chance to get their fair share of money."

One member of the audience made comments during the meeting. Donald Homan, of Chaparral, asked if there were any studies done for the Chaparral area. He noted Chaparral is the second largest community in Otero County and is close to El Paso and Fort Bliss.

Perry said his research in hazard identification and risk assessment includes different areas and different topics. He said he's seen groundwater impact studies for the Chaparral area, and there's been discussion on growth of the colonias and the control of growth to have high-quality buildings and adequate services.

"We have studied some of these things," Perry said. "And where they really address hazard mitigation, we incorporate some of those."

Perry said if there is other information or insufficient information, they want to hear that from residents during the public comment period.

Quairoli said the plan has looked at fire hazards and flood maps in Chaparral. He noted the census information on the population might be off, so they tried to bump up that estimate to more accurately reflect Chaparral.

Contact Laura London at llondon@alamogordonews.com.

For full details for EEI click here.

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ALAMOGORDO DAILY NEWS

County adopts hazard plan

Alamogordo Daily News
By Laura London, Staff Writer

Posted: 09/19/2009 12:00:00 AM MDT

The Otero County Commission adopted a hazard mitigation plan during a final public hearing Thursday's at its regular meeting.

Public hearings for the plan were also conducted during the July and August regular county meetings.

The final draft of the Otero County Hazard Mitigation Plan can be seen on the county's Web site, www.co.otero.nm.us.

The plan was prepared by Ecology & Environment Inc., of Baton Rouge, La., with input from county commissioners and the public.

Paul Quairoli, county emergency management coordinator, said the plan gives the Federal Emergency Management Association a basic picture of the county's infrastructure, facilities, population and revenue.

"Should there be a major disaster, it gives FEMA that baseline, actually, to come in and give us assistance," Quairoli said. "It makes the process a little bit faster for them to start that assistance to us."

Quairoli said the plan also allows the county to ask for mitigation money from FEMA up to $500,000 a year to fix some of the things identified in the plan as true hazards.

In other business, commissioners voted to include Holloman Air Force Base on the county's ambulance board. Commissioner Doug Moore estimated Holloman will have a seat on the board and everything will be in place in about 30 to 60 days.

Consent agenda items approved by the county commission Thursday include:

* An application for a grant totaling $16,681.34 from the state Department of Finance and Administration to be used to purchase new office equipment for the DWI program.

* Acceptance of a quitclaim deed and purchase of property from Ann Dunham to Otero County for the benefit of the Sixteen Springs Canyon Volunteer Fire Department.

* Vacation of a portion of Oak Avenue, also known as Ironwood Avenue, located in Chippeway Park subdivision.

* Annual renewal of a contract with Bridge 360 for written language translation services for county administration. Submitted by Ginger Herndon.

* Annual renewal of a contract with Staley's Veterinary Medical Clinic for animal shelter and veterinary services for the county. Submitted by Ginger Herndon.

* A purchase of security cameras and hardware for the Otero County Detention Center from Advent Digital Video, of Clearfield, Utah., for $50,324.86.

* A contract for the Otero County Assessor's Office with Peregrine Corp., of Albuquerque, for $4,785, plus postage. This will be a four-year contract with the option to renew yearly.

* Budget adjustments to reflect a legislative grant for $13,310 for kitchen improvements to the Sacramento Mountains Senior Center.

* Budget adjustments to reflect the award of a

ALAMOGORDO DAILY NEWS

Trauma System Fund Authority grant for $4,500 for training and to purchase emergency medical response equipment for the Sixteen Springs Canyon EMS Department.

* Budget adjustments to reflect a New Mexico Energy, Minerals and Natural Resources Department grant for $10,000 for the Mayhill Volunteer Fire Department.

* Budget adjustments in consideration of a hazardous fuels mitigation grant from the state Energy, Minerals and Natural Resources Department for $300,000.

* An agreement and resolution between Otero County and the Southeastern New Mexico Economic Development District/COG for the 2009/2010 fiscal year in the amount of $7,200.

* Budget adjustments to compensate for an increase of $1,498 in EMS Fund Act distributions for Fiscal Year 2009/2010.

* A resolution to adopt an Infrastructure Capital Improvement Plan.

* An agreement between Otero County and American Medical Response for emergency ambulance services.

* A joint powers agreement between Otero County, the city of Alamogordo and the village of Tularosa for ambulance services for fiscal year 2009/2010.

* An agreement between Western New Mexico University, Alex Thal and Otero County providing consultation services on resource issues.

* A memorandum of understanding between Otero County and the Retired and Senior Volunteer Program (RSVP).

Contact Laura London at llondon@alamogordonews.com.

From: Paul Quairoli [pquairoli@co.otero.nm.us]
Sent: Monday, September 28, 2009 12:45 PM
To: Perry, William
Subject: RE: Looking for information

Please send it to the state directly. I believe all the info you need is online, if not I will send it to you, just let me know what you need.

Paul Quairoli
Emergency Services Director
Otero County Office of Emergency Services
1101 New York Ave. Suite 202
Alamogordo, NM 88310
Office: 575-439-2612
Fax: 575-437-2259
Cell: 575-491-5942
E-mail: pquairoli@co.otero.nm.us

From: Perry, William [mailto:WPerry@ene.com]
Sent: Friday, September 25, 2009 12:20 PM
To: Paul Quairoli
Subject: Looking for information

Paul,

Trying to wrap up the HMP and I need the adoption paperwork. If it is located with the commission meeting minutes, I can get that.

Also, do you want me to print up the HMP and send to you to submit or submit to the State directly?

Bill P

Not extracted: June18, 2009 – request from County Emergency Manager for public hearings the following month – approved.

Regular Meeting **July 16, 2009**

The Board of County Commissioners, in and for the County of Otero, State of New Mexico, met in a Regular Meeting at the Otero County Administration Building in Alamogordo, County and State aforesaid. Meeting called to order by the Chairman at 6:00 p.m., June 16, 2009; and he announced that reasonable notice for this meeting was given to the Alamogordo Daily News, and to Radio Stations, KPSA, KINN and KYEE.

Present:

Ronny Rardin	Chairman
Doug Moore	Vice-Chairman
Clarissa McGinn	Member
Timothy Smith	County Manager
Dan Bryant	County Attorney
Ray Backstrom	Assistant County Manager
Christina Nuno	Deputy Clerk

DRAFT

Pastor Willie Burke gave the invocation. Commissioner Rardin led the Pledge of Allegiance and Commissioner Moore led the Salute to the Flag of the State of New Mexico.

Commissioner McGinn made a motion to approve items on the consent agenda, items 7-15 and 18-26, with the exception of items 16 and 17. The motion was seconded by Commissioner Moore. Donna Brandon, Financial Director, noticed one item on the agenda that was incorporated into the final budget in particular the funding for the health office. She stated the final budget can be approved separately with a resolution. Commissioner McGinn amended her motion to remove the approval of the final budget. The

motion was seconded by Commissioner Moore. A vote was taken and the motion passed unanimously.

1. **Public Hearing:**

The time being 6:05 p.m. and properly being published a public hearing will take place regarding a discussion to hear public comments on the Otero County Hazard Mitigation Plan. Paul Quairoli, Emergency Management Coordinator, and William Perry, of Ecology & Environment, approached the Board to present their presentation. Mr. Quairoli stated the county received a grant from the Federal Emergency Management Association after the flood disaster of 2006 to create a plan. They went out to bid for a contract to create this plan and this plan must be reviewed in public and adopted by the county and sent to FEMA. Mr. Quairoli stated tonight would be the first public review then another public hearing in August. Mr. Perry presented a slide show and discussed all the sections with the plan. He stated the plan reviews different threats to people and property and how often a given threat will occur during a year. Mr. Perry stated they have fourteen (14) hazards and the top five listed are: flood, wildfire, high wind, thunderstorms and dam failure. The 2000 census was their basic source where they received information, that being square footage and valuations on the buildings. Their calculations on the value of buildings in the county came in at six (6) billion where the State in their plan had calculations of 3.3 billion to four (4) billion. Commissioner Moore said he did not see several hazards listed in the plan, like hazardous material spills, overturned trucks, or downed military aircraft. Mr. Quairoli stated the plan hazard mitigation plan is geared more for natural threats. Commissioner Rardin asked the question if they are working with the City, Cloudcroft and Tularosa on this plan. Mr. Perry said they have been reaching out to the City and possibly using the Senior Center as a shelter. Mr. Quairoli stated the City has a Hazard Mitigation Plan. Commissioner Moore stated that was also going to be his question if other entities have a plan, and if so, the Commission will like to get a copy of their plans to make sure the county's plan is consistent with theirs. This plan has to be multi-

jurisdictional response to an issue. Mr. Quairoli stated there is a planning group, members from the Emergency Planning Committee, which consist from the City of Alamogordo, Village of Tularosa and Cloudcroft. The Village of Tularosa is the only one that has not been to meetings. Mr. Quairoli said he has sent them copies of the plan and have notified them of up coming meetings, but has not yet received a response or attendance. Commissioner Moore stated it is not going to work if they do not get involvement. If they have an event, just like every event that has happened, there's going to have to be multi-jurisdiction responding. He also said if they don't build this into the plan, it's just a book with a bunch of papers in it. Commissioner Moore also stated they should reach out to adjacent counties such as Lincoln County and other surrounding counties. They should be made aware of this either talking directly to the emergency personnel or to the governing Board.

Commissioner Rardin asked the audience if anyone had any question regarding this issue.

Mr. Donald Homan, resident of Chaparral, asked Mr. Perry if they were any studies done for the Chaparral area since Chaparral is the second largest community in Otero County and it is close to El Paso and Fort Bliss. Mr. Perry stated their research in hazard identification and risk assessment included different areas and different topics. He said he has seen the groundwater impact studies for Chaparral and there's been discussion on the growth of the colonias. He said the census information on the population might be off, so they tried to bump up that estimate to more accurately reflect Chaparral. There were no other questions from the audience.

Commissioner Rardin adjourned the Public Hearing at 6:50 p.m.

2. Scheduled Citizen Communications:

Tierra Del Sol Housing Corporation is requesting the Board of County Commissioners to provide letters of support for the Homelessness Prevention and Rapid Re-Housing Program (HPRRP) to be

The Board of County Commissioners, in and for the County of Otero, State of New Mexico, met in a Regular Meeting at the Otero County Administration Building in Alamogordo, County and State aforesaid. Meeting called to order by the Vice-Chairman at 6:00 p.m., August 20, 2009; and he announced that reasonable notice for this meeting was given to the Alamogordo Daily News, and to Radio Stations, KPSA, KINN and KYEE.

Present:

Ronny Rardin	Absent
Doug Moore	Vice-Chairman
Clarissa McGinn	Member
Timothy Smith	County Manager
Ray Backstrom	Assistant County Manager
Dan Bryant	County Attorney
Pamela Heltner	Commission Liaison
Lynn Estrada	Deputy Clerk

Dan Bryant gave the invocation. Commissioner Moore led the Pledge of Allegiance and the Salute to the Flag of the State of New Mexico.

1. Public Hearing:

Commissioner Moore called to order the Public Hearings on the Otero County Hazard Mitigation Plan and the amendment to the Otero County Health Care Ordinance 01-04. The Vice-Chairman recessed the Public Hearing on the Otero County Health Care Ordinance 01-04.

We have solicited public comment from agencies that might be involved depending on the type of hazard. We are trying to build a strategic plan whereby we recognize some of the most hazardous conditions that exist in Otero County and prepare a plan to be prepared for those. This plan also will help us in an event of a natural disaster or a hazard in facilitating the rapid implementation of FEMA and federal agencies to come to our assistance and aid. This is the second of three public hearings. The last and final one will be in September at our Regular Meeting.

Paul Quairoli, Emergency Management, stated that we had a public hearing last month and we did get some public comment back that was adopted into the plan. The latest version of the plan was put on the website tonight.

There was no public comment on the plan tonight. Commissioner Moore closed the Public Hearing on the Otero County Hazard Mitigation Plan and opened the Public Hearing on an amendment to the Otero County Health Care Ordinance 01-04.

Tim Smith, County Manager, stated that there was one amendment that staff recommended to increase the annual cap from $20,000.00 to $30,000.00. When we submit money to the state it's reimbursed at three or four times back to Gerald Champion as the sole provider. What ever that amount of money is, Gloria Sainz, Indigent Coordinator and her staff qualifies folks as either indigent or not. We have to account for the money. What has happened over the years as the amount goes to Gerald Champion, there's money that isn't being accounted for, for indigent purposes. The hospital just gets to keep it. There is about $410,000.00 that is not approved by Gloria and by folks that have gone over the cap. By raising the cap by $10,000.00, that will take care of about $300,000.00 of that amount. We have also changed how the applications are processed at the hospital to try and capture more folks to get them qualified. This is the recommendation.

AGENDA REPORT
Otero County Commission

Meeting Date: September 17, 2009 **Report Date:** August 31, 2009

Submitted by: Paul Quairoli **Approved for Agenda:**

Subject: CONDUCT A PUBLIC HEARING FOR COMMENTS AND CONSIDERATION FOR ADOPTION OF THE OTERO COUNTY HAZARD MITIGATION PLAN AS PER FEMA REQUIREMENTS AND APPROVE RESOLUTION 9-17-09/98-12, ADOPTING A HAZARD MITIGATION PLAN FOR OTERO COUNTY.

Research/Background: Otero County did receive grant monies to create a hazard mitigation plan following the 2006 flooding events and FEMA disaster declaration 1659. This grant was to create and adopt a countywide hazard mitigation plan which establishes a baseline of Otero County's exposure to hazards and allow the county to apply for hazard mitigation grant funds.

Staff/Department Recommendation:

Emergency Services: Paul Quairoli; recommends the approval of this resolution to establish a FEMA approved hazard mitigation plan that will establish baseline information accessible to the state and FEMA prior to an emergency and could enhance the protection of the citizens of the county through applying for and receiving grant monies to strengthen our preparedness.

This report and all attached documents have been reviewed by:

Name	Department	Recommend approval ○yes ○no
Name	Department	Recommend approval ⊗yes ○no
Name	Department	Recommend approval ○yes ○no

This item was approved/disapproved by the Board of County Commissioners on 9/17/09.

Email: oteroadm@co.otero.nm.us
COMMISSION / ADMINISTRATION
(575) 437-7427
FAX (575) 443-2904
886-986-8376

1101 NEW YORK AVE.
ALAMOGORDO, NM 88310-8935

State of New Mexico
County of Otero

RESOLUTION NO. 09-17-09/98-12

A RESOLUTION ADOPTING A COUNTY HAZARD MITIGATION PLAN

WHEREAS, the Otero County Commissioners have received grant funds from the Federal Emergency Management Agency, through the New Mexico Office of Homeland Security and Emergency Management, for the preparation of a hazard mitigation plan and;

WHEREAS, the Disaster Mitigation Act of 2000, specifically Section 322, addresses local mitigation planning and requires local governments to develop and submit plans as a condition of receiving Hazard Mitigation Grant Program Funds, and;

WHEREAS, post-disaster mitigation funds are only available to those communities with an approved Hazard Mitigation Plan, and;

WHEREAS, the State Office of Homeland Security and Emergency Management focuses local mitigation planning at the County level and they encourage local governments to participate in the County mitigation planning process.

