### San Miguel County, New Mexico

### Wildland Urban Interface Community Wildfire Protection Plan



### **Prepared for:** San Miguel County, New Mexico

Submitted by: Anchor Point Group, LLC The Placitas Group, Inc.

We the undersigned approve the San Miguel County Community Wildfire Protection Plan.

Organization: San Miguel County

\_\_\_\_ Date: \_<u>4/10/08</u> Signature:

Name and Title: Mr. Les Montoya, County Manager

Organization: San Miguel County-Fire Division Signature:

Date: <u>4-11-08</u>

Name and Title: Mr. Russell Pacheco, Fire Chief

 

 Organization:
 New Mexico Energy, Minerals and Natural Resources Department, Forestry Division

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 Date:
 4-10-2008

Name and Title: Ernesto Hurtado, Las Vegas District Forester

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We the undersigned support the San Miguel County Community Wildfire Protection Plan.

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Organization: <u>New Mexico State Land Othics</u> Signature: <u>Dan Estract</u> Date: <u>4-15-08</u> Name and Title: <u>District Resource Managen</u> Organization: <u>"Recos National Historical Park</u>

Signature: <u>Fathy Billing</u> Date: <u>4/25/08</u> Name and Title: <u>Kathy Billings</u>, <u>Superintendent</u>

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## **SUMMARY OF THIS DOCUMENT**

This document incorporates new and existing information relating to wildfire for citizens, policy makers, and public agencies within San Miguel County, New Mexico. Wildfire hazard data is derived from the community wildfire hazard rating analysis (WHR) and the analysis of fire behavior potential, which are extensive and/or technical in nature. For this reason, detailed findings and methodologies are included in their entirety in appendices rather than the main report text. This approach is designed to make the plan more readable, while establishing a reference source for those interested in the technical elements of the San Miguel County wildfire hazard and risk assessment.

The San Miguel County Community Wildfire Protection Plan (CWPP) is the result of a community-wide fire protection planning effort that included extensive field data gathering, compilation of existing fire suppression documents, a scientific analysis of the fire behavior potential of the study area, and collaboration with various participants including homeowners, citizens, educators, San Miguel County officials, and several federal and state agencies.

This project meets the requirements of the federal Healthy Forests Restoration Act (HFRA) of 2003 for community fire planning by:

- 1. Identifying and prioritizing fuels reduction opportunities across the landscape See the *Fuels Modification* section on pages 36-50 of this document.
- Addressing structure ignitability See the *Reducing Structure Ignitability* section on pages 31-35 and *Appendix B* of this document
- 3. Collaborating with stakeholders See *Appendix E* of this document

Special thanks and recognition go to the State of New Mexico, the New Mexico Energy, Minerals and Natural Resources Department and its Forestry Division for providing grant funds to San Miguel County to conduct this project.

# THE NATIONAL FIRE PLAN

In 2000, more than eight million acres burned across the United States, marking one of the most devastating wildfire seasons in American history. One high-profile incident, the Cerro Grande fire at Los Alamos, NM, destroyed more than 235 structures and threatened the Department of Energy's nuclear research facility.

Two reports addressing federal wildland fire management were initiated after the 2000 fire season. The first was a document prepared by a federal interagency group entitled "Review and Update of the 1995 Federal Wildland Fire Management Policy" (2001), which concluded among other points that the condition of America's forests had continued to deteriorate.

The second report issued by the Bureau of Land Management (BLM) and the United States Department of Agriculture Forest Service (USFS) – "Managing the Impacts of Wildfire on Communities and the Environment: A Report to the President in Response to the Wildfires of 2000" – would become known as the National Fire Plan (NFP). That report, and the ensuing congressional appropriations, ultimately required actions to:

- 1. Respond to severe fires
- 2. Reduce the impact of fire on rural communities and the environment
- 3. Ensure sufficient firefighting resources

Congress increased its specific appropriations to accomplish these goals. But 2002 was another severe season, with more than 1,200 homes destroyed and seven million acres burned. In response to public pressure, Congress and the Bush administration continued to obligate funds for specific actionable items, such as preparedness and suppression. That same year, the Bush administration announced the HFRA initiative, which enhanced measures to restore forest and rangeland health and reduce the risk of catastrophic wildfires. In 2003, that act was signed into law.

Through these watershed pieces of legislation, Congress continues to appropriate specific funding to address five main sub-categories: preparedness, suppression, reduction of hazardous fuels, burned-area rehabilitation, and state and local assistance to firefighters. The general concepts of the NFP blended well with the established need for community wildfire protection in the study area. The spirit of the NFP is reflected in the San Miguel County CWPP.

# PURPOSE OF THE SAN MIGUEL COUNTY CWPP

The purposes of the San Miguel County CWPP are to:

- 1. Promote firefighter and public safety
- 2. Identify communities at risk
- 3. Reduce fuel hazards and prevent fires
  - a. Consider fuels treatment prescriptions and locations
  - b. Consider wildland urban interface codes and the Firewise Communities Program
- 4. Increase fire department capacity
- 5. Improve the County's position as it competes for grants

## **GOALS AND OBJECTIVES**

Goals for this project include the following:

- 1. Enhance life safety for residents and responders
- 2. Mitigate undesirable fire outcomes to property and infrastructure
- 3. Mitigate undesirable fire outcomes to the environment and quality of life

In order to accomplish these goals the following objectives have been identified:

- 1. Establish an approximate level of risk (the likelihood of a significant wildfire event for the study area)
- 2. Provide a scientific analysis of the fire behavior potential of the study area
- 3. Group Values at Risk into "communities" that represent relatively similar hazard factors
- 4. Identify and quantify factors that limit (mitigate) undesirable fire effects to the Values at Risk (hazard levels)
- 5. Recommend specific actions that will reduce hazards to the Values at Risk

### **OTHER DESIRED OUTCOMES**

- Promote community awareness:
  - Quantification of the community's hazards and risk from wildfire will facilitate public awareness and assist in creating public action to mitigate the defined hazards.
- Improve wildfire prevention through education:
  - Awareness, combined with education, will help to reduce the risk of unplanned human ignitions.