NOW THEREFORE, BE IT RESOLVED, by the Otero County Commissioners, that Otero County approves and adopts the final Federal Emergency Management Agency approved Hazard Mitigation Plan.

PASSES APPROVED AND ADOPTED this 17th day of September, 2009.

BOARD OF COUNTY COMMISSIONERS
OTERO COUNTY, NEW MEXICO

Ronny Rardin, Chairman

Doug Moore, Vice-Chairperson

Clarissa McGinn, Member

Attest:

Robyn Holmes, County Clerk

(SEAL)

B Asset Inventory

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Inventory Assets - Otero County

Date: 9/28/2009 What will be affected by the hazard event?

Task A. Determine the proportion of buildings, the value of buildings, and the population in your community or state that are located in hazard areas.

Hazard Flood

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community	# in Hazard Area (1)	% in Hazard Area	$ in Community	$ in Hazard Area (1)	% in Hazard Area	# in Community	# in Hazard Area (1)	% in Hazard Area
Residential	27,278	5,565	20.4%	$ 4,107,077,495 (2)	$837,843,809	20.4%	62,216 (2)	12,692	20.4%
Commercial	226	113	50.0%	$ 1,476,510,634 (3)	$301,208,169	20.4%	22,947 (3)	4,681	20.4%
Industrial	47	24	50.0%	$ 112,878,470	$56,439,235	50.0%	6,964	1,421	20.4%
Agricultural	13	1	10.0%	$ 29,997,990	$14,998,995	50.0%	N/A	N/A	N/A
Religious / Non-Profit	29	6	20.4%	$ 146,823,503	$29,951,995	20.4%	N/A	N/A	N/A
Government	40	13	33.0%	$ 8,892,433 (4)	$1,814,056	20.4%	N/A	N/A	N/A
Education	14	3	20.4%	$ 86,573,031 (5)	$17,660,898	20.4%	8338	N/A	N/A
Utilities	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	27,647	5,724	20.7%	$5,968,753,555	$1,259,917,157	21.1%	100,465	18,794	18.7%

All data derived from HAZUS-MH software (and US Census 2000 tract data) unless otherwise indicated.

1) Percent impacted based upon HAZUS-MH output.

2) Numbers include single family units, duplexes and apartments.

3) Numbers underestimated due to lack of data on nursing homes.

4) Numbers underestimated due to lack of data on emergency services.

5) Numbers underestimated due to lack of data on colleges/university.

HAZUS-MH did not provide value of Commercial, Religious, Government and Education structures. RSMeans Square Foot Cost was used as source of data.

N/A = Data not available in HAZUS-MH

Inventory Assets - Otero County

Date: 9/28/2009 What will be affected by the hazard event?

Task A. Determine the proportion of buildings, the value of buildings, and the population in your community or state that are located in hazard areas.

Hazard Wildfire

Type of Structure (Occupancy Class)	Number of Structures [1]			Value of Structures			Number of People		
	# in Community	# in Hazard Area [2]	% in Hazard Area	$ in Community	$ in Hazard Area [2]	% in Hazard Area	# in Community	# in Hazard Area [2]	% in Hazard Area
Residential	27,278	9,084	33.3%	$ 4,107,077,495 [2]	$1,367,656,806	33.3%	62,216 [2]	20,718	33.3%
Commercial	226	23	10.0%	$ 1,476,510,634 [3]	$147,651,063	10.0%	22,947 [3]	7,641	33.3%
Industrial	47	5	10.0%	$ 112,878,470	$11,287,847	10.0%	6,964	2,319	33.3%
Agricultural	13	1	5.0%	$ 29,997,990	$1,499,900	5.0%	N/A	N/A	N/A
Religious / Non-Profit	29	10	33.3%	$ 146,823,503	$48,892,226	33.3%	N/A	N/A	N/A
Government	40	4	10.0%	$ 8,892,433 [4]	$889,243	10.0%	N/A	N/A	N/A
Education	14	5	33.0%	$ 86,573,031 [5]	$28,569,100	33.0%	8,338	N/A	N/A
Utilities	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	27,647	9,130	33.0%	$5,968,753,555	$1,606,446,186	26.9%	100,465	30,678	30.5%

All data derived from HAZUS-MH software (and US Census 2000 tract data) unless otherwise indicated.

1) Percent impacted based upon HAZUS-MH output.

2) Numbers include single family units, duplexes and apartments.

3) Numbers underestimated due to lack of data on nursing homes.

4) Numbers underestimated due to lack of data on emergency services.

5) Numbers underestimated due to lack of data on colleges/university.

HAZUS-MH did not provide value of Commercial, Religious, Government and Education structures. RSMeans Square Foot Cost was used as source of data.

N/A = Data not available in HAZUS-MH

Inventory Assets - Otero County

Date: 9/28/2009 What will be affected by the hazard event?

Task A. Determine the proportion of buildings, the value of buildings, and the population in your community or state that are located in hazard areas.

Hazard High Winds

Type of Structure (Occupancy Class)	Number of Structures [1]			Value of Structures			Number of People		
	# in Community	# in Hazard Area [2]	% in Hazard Area	$ in Community	$ in Hazard Area [2]	% in Hazard Area	# in Community	# in Hazard Area [2]	% in Hazard Area
Residential	27,278	14	0.05%	$ 4,107,077,495 [2]	$2,053,539	0.05%	62,216 [2]	31	0.1%
Commercial	226	0	0.01%	$ 1,476,510,634 [3]	$147,651	0.01%	22,947 [3]	11	0.1%
Industrial	47	0	0.01%	$ 112,878,470	$11,288	0.01%	6,964	3	0.1%
Agricultural	13	0	0.05%	$ 29,997,990	$14,999	0.05%	N/A	N/A	N/A
Religious / Non-Profit	29	0	0.01%	$ 146,823,503	$7,341	0.01%	N/A	N/A	N/A
Government	40	0	0.01%	$ 8,892,433 [4]	$445	0.01%	N/A	N/A	N/A
Education	14	0	0.01%	$ 86,573,031 [5]	$4,329	0.01%	8,338	N/A	N/A
Utilities	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	27,647	14	0.049%	$5,968,753,555	$2,239,591	0.04%	100,465	46	0.0%

All data derived from HAZUS-MH software (and US Census 2000 tract data) unless otherwise indicated.

1) Percent impacted based upon visual estimation using maps.

2) Numbers include single family units, duplexes and apartments.

3) Numbers underestimated due to lack of data on nursing homes.

4) Numbers underestimated due to lack of data on emergency services.

5) Numbers underestimated due to lack of data on colleges/university.

HAZUS-MH did not provide value of Commercial, Religious, Government and Education structures. RSMeans Square Foot Cost was used as source of data.

N/A = Data not available in HAZUS-MH

Inventory Assets - Otero County

Date: 9/28/2009 What will be affected by the hazard event?

Task A. Determine the proportion of buildings, the value of buildings, and the population in your community or state that are located in hazard areas.

Hazard Thunderstorms

Type of Structure (Occupancy Class)	Number of Structures [1]			Value of Structures			Number of People		
	# in Community	# in Hazard Area [2]	% in Hazard Area	$ in Community	$ in Hazard Area [2]	% in Hazard Area	# in Community	# in Hazard Area [2]	% in Hazard Area
Residential	27,278	7,324	26.9%	$ 4,107,077,495 [2]	$1,102,750,307	26.9%	62,216 [2]	16,705	26.9%
Commercial	226	68	30.0%	$ 1,476,510,634 [3]	$442,953,190	30.0%	22,947 [3]	6,161	26.9%
Industrial	47	14	30.0%	$ 112,878,470	$33,863,541	30.0%	6,964	1,870	26.9%
Agricultural	13	1	7.5%	$ 29,997,990	$2,249,849	7.5%	N/A	N/A	N/A
Religious / Non-Profit	29	8	26.9%	$ 146,823,503	$39,422,110	26.9%	N/A	N/A	N/A
Government	40	9	21.5%	$ 8,892,433 [4]	$1,911,873	21.5%	N/A	N/A	N/A
Education	14	4	26.7%	$ 86,573,031 [5]	$23,114,999	26.7%	8,338	N/A	N/A
Utilities	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	27,647	7,427	26.9%	$5,968,753,555	$1,646,265,871	27.6%	100,465	24,736	24.6%

All data derived from HAZUS-MH software (and US Census 2000 tract data) unless otherwise indicated.

1) Percent impacted based upon visual estimation using maps.

2) Numbers include single family units, duplexes and apartments.

3) Numbers underestimated due to lack of data on nursing homes.

4) Numbers underestimated due to lack of data on emergency services.

5) Numbers underestimated due to lack of data on colleges/university.

HAZUS-MH did not provide value of Commercial, Religious, Government and Education structures. RSMeans Square Foot Cost was used as source of data.

N/A = Data not available in HAZUS-MH

Inventory Assets - Otero County

Date: 9/28/2009 What will be affected by the hazard event?

Task A. Determine the proportion of buildings, the value of buildings, and the population in your community or state that are located in hazard areas.

Hazard Dam Failure

Type of Structure (Occupancy Class)	Number of Structures [1]			Value of Structures			Number of People		
	# in Community	# in Hazard Area [2]	% in Hazard Area	$ in Community	$ in Hazard Area [2]	% in Hazard Area	# in Community	# in Hazard Area [2]	% in Hazard Area
Residential	27,278	14	0.1%	$ 4,107,077,495 [2]	$2,053,539	0.1%	62,216 [2]	31	0.1%
Commercial	226	0	0.0%	$ 1,476,510,634 [3]	$14,765	0.0%	22,947 [3]	11	0.1%
Industrial	47	0	0.0%	$ 112,878,470	$1,129	0.0%	6,964	3	0.1%
Agricultural	13	0	0.0%	$ 29,997,990	$300	0.0%	N/A	N/A	N/A
Religious / Non-Profit	29	0	0.0%	$ 146,823,503	$1,468	0.0%	N/A	N/A	N/A
Government	40	2	5.0%	$ 8,892,433 [4]	$444,622	5.0%	N/A	N/A	N/A
Education	14	0	0.0%	$ 86,573,031 [5]	$866	0.0%	8,338	N/A	N/A
Utilities	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	27,647	16	0.06%	$5,968,753,555	$2,516,688	0.0%	100,465	46	0.0%

All data derived from HAZUS-MH software (and US Census 2000 tract data) unless otherwise indicated.

1) Percent impacted based upon visual estimation using maps.

2) Numbers include single family units, duplexes and apartments.

3) Numbers underestimated due to lack of data on nursing homes.

4) Numbers underestimated due to lack of data on emergency services.

5) Numbers underestimated due to lack of data on colleges/university.

HAZUS-MH did not provide value of Commercial, Religious, Government and Education structures. RSMeans Square Foot Cost was used as source of data.

N/A = Data not available in HAZUS-MH

Inventory Assets - Otero County

Date: 9/28/2009 What will be affected by the hazard event?

Task A. Determine the proportion of buildings, the value of buildings, and the population in your community or state that are located in hazard areas.

Hazard Sever Winter Storms

Type of Structure (Occupancy Class)	Number of Structures [1]			Value of Structures			Number of People		
	# in Community	# in Hazard Area [2]	% in Hazard Area	$ in Community	$ in Hazard Area [2]	% in Hazard Area	# in Community	# in Hazard Area [2]	% in Hazard Area
Residential	27,278	14	0.1%	$ 4,107,077,495 [2]	$2,053,539	0.1%	62,216 [2]	31	0.1%
Commercial	226	0	0.1%	$ 1,476,510,634 [3]	$738,255	0.1%	22,947 [3]	11	0.1%
Industrial	47	0	0.1%	$ 112,878,470	$56,439	0.1%	6,964	3	0.1%
Agricultural	13	0	0.1%	$ 29,997,990	$14,999	0.1%	N/A	N/A	N/A
Religious / Non-Profit	29	0	0.1%	$ 146,823,503	$73,412	0.1%	N/A	N/A	N/A
Government	40	0	0.1%	$ 8,892,433 [4]	$4,446	0.1%	N/A	N/A	N/A
Education	14	0	0.1%	$ 86,573,031 [5]	$43,287	0.1%	8,338	N/A	N/A
Utilities	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	27,647	14	0.1%	$5,968,753,555	$2,984,377	0.1%	100,465	46	0.0%

All data derived from HAZUS-MH software (and US Census 2000 tract data) unless otherwise indicated.

1) Percent impacted based upon visual estimation using maps.

2) Numbers include single family units, duplexes and apartments.

3) Numbers underestimated due to lack of data on nursing homes.

4) Numbers underestimated due to lack of data on emergency services.

5) Numbers underestimated due to lack of data on colleges/university.

HAZUS-MH did not provide value of Commercial, Religious, Government and Education structures. RSMeans Square Foot Cost was used as source of data.

N/A = Data not available in HAZUS-MH

Inventory Assets - Otero County

Date: 9/28/2009 What will be affected by the hazard event?

Task A. Determine the proportion of buildings, the value of buildings, and the population in your community or state that are located in hazard areas.

Hazard Drought

Type of Structure (Occupancy Class)	Number of Structures [1]			Value of Structures			Number of People		
	# in Community	# in Hazard Area [2]	% in Hazard Area	$ in Community	$ in Hazard Area [2]	% in Hazard Area	# in Community	# in Hazard Area [2]	% in Hazard Area
Residential	27,278	14	0.1%	$ 4,107,077,495 [2]	$2,053,539	0.1%	62,216 [2]	31	0.1%
Commercial	226	0	0.1%	$ 1,476,510,634 [3]	$738,255	0.1%	22,947 [3]	11	0.1%
Industrial	47	0	0.1%	$ 112,878,470	$56,439	0.1%	6,964	3	0.1%
Agricultural	13	0	0.1%	$ 29,997,990	$14,999	0.1%	N/A	N/A	N/A
Religious / Non-Profit	29	0	0.1%	$ 146,823,503	$73,412	0.1%	N/A	N/A	N/A
Government	40	0	0.1%	$ 8,892,433 [4]	$4,446	0.1%	N/A	N/A	N/A
Education	14	0	0.1%	$ 86,573,031 [5]	$43,287	0.1%	8,338	N/A	N/A
Utilities	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	27,647	14	0.1%	$5,968,753,555	$2,984,377	0.1%	100,465	46	0.0%

All data derived from HAZUS-MH software (and US Census 2000 tract data) unless otherwise indicated.