- Facilitate and prioritize appropriate hazardous fuel reduction:
  - Organizing and prioritizing hazard mitigation actions into an Action Plan can assist stakeholders in focusing future efforts from both a social and fire management perspective.
- Promote improved levels of response:
  - The identification of areas of concern will improve the accuracy of preplanning, and facilitate the implementation of cross-boundary, multijurisdictional projects.

## COLLABORATION: COMMUNITY, AGENCIES AND CORE TEAM

People involved in the development of the San Miguel County CWPP are included in the following table. Their names, organizations, and roles and responsibilities are indicated in Table 1. For more information on the collaborative process that led to the development of this CWPP, see **Appendix E, San Miguel County CWPP Collaborative Effort**.

Name	Organization	Roles / Responsibilities
Les Montoya, County Manager Russell Pacheoco, Fire Chief Dennis English, Emergency Manager Alex Tafoya, Planning and Zoning	San Miguel County	
Eugene Garcia, Emergency Management	Las Vegas Police Department	
Alice Sena Mary Ann Pacheco Joe Reddan, District Ranger	Tecolote Fire District Santa Fe National Forest-	Local information and expertise, including community risk and value assessment, development of community protection priorities, and establishment
Ron Ortega	New Mexico Highlands University-Forest Restoration	of fuels treatment project areas and methods.
Francis Martinez Steve Reichert	Tierra Y Montes Soil and Water Conservation District	
Clarence Montoya, District Conservationist	Natural Resources Conservation Service	

### Table 1. CWPP Core Team and Development Team

Herb Cohen Neal Schaffer	Upper Pecos Watershed Association	
Ernesto Hurtado, District Forester Eugene Pino, Fire Management Shannon Atencio, Forester Terrell Treat, Office of Forest and Watershed Health	New Mexico State Forestry Division	Facilitation of planning process and approval of CWPP minimum standards.
Shelley Rossbach, President, Facilitator Fred Rossbach, Vice-President, Local Project Manager	The Placitas Group, Inc. Consultants	Facilitation of planning process and development of the CWPP
Chris White, CEO, Wildland Urban Interface Specialist Rodrigo Moraga, Managing Member, Fire Behavior Analyst Mark McLean, GIS Project Manager Marc McDonald, Project Manager Quinn MacLeod, WUI Project Specialist	Anchor Point Group LLC Consultants	Development of the CWPP, community risk and value assessment, development of community protection priorities, establishment of fuels treatment project areas and methods.

### **STUDY AREA OVERVIEW**

San Miguel County is located in northeastern New Mexico. The County is approximately 3,034,264 acres or 4,741 square miles in area (1994 Land Entitlement Acreages, Bureau of Land Management) making it the 9<sup>th</sup> largest county in land area in the state. The area extends 118 miles east to west and about 57 miles north to south. The western part of the County is in the foothills of the Sangre de Cristo Mountains, the central part is on the plains and the eastern part in the valleys of the Canadian and Conchas Rivers (San Miguel Soil Survey, USDA Natural Resources Conservation Service, 1981).

The approximate population for the County is 29,325. The County seat is Las Vegas, New Mexico which has a population of approximately 15,565. The other municipality located in San Miguel County is the Village of Pecos with a population of approximately 1,450 (U.S Census 2006, estimate).

Private lands make up the majority of land ownership in the area with approximately 2,466,000 acres representing 81% of the area. There are approximately 390,600 acres of federal lands throughout the County. The USDA Forest Service, Santa Fe National Forest, Pecos/Las Vegas Ranger District is the largest federal land manager with approximately 340,440 acres. The Bureau of Land Management manages approximately 48,600 acres, primarily located in the eastern portion of the County. The National Park Service manages the Pecos National Historical Park which is very close to the Village of Pecos. The U. S. Fish and Wildlife Service and the Bureau of Reclamation also manage small areas of land. There are approximately 173,808 acres of state lands that are leased on the surface primarily for grazing (1994 Land Entitlement Acreages from Bureau of Land Management).

The dominant land cover type to the south and east is the non-forest watershed made up of grasslands, shrub lands, woodland and a small amount of agriculture. The grasslands are representative of the Southern Shortgrass Prairie Eco-region represented primarily by the Western Great Plains Terrestrial Habitat Type. Approximately one third of the County is forested (New Mexico's Forests, 2000, USDA-Rocky Mountain Research Station, RB-3). The forest lands are made up primarily of the pinon-juniper/juniper savanna land cover type. The northwest corner of the County is forested and located in the Southern Rocky Mountain Ecoregion and represented by the Rocky Mountain Mixed Conifer Forests and Woodlands Terrestrial Habitat Type. These mixed conifer forests change dominant tree species depending on changes in the moisture regime, which is influenced by aspect and the elevation. The typical tree species profile starts with pinon-juniper (*Pinus edulis and Juniperus spp.*) in the lower elevations, then transitions to a broadband of ponderosa pine (*Pinus ponderosa*), then ponderosa-Douglas fir (*Pseudotsuga menziesii*), with a mix of true firs and spruce (*Abies* spp. and Picea spp.) in the higher elevations. Gambel oak (Quergcus gambelli) and Aspen (Populus tremuloides) often are prominent following disturbances such as fire (Comprehensive Wildlife Strategy for New Mexico, New Mexico Game and Fish, 2006)

Elevation in the area ranges from 3,800 feet in the southeast near Conchas Lake to Elk Mountain in the northwest at 11,660 feet. Temperature and precipitation vary from east to west depending on the elevation and topography. Average annual snowfall range from 18 to 36 inches and occurs primarily between December and February. The average precipitation in Las Vegas is 16 inches per year. The prevailing wind is from the southwest although frontal systems sliding down from the north along the eastern slopes of the Sangre de Cristo Mountains often influence the local weather (San Miguel Soil Survey, USDA Natural Resources Conservation Service, 1981).