1) Percent impacted based upon visual estimation using maps.

2) Numbers include single family units, duplexes and apartments.

3) Numbers underestimated due to lack of data on nursing homes.

4) Numbers underestimated due to lack of data on emergency services.

5) Numbers underestimated due to lack of data on colleges/university.

HAZUS-MH did not provide value of Commercial, Religious, Government and Education structures. RSMeans Square Foot Cost was used as source of data.

N/A = Data not available in HAZUS-MH

Inventory Assets - Otero County

Date: 9/28/2009 What will be affected by the hazard event?

Task A. Determine the proportion of buildings, the value of buildings, and the population in your community or state that are located in hazard areas.

Hazard Landslide

Type of Structure (Occupancy Class)	Number of Structures [1]			Value of Structures			Number of People		
	# in Community	# in Hazard Area [2]	% in Hazard Area	$ in Community	$ in Hazard Area [2]	% in Hazard Area	# in Community	# in Hazard Area [2]	% in Hazard Area
Residential	27,278	3	0.01%	$ 4,107,077,495 [2]	$410,708	0.01%	62,216 [2]	6	0.0%
Commercial	226	0	0.00%	$ 1,476,510,634 [3]	$0	0.00%	22,947 [3]	2	0.0%
Industrial	47	0	0.00%	$ 112,878,470	$0	0.00%	6,964	1	0.0%
Agricultural	13	0	0.10%	$ 29,997,990	$29,998	0.10%	N/A	N/A	N/A
Religious / Non-Profit	29	0	0.00%	$ 146,823,503	$0	0.00%	N/A	N/A	N/A
Government	40	0	0.00%	$ 8,892,433 [4]	$0	0.00%	N/A	N/A	N/A
Education	14	0	0.00%	$ 86,573,031 [5]	$0	0.00%	8,338	N/A	N/A
Utilities	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	27,647	3	0.01%	$5,968,753,555	$440,706	0.01%	100,465	9	0.0%

All data derived from HAZUS-MH software (and US Census 2000 tract data) unless otherwise indicated.

1) Percent impacted based upon visual estimation using maps.

2) Numbers include single family units, duplexes and apartments.

3) Numbers underestimated due to lack of data on nursing homes.

4) Numbers underestimated due to lack of data on emergency services.

5) Numbers underestimated due to lack of data on colleges/university.

HAZUS-MH did not provide value of Commercial, Religious, Government and Education structures. RSMeans Square Foot Cost was used as source of data.

N/A = Data not available in HAZUS-MH

Inventory Assets - Otero County

Date: 9/28/2009 What will be affected by the hazard event?

Task A. Determine the proportion of buildings, the value of buildings, and the population in your community or state that are located in hazard areas.

Hazard Extreme Heat

Type of Structure (Occupancy Class)	Number of Structures [1]			Value of Structures			Number of People		
	# in Community	# in Hazard Area [2]	% in Hazard Area	$ in Community	$ in Hazard Area [2]	% in Hazard Area	# in Community	# in Hazard Area [2]	% in Hazard Area
Residential	27,278	1,364	5.0%	$ 4,107,077,495 [2]	$205,353,875	5.0%	62,216 [2]	3,111	5.0%
Commercial	226	5	2.0%	$ 1,476,510,634 [3]	$29,530,213	2.0%	22,947 [3]	1,147	5.0%
Industrial	47	1	2.0%	$ 112,878,470	$2,257,569	2.0%	6,964	348	5.0%
Agricultural	13	0	2.0%	$ 29,997,990	$599,960	2.0%	N/A	N/A	N/A
Religious / Non-Profit	29	1	5.0%	$ 146,823,503	$7,341,175	5.0%	N/A	N/A	N/A
Government	40	2	5.0%	$ 8,892,433 [4]	$444,622	5.0%	N/A	N/A	N/A
Education	14	1	5.0%	$ 86,573,031 [5]	$4,328,652	5.0%	8,338	N/A	N/A
Utilities	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	27,647	1,374	5.0%	$5,968,753,555	$249,856,065	4.2%	100,465	4,606	4.6%

All data derived from HAZUS-MH software (and US Census 2000 tract data) unless otherwise indicated.

1) Percent impacted based upon visual estimation using maps.

2) Numbers include single family units, duplexes and apartments.

3) Numbers underestimated due to lack of data on nursing homes.

4) Numbers underestimated due to lack of data on emergency services.

5) Numbers underestimated due to lack of data on colleges/university.

HAZUS-MH did not provide value of Commercial, Religious, Government and Education structures. RSMeans Square Foot Cost was used as source of data.

N/A = Data not available in HAZUS-MH

Inventory Assets - Otero County

Date: 9/28/2009 What will be affected by the hazard event?

Task A. Determine the proportion of buildings, the value of buildings, and the population in your community or state that are located in hazard areas.

Hazard Expansive Soils

Type of Structure (Occupancy Class)	Number of Structures [1]			Value of Structures			Number of People		
	# in Community	# in Hazard Area [2]	% in Hazard Area	$ in Community	$ in Hazard Area [2]	% in Hazard Area	# in Community	# in Hazard Area [2]	% in Hazard Area
Residential	27,278	273	1.00%	$ 4,107,077,495 [2]	$41,070,775	1.0%	62,216 [2]	622	1.0%
Commercial	226	2	1.00%	$ 1,476,510,634 [3]	$14,765,106	1.0%	22,947 [3]	229	1.0%
Industrial	47	0	0.10%	$ 112,878,470	$112,878	0.1%	6,964	70	1.0%
Agricultural	13	0	0.05%	$ 29,997,990	$14,999	0.1%	N/A	N/A	N/A
Religious / Non-Profit	29	0	0.10%	$ 146,823,503	$146,824	0.1%	N/A	N/A	N/A
Government	40	0	0.05%	$ 8,892,433 [4]	$4,446	0.1%	N/A	N/A	N/A
Education	14	0	0.10%	$ 86,573,031 [5]	$86,573	0.1%	8,338	N/A	N/A
Utilities	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	27,647	275	1.00%	$5,968,753,555	$56,201,601	0.9%	100,465	921	0.9%

All data derived from HAZUS-MH software (and US Census 2000 tract data) unless otherwise indicated.

1) Percent impacted based upon visual estimation using maps.

2) Numbers include single family units, duplexes and apartments.

3) Numbers underestimated due to lack of data on nursing homes.

4) Numbers underestimated due to lack of data on emergency services.

5) Numbers underestimated due to lack of data on colleges/university.

HAZUS-MH did not provide value of Commercial, Religious, Government and Education structures. RSMeans Square Foot Cost was used as source of data.

N/A = Data not available in HAZUS-MH

Inventory Assets - Otero County

Date: 9/28/2009 What will be affected by the hazard event?

Task A. Determine the proportion of buildings, the value of buildings, and the population in your community or state that are located in hazard areas.

Hazard Tornadoes

Type of Structure (Occupancy Class)	Number of Structures [1]			Value of Structures			Number of People		
	# in Community	# in Hazard Area [2]	% in Hazard Area	$ in Community	$ in Hazard Area [2]	% in Hazard Area	# in Community	# in Hazard Area [2]	% in Hazard Area
Residential	27,278	818	3.0%	$ 4,107,077,495 [2]	$123,212,325	3.0%	62,216 [2]	1,866	3.0%
Commercial	226	5	2.0%	$ 1,476,510,634 [3]	$29,530,213	2.0%	22,947 [3]	688	3.0%
Industrial	47	1	2.0%	$ 112,878,470	$2,257,569	2.0%	6,964	209	3.0%
Agricultural	13	0	1.0%	$ 29,997,990	$299,980	1.0%	N/A	N/A	N/A
Religious / Non-Profit	29	1	2.0%	$ 146,823,503	$2,936,470	2.0%	N/A	N/A	N/A
Government	40	0	1.0%	$ 8,892,433 [4]	$88,924	1.0%	N/A	N/A	N/A
Education	14	0	2.0%	$ 86,573,031 [5]	$1,731,461	2.0%	8,338	N/A	N/A
Utilities	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	27,647	825	3.0%	$5,968,753,555	$160,056,942	2.7%	100,465	2,764	2.8%

All data derived from HAZUS-MH software (and US Census 2000 tract data) unless otherwise indicated.

1) Percent impacted based upon visual estimation using maps.

2) Numbers include single family units, duplexes and apartments.

3) Numbers underestimated due to lack of data on nursing homes.

4) Numbers underestimated due to lack of data on emergency services.

5) Numbers underestimated due to lack of data on colleges/university.

HAZUS-MH did not provide value of Commercial, Religious, Government and Education structures. RSMeans Square Foot Cost was used as source of data.

N/A = Data not available in HAZUS-MH

Inventory Assets - Otero County

Date: 9/28/2009 What will be affected by the hazard event?

Task A. Determine the proportion of buildings, the value of buildings, and the population in your community or state that are located in hazard areas.

Hazard Land Subsidence

Type of Structure (Occupancy Class)	Number of Structures [1]			Value of Structures			Number of People		
	# in Community	# in Hazard Area [2]	% in Hazard Area	$ in Community	$ in Hazard Area [2]	% in Hazard Area	# in Community	# in Hazard Area [2]	% in Hazard Area
Residential	27,278	136	0.50%	$ 4,107,077,495 [2]	$20,535,387	0.5%	62,216 [2]	311	0.5%
Commercial	226	0	0.05%	$ 1,476,510,634 [3]	$738,255	0.1%	22,947 [3]	115	0.5%
Industrial	47	0	0.05%	$ 112,878,470	$56,439	0.1%	6,964	35	0.5%
Agricultural	13	0	0.05%	$ 29,997,990	$14,999	0.1%	N/A	N/A	N/A
Religious / Non-Profit	29	0	0.10%	$ 146,823,503	$146,824	0.1%	N/A	N/A	N/A
Government	40	0	0.05%	$ 8,892,433 [4]	$4,446	0.1%	N/A	N/A	N/A
Education	14	0	0.05%	$ 86,573,031 [5]	$43,287	0.1%	8,338	N/A	N/A
Utilities	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	27,647	137	0.5%	$5,968,753,555	$21,539,637	0.4%	100,465	461	0.5%

All data derived from HAZUS-MH software (and US Census 2000 tract data) unless otherwise indicated.

1) Percent impacted based upon visual estimation using maps.

2) Numbers include single family units, duplexes and apartments.

3) Numbers underestimated due to lack of data on nursing homes.

4) Numbers underestimated due to lack of data on emergency services.

5) Numbers underestimated due to lack of data on colleges/university.

HAZUS-MH did not provide value of Commercial, Religious, Government and Education structures. RSMeans Square Foot Cost was used as source of data.

N/A = Data not available in HAZUS-MH

Inventory Assets - Otero County

Date: 9/28/2009 What will be affected by the hazard event?

Task A. Determine the proportion of buildings, the value of buildings, and the population in your community or state that are located in hazard areas.

Hazard Earthquake

Type of Structure (Occupancy Class)	Number of Structures [1]			Value of Structures			Number of People		
	# in Community	# in Hazard Area [2]	% in Hazard Area	$ in Community	$ in Hazard Area [2]	% in Hazard Area	# in Community	# in Hazard Area [2]	% in Hazard Area
Residential	27,278	2,728	10.0%	$ 4,107,077,495 [2]	$410,707,749	10.0%	62,216 [2]	6,222	10.0%
Commercial	226	5	2.0%	$ 1,476,510,634 [3]	$29,530,213	2.0%	22,947 [3]	2,295	10.0%
Industrial	47	1	2.0%	$ 112,878,470	$2,257,569	2.0%	6,964	696	10.0%
Agricultural	13	0	0.1%	$ 29,997,990	$14,999	0.1%	N/A	N/A	N/A
Religious / Non-Profit	29	1	5.0%	$ 146,823,503	$7,341,175	5.0%	N/A	N/A	N/A
Government	40	1	2.0%	$ 8,892,433 [4]	$177,849	2.0%	N/A	N/A	N/A
Education	14	0	2.0%	$ 86,573,031 [5]	$1,731,461	2.0%	8,338	N/A	N/A
Utilities	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	27,647	2,736	9.9%	$5,968,753,555	$451,761,015	7.6%	100,465	9,213	9.2%

All data derived from HAZUS-MH software (and US Census 2000 tract data) unless otherwise indicated.

1) Percent impacted based upon HAZUS-MH output.

2) Numbers include single family units, duplexes and apartments.

3) Numbers underestimated due to lack of data on nursing homes.

4) Numbers underestimated due to lack of data on emergency services.

5) Numbers underestimated due to lack of data on colleges/university.

HAZUS-MH did not provide value of Commercial, Religious, Government and Education structures. RSMeans Square Foot Cost was used as source of data.

N/A = Data not available in HAZUS-MH

Inventory Assets - Otero County

Date: 9/28/2009 What will be affected by the hazard event?

Task A. Determine the proportion of buildings, the value of buildings, and the population in your community or state that are located in hazard areas.

Hazard Volcanoes

Type of Structure (Occupancy Class)	Number of Structures [1]			Value of Structures			Number of People		
	# in Community	# in Hazard Area [2]	% in Hazard Area	$ in Community	$ in Hazard Area [2]	% in Hazard Area	# in Community	# in Hazard Area [2]	% in Hazard Area
Residential	27,278	1,364	5.0%	$ 4,107,077,495 [2]	$205,353,875	5.0%	62,216 [2]	3,111	5.0%
Commercial	226	2	1.0%	$ 1,476,510,634 [3]	$14,765,106	1.0%	22,947 [3]	1,147	5.0%
Industrial	47	0	0.5%	$ 112,878,470	$564,392	0.5%	6,964	348	5.0%
Agricultural	13	0	0.5%	$ 29,997,990	$149,990	0.5%	N/A	N/A	N/A
Religious / Non-Profit	29	0	1.0%	$ 146,823,503	$1,468,235	1.0%	N/A	N/A	N/A
Government	40	0	1.0%	$ 8,892,433 [4]	$88,924	1.0%	N/A	N/A	N/A
Education	14	0	1.0%	$ 86,573,031 [5]	$865,730	1.0%	8,338	N/A	N/A
Utilities	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	27,647	1,367	4.9%	$5,968,753,555	$223,256,253	3.7%	100,465	4,606	4.6%

All data derived from HAZUS-MH software (and US Census 2000 tract data) unless otherwise indicated.

1) Percent impacted based upon visual estimation using maps.

2) Numbers include single family units, duplexes and apartments.

3) Numbers underestimated due to lack of data on nursing homes.

4) Numbers underestimated due to lack of data on emergency services.

5) Numbers underestimated due to lack of data on colleges/university.

HAZUS-MH did not provide value of Commercial, Religious, Government and Education structures. RSMeans Square Foot Cost was used as source of data.

N/A = Data not available in HAZUS-MH

C Loss Estimates

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Otero County
Hazard Mitigation Plan
Assessing Vulnerability - Estimating Potential Losses

Population

Census Tract	Population	Commercial Population	Industrial Pop.	Agricultural Pop.	Religious Pop.	Government Pop.	Education Pop.	Utility Pop.
35035000100	2943	1101	1169				417	
35035000200	1946	879	568				218	
35035000301	6594	2537	405				846	
35035000302	7962	3177	120				1186	
35035000401	5503	2190	144				802	
35035000402	7060	2583	1287				977	
35035000500	6449	2344	1151				880	
35035000601	2181	439	697				308	
35035000602	1297	484	56				112	
35035000603	2451	965	213				299	
35035000700	6011	2310	231				634	
35035000800	3156	855	405				561	
35035000900	8663	3083	518				1098	
TOTAL	**62216**	**22947**	**6964**	**0**	**0**	**0**	**8338**	**0**

CENSUS 2000 HAZUS-MH HAZUS-MH Data Not Available

Number of Structures

Census Tract	Residential Struct.	Commercial Struct.	Industrial Struct.	Agricultural Struct.	Religious Struct.	Government Struct.	Education Struct.	Utilities
35035000100	1167	38	3	1	3	3	1	
35035000200	851	16	1	1	4	5	1	
35035000301	2685	23	4	1	1	1	2	
35035000302	3218	12	3	1	4	1	2	
35035000401	1952	13	3	1	2	1	1	
35035000402	2757	31	3	1	2	1	1	
35035000500	2791	31	8	1	2	2	1	
35035000601	518	9	3	1	1	9	2	
35035000602	685	4	3	1	1	2	0	
35035000603	1063	8	4	1	1	1	0	
35035000700	2572	19	5	1	2	2	1	
35035000800	915	7	3	1	1	7	1	
35035000900	6104	15	4	1	5	5	1	
TOTAL	**27278**	**226**	**47**	**13**	**29**	**40**	**14**	**0**

Note: All data was taken from HAZUS-MH software, recommended by FEMA's State and Local Planning How-To Guide, Understanding Your Risk.

=HAZUS-MH Data not available

Value of Residential Structures

Census Tract	Avg. Value Res. Struct.	# of Res. Structures	$ of Res. Structures
35035000100	$44,307	1167	$51,706,012
35035000200	$55,868	851	$47,543,823
35035000301	$91,374	2685	$245,337,926
35035000302	$74,206	3218	$238,795,252
35035000401	$78,186	1952	$152,619,782
35035000402	$113,438	2757	$312,749,315
35035000500	$66,707	2791	$186,178,307
35035000601	$110,000	518	$56,980,000
35035000602	$97,827	685	$67,011,403
35035000603	$99,792	1063	$106,078,542
35035000700	$72,948	2572	$187,622,297
35035000800	$36,143	915	$33,070,714
35035000900	$95,917	6104	$585,477,253
TOTAL	**$79,747**	**27278**	**$2,271,170,625**

NOTE: All data was taken from HAZUS-MH software, recommended by FEMA's State and Local Mitigation Planning How-To Guide, Understanding Your Risk

Otero County
Hazard Mitigation Plan
Assessing Vulnerability - Estimating Potential Losses

Value of Non-Residential Structures

Census 2000 Classifications RSMeans Classification	RSMeans Cost per Sq.Ft.	County-Wide Sq.Ft. (x10K)	Total by Classification ($)
Residential - Apartments (RES3AF, RES3BF, RES3CF, RES3DF and RES3EF)			
Apartment, 1-3 Story	$129.65	345.87	$448,420,455
Residential - Apartments (RES3FF)			
Apartment, 4-7 Story	$132.85	13.78	$18,306,730
Residential - Temporary Lodging (RES4F)			
Motel, 2-3 Story	$138.65	134.69	$186,747,685
Residential - Institution (RES5F)			
Assisted-Senior Living	$130.80	904.00	$1,182,432,000
Residential - Nursing Home (RES6F)			
Nursing Home	$126.90	0.00	$0
Commercial - Retail Trade (COM1F)			
Garage, Auto Sales	$86.45		
Garage, Repair	$99.35		
Garage, Service Station	$144.65		
Store, Convenience	$88.40		
Store, Department, 1 Story	$90.35		
Store, Department, 3 Story	$105.80		
Store, Retail	$92.50		
Supermarket	$79.70		
AVERAGE	$98.40	640.44	$630,192,960
Commercial - Wholesale Trade (COM2F)			
Warehouse	$70.65	217.12	$153,395,280
Commercial - Personal Services (COM3F)			
Office, 1 Story	$137.60	165.37	$227,549,120
Commercial - Professional (COM4F)			
Office, 2-4 Story	$137.85	196.31	$270,613,335
Commercial - Banking (COM5F)			
Bank	$191.65	7.60	$14,565,400
Commercial - Hospital (COM6F)			
Hospital, 2-3 Story	$228.85	14.75	$33,761,829
Commercial - Medical Office (COM7F)			
Medical Office, 1 Story	$155.50	19.12	$29,731,600
Commercial - Entertainment (COM8F)			
Auditorium	$136.80		
Bowling Alley	$80.50		
Community Center	$118.75		
Club, Country	$172.65		
Club, Social	$116.80		
Gymnasium	$123.20		
Raquetball Court	$140.65		
Restaurant	$167.60		
Restaurant, Fast Food	$147.10		
Rink, Hockey/Indoor Soccer	$143.10		
Swimming Pool, Enclosed	$181.30		
AVERAGE	$138.95	80.18	$111,410,110
Commercial - Theater (COM9F)			
Movie Theater	$120.25	4.40	$5,291,000
Commercial - Parking (COM10F)			
Garage, Parking	$37.45	0.00	$0
Industry (IND1F, IND2F, IND3F, IND4F, IND5F)			
Factory, 1 Story	$86.05	73.73	$63,444,665
Industry - Construction (IND6F)			
Warehouse	$70.65	69.97	$49,433,805
Agriculture (AGR1F)			
Warehouse	$70.65	42.46	$29,997,990
Religious (REL1F)			
Church	$140.95		
Religious Education	$133.00		
AVERAGE	$136.98	107.19	$146,823,503

Otero County
Hazard Mitigation Plan
Assessing Vulnerability - Estimating Potential Losses

Value of Non-Residential Structures

Census 2000 Classifications RSMeans Classification	RSMeans Cost per Sq.Ft.	County-Wide Sq.Ft. (x10K)	Total by Classification ($)
Government - General Services (GOV1F)			
Community Center	$118.75		
Courthouse, I Story	$172.85		
Jail	$215.20		
Library	$129.40		
Office, 2-4 Story	$137.85		
Post Office	$104.15		
Town Hall, 1 Story	$108.20		
Warehouse	$70.65		
AVERAGE	$132.13	6.73	$8,892,433
Government - Emergency Centers (GOV2F)			
Fire Station, 1 Story	$133.00		
Police Station	$182.95		
Computer Data Center	$230.85		
AVERAGE	$182.27	0.00	$0
Schools - K-12 (EDU1F)			
School, Elementary	$106.15		
School, High, 2-3 Story	$114.60		
School, Jr. High, 2-3 Story	$116.00		
School, Vocational	$118.00		
AVERAGE	$113.69	76.15	$86,573,031
Colleges (EDU2F)			
Auditorium	$136.80		
College, Classroom, 2-3 Story	$142.30		
College, Dormitory, 2-3 Story	$149.35		
College, Dormitory, 4-8 Story	$145.95		
College, Laboratory	$145.10		
College, Student Union	$130.70		
AVERAGE	$141.70	0.00	$0
Total Non-Residential Property Value for County			**$3,697,582,930**

1) HAZUS-MH did not have commercial structure value data.
2) Therefore, RSMeans Square Foot Cost, 27th Annual Edition (2006) was used as the source of commercial structure value data.
3) Highlighted cells: level of detail not possible from HAZUS data. Facility types do exist and may be possibly captured in the 2010 Census.

D Mitigation Strategy Rankings

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Otero County HMP - Criteria Ranking Worksheet

Considerations	Rank	Metric
Social (evaluate the extent of community acceptance / resistance to proposed project)	**1**	*Methodology assumes equal ranking*
Technical (evaluate the project's technical feasibility and the project's ability to provide a long term solution with minimal secondary impact)	**1**	*Methodology assumes equal ranking*
Administrative (evaluate the capability of the jurisdiction to implement and manage ongoing maintenance of the proposed project)	**1**	*Methodology assumes equal ranking*
Political (evaluate the potential challenges to proposed project's implementation from the local political perspective)	**1**	*Methodology assumes equal ranking*
Legal (evaluate existing authority to implement the proposed project or willingness to change legal or regulatory constraints)	**1**	*Methodology assumes equal ranking*
Economic (evaluate the cost-effectiveness of the proposed project, ability of the project to mesh with stated jurisdictional goals, and the jurisdiction's ability to obtain implementation funding)	**1**	*Methodology assumes equal ranking*
Environmental (evaluate the potential project's impact on environmental / natural resources and the jurisdiction's cultural resources)	**1**	*Methodology assumes equal ranking*

Instructions:

The maximum score possible is 72:

Social = 12 (4 criteria)
Technical = 9 (3 criteria)
Administrative = 9 (3 criteria)
Political = 9 (3 criteria)
Legal = 9 (3 criteria)
Economic = 12 (4 criteria)
Environmental = 12 (4 criteria)

When scoring against evaluation criteria, assume the following:

0 = Poor: The mitigation method does not meet basic criteria established under the evaluation category.
1 = Fair: The mitigation method meets the basic criteria established under the evaluation category.
2 = Good: The mitigation method exceeds the basic criteria established under the evaluation category.
3 = Excellent: The mitigation method exceeds the basic established criteria in an innovative or new way.

Otero County HMP - Project Ranking Summary

		Project Scores								
		S	T	A	P	L	E	E		
	Criteria Ranking:	1	1	1	1	1	1	1	Total	Rank
	Proposed Action									
3	Utilize County Construction Codes	1.0	3.0	6.0	2.0	4.0	5.0	12.0	33.0	1
5	Improve Key Comm. & Response Eq.	8.0	5.0	3.0	6.0	6.0	6.0	12.0	46.0	2
8	Repetitive Washout Roadway Improve.	5.0	5.0	4.0	6.0	5.0	6.0	4.0	35.0	3
12	PW Response Improvement Program	8.0	6.0	4.0	5.0	5.0	4.0	12.0	44.0	4
7	Revise / Renew MOU / MAA	8.0	5.0	6.0	6.0	5.0	6.0	12.0	48.0	5
9	Low Water Crossing Review/Replace.	5.0	5.0	4.0	6.0	5.0	6.0	4.0	35.0	6
4	Compel Owner/Operators to Improve	0.0	3.0	6.0	2.0	3.0	5.0	12.0	31.0	7
2	Develop PSAs	8.0	5.0	6.0	6.0	9.0	8.0	12.0	54.0	8
11	Evac./Notification Sirens	6.0	4.0	4.0	6.0	6.0	6.0	12.0	44.0	9
6	Hwy 54 Corridor as HM Route	4.0	4.0	5.0	5.0	4.0	5.0	12.0	39.0	10
10	ER Vehicle GPS Capability Develop.	8.0	6.0	6.0	9.0	7.0	12.0	12.0	60.0	11
1	Awareness Public Meetings	6.0	5.0	4.0	6.0	9.0	8.0	12.0	50.0	12
13	Mescalero Dam Improvements	8.0	6.0	3.0	6.0	5.0	7.0	8.0	43.0	13
14	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
15	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	

Otero County HMP Project Scoring Worksheet

Project Name: **Awareness Public Meetings** **Type: All**

Description:

Conduct public meetings to raise awareness of threats and how citizens can decrease the impact of disasters.

Responsible Parties:

MPG members, Local emergency manager, LEPC members, County Commissioners, other County agencies, NMDHSEM, Other State Agencies involved with Emergency Management.

Consideration	Evaluation Criteria	Score	Metric
Social (evaluate the extent of community acceptance / resistance to proposed project)**:**			
Adversely Affects Segment of Population	Proposed action does not adversely affect one segment of the population more than another (or the overall population).	2	
Disrupts Communities	Proposed action does not adversely affect any recognized community (disrupt an established neighborhoods, voting districts, etc.)	2	
Community Values	Proposed action compatible with community values.	1	
Cultural Resources	Proposed action respects (is compatible, fits with) with recognized cultural resources.	1	
Technical (evaluate the project's technical feasibility and the project's ability to provide a long term solution with minimal secondary impact)**:**			
Realistic	The proposed action can be accomplished.	2	
Long Term Solution	The proposed action provides a long term effective solution to the problem(s) and not just address a symptom of the problem.	1	
Secondary Impacts	The proposed action will not create problems if executed.	2	
Administrative (evaluate the capability of the jurisdiction to implement and manage ongoing maintenance of the proposed project)**:**			
Capability (Staffing Levels & Training)	County (applicable jurisdictions or participating agencies) has adequate staff to implement the proposed action.	1	
Funding Allocation	County (applicable jurisdictions or participating agencies) has adequate funding to match federal or state funding for the proposed action. Local share can be as high as 25% of project cost.	2	
Maintenance	The County (applicable jurisdiction or participating agency) has adequate staff and funding to maintain the systems developed under the proposed action.	1	
Political (evaluate the potential challenges to proposed project's implementation from the local political perspective)**:**			*0 = Poor: The mitigation method does not meet basic criteria established under the evaluation category.* *1 = Fair: The mitigation method meets the basic criteria established under the evaluation category.* *2 = Good: The mitigation method exceeds the basic criteria established under the evaluation category.* *3 = Excellent: The mitigation method exceeds the basic established criteria in an innovative or new way.*
Political Support	Local political support exists for implementing the proposed action.	2	
Local Champion or Proponent	A local champion (proponent) exists (is known to likely support) for implementing the proposed action.	2	
Public Support	Public support exists (or is likely to exist)for implementing the proposed action. Stakeholders have been engaged in the planning process relative to the proposed action.	2	
Legal (evaluate existing authority to implement the proposed project or willingness to change legal or regulatory constraints)**:**			
Legal Authority	The County (applicable jurisdictions or participating agencies) has the authority to implement the proposed action. Proper laws, ordinances, and resolutions are ALREADY in place to implement the proposed action.	3	
Liability	Potential legal consequences do NOT exist relative to implementing the proposed action. The County (applicable jurisdictions or participating agency) will NOT be liable for the support of action. The proposed action, if NOT executed once formally presented in the HMP will NOT bring potential liability due to the lack of action.	3	
Action Potentially Subject to a Legal Challenge	The action will NOT likely to be challenged by stakeholders who may be negatively affected (or no negative impacts are visible).	3	
Economic (evaluate the cost-effectiveness of the proposed project, ability of the project to mesh with stated jurisdictional goals, and the jurisdiction's ability to obtain implementation funding)**:**			
Cost of Action	To the extent that the cost of the proposed action are known, the cost seem reasonable.	3	
Burden to Local Economy	The proposed action will NOT place a burden on the tax base or local economy.	3	
Contributes to Economic Goals	The proposed action contributes to other goals such as capital improvements.	0	
Outside Funding Available	Proposed action meet criteria of an identifiable federal, state, or private sector grant, thus increasing liklihood of future external funding.	2	
Environmental (evaluate the potential project's impact on environmental / natural resources and the jurisdiction's cultural resources)**:**			
Affects Land / Water Bodies	The proposed action will NOT negatively affect land-based resources. The proposed action will NOT negatively affect wetlands or water resources.	3	
Affects Endangered Species	The proposed action will NOT negatively affect endangered species.	3	
Consistent with applicable Environmental Law	The proposed action complies with federal law regarding environmental protection, historical or cultural preservation.	3	
Consistent with Community Environmental Goals	The proposed action is consistent with community environmental goals.	3	
	Project Score:	**50**	

Otero County HMP Project Scoring Worksheet

Project Name: **Develop PSAs** **Type: All**

Description:

Develop Public Service Announcements specific to threats for disseminations through the media.