**Table 2** and **Figures 2** and **3** display the communities that define the WUI study area. For the purposes of this project, the most populated areas were divided into 31 communities. Each community represents certain dominant hazards from a wildfire perspective. The overall hazard ranking of these communities is determined by considering the following variables: fuels, topography, structural flammability, availability of water for fire suppression, egress and navigational difficulties, as well as other hazards, both natural and manmade. The methodology for this assessment uses the WHR community hazard rating system developed specifically to evaluate communities within the WUI for their relative wildfire hazard.<sup>1</sup> The WHR model combines physical infrastructure such as structure density and roads, and fire behavior components like fuels and topography, with the field experience and knowledge of wildland fire experts. For more information on the WHR methodology please see **Appendix B**.

<sup>1</sup> C. White, "Community Wildfire Hazard Rating Form" Wildfire Hazard Mitigation and Response Plan, Colorado State Forest Service, Ft. Collins, CO, 1986.

Hazard Ratings for San Miguel County Communities			
Number	Community	Rank	Score
1	Dalton Canyon	Extreme	12
2	Grass Mountain	Extreme	14
3	Windsor Creek / Holy Ghost	Very High	17
4	Montezuma	Very High	17
5	Cowles	Very High	18
6	Terrero / Tres Lagunas	Very High	18
7	Bull Creek	Very High	18
8	Upper / Lower Colonias	Very High	18
9	Pendaries	Very High	19
10	Hidden Valley	High	21
11	Pecos / East Pecos	High	21
12	Upper Gallinas	High	21
13	Mineral Hill	High	21
14	San Ignacio / Las Tusas	High	21
15	Highway 84	High	22
16	Romeroville / Ojitos Frios	High	22
17	Rociada Valleys	High	23
18	El Porvenir	High	23
19	Lower Pecos Canyon	High	24
20	Sapello / Tierra Monte	High	24
21	Bernal / Tecolote / Lagunita	High	26
22	North and West Las Vegas	High	26
23	Gallinas	High	26
24	Trujillo	High	28
25	Gonzales Ranch	High	28
26	Pecos River Valley	High	28
27	Tecolotito	High	28
28	Southeast Las Vegas	Moderate	31
29	Conchas Lake	Moderate	32
30	Trementina / Variadero	Moderate	35
31	Sabinoso	Low	40

 Table 2. Relative Hazard Rankings for Communities in the Study Area.

Communities in the San Miguel Community Wildfire Protection Plan with a ranking of extreme, very high or high should be considered as ranking high for the purpose of conforming to the reporting requirements for the New Mexico Fire Planning Task Force.



Figure 2. Community Hazard Graphic – West



Figure 3. Community Hazard Graphic – East

## VALUES AT RISK

San Miguel County is 4,741 square miles or 3,034,264 acres in size, making it the 9<sup>th</sup> largest county in land area in the state. The approximate population for the County is 29,325. The County seat is the City of Las Vegas, New Mexico with a population of approximately 15,565. The other municipality located in San Miguel County is the Village of Pecos with a population of approximately 1,450 (U.S Census 2006, estimate).

#### **Emergency Response Services**

San Miguel County fire districts provide all risk emergency response services to all of the unincorporated areas of the County. Services include wildland fire and structural fire prevention and suppression, emergency medical services, hazardous materials mitigation and rural search and rescue. There are 12 active fire districts, with 10 active main stations and 2 in the planning stages. There are 4 active sub-stations with 10 more in the planning stages (http://www.smcounty.net/fire\_marshal.htm). The fire districts are staffed by 300 volunteer firefighters. There are approximately 60 fire trucks in the County of varying types and capabilities. For wildland fire response the County has adopted the national wildfire qualifications system ("Red Card" system). The County has a Fire Division with a full-time Fire Chief that oversees the volunteer fire districts. San Miguel County is also responsible for the local area Office of Emergency Management.

Like many rural fire departments most of their responses are related to emergency medical service and wildland fire. Structure fires are infrequent and wildland fires makes up approximately 90% of the fire responses. The fire departments are continually challenged to recruit and train members, and to provide reliable communications and adequate water delivery capacity to extinguish fires. San Miguel County fire districts also work with municipal fire departments in the City of Las Vegas and the Village of Pecos. These municipalities provide mutual aid and have developed water systems and fire hydrants for fire suppression.

New Mexico State Forestry's Las Vegas District, located at Storrie Lake State Park in Las Vegas also provides fire suppression response for wildland fires on state and private lands in San Miguel County. San Miguel County fire districts often provide first response or initial attack. New Mexico State Forestry then provides support or assumes responsibility for extended attack incidents. The County has agreements with the State to provide reimbursement for wildfire responses beyond initial attack.

The USDA Forest Service, Santa Fe National Forest Pecos/Las Vegas Ranger District administers a large portion of the forested lands in the County. They provide initial attack fire suppression resources and they can mobilize a significant number of resources for extended attack wildfire suppression through their local, regional and national interagency dispatch centers. Other federal agencies such as the Bureau of Land Management and the National Park Service, Pecos National Historical Park have limited initial attack resources in the County but participate in the interagency dispatch and mobilization. San Miguel County fire districts provide primary fire suppression response for the U.S. Fish and Wildlife Service at MacAllister Lake Wildlife Refuge. The Pecos National Historical Park has an agreement with the Village of Pecos stating that the Village will provide structural fire protection to Park buildings.

The San Miguel County Road Department can respond to wildfires with road graders. The State of New Mexico Department of Transportation can also respond to wildfires when life or property is threatened. Over the years the San Miguel fire districts have been very resourceful in managing large incidents.