Responsible Parties:

Local Emergency Manager, Media Outlets

Consideration	Evaluation Criteria	Score	Metric
Social (evaluate the extent of community acceptance / resistance to proposed project)**:**			
Adversely Affects Segment of Population	Proposed action does not adversely affect one segment of the population more than another (or the overall population).	2	
Disrupts Communities	Proposed action does not adversely affect any recognized community (disrupt an established neighborhoods, voting districts, etc.)	2	
Community Values	Proposed action compatible with community values.	2	
Cultural Resources	Proposed action respects (is compatible, fits with) with recognized cultural resources.	2	
Technical (evaluate the project's technical feasibility and the project's ability to provide a long term solution with minimal secondary impact)**:**			
Realistic	The proposed action can be accomplished.	2	
Long Term Solution	The proposed action provides a long term effective solution to the problem(s) and not just address a symptom of the problem.	1	
Secondary Impacts	The proposed action will not create problems if executed.	2	
Administrative (evaluate the capability of the jurisdiction to implement and manage ongoing maintenance of the proposed project)**:**			
Capability (Staffing Levels & Training)	County (applicable jurisdictions or participating agencies) has adequate staff to implement the proposed action.	2	
Funding Allocation	County (applicable jurisdictions or participating agencies) has adequate funding to match federal or state funding for the proposed action. Local share can be as high as 25% of project cost.	2	
Maintenance	The County (applicable jurisdiction or participating agency) has adequate staff and funding to maintain the systems developed under the proposed action.	2	
Political (evaluate the potential challenges to proposed project's implementation from the local political perspective)**:**			
Political Support	Local political support exists for implementing the proposed action.	2	*0 = Poor: The mitigation method does not meet basic criteria established under the evaluation category.*
Local Champion or Proponent	A local champion (proponent) exists (is known to likely support) for implementing the proposed action.	2	
Public Support	Public support exists (or is likely to exist)for implementing the proposed action. Stakeholders have been engaged in the planning process relative to the proposed action.	2	*1 = Fair: The mitigation method meets the basic criteria established under the evaluation category.*
Legal (evaluate existing authority to implement the proposed project or willingness to change legal or regulatory constraints)**:**			*2 = Good: The mitigation method exceeds the basic criteria established under the evaluation category.*
Legal Authority	The County (applicable jurisdictions or participating agencies) has the authority to implement the proposed action. Proper laws, ordinances, and resolutions are ALREADY in place to implement the proposed action.	3	*3 = Excellent: The mitigation method exceeds the basic established criteria in an innovative or new way.*
Liability	Potential legal consequences do NOT exist relative to implementing the proposed action. The County (applicable jurisdictions or participating agency) will NOT be liable for the support of action. The proposed action, if NOT executed once formally presented in the HMP will NOT bring potential liability due to the lack of action.	3	
Action Potentially Subject to a Legal Challenge	The action will NOT likely to be challenged by stakeholders who may be negatively affected (or no negative impacts are visible).	3	
Economic (evaluate the cost-effectiveness of the proposed project, ability of the project to mesh with stated jurisdictional goals, and the jurisdiction's ability to obtain implementation funding)**:**			
Cost of Action	To the extent that the cost of the proposed action are known, the cost seem reasonable.	3	
Burden to Local Economy	The proposed action will NOT place a burden on the tax base or local economy.	3	
Contributes to Economic Goals	The proposed action contributes to other goals such as capital improvements.	0	
Outside Funding Available	Proposed action meet criteria of an identifiable federal, state, or private sector grant, thus increasing liklihood of future external funding.	2	
Environmental (evaluate the potential project's impact on environmental / natural resources and the jurisdiction's cultural resources)**:**			
Affects Land / Water Bodies	The proposed action will NOT negatively affect land-based resources. The proposed action will NOT negatively affect wetlands or water resources.	3	
Affects Endangered Species	The proposed action will NOT negatively affect endangered species.	3	
Consistent with applicable Environmental Law	The proposed action complies with federal law regarding environmental protection, historical or cultural preservation.	3	
Consistent with Community Environmental Goals	The proposed action is consistent with community environmental goals.	3	
	Project Score:	**54**	

Otero County HMP Project Scoring Worksheet

Project Name: **Utilize County Construction Codes** **Type: Flood**

Description:

Review/revise and increase utilization of the County's constructions codes to decrease vulnerability of critical and non-critical infrastructure.

Responsible Parties:

Local Emergency Manager, LEPC, County Commissioners, City Planners

Consideration	Evaluation Criteria	Score	Metric
Social (evaluate the extent of community acceptance / resistance to proposed project)**:**			
Adversely Affects Segment of Population	Proposed action does not adversely affect one segment of the population more than another (or the overall population).	0	
Disrupts Communities	Proposed action does not adversely affect any recognized community (disrupt an established neighborhoods, voting districts, etc.)	0	
Community Values	Proposed action compatible with community values.	1	
Cultural Resources	Proposed action respects (is compatible, fits with) with recognized cultural resources.	0	
Technical (evaluate the project's technical feasibility and the project's ability to provide a long term solution with minimal secondary impact)**:**			
Realistic	The proposed action can be accomplished.	1	
Long Term Solution	The proposed action provides a long term effective solution to the problem(s) and not just address a symptom of the problem.	2	
Secondary Impacts	The proposed action will not create problems if executed.	0	
Administrative (evaluate the capability of the jurisdiction to implement and manage ongoing maintenance of the proposed project)**:**			
Capability (Staffing Levels & Training)	County (applicable jurisdictions or participating agencies) has adequate staff to implement the proposed action.	2	
Funding Allocation	County (applicable jurisdictions or participating agencies) has adequate funding to match federal or state funding for the proposed action. Local share can be as high as 25% of project cost.	2	
Maintenance	The County (applicable jurisdiction or participating agency) has adequate staff and funding to maintain the systems developed under the proposed action.	2	
Political (evaluate the potential challenges to proposed project's implementation from the local political perspective)**:**			
Political Support	Local political support exists for implementing the proposed action.	1	*0 = Poor: The mitigation method does not meet basic criteria established under the evaluation category.*
Local Champion or Proponent	A local champion (proponent) exists (is known to likely support) for implementing the proposed action.	1	
Public Support	Public support exists (or is likely to exist)for implementing the proposed action. Stakeholders have been engaged in the planning process relative to the proposed action.	0	*1 = Fair: The mitigation method meets the basic criteria established under the evaluation category.*
Legal (evaluate existing authority to implement the proposed project or willingness to change legal or regulatory constraints)**:**			*2 = Good: The mitigation method exceeds the basic criteria established under the evaluation category.*
Legal Authority	The County (applicable jurisdictions or participating agencies) has the authority to implement the proposed action. Proper laws, ordinances, and resolutions are ALREADY in place to implement the proposed action.	3	*3 = Excellent: The mitigation method exceeds the basic established criteria in an innovative or new way.*
Liability	Potential legal consequences do NOT exist relative to implementing the proposed action. The County (applicable jurisdictions or participating agency) will NOT be liable for the support of action. The proposed action, if NOT executed once formally presented in the HMP will NOT bring potential liability due to the lack of action.	1	
Action Potentially Subject to a Legal Challenge	The action will NOT likely to be challenged by stakeholders who may be negatively affected (or no negative impacts are visible).	0	
Economic (evaluate the cost-effectiveness of the proposed project, ability of the project to mesh with stated jurisdictional goals, and the jurisdiction's ability to obtain implementation funding)**:**			
Cost of Action	To the extent that the cost of the proposed action are known, the cost seem reasonable.	1	
Burden to Local Economy	The proposed action will NOT place a burden on the tax base or local economy.	3	
Contributes to Economic Goals	The proposed action contributes to other goals such as capital improvements.	1	
Outside Funding Available	Proposed action meet criteria of an identifiable federal, state, or private sector grant, thus increasing liklihood of future external funding.	0	
Environmental (evaluate the potential project's impact on environmental / natural resources and the jurisdiction's cultural resources)**:**			
Affects Land / Water Bodies	The proposed action will NOT negatively affect land-based resources. The proposed action will NOT negatively affect wetlands or water resources.	3	
Affects Endangered Species	The proposed action will NOT negatively affect endangered species.	3	
Consistent with applicable Environmental Law	The proposed action complies with federal law regarding environmental protection, historical or cultural preservation.	3	
Consistent with Community Environmental Goals	The proposed action is consistent with community environmental goals.	3	
	Project Score:	**33**	

Otero County HMP Project Scoring Worksheet

Project Name: **Compel Owner/Operators to Improve** **Type: All**

Description:

Review and assess the County rights to compel owners and operators of facilities and infrastructure to make improvements where these present credible threats to the County.

Responsible Parties:

County Commissioners, Local Emergency Manager, Other County Officials, Other County Agencies.

Consideration	Evaluation Criteria	Score	Metric
Social (evaluate the extent of community acceptance / resistance to proposed project):			
Adversely Affects Segment of Population	Proposed action does not adversely affect one segment of the population more than another (or the overall population).	0	
Disrupts Communities	Proposed action does not adversely affect any recognized community (disrupt an established neighborhoods, voting districts, etc.)	0	
Community Values	Proposed action compatible with community values.	0	
Cultural Resources	Proposed action respects (is compatible, fits with) with recognized cultural resources.	0	
Technical (evaluate the project's technical feasibility and the project's ability to provide a long term solution with minimal secondary impact):			
Realistic	The proposed action can be accomplished.	1	
Long Term Solution	The proposed action provides a long term effective solution to the problem(s) and not just address a symptom of the problem.	2	
Secondary Impacts	The proposed action will not create problems if executed.	0	
Administrative (evaluate the capability of the jurisdiction to implement and manage ongoing maintenance of the proposed project):			
Capability (Staffing Levels & Training)	County (applicable jurisdictions or participating agencies) has adequate staff to implement the proposed action.	2	
Funding Allocation	County (applicable jurisdictions or participating agencies) has adequate funding to match federal or state funding for the proposed action. Local share can be as high as 25% of project cost.	2	
Maintenance	The County (applicable jurisdiction or participating agency) has adequate staff and funding to maintain the systems developed under the proposed action.	2	
Political (evaluate the potential challenges to proposed project's implementation from the local political perspective):			
Political Support	Local political support exists for implementing the proposed action.	1	*0 = Poor: The mitigation method does not meet basic criteria established under the evaluation category.*
Local Champion or Proponent	A local champion (proponent) exists (is known to likely support) for implementing the proposed action.	1	
Public Support	Public support exists (or is likely to exist)for implementing the proposed action.	0	*1 = Fair: The mitigation method meets the basic criteria established under the evaluation category.*
	Stakeholders have been engaged in the planning process relative to the proposed action.		
Legal (evaluate existing authority to implement the proposed project or willingness to change legal or regulatory constraints):			*2 = Good: The mitigation method exceeds the basic criteria established under the evaluation category.*
Legal Authority	The County (applicable jurisdictions or participating agencies) has the authority to implement the proposed action.	3	*3 = Excellent: The mitigation method exceeds the basic established criteria in an innovative or new way.*
	Proper laws, ordinances, and resolutions are ALREADY in place to implement the proposed action.		
Liability	Potential legal consequences do NOT exist relative to implementing the proposed action.	0	
	The County (applicable jurisdictions or participating agency) will NOT be liable for the support of action.		
	The proposed action, if NOT executed once formally presented in the HMP will NOT bring potential liability due to the lack of action.		
Action Potentially Subject to a Legal Challenge	The action will NOT likely to be challenged by stakeholders who may be negatively affected (or no negative impacts are visible).	0	
Economic (evaluate the cost-effectiveness of the proposed project, ability of the project to mesh with stated jurisdictional goals, and the jurisdiction's ability to obtain implementation funding):			
Cost of Action	To the extent that the cost of the proposed action are known, the cost seem reasonable.	1	
Burden to Local Economy	The proposed action will NOT place a burden on the tax base or local economy.	3	
Contributes to Economic Goals	The proposed action contributes to other goals such as capital improvements.	1	
Outside Funding Available	Proposed action meet criteria of an identifiable federal, state, or private sector grant, thus increasing liklihood of future external funding.	0	
Environmental (evaluate the potential project's impact on environmental / natural resources and the jurisdiction's cultural resources):			
Affects Land / Water Bodies	The proposed action will NOT negatively affect land-based resources.	3	
	The proposed action will NOT negatively affect wetlands or water resources.		
Affects Endangered Species	The proposed action will NOT negatively affect endangered species.	3	
Consistent with applicable Environmental Law	The proposed action complies with federal law regarding environmental protection, historical or cultural preservation.	3	
Consistent with Community Environmental Goals	The proposed action is consistent with community environmental goals.	3	
	Project Score:	**31**	

Otero County HMP Project Scoring Worksheet

Project Name: **Improve Key Comm. & Response Eq.** **Type: All**

Description:

Establish and prioritize needed improvements of key communication systems and response equipment.

Responsible Parties:

Local Emergency Manager, LEPC, Other County Response Agencies

Consideration	Evaluation Criteria	Score	Metric
Social (evaluate the extent of community acceptance / resistance to proposed project)**:**			
Adversely Affects Segment of Population	Proposed action does not adversely affect one segment of the population more than another (or the overall population).	2	
Disrupts Communities	Proposed action does not adversely affect any recognized community (disrupt an established neighborhoods, voting districts, etc.)	2	
Community Values	Proposed action compatible with community values.	2	
Cultural Resources	Proposed action respects (is compatible, fits with) with recognized cultural resources.	2	
Technical (evaluate the project's technical feasibility and the project's ability to provide a long term solution with minimal secondary impact)**:**			
Realistic	The proposed action can be accomplished.	1	
Long Term Solution	The proposed action provides a long term effective solution to the problem(s) and not just address a symptom of the problem.	2	
Secondary Impacts	The proposed action will not create problems if executed.	2	
Administrative (evaluate the capability of the jurisdiction to implement and manage ongoing maintenance of the proposed project)**:**			
Capability (Staffing Levels & Training)	County (applicable jurisdictions or participating agencies) has adequate staff to implement the proposed action.	1	
Funding Allocation	County (applicable jurisdictions or participating agencies) has adequate funding to match federal or state funding for the proposed action. Local share can be as high as 25% of project cost.	1	
Maintenance	The County (applicable jurisdiction or participating agency) has adequate staff and funding to maintain the systems developed under the proposed action.	1	
Political (evaluate the potential challenges to proposed project's implementation from the local political perspective)**:**			
Political Support	Local political support exists for implementing the proposed action.	2	*0 = Poor: The mitigation method does not meet basic criteria established under the evaluation category.*
Local Champion or Proponent	A local champion (proponent) exists (is known to likely support) for implementing the proposed action.	2	
Public Support	Public support exists (or is likely to exist)for implementing the proposed action. Stakeholders have been engaged in the planning process relative to the proposed action.	2	*1 = Fair: The mitigation method meets the basic criteria established under the evaluation category.*
Legal (evaluate existing authority to implement the proposed project or willingness to change legal or regulatory constraints)**:**			*2 = Good: The mitigation method exceeds the basic criteria established under the evaluation category.*
Legal Authority	The County (applicable jurisdictions or participating agencies) has the authority to implement the proposed action. Proper laws, ordinances, and resolutions are ALREADY in place to implement the proposed action.	2	*3 = Excellent: The mitigation method exceeds the basic established criteria in an innovative or new way.*
Liability	Potential legal consequences do NOT exist relative to implementing the proposed action. The County (applicable jurisdictions or participating agency) will NOT be liable for the support of action. The proposed action, if NOT executed once formally presented in the HMP will NOT bring potential liability due to the lack of action.	2	
Action Potentially Subject to a Legal Challenge	The action will NOT likely to be challenged by stakeholders who may be negatively affected (or no negative impacts are visible).	2	
Economic (evaluate the cost-effectiveness of the proposed project, ability of the project to mesh with stated jurisdictional goals, and the jurisdiction's ability to obtain implementation funding)**:**			
Cost of Action	To the extent that the cost of the proposed action are known, the cost seem reasonable.	1	
Burden to Local Economy	The proposed action will NOT place a burden on the tax base or local economy.	1	
Contributes to Economic Goals	The proposed action contributes to other goals such as capital improvements.	2	
Outside Funding Available	Proposed action meet criteria of an identifiable federal, state, or private sector grant, thus increasing liklihood of future external funding.	2	
Environmental (evaluate the potential project's impact on environmental / natural resources and the jurisdiction's cultural resources)**:**			
Affects Land / Water Bodies	The proposed action will NOT negatively affect land-based resources. The proposed action will NOT negatively affect wetlands or water resources.	3	
Affects Endangered Species	The proposed action will NOT negatively affect endangered species.	3	
Consistent with applicable Environmental Law	The proposed action complies with federal law regarding environmental protection, historical or cultural preservation.	3	
Consistent with Community Environmental Goals	The proposed action is consistent with community environmental goals.	3	
	Project Score:	**46**	

Otero County HMP Project Scoring Worksheet

Project Name: **Hwy 54 Corridor as HM Route** **Type: HazMat**

Description:

Explore development of a hazardous cargo route alternate to Highway 54 corridor.

Responsible Parties:

County and Local Transportation Agencies, State Transportation Agency, Local Emergency Manager, Other County and local agencies and personnel

Consideration	Evaluation Criteria	Score	Metric
Social (evaluate the extent of community acceptance / resistance to proposed project)**:**			
Adversely Affects Segment of Population	Proposed action does not adversely affect one segment of the population more than another (or the overall population).	1	
Disrupts Communities	Proposed action does not adversely affect any recognized community (disrupt an established neighborhoods, voting districts, etc.)	1	
Community Values	Proposed action compatible with community values.	1	
Cultural Resources	Proposed action respects (is compatible, fits with) with recognized cultural resources.	1	
Technical (evaluate the project's technical feasibility and the project's ability to provide a long term solution with minimal secondary impact)**:**			
Realistic	The proposed action can be accomplished.	2	
Long Term Solution	The proposed action provides a long term effective solution to the problem(s) and not just address a symptom of the problem.	1	
Secondary Impacts	The proposed action will not create problems if executed.	1	
Administrative (evaluate the capability of the jurisdiction to implement and manage ongoing maintenance of the proposed project)**:**			
Capability (Staffing Levels & Training)	County (applicable jurisdictions or participating agencies) has adequate staff to implement the proposed action.	2	
Funding Allocation	County (applicable jurisdictions or participating agencies) has adequate funding to match federal or state funding for the proposed action. Local share can be as high as 25% of project cost.	1	
Maintenance	The County (applicable jurisdiction or participating agency) has adequate staff and funding to maintain the systems developed under the proposed action.	2	
Political (evaluate the potential challenges to proposed project's implementation from the local political perspective)**:**			
Political Support	Local political support exists for implementing the proposed action.	2	*0 = Poor: The mitigation method does not meet basic criteria established under the evaluation category.*
Local Champion or Proponent	A local champion (proponent) exists (is known to likely support) for implementing the proposed action.	2	
Public Support	Public support exists (or is likely to exist)for implementing the proposed action. Stakeholders have been engaged in the planning process relative to the proposed action.	1	*1 = Fair: The mitigation method meets the basic criteria established under the evaluation category.*
Legal (evaluate existing authority to implement the proposed project or willingness to change legal or regulatory constraints)**:**			*2 = Good: The mitigation method exceeds the basic criteria established under the evaluation category.*
Legal Authority	The County (applicable jurisdictions or participating agencies) has the authority to implement the proposed action. Proper laws, ordinances, and resolutions are ALREADY in place to implement the proposed action.	1	*3 = Excellent: The mitigation method exceeds the basic established criteria in an innovative or new way.*
Liability	Potential legal consequences do NOT exist relative to implementing the proposed action. The County (applicable jurisdictions or participating agency) will NOT be liable for the support of action. The proposed action, if NOT executed once formally presented in the HMP will NOT bring potential liability due to the lack of action.	2	
Action Potentially Subject to a Legal Challenge	The action will NOT likely to be challenged by stakeholders who may be negatively affected (or no negative impacts are visible).	1	
Economic (evaluate the cost-effectiveness of the proposed project, ability of the project to mesh with stated jurisdictional goals, and the jurisdiction's ability to obtain implementation funding)**:**			
Cost of Action	To the extent that the cost of the proposed action are known, the cost seem reasonable.	2	
Burden to Local Economy	The proposed action will NOT place a burden on the tax base or local economy.	2	
Contributes to Economic Goals	The proposed action contributes to other goals such as capital improvements.	0	
Outside Funding Available	Proposed action meet criteria of an identifiable federal, state, or private sector grant, thus increasing liklihood of future external funding.	1	
Environmental (evaluate the potential project's impact on environmental / natural resources and the jurisdiction's cultural resources)**:**			
Affects Land / Water Bodies	The proposed action will NOT negatively affect land-based resources. The proposed action will NOT negatively affect wetlands or water resources.	3	
Affects Endangered Species	The proposed action will NOT negatively affect endangered species.	3	
Consistent with applicable Environmental Law	The proposed action complies with federal law regarding environmental protection, historical or cultural preservation.	3	
Consistent with Community Environmental Goals	The proposed action is consistent with community environmental goals.	3	
	Project Score:	**39**	

Otero County HMP Project Scoring Worksheet

Project Name: **Revise / Renew MOU / MAA** **Type: All**

Description:

Review existing and develop new Memoranda of Understanding (MOU) and Mutual Aid Agreements (MAA) between County, Governmental Organizations and Non-Governmental Organizations.

Responsible Parties:

Local Emergency manager, any responding County or State Agency, other Non-Governmental Organizations that are a part of response

Consideration	Evaluation Criteria	Score	Metric
Social (evaluate the extent of community acceptance / resistance to proposed project)**:**			
Adversely Affects Segment of Population	Proposed action does not adversely affect one segment of the population more than another (or the overall population).	2	
Disrupts Communities	Proposed action does not adversely affect any recognized community (disrupt an established neighborhoods, voting districts, etc.)	2	
Community Values	Proposed action compatible with community values.	2	
Cultural Resources	Proposed action respects (is compatible, fits with) with recognized cultural resources.	2	
Technical (evaluate the project's technical feasibility and the project's ability to provide a long term solution with minimal secondary impact)**:**			
Realistic	The proposed action can be accomplished.	2	
Long Term Solution	The proposed action provides a long term effective solution to the problem(s) and not just address a symptom of the problem.	1	
Secondary Impacts	The proposed action will not create problems if executed.	2	
Administrative (evaluate the capability of the jurisdiction to implement and manage ongoing maintenance of the proposed project)**:**			
Capability (Staffing Levels & Training)	County (applicable jurisdictions or participating agencies) has adequate staff to implement the proposed action.	2	
Funding Allocation	County (applicable jurisdictions or participating agencies) has adequate funding to match federal or state funding for the proposed action. Local share can be as high as 25% of project cost.	2	
Maintenance	The County (applicable jurisdiction or participating agency) has adequate staff and funding to maintain the systems developed under the proposed action.	2	
Political (evaluate the potential challenges to proposed project's implementation from the local political perspective)**:**			
Political Support	Local political support exists for implementing the proposed action.	2	*0 = Poor: The mitigation method does not meet basic criteria established under the evaluation category.*
Local Champion or Proponent	A local champion (proponent) exists (is known to likely support) for implementing the proposed action.	2	
Public Support	Public support exists (or is likely to exist)for implementing the proposed action. Stakeholders have been engaged in the planning process relative to the proposed action.	2	*1 = Fair: The mitigation method meets the basic criteria established under the evaluation category.*
Legal (evaluate existing authority to implement the proposed project or willingness to change legal or regulatory constraints)**:**			*2 = Good: The mitigation method exceeds the basic criteria established under the evaluation category.*
Legal Authority	The County (applicable jurisdictions or participating agencies) has the authority to implement the proposed action. Proper laws, ordinances, and resolutions are ALREADY in place to implement the proposed action.	2	*3 = Excellent: The mitigation method exceeds the basic established criteria in an innovative or new way.*
Liability	Potential legal consequences do NOT exist relative to implementing the proposed action. The County (applicable jurisdictions or participating agency) will NOT be liable for the support of action. The proposed action, if NOT executed once formally presented in the HMP will NOT bring potential liability due to the lack of action.	2	
Action Potentially Subject to a Legal Challenge	The action will NOT likely to be challenged by stakeholders who may be negatively affected (or no negative impacts are visible).	1	
Economic (evaluate the cost-effectiveness of the proposed project, ability of the project to mesh with stated jurisdictional goals, and the jurisdiction's ability to obtain implementation funding)**:**			
Cost of Action	To the extent that the cost of the proposed action are known, the cost seem reasonable.	2	
Burden to Local Economy	The proposed action will NOT place a burden on the tax base or local economy.	1	
Contributes to Economic Goals	The proposed action contributes to other goals such as capital improvements.	1	
Outside Funding Available	Proposed action meet criteria of an identifiable federal, state, or private sector grant, thus increasing liklihood of future external funding.	2	
Environmental (evaluate the potential project's impact on environmental / natural resources and the jurisdiction's cultural resources)**:**			
Affects Land / Water Bodies	The proposed action will NOT negatively affect land-based resources. The proposed action will NOT negatively affect wetlands or water resources.	3	
Affects Endangered Species	The proposed action will NOT negatively affect endangered species.	3	
Consistent with applicable Environmental Law	The proposed action complies with federal law regarding environmental protection, historical or cultural preservation.	3	
Consistent with Community Environmental Goals	The proposed action is consistent with community environmental goals.	3	
	Project Score:	**48**	

Otero County HMP Project Scoring Worksheet

Project Name: **Repetitive Washout Roadway Improve.** **Type: Flood**

Description:

Review and improve roads repetitively subjected to washouts.

Responsible Parties:

Local Emergency Manager, County Transportation Department, County Public Works

Consideration	Evaluation Criteria	Score	Metric
Social (evaluate the extent of community acceptance / resistance to proposed project)**:**			
Adversely Affects Segment of Population	Proposed action does not adversely affect one segment of the population more than another (or the overall population).	1	
Disrupts Communities	Proposed action does not adversely affect any recognized community (disrupt an established neighborhoods, voting districts, etc.)	1	
Community Values	Proposed action compatible with community values.	2	
Cultural Resources	Proposed action respects (is compatible, fits with) with recognized cultural resources.	1	
Technical (evaluate the project's technical feasibility and the project's ability to provide a long term solution with minimal secondary impact)**:**			
Realistic	The proposed action can be accomplished.	2	
Long Term Solution	The proposed action provides a long term effective solution to the problem(s) and not just address a symptom of the problem.	2	
Secondary Impacts	The proposed action will not create problems if executed.	1	
Administrative (evaluate the capability of the jurisdiction to implement and manage ongoing maintenance of the proposed project)**:**			
Capability (Staffing Levels & Training)	County (applicable jurisdictions or participating agencies) has adequate staff to implement the proposed action.	1	
Funding Allocation	County (applicable jurisdictions or participating agencies) has adequate funding to match federal or state funding for the proposed action. Local share can be as high as 25% of project cost.	2	
Maintenance	The County (applicable jurisdiction or participating agency) has adequate staff and funding to maintain the systems developed under the proposed action.	1	
Political (evaluate the potential challenges to proposed project's implementation from the local political perspective)**:**			
Political Support	Local political support exists for implementing the proposed action.	2	*0 = Poor: The mitigation method does not meet basic criteria established under the evaluation category.*
Local Champion or Proponent	A local champion (proponent) exists (is known to likely support) for implementing the proposed action.	2	
Public Support	Public support exists (or is likely to exist)for implementing the proposed action. Stakeholders have been engaged in the planning process relative to the proposed action.	2	*1 = Fair: The mitigation method meets the basic criteria established under the evaluation category.*
Legal (evaluate existing authority to implement the proposed project or willingness to change legal or regulatory constraints)**:**			*2 = Good: The mitigation method exceeds the basic criteria established under the evaluation category.*
Legal Authority	The County (applicable jurisdictions or participating agencies) has the authority to implement the proposed action. Proper laws, ordinances, and resolutions are ALREADY in place to implement the proposed action.	2	*3 = Excellent: The mitigation method exceeds the basic established criteria in an innovative or new way.*
Liability	Potential legal consequences do NOT exist relative to implementing the proposed action. The County (applicable jurisdictions or participating agency) will NOT be liable for the support of action. The proposed action, if NOT executed once formally presented in the HMP will NOT bring potential liability due to the lack of action.	2	
Action Potentially Subject to a Legal Challenge	The action will NOT likely to be challenged by stakeholders who may be negatively affected (or no negative impacts are visible).	1	
Economic (evaluate the cost-effectiveness of the proposed project, ability of the project to mesh with stated jurisdictional goals, and the jurisdiction's ability to obtain implementation funding)**:**			
Cost of Action	To the extent that the cost of the proposed action are known, the cost seem reasonable.	1	
Burden to Local Economy	The proposed action will NOT place a burden on the tax base or local economy.	1	
Contributes to Economic Goals	The proposed action contributes to other goals such as capital improvements.	2	
Outside Funding Available	Proposed action meet criteria of an identifiable federal, state, or private sector grant, thus increasing liklihood of future external funding.	2	
Environmental (evaluate the potential project's impact on environmental / natural resources and the jurisdiction's cultural resources)**:**			
Affects Land / Water Bodies	The proposed action will NOT negatively affect land-based resources. The proposed action will NOT negatively affect wetlands or water resources.	1	
Affects Endangered Species	The proposed action will NOT negatively affect endangered species.	1	
Consistent with applicable Environmental Law	The proposed action complies with federal law regarding environmental protection, historical or cultural preservation.	1	
Consistent with Community Environmental Goals	The proposed action is consistent with community environmental goals.	1	
	Project Score:	**35**	

Otero County HMP Project Scoring Worksheet

Project Name: **Low Water Crossing Review/Replace.** **Type: Flood**

Description:

Review and eliminate low water crossings based on prioritization that is driven from emergency needs. Scope and eliminate repetitive washout for bridges and improvements that can be made to these areas.