### WILDLAND URBAN INTERFACE

The San Miguel Community Wildfire Protection Plan Core Team has designated the entire County as Wildland Urban Interface (WUI). San Miguel County has the fourth highest number of square miles of existing forested WUI areas at risk adjacent to federal lands among counties in New Mexico. It is estimated that there are currently 1,450 homes on 10 square miles of developed WUI forest lands adjacent to federal lands (www.headwaterseconomics.org). Less than a fifth of the area has been developed, leaving a large potential for development with homes at risk in the future. In addition, the remaining areas of the County not adjacent to federal lands also have widespread rural interface with significant risk from wildfire. These areas have potential for rapid rates of spread and high fire intensity due to fast burning or flashy fuels. This area may also represent a threat to life safety due to the likelihood of heavy smoke, heat and the potential to overwhelm the limited number of local suppression resources.

### COMMERCE AND INFRASTRUCTURE

The San Miguel County economy is dominated by health and social services, education, and public administration. Retail services and the construction industry are active. Agriculture, primarily ranching, is also important. Farming of cultivated crops is limited and primarily associated with support of livestock. The County has less than 1,000 acres enrolled in the Conservation Reserve Program (CRP).

New Mexico Highlands University (NMHU) is located in Las Vegas and offers graduate and undergraduate programs in arts and sciences, business, education, and social work. NMHU also houses the New Mexico Forest and Watershed Restoration Institute dedicated to research, education and community outreach and in forest and watershed health issues. The NMHU campus is home to approximately 3,500 students (http://www.nmhu.edu).

There are 14,752 housing units within the County. The median household income *with earnings* is \$33,070 compared to the state median of \$43,900. The median income for all households in the County is \$27,972. About 19.9% of families are below the poverty line (U.S Census, 2000).

### HISTORY AND LIFESTYLE

San Miguel County and the communities surrounding the Gallinas and Pecos Rivers have always been important places in New Mexico. The area and its water sources had been inhabited by Native Americans for many years before being frequented by Spanish explorers in the mid-1500's. Spanish and Mexican land grants supported subsistence agriculture economy for many years. In the early 1800's, Americans traveling the Santa Fe Trail stopped to rest in these areas. In the 1870's, when the Atchison, Topeka and Santa Fe Railroad came to the area, many people came to settle, conduct ranching and do business (http://www.lasvegasnm.org). This new commerce encouraged the widespread use of forest resources and heavy grazing practices which eventually took its toll on forest and watershed health.

There were a number of small sawmills that harvested the private forest lands starting in the early 1900's. Many of the forests standing today are the second or even third growth from the original harvests. Today most of the forest industry has disappeared. There are still a few small saw log and round wood operations that produce rough sawn lumber, house logs and southwest house construction specialty items such as vigas and latillas. There is still a small forestry workforce that retains the skills and equipment needed to harvest forest products and thin trees to reduce fire hazard and promote forest health.

### RECREATION

Since the 1980's there has been steady development in the forested areas in western San Miguel County. Many of the new homes being constructed in the forested wildland urban interface (WUI) areas are second homes. During the summer months, San Miguel County draws a stream of seasonal and weekend visitors for camping, fishing, hiking and off-road vehicle use. There are also a number of recreation camp and church camp facilities that run programs for hundreds of children each week. The visitors and seasonal residents are often disconnected to the local communities and lack awareness of the potential of forest fires in the WUI. Development in the WUI areas have placed stresses on government services including law enforcement and fire protection. Residents in the Pecos Valley especially feel this area lacks adequate law enforcement and have said "just posting signs warning of the dangers is not enough".

### **ENVIRONMENT**

The dominant land cover type to the south and east is the non-forest watershed made up of grasslands, shrub lands, woodland and a small amount of agriculture. The grasslands are representative of the Southern Shortgrass Prairie Eco-region represented primarily by the Western Great Plains Terrestrial Habitat Type. Approximately one third of the County is forested (New Mexico's Forests, 2000, USDA-Rocky Mountain Research Station, RB-3). The forest lands are made up primarily of the pinon-juniper/juniper savanna land cover type (*Pinus edulis and Juniperus spp.*). The northwest corner of the County is forested and located in the Southern Rocky Mountain Ecoregion and represented by the Rocky Mountain Mixed Conifer Forests and Woodlands Terrestrial Habitat Type. These mixed conifer forests include tree species such as ponderosa pine (*Pinus ponderosa*), Douglas fir (*Pseudotsuga menziesii*),and various true fir and spruce species (*Abies spp. and Picea spp.*). Gambel oak (*Querqcus gambelli*) and Aspen (*Populus tremuloides*) often are prominent following disturbances such as fire (Comprehensive Wildlife Strategy for New Mexico, New Mexico Game and Fish, 2006).

The early 1900's saw the establishment of the National Forests. Early forest managers promoted silvicultural practices, including timber harvesting, to regulate forest growth and succession. Aggressive fire suppression was meant to protect natural resources. This fire suppression policy, along with changes brought on by forest management and grazing practices, resulted in changes to the natural fire regime. In general, fires in the forest changed from natural, lower intensity ground fires to more intense, stand replacing crown fires. In the early 1900's old timers could put a fire out with a gunny sack. Today's fires are often so intense firefighters cannot go near the flames. During hot, dry, windy days with extreme fire danger, mechanical equipment and aircraft that drop fire retardant are only marginally effective.

During the San Miguel County Community Wildfire Protection Plan process, Core Team members, Interested Parties and the general public supported long term solutions to

improve forest and watershed health and reduce forest fuels by mechanical thinning and prescribed burns. San Miguel County CWPP participants understand that fire has a natural role in the environment but that today's forest fuels are not natural. Today's fires burn more rapidly and with more intensity. At the same time, people now live in this environment. In general, they are concerned about the safety of prescribed fire but they are willing to consider the benefits to prevent catastrophic fires and improve forest and watershed health.