Responsible Parties:

Mitigation Planning Group, Local Emergency Manager, County Transportation Department, County Public Works

Consideration	Evaluation Criteria	Score	Metric
Social (evaluate the extent of community acceptance / resistance to proposed project)**:**			
Adversely Affects Segment of Population	Proposed action does not adversely affect one segment of the population more than another (or the overall population).	1	
Disrupts Communities	Proposed action does not adversely affect any recognized community (disrupt an established neighborhoods, voting districts, etc.)	1	
Community Values	Proposed action compatible with community values.	2	
Cultural Resources	Proposed action respects (is compatible, fits with) with recognized cultural resources.	1	
Technical (evaluate the project's technical feasibility and the project's ability to provide a long term solution with minimal secondary impact)**:**			
Realistic	The proposed action can be accomplished.	2	
Long Term Solution	The proposed action provides a long term effective solution to the problem(s) and not just address a symptom of the problem.	2	
Secondary Impacts	The proposed action will not create problems if executed.	1	
Administrative (evaluate the capability of the jurisdiction to implement and manage ongoing maintenance of the proposed project)**:**			
Capability (Staffing Levels & Training)	County (applicable jurisdictions or participating agencies) has adequate staff to implement the proposed action.	1	
Funding Allocation	County (applicable jurisdictions or participating agencies) has adequate funding to match federal or state funding for the proposed action. Local share can be as high as 25% of project cost.	2	
Maintenance	The County (applicable jurisdiction or participating agency) has adequate staff and funding to maintain the systems developed under the proposed action.	1	
Political (evaluate the potential challenges to proposed project's implementation from the local political perspective)**:**			
Political Support	Local political support exists for implementing the proposed action.	2	*0 = Poor: The mitigation method does not meet basic criteria established under the evaluation category.*
Local Champion or Proponent	A local champion (proponent) exists (is known to likely support) for implementing the proposed action.	2	
Public Support	Public support exists (or is likely to exist)for implementing the proposed action. Stakeholders have been engaged in the planning process relative to the proposed action.	2	*1 = Fair: The mitigation method meets the basic criteria established under the evaluation category.*
Legal (evaluate existing authority to implement the proposed project or willingness to change legal or regulatory constraints)**:**			*2 = Good: The mitigation method exceeds the basic criteria established under the evaluation category.*
Legal Authority	The County (applicable jurisdictions or participating agencies) has the authority to implement the proposed action. Proper laws, ordinances, and resolutions are ALREADY in place to implement the proposed action.	2	*3 = Excellent: The mitigation method exceeds the basic established criteria in an innovative or new way.*
Liability	Potential legal consequences do NOT exist relative to implementing the proposed action. The County (applicable jurisdictions or participating agency) will NOT be liable for the support of action. The proposed action, if NOT executed once formally presented in the HMP will NOT bring potential liability due to the lack of action.	2	
Action Potentially Subject to a Legal Challenge	The action will NOT likely to be challenged by stakeholders who may be negatively affected (or no negative impacts are visible).	1	
Economic (evaluate the cost-effectiveness of the proposed project, ability of the project to mesh with stated jurisdictional goals, and the jurisdiction's ability to obtain implementation funding)**:**			
Cost of Action	To the extent that the cost of the proposed action are known, the cost seem reasonable.	1	
Burden to Local Economy	The proposed action will NOT place a burden on the tax base or local economy.	1	
Contributes to Economic Goals	The proposed action contributes to other goals such as capital improvements.	2	
Outside Funding Available	Proposed action meet criteria of an identifiable federal, state, or private sector grant, thus increasing liklihood of future external funding.	2	
Environmental (evaluate the potential project's impact on environmental / natural resources and the jurisdiction's cultural resources)**:**			
Affects Land / Water Bodies	The proposed action will NOT negatively affect land-based resources. The proposed action will NOT negatively affect wetlands or water resources.	1	
Affects Endangered Species	The proposed action will NOT negatively affect endangered species.	1	
Consistent with applicable Environmental Law	The proposed action complies with federal law regarding environmental protection, historical or cultural preservation.	1	
Consistent with Community Environmental Goals	The proposed action is consistent with community environmental goals.	1	
	Project Score:	**35**	

Otero County HMP Project Scoring Worksheet

Project Name: **ER Vehicle GPS Capability Develop.** **Type: All**

Description:

Obtain GPS capability for Emergency Response vehicles.

Responsible Parties:

Local Emergency Manager, Response Agencies (Police, Fire, EMS, etc…)

Consideration	Evaluation Criteria	Score
Social (evaluate the extent of community acceptance / resistance to proposed project)**:**		
Adversely Affects Segment of Population	Proposed action does not adversely affect one segment of the population more than another (or the overall population).	2
Disrupts Communities	Proposed action does not adversely affect any recognized community (disrupt an established neighborhoods, voting districts, etc.)	2
Community Values	Proposed action compatible with community values.	2
Cultural Resources	Proposed action respects (is compatible, fits with) with recognized cultural resources.	2
Technical (evaluate the project's technical feasibility and the project's ability to provide a long term solution with minimal secondary impact)**:**		
Realistic	The proposed action can be accomplished.	3
Long Term Solution	The proposed action provides a long term effective solution to the problem(s) and not just address a symptom of the problem.	1
Secondary Impacts	The proposed action will not create problems if executed.	2
Administrative (evaluate the capability of the jurisdiction to implement and manage ongoing maintenance of the proposed project)**:**		
Capability (Staffing Levels & Training)	County (applicable jurisdictions or participating agencies) has adequate staff to implement the proposed action.	2
Funding Allocation	County (applicable jurisdictions or participating agencies) has adequate funding to match federal or state funding for the proposed action. Local share can be as high as 25% of project cost.	2
Maintenance	The County (applicable jurisdiction or participating agency) has adequate staff and funding to maintain the systems developed under the proposed action.	2
Political (evaluate the potential challenges to proposed project's implementation from the local political perspective)**:**		
Political Support	Local political support exists for implementing the proposed action.	3
Local Champion or Proponent	A local champion (proponent) exists (is known to likely support) for implementing the proposed action.	3
Public Support	Public support exists (or is likely to exist)for implementing the proposed action. Stakeholders have been engaged in the planning process relative to the proposed action.	3
Legal (evaluate existing authority to implement the proposed project or willingness to change legal or regulatory constraints)**:**		
Legal Authority	The County (applicable jurisdictions or participating agencies) has the authority to implement the proposed action. Proper laws, ordinances, and resolutions are ALREADY in place to implement the proposed action.	3
Liability	Potential legal consequences do NOT exist relative to implementing the proposed action. The County (applicable jurisdictions or participating agency) will NOT be liable for the support of action. The proposed action, if NOT executed once formally presented in the HMP will NOT bring potential liability due to the lack of action.	2
Action Potentially Subject to a Legal Challenge	The action will NOT likely to be challenged by stakeholders who may be negatively affected (or no negative impacts are visible).	2
Economic (evaluate the cost-effectiveness of the proposed project, ability of the project to mesh with stated jurisdictional goals, and the jurisdiction's ability to obtain implementation funding)**:**		
Cost of Action	To the extent that the cost of the proposed action are known, the cost seem reasonable.	3
Burden to Local Economy	The proposed action will NOT place a burden on the tax base or local economy.	3
Contributes to Economic Goals	The proposed action contributes to other goals such as capital improvements.	3
Outside Funding Available	Proposed action meet criteria of an identifiable federal, state, or private sector grant, thus increasing liklihood of future external funding.	3
Environmental (evaluate the potential project's impact on environmental / natural resources and the jurisdiction's cultural resources)**:**		
Affects Land / Water Bodies	The proposed action will NOT negatively affect land-based resources. The proposed action will NOT negatively affect wetlands or water resources.	3
Affects Endangered Species	The proposed action will NOT negatively affect endangered species.	3
Consistent with applicable Environmental Law	The proposed action complies with federal law regarding environmental protection, historical or cultural preservation.	3
Consistent with Community Environmental Goals	The proposed action is consistent with community environmental goals.	3
	Project Score:	**60**

0 = Poor: The mitigation method does not meet basic criteria established under the evaluation category.

1 = Fair: The mitigation method meets the basic criteria established under the evaluation category.

2 = Good: The mitigation method exceeds the basic criteria established under the evaluation category.

3 = Excellent: The mitigation method exceeds the basic established criteria in an innovative or new way.

Otero County HMP Project Scoring Worksheet

Project Name: **Evac./Notification Sirens** **Type: All**

Description:

Conduct a study on the best and most cost effective placement of evacuation and notification sirens for the County.

Responsible Parties:

Local Emergency Manager

Consideration	Evaluation Criteria	Score	Metric
Social (evaluate the extent of community acceptance / resistance to proposed project)**:**			
Adversely Affects Segment of Population	Proposed action does not adversely affect one segment of the population more than another (or the overall population).	2	
Disrupts Communities	Proposed action does not adversely affect any recognized community (disrupt an established neighborhoods, voting districts, etc.)	2	
Community Values	Proposed action compatible with community values.	1	
Cultural Resources	Proposed action respects (is compatible, fits with) with recognized cultural resources.	1	
Technical (evaluate the project's technical feasibility and the project's ability to provide a long term solution with minimal secondary impact)**:**			
Realistic	The proposed action can be accomplished.	2	
Long Term Solution	The proposed action provides a long term effective solution to the problem(s) and not just address a symptom of the problem.	1	
Secondary Impacts	The proposed action will not create problems if executed.	1	
Administrative (evaluate the capability of the jurisdiction to implement and manage ongoing maintenance of the proposed project)**:**			
Capability (Staffing Levels & Training)	County (applicable jurisdictions or participating agencies) has adequate staff to implement the proposed action.	1	
Funding Allocation	County (applicable jurisdictions or participating agencies) has adequate funding to match federal or state funding for the proposed action. Local share can be as high as 25% of project cost.	2	
Maintenance	The County (applicable jurisdiction or participating agency) has adequate staff and funding to maintain the systems developed under the proposed action.	1	
Political (evaluate the potential challenges to proposed project's implementation from the local political perspective)**:**			
Political Support	Local political support exists for implementing the proposed action.	2	*0 = Poor: The mitigation method does not meet basic criteria established under the evaluation category.*
Local Champion or Proponent	A local champion (proponent) exists (is known to likely support) for implementing the proposed action.	2	
Public Support	Public support exists (or is likely to exist)for implementing the proposed action. Stakeholders have been engaged in the planning process relative to the proposed action.	2	*1 = Fair: The mitigation method meets the basic criteria established under the evaluation category.*
Legal (evaluate existing authority to implement the proposed project or willingness to change legal or regulatory constraints)**:**			*2 = Good: The mitigation method exceeds the basic criteria established under the evaluation category.*
Legal Authority	The County (applicable jurisdictions or participating agencies) has the authority to implement the proposed action. Proper laws, ordinances, and resolutions are ALREADY in place to implement the proposed action.	2	*3 = Excellent: The mitigation method exceeds the basic established criteria in an innovative or new way.*
Liability	Potential legal consequences do NOT exist relative to implementing the proposed action. The County (applicable jurisdictions or participating agency) will NOT be liable for the support of action. The proposed action, if NOT executed once formally presented in the HMP will NOT bring potential liability due to the lack of action.	2	
Action Potentially Subject to a Legal Challenge	The action will NOT likely to be challenged by stakeholders who may be negatively affected (or no negative impacts are visible).	2	
Economic (evaluate the cost-effectiveness of the proposed project, ability of the project to mesh with stated jurisdictional goals, and the jurisdiction's ability to obtain implementation funding)**:**			
Cost of Action	To the extent that the cost of the proposed action are known, the cost seem reasonable.	1	
Burden to Local Economy	The proposed action will NOT place a burden on the tax base or local economy.	1	
Contributes to Economic Goals	The proposed action contributes to other goals such as capital improvements.	2	
Outside Funding Available	Proposed action meet criteria of an identifiable federal, state, or private sector grant, thus increasing liklihood of future external funding.	2	
Environmental (evaluate the potential project's impact on environmental / natural resources and the jurisdiction's cultural resources)**:**			
Affects Land / Water Bodies	The proposed action will NOT negatively affect land-based resources. The proposed action will NOT negatively affect wetlands or water resources.	3	
Affects Endangered Species	The proposed action will NOT negatively affect endangered species.	3	
Consistent with applicable Environmental Law	The proposed action complies with federal law regarding environmental protection, historical or cultural preservation.	3	
Consistent with Community Environmental Goals	The proposed action is consistent with community environmental goals.	3	
	Project Score:	**44**	

Otero County HMP Project Scoring Worksheet

Project Name: **PW Response Improvement Program** **Type: All**

Description:

Create an Improvement Program for the Public Works response capability.