There are hundreds of wildlife species represented in the Southern Rocky Mountains Ecoregion, Rocky Mountain Mixed Conifer Forests and Woodlands Terrestrial Habitat Types. Of these, 44 are list as "Species of Concern" (http://www.bison-m.org). In this habitat type, "*prioritized conservation actions*" to manage for wildlife concerns include promoting natural fire regimes and forest and watershed health, conducting thinning to open dense stands and reduce stand replacing fires, and promoting local zoning to reduce the threat of wildfire from homes in the WUI (Comprehensive Wildlife Strategy for New Mexico, New Mexico Game and Fish, 2006).

The New Mexico Department of Game and Fish (NMDGF) reviewed the draft San Miguel CWPP and does not anticipate the plan will result in significant impacts to wildlife or sensitive habitats (NMDGF letter No. 11987). In their letter NMDGF expressed a desire to be involved in future planning for implementation of thinning and prescribed burns within the County. The NMDGF also encourages monitoring of the effectiveness of treatments to reduce forest fuels and promote long-term forest health.

Through public involvement, local support, and a regional perspective, the fuels reduction and other mitigation elements described in this document can and should enhance and protect the values of the study area.

### **CURRENT RISK SITUATION**

For the purposes of this report the following definitions apply:

**Risk** is considered to be the likelihood of an ignition occurrence. This is primarily determined by the fire history of the area.

**Hazard** is the combination of the wildfire hazard ratings of the Wildland Urban Interface (WUI) communities and fire behavior potential, as modeled from the fuels, weather and topography of the study area.

The majority of the district is at a high risk for WUI fires. This assessment is based on the analysis of the following factors:

- San Miguel County fire departments respond to an average of 38 wildland incidents annually. This data is summarized from information provided by the New Mexico State Forestry (NMSF) which includes fire statistics from local agencies.
- 2. NMSF reports 772 fires between the years of 1987 and 2006. The largest fire which burned in the County, the Viveash fire, occurred in June of 2000 and grew

to 28,000 acres, involving local, state and federal lands. It is important to point out that fires have the ability to burn and grow to a large size during most months of the year due to the size of the County and the vast differences in fuel types.

- 3. The USDA Forest Service fire regime and condition class evaluation of forest stands in the study area shows that historic fire regimes have been moderately altered. Please see the *Fire Regime and Condition Class* section of this report for details.
- 4. The surrounding federal lands report a moderately active fire history. Fire occurrences for the Las Vegas and Pecos Ranger Districts of the Santa Fe National Forest (see Figure 4) were calculated from the USDA Forest Service Personal Computer Historical Archive for the twenty one-year period from 1986-2006. These areas represent federal lands in and adjacent to the study area, but do not include any data from state, county, or private lands. The data have been processed and graphed using the Fire Family Plus software program and are summarized below.

**Figure 4a** shows the number of fires (red bars) and the total acres burned (blue hatched bars) in the Las Vegas and Pecos Ranger Districts for each year. While the number of annual fires ranges from approximately 3 to over 46 fires per year, there is little year-to-year pattern to the variation. The single largest fire for acreage burned was the Viveash Fire in 2000, which burned approximately 28,000 acres.

**Figure 4b** shows the percentage and number of fires between 1986 and 2006 occurring in each month of the year. June had the greatest number of fires, followed by July and May. The fewest fires occurred between the months of November and March, a fact which reflects the climate conditions for the area.

**Figure 4c** shows the size class distribution of fires. Approximately 94% of the reported fires (368 of 391) were less than 10 acres in size. These statistics reflect the widely held opinion that, throughout the western US, the vast majority of fires are controlled during initial attack.

**Figure 4d** shows the number of fires caused by each factor. As shown in this graph, the most common cause of ignitions is lightning (78%). The next most common cause is campfires (10%). It should be noted that these numbers are for national forest areas which lack the concentrated development and many other risk factors present in the portions of the study area where private land is dominant.

**Figure 4e** shows the number of fire starts for each day that a fire start was recorded. Most fires (262) occurred on days that only had one fire start. Approximately 7% (28) of fire days had two fire starts recorded, and days with three or more fire starts represent less than 5% of all fire start days. The statistics suggest that multiple start days are a rare occurrence compared to fire days with a single ignition.



Figure 4.	<b>USFS Fire</b>	Statistics (Las	Vegas & F	Pecos Ranger	Districts)
<u> </u>		•			

Size Class (in acres)	A < ¼	B ¼ - 9	C 10 – 99	D 100-299	E 300-999	F 1000 - 4999	G 5000 +		
Causes	1 Lightning	2 Equipment	3 Smoking	4 Campfire	5 Debris Burning	6 Railroad	7 Arson	8 Children	9 Misc.

### FIRE REGIME AND CONDITION CLASS

Fire Regime and Condition Class (FRCC) is a landscape evaluation of expected fire behavior as it relates to the departure from historic norms. The data used for this study is from a national level map. The minimum mapping unit for this data is 1 square kilometer. FRCC is not to be confused with BEHAVE and FlamMap fire behavior models (detailed in the fire behavior section) which provide the fire behavior potential analysis for expected flame length, rate of spread and crown fire development.

The FRCC is an expression of the departure of the current condition from the historical fire regime. It is used as a proxy for the probability of severe fire effects (e.g., the loss of key ecosystem components - soil, vegetation structure, species, or alteration of key ecosystem processes - nutrient cycles, hydrologic regimes). Consequently, FRCC is an index of hazards to the status of many components (e.g., water quality, fish status, wildlife habitats, etc.). **Figure 5** displays graphically the return interval and condition class of the study area.



#### Figure 5. Fire Regime and Condition Class

Deriving FRCC entails comparing current conditions to some estimate of the historical range that existed prior to substantial settlement by Euro-Americans. The departure of the current condition from the historical baseline serves as a proxy for probable ecosystem effects. In applying the condition class concept, it is assumed that historical fire regimes represent the conditions under which the ecosystem components within fire-adapted ecosystems evolved and have been maintained over time. Thus, if it is projected that fire intervals and/or fire severity have changed from the historical conditions, then it would be expected that fire size, intensity, and burn patterns would also be subsequently altered if a fire occurred. Furthermore, if it is assumed that these basic fire characteristics have changed, then it is likely that there would be subsequent effects to those ecosystem components that had adapted to the historical fire regimes.

As used here, the potential of ecosystem effects reflect the probability that key ecosystem components would be lost if a fire were to occur within the study area. It should be noted that a key ecosystem component can represent virtually any attribute of an ecosystem (for example, soil productivity, water quality, floral and faunal species, large-diameter trees, snags, etc.).

The following categories of condition class are used to qualitatively rank the potential of effects to key ecosystem components:

Fire Regime Condition Class	FR Condition = 25; FRCC = 1 FRCC = 2 FRCC = 3 FRCC = 3					
Condition Class	Condition Class Description					
1	Fire regimes are within their historical range and the risk of losing key ecosystem components as a result of wildfire is low. Vegetation attributes (species composition and structure) are intact and functioning within an historical range. Fire effects would be similar to those expected under historic fire regimes.					
2	Fire regimes have been moderately altered from their historical range. The risk of losing key ecosystem components as a result of wildfire is moderate. Fire frequencies have changed by one or more fire-return intervals (either increased or decreased). Vegetation attributes have been moderately altered from their historical range. Consequently, wildfires would likely be larger, more intense, more severe, and have altered burn patterns, as compared with those expected under historic fire regimes.					
3	Fire regimes have changed substantially from their historical range. The risk of losing key ecosystem components is high. Fire frequencies have changed by two or more fire-return intervals. Vegetation attributes have been significantly altered from their historical range. Consequently, wildfires would likely be larger, more intense, and have altered burn patterns, as compared with those expected under historic fire regimes.					

Table 3.	Condition	Class	Descrir	otions <sup>2</sup>
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The communities of the study area are dominantly classified under Condition Classes 2 and 3. By definition, historic fire regimes have been moderately to substantially altered. Consequently, wildfires are likely to be larger, more severe, and have altered burn patterns, as compared with those expected under historic fire regimes.

<sup>2</sup> Fire Regime Condition Class, website, http://www.frcc.gov/, July 2005.

## **FIRE BEHAVIOR POTENTIAL**

As a part of the wildfire hazard analysis carried out for this study, the fire behavior potential of the study area was modeled (see **Appendix A**). This model can be combined with the community wildfire hazard ratings (WHR), structure density and Values at Risk information to generate current and future "areas of concern." **Figures 6**, **8**, and **10** show the fire behavior potential for the analysis area, given the average weather conditions existing between April 1 and November 1. Weather observations from the Pecos Remote Automated Weather Station (RAWS) were averaged for a fourteen-year period (1994-2007) to calculate these conditions.

**Figures 7, 9,** and **11** show the fire behavior potential for the analysis area, given ninetyseventh percentile weather data. In other words, the weather conditions existing on the five most severe fire weather days in each season for the fourteen-year period were averaged together to provide the weather data for this calculation. It is a reasonable assumption that similar conditions may exist for at least five days of the fire season during an average year. In fact, during extreme years such as 2000 and 2002, such conditions may exist for significantly longer periods.

Weather conditions are extremely variable and not all combinations are accounted for. These outputs are best used for pre-planning and not as a stand-alone product for tactical operations. This model can be combined with the WHR and Values at Risk information to generate current and future "areas of concern," which are useful for prioritizing mitigation actions. It is recommended that when this information is used for tactical operations, fire behavior calculations be done with actual weather observations during the fire event. For greatest accuracy, the most current Energy Release Component (ERC) values should be calculated and distributed during the fire season to be used as a guideline for fire behavior potential. For a more complete discussion of the fire behavior potential methodology, please see **Appendix A**.



Figure 6. Flame Length, Moderate Conditions



Figure 7. Flame Length, Extreme Conditions



Figure 8. Rate of Spread, Moderate Conditions



Figure 9. Rate of Spread, Extreme Conditions









### **ACTION PLAN**

The action plan is the heart of the CWPP. It details the prioritized actions that the County and cooperators want to take to reduce the risk of wildland fire damage to people, property and the environment. It will require a high level of commitment of landowners, citizens and public officials to accomplish the tasks shown in this action plan and reduce the risk of catastrophic wildland fire in San Miguel County.

The major topics in the Action Plan are:

- 1. Organization, Ordinances and Public Information
- 2. Reducing Structure Ignitability
- 3. Fuels Treatment
- 4. Evacuation/Travel Route Identification and Improvement
- 5. Local Preparedness and Firefighting Capabilities
- 6. Areas of Special Interest

Projects described in this Action Plan will be on-going, accomplished or substantially initiated over the next ten years. The San Miguel County Fire Division and Office of Emergency Management will take the lead in monitoring the progress of the proposed projects. The projects have been prioritized but it is not meant to be restrictive. If an opportunity arises to accomplish a lower priority the Fire Chiefs should take advantage. The San Miguel County Community Wildfire Protection Plan will be a living document that can periodically be adjusted to reflect lessons learned and new ideas.

### ORGANIZATION, ORDINANCES, AND PUBLIC INFORMATION

The purpose of this organization and ordinances section is to provide recommendations on how to best achieve certain administrative activities within San Miguel County related to this CWPP. The underlying goal is to work with communities and citizens to educate, inform and involve them in all aspects of the wildfire issues facing San Miguel County.

### **Organization Action Items:**

**Very High Priority:** Develop a Countywide wildfire coordinator position to help develop annual operating plans, coordinate with community groups, provide public information and education, increase volunteer fire department membership and increase operating funds and grants. Define responsibilities of the position within a County wildfire ordinance.