Responsible Parties:

DHSEM, State Floodplain Coordinator, Local Floodplain managers, local jurisdictions

Consideration	Evaluation Criteria	Score	Metric
Social (evaluate the extent of community acceptance / resistance to proposed project)**:**			
Adversely Affects Segment of Population	Proposed action does not adversely affect one segment of the population more than another (or the overall population).	2	
Disrupts Communities	Proposed action does not adversely affect any recognized community (disrupt an established neighborhoods, voting districts, etc.)	2	
Community Values	Proposed action compatible with community values.	2	
Cultural Resources	Proposed action respects (is compatible, fits with) with recognized cultural resources.	2	
Technical (evaluate the project's technical feasibility and the project's ability to provide a long term solution with minimal secondary impact)**:**			
Realistic	The proposed action can be accomplished.	2	
Long Term Solution	The proposed action provides a long term effective solution to the problem(s) and not just address a symptom of the problem.	2	
Secondary Impacts	The proposed action will not create problems if executed.	2	
Administrative (evaluate the capability of the jurisdiction to implement and manage ongoing maintenance of the proposed project)**:**			
Capability (Staffing Levels & Training)	County (applicable jurisdictions or participating agencies) has adequate staff to implement the proposed action.	1	
Funding Allocation	County (applicable jurisdictions or participating agencies) has adequate funding to match federal or state funding for the proposed action. Local share can be as high as 25% of project cost.	2	
Maintenance	The County (applicable jurisdiction or participating agency) has adequate staff and funding to maintain the systems developed under the proposed action.	1	
Political (evaluate the potential challenges to proposed project's implementation from the local political perspective)**:**			
Political Support	Local political support exists for implementing the proposed action.	2	*0 = Poor: The mitigation method does not meet basic criteria established under the evaluation category.*
Local Champion or Proponent	A local champion (proponent) exists (is known to likely support) for implementing the proposed action.	2	
Public Support	Public support exists (or is likely to exist)for implementing the proposed action. Stakeholders have been engaged in the planning process relative to the proposed action.	1	*1 = Fair: The mitigation method meets the basic criteria established under the evaluation category.*
Legal (evaluate existing authority to implement the proposed project or willingness to change legal or regulatory constraints)**:**			*2 = Good: The mitigation method exceeds the basic criteria established under the evaluation category.*
Legal Authority	The County (applicable jurisdictions or participating agencies) has the authority to implement the proposed action. Proper laws, ordinances, and resolutions are ALREADY in place to implement the proposed action.	2	*3 = Excellent: The mitigation method exceeds the basic established criteria in an innovative or new way.*
Liability	Potential legal consequences do NOT exist relative to implementing the proposed action. The County (applicable jurisdictions or participating agency) will NOT be liable for the support of action. The proposed action, if NOT executed once formally presented in the HMP will NOT bring potential liability due to the lack of action.	2	
Action Potentially Subject to a Legal Challenge	The action will NOT likely to be challenged by stakeholders who may be negatively affected (or no negative impacts are visible).	1	
Economic (evaluate the cost-effectiveness of the proposed project, ability of the project to mesh with stated jurisdictional goals, and the jurisdiction's ability to obtain implementation funding)**:**			
Cost of Action	To the extent that the cost of the proposed action are known, the cost seem reasonable.	1	
Burden to Local Economy	The proposed action will NOT place a burden on the tax base or local economy.	1	
Contributes to Economic Goals	The proposed action contributes to other goals such as capital improvements.	0	
Outside Funding Available	Proposed action meet criteria of an identifiable federal, state, or private sector grant, thus increasing liklihood of future external funding.	2	
Environmental (evaluate the potential project's impact on environmental / natural resources and the jurisdiction's cultural resources)**:**			
Affects Land / Water Bodies	The proposed action will NOT negatively affect land-based resources. The proposed action will NOT negatively affect wetlands or water resources.	3	
Affects Endangered Species	The proposed action will NOT negatively affect endangered species.	3	
Consistent with applicable Environmental Law	The proposed action complies with federal law regarding environmental protection, historical or cultural preservation.	3	
Consistent with Community Environmental Goals	The proposed action is consistent with community environmental goals.	3	
	Project Score:	**44**	

Otero County HMP Project Scoring Worksheet

Project Name: **Mescalero Dam Improvements** **Type: Dam Failure / Flood**

Description:

Dam is currently subject to overtopping and uncontrolled release during storms. Improve monitoring and notification systems. This is a shared project with Lincoln County and the Mescalero Tribe.

Responsible Parties:

Otero County Government (elected officials and emergency manager), Lincoln County Government (elected officials and emergency manager), Mescalero Tribal Government (elected officials and emergency manager), NM Office of State Engineer, BIA Engineering

Consideration	Evaluation Criteria	Score	Metric
Social (evaluate the extent of community acceptance / resistance to proposed project)**:**			
Adversely Affects Segment of Population	Proposed action does not adversely affect one segment of the population more than another (or the overall population).	2	
Disrupts Communities	Proposed action does not adversely affect any recognized community (disrupt an established neighborhoods, voting districts, etc.)	2	
Community Values	Proposed action compatible with community values.	2	
Cultural Resources	Proposed action respects (is compatible, fits with) with recognized cultural resources.	2	
Technical (evaluate the project's technical feasibility and the project's ability to provide a long term solution with minimal secondary impact)**:**			
Realistic	The proposed action can be accomplished.	2	
Long Term Solution	The proposed action provides a long term effective solution to the problem(s) and not just address a symptom of the problem.	2	
Secondary Impacts	The proposed action will not create problems if executed.	2	
Administrative (evaluate the capability of the jurisdiction to implement and manage ongoing maintenance of the proposed project)**:**			
Capability (Staffing Levels & Training)	County (applicable jurisdictions or participating agencies) has adequate staff to implement the proposed action.	1	
Funding Allocation	County (applicable jurisdictions or participating agencies) has adequate funding to match federal or state funding for the proposed action. Local share can be as high as 25% of project cost.	1	
Maintenance	The County (applicable jurisdiction or participating agency) has adequate staff and funding to maintain the systems developed under the proposed action.	1	
Political (evaluate the potential challenges to proposed project's implementation from the local political perspective)**:**			
Political Support	Local political support exists for implementing the proposed action.	2	*0 = Poor: The mitigation method does not meet basic criteria established under the evaluation category.* *1 = Fair: The mitigation method meets the basic criteria established under the evaluation category.* *2 = Good: The mitigation method exceeds the basic criteria established under the evaluation category.* *3 = Excellent: The mitigation method exceeds the basic established criteria in an innovative or new way.*
Local Champion or Proponent	A local champion (proponent) exists (is known to likely support) for implementing the proposed action.	2	
Public Support	Public support exists (or is likely to exist)for implementing the proposed action. Stakeholders have been engaged in the planning process relative to the proposed action.	2	
Legal (evaluate existing authority to implement the proposed project or willingness to change legal or regulatory constraints)**:**			
Legal Authority	The County (applicable jurisdictions or participating agencies) has the authority to implement the proposed action. Proper laws, ordinances, and resolutions are ALREADY in place to implement the proposed action.	2	
Liability	Potential legal consequences do NOT exist relative to implementing the proposed action. The County (applicable jurisdictions or participating agency) will NOT be liable for the support of action. The proposed action, if NOT executed once formally presented in the HMP will NOT bring potential liability due to the lack of action.	1	
Action Potentially Subject to a Legal Challenge	The action will NOT likely to be challenged by stakeholders who may be negatively affected (or no negative impacts are visible).	2	
Economic (evaluate the cost-effectiveness of the proposed project, ability of the project to mesh with stated jurisdictional goals, and the jurisdiction's ability to obtain implementation funding)**:**			
Cost of Action	To the extent that the cost of the proposed action are known, the cost seem reasonable.	2	
Burden to Local Economy	The proposed action will NOT place a burden on the tax base or local economy.	1	
Contributes to Economic Goals	The proposed action contributes to other goals such as capital improvements.	2	
Outside Funding Available	Proposed action meet criteria of an identifiable federal, state, or private sector grant, thus increasing liklihood of future external funding.	2	
Environmental (evaluate the potential project's impact on environmental / natural resources and the jurisdiction's cultural resources)**:**			
Affects Land / Water Bodies	The proposed action will NOT negatively affect land-based resources. The proposed action will NOT negatively affect wetlands or water resources.	2	
Affects Endangered Species	The proposed action will NOT negatively affect endangered species.	2	
Consistent with applicable Environmental Law	The proposed action complies with federal law regarding environmental protection, historical or cultural preservation.	2	
Consistent with Community Environmental Goals	The proposed action is consistent with community environmental goals.	2	
	Project Score:	**43**	

E Maps

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Otero County HMP:

Critical Facilities Mapping

Gerald Champion RMC

2669 Scenic Drive, Alamogordo, NM 88310

Otero County Admin. Blding.

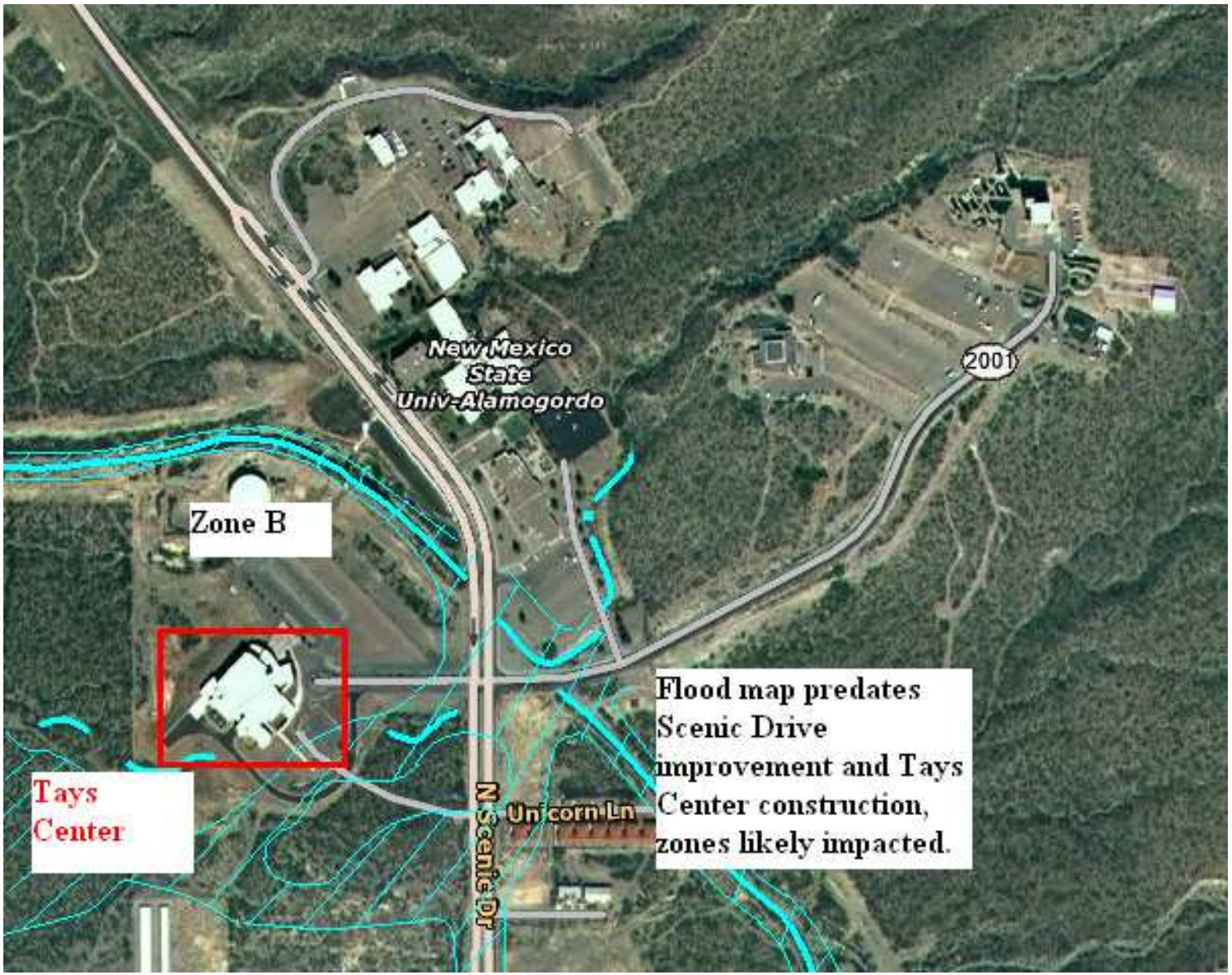
1101 New York Avenue, Alamogordo, NM 88310

Otero County PW Yard

7085 US HWY 54/70 North, Alamogordo, NM 88310

Tay's Special Events Center

2400 N. Scenic, Alamogordo, NM 88310



Alamo Senior Center

2201 Puerto Rico Ave., Alamogordo, NM 88310

OCEC and PNM Substation

Eddy Street, Alamogordo, NM 88310

Boles Acres Fire Station

#10 Sage Ave Boles Acres, Alamogordo, NM 88311

Oro Vista FS (Station #1 - San Pedro)

Dungan Fire Station

32 Crestwood Ln., Alamogordo, NM 88310

Otero County Detention Center

1958 Dr. Martin Luther King Jr. Drive, Alamogordo, NM 88310

Note: The Otero County Jail is located south of Alamogordo just west of US Rt. 54 near the TX-NM border. That facility is leased to the US government. The facility sets in Zone C.

Ben Archer Clinic

2150 US Highway 54 South, Alamogordo, NM 88310

Wal-Mart Super Center

233 S New York Ave., Alamogordo, NM 88310

Volcano Scenario A:

Reactivation of Carrizozo Malpais (A)

Description (A):

- Re-issuance of lava from Little Black Peak (volcanic source of Malpais - circle in upper left corner of image).
- Volume and viscosity unusual for volcano size (based upon existing malpais).
- Flow extends past US Rt. 380 causing loss of use (and potential impact of supply).

Impact (A):

- Minimal - US Rt. 54 is more significant for re-supply of communities.
- Boost to local economy with increase in tourism - challenge to Carrizozo hotels and restaurants.

Volcano Scenario B:

Reactivation of Sierra Blanca (B)

Description (B):

- Moderate earthquakes associated with movement of magma into mountain core.
- Fissures develop and heating of groundwater causes winter snows to rapidly melt (mud slides / flash floods into Rio Ruidoso and Rio Bonito watersheds as well as down western slope towards Three Rivers area).
- Overflow and failure of Bonito Lake and Mescalero Lake (flash floods for Ruidoso, Ruidoso Downs and Alto - as far as Lincoln).

Impact (B):

- Dam Failure scenario (impacts Mescalero).
- Ash causes forest fires – USFS lands
- Disruption of US 70 corridor (impacts supply to critical facilities minimal)