**Very High Priority:** Develop an annual operating plan to coordinate wildfire management. An annual operating plan would be prepared cooperatively with local, state, and federal government agencies to address the following:

- fire prevention
- public education
- encourage defensible space
- public information during incidents
- evacuation planning and coordination
- fuels treatments

**Very High Priority:** Emphasize the use of the Incident Command System (ICS). ICS will help organize multi-agency incidents and smooth out communications problems. Ensure that all County agencies are National Incident Management System (NIMS) compliant, refer to the FEMA web site for more information and clarification. http://www.fema.gov/emergency/nims/

**High Priority:** San Miguel County will coordinate with community groups to promote fire prevention, fuels treatments and defensible space in the wildland urban interface.

**High Priority:** Develop a lead Public Information Officer (PIO) position. The lead PIO would work directly for the Emergency Manager. Other individuals should be developed to support the lead PIO; this would be a collateral duty for those individuals.

Moderate Priority: Conduct a review of all levels of County wildfire agreements to ensure that no conflicts exist between them.

### Ordinances Action Items:

**High Priority:** Consider adoption of a Wildland Urban Interface code to reduce structure ignitability and to recognize issues such as construction standards and creation
of defensible space and fuels treatment to reduce risk. The codes also recognize importance of access and water availability.

**High Priority:** The San Miguel County volunteer fire chiefs should monitor fire danger conditions in their respective districts and advise the County Fire Chief so that he can recommend to the Board of County Commissioners when it is appropriate to implement fire restrictions (on open burning, smoking, fireworks, etc.). These restrictions should be coordinated with federal and state agencies within the County and with neighboring counties.

**High Priority:** San Miguel County Planning and Zone should review subdivision covenants and address issues that limit cutting trees for defensible space.

**High Priority:** Create an ordinance to manage open burning. The goal would be to create an ordinance to streamline the process and improve coordination between the landowner and the County.

### Public Information and Fire Prevention Action Items:

Within San Miguel County there is likely to be a varied understanding among property owners of the hazards associated with the threat of a wildfire. An approach to wildfire education that emphasizes safety and hazard mitigation on an individual property level should be undertaken. County fire departments should provide educational materials to homeowners through personal contact when possible. Property owner education and the wildfire hazard mitigation message should be an ongoing effort.

**Very High Priority:** Provide information to citizens during emergencies such as wildfire. Use the PIO position to coordinate public information. Use local radio (English and Spanish), a community notification system such as Reverse 911 or Dialogic, the Internet and local "phone trees" to provide the public with information. Above all, early notification to residents and visitors to the area will provide the greatest benefit.

**Very High Priority:** Educate homeowners about forest health and fire prevention. Programs should provide the public with information about mechanical and prescribed fire fuels treatments. Workshops should include information on how to create defensible space and promote the safe use of chainsaws (professional instruction and PPE).

**Very High Priority:** Emphasize that homeowners need to take responsibility to help fire departments better protect their homes.

Very High Priority: Encourage public involvement and feedback.

**Very High Priority:** Public land management agencies will create an updated procedure for notifying local fire departments of their prescribed fires and other types of fuel treatment plans and operations.

**High Priority:** Promote the recommendations for each community with regards to defensible space and hazard reduction. See **Appendix B** for specific community recommendations.

**High Priority:** Conduct fire prevention campaigns during times when fire danger is high such as during the spring when fires can start in dry fuels and spread rapidly in windy conditions. Create fire prevention messages in the local newspaper and on the radio to raise public awareness of the danger of wildfires. Increase law enforcement presence, especially in the Pecos Valley.

**High Priority:** Obtain additional "Smokey Bear" signs for use along major highways to inform the public of the current fire danger and to promote fire prevention. Where current signs are placed, check to be sure they are visible.

**High Priority:** Provide Firewise fire prevention materials to encourage all homeowners and landowners to take responsibility and voluntarily implement defensible space practices that will reduce the chance of their homes catching fire during a wildfire. Consider having firefighters distribute Firewise materials door to door to provide fire prevention and home protection advice in person.

**High Priority:** Ensure that the Address Map books are updated to reflect information stemming from this CWPP. As recommended in other areas of this CWPP, they should include the individual home assessments. Every piece of emergency equipment in the County should have a copy (County and municipal fire departments, the County road department, NMSF, USFS, BLM) Command/Supervisor vehicles will need multiple copies or the ability to generate multiple copies. This will allow for the distribution of specific maps to incoming mutual aid resources that may not have the maps.

Visit these web sites for a list of public education materials. These are suitable for firefighters and homeowners alike:

- http://www.nwcg.gov/pms/pubs/pubs.htm
- <u>http://www.firewise.org</u>
- http://www.firesafecouncil.org/homeowner/index.cfm
- http://www.smcounty.net/
- http://www.emnrd.state.nm.us/FD/index.htm
- http://www.fs.fed.us/r3/sfe/

## **REDUCING STRUCTURE IGNITABILITY**

Of the 31 communities in the study area, the community-level assessment identified 2 that are at extreme risk, 7 at very high risk, 18 at high risk, 3 at moderate risk and 1 at low risk. Construction type, condition, age, fuel loading of the area, and position are contributing factors in making homes more susceptible to ignition under even moderate burning conditions. There is also a likelihood of rapid fire growth and spread in these areas due to steep topography, fast burning or flashy fuel components, and other topographic features that contribute to channeling winds and promotion of extreme fire behavior.

Outside of the established communities many ranches and individual home sites exist. The following recommendations apply to all structures which could be threatened by wildfire.

Due to the nature of the vegetation and topography combined with the majority of homes being situated on medium sized parcels, an aggressive program of evaluating and implementing defensible space for all homes will do more to limit fire-related property damage than any other single recommendation in this report.

To improve life safety and preserve property, every home in the study area must have compliant, effective defensible space. This is especially important for homes with wood roofs and homes located on steep slopes, in chimneys, saddles, or near any other topographic feature that contributes to fire intensity. These recommendations are intended to give homeowners enough information to immediately begin making their home fire-safe or improve existing home mitigation efforts. Defensible space must be maintained throughout the year.

- Trees and shrubs are properly thinned and pruned within the defensible space. Slash from the thinning has been disposed of properly.
- Roof and gutters are clear of debris. Branches overhanging the roof and chimney are removed.
- ✓ Chimney screens are in place and in good condition.
- An outdoor water supply is available, complete with a hose and nozzle that can reach all parts of the house. Fire extinguishers are checked and in working condition. Hand tools such as shovels and rakes are easily accessible.
- The driveway is wide enough. The clearance of trees and branches is adequate for fire and emergency equipment. (Check with your local fire department.)
- ✓ Road signs and the house number are posted and easily visible.
- Attic, roof, eaves, and foundation vents are screened and in good condition. Stilt foundations and decks are enclosed, screened or walled up.
- ✓ Firewood is staked on a side contour, at least 50 feet away from structures.
- Propane tanks should be located at least 30' from all structures. The area around the tank must be free of combustible material such as yard debris, weeds, etc.
- ✓ Power poles have vegetation cleared away in a 5 foot radius.
- Maintain the defensible space constantly:

- Mow non-irrigated grass to a low height. Mow early in the morning, avoiding times of wind, and avoiding rocks because a grass fire could ignite from a spark.
- Remove any branches overhanging the roof or chimney.
- Remove all debris and cuttings from the defensible space.









Maintain Chimneys

### Defensible Space Zones (Timber and Brush Lands)<sup>3</sup>



<sup>&</sup>lt;sup>3</sup> A Homeowner's Guide to Fire Safe Landscaping (2005), www.firesafecouncil.org, referenced 9/10/07



**Defensible Space Zones (Grass Lands)** 

**ZONE 1 (within 15 feet of the home),** shown as Home Ignition Zone, suggests eliminating all flammable materials (fire-prone vegetation, wood stacks, wood decking, patio furniture, umbrellas, etc.). Irrigated grass, rock gardens, non-flammable decking, or stone patios are desirable substitutions.

**ZONE 2 Defensible Space (15 to 100 feet from the home – on steep slopes or areas of high winds the Defensible Space will need to be expanded to 150 feet)** suggests thinning trees and large shrubs so there is at least 10 feet between tree tops (crowns). Crown separation is measured from the furthest branch of one tree to the nearest branch on the next tree. On steep slopes or areas subject to high winds, allow at least 1.5 times more space between tree crowns. Remove all ladder fuels from under these remaining trees. Prune all trees to a height of at least 10 feet, or 1/3 of the live crown height. Small clumps of 2 to 3 trees may be occasionally left but leave more space between the crowns of these clumps and surrounding trees. Isolated shrubs may remain, provided they are not under tree crowns. Remove dead stems from trees and shrubs annually. Where shrubs are the primary vegetation in Zone 2, refer to the "Brush and Shrubs" section below.<sup>4</sup>

### ZONE 3 Wildland Reduction, a/k/a Extended Defensible Space (beyond 100 feet),

suggests a much more limited thinning and pruning to the standards in zone 2. The goal in this zone is to improve the health of the wildlands, which will also help to slow the approaching wildfire.

#### **BRUSH AND SHRUBS**

Brush and shrubs are smaller than trees, often formed by a number of vertical or semiupright branches arising close to the ground. On nearly level ground (increase 1.5 times

<sup>&</sup>lt;sup>4</sup> http://www.ext.colostate.edu/PUBS/natres/06302.html, referenced 9/10/07

for slope and windy areas), minimum spacing recommendations between clumps of brush or shrubs is 2 1/2 times the height of the vegetation. Maximum diameter of clumps should be 2 times the height of the vegetation. All measurements are made from the edges of vegetation crowns.

**For example:** For shrubs 6 feet high, spacing between shrub clumps should be 15 feet or more apart (measured from the edges of the crowns of vegetation clumps). The diameter of shrub clumps should not exceed 12 feet (measured from the edges of the crowns). Branches should be pruned to a height of 3 feet.



Eliminate Ladder Fuels



Increase Defensible Space in Windy and Steep Areas

### **Reducing Structure Ignitability Action Items:**

**Very High Priority:** Perform parcel level analyses (individual home assessments) on the communities rated extreme, very high, and high hazard. This should be implemented as soon as possible. Please see **Appendix B** for more detailed community information. This data should facilitate the following important fire management practices:

- Establishing a baseline hazard assessment for homes in these communities
- Education of the community through the presentation of the parcel level Hazard-Risk Analysis at neighborhood public meetings
- o Identification of defensible space needs and other effective mitigation techniques
- Identification and facilitation of "cross-boundary" projects such as fuels modification projects adjacent to the community
- Development of a Pre-Attack/Operational Plan and eventually the entire study area. A pre-attack plan assists fire agencies in developing strategies and tactics that will mitigate incidents that occur

Very High Priority: Conduct fuels treatment and defensible space projects on private land.

**High Priority**: Fire departments and communities should conduct "Chipper Days" to encourage homeowners to create defensible space by providing them help with slash disposal either by chipping on-site or removing slash off site.

**High Priority:** To improve response, ensure that reflective address signs are present. Some homes will need signs at both the home and driveway. (See **Appendix D** for recommendations.)



**High Priority:** To improve response, use the structure triage methodology provided in **Appendix C** to identify homes not likely to be defendable.

## **FUELS TREATMENT**

Treating vegetation is one of the most important things that can be done to reduce the risk of catastrophic wildland fire. In order of priority, vegetation in San Miguel County should be treated as follows:

- 1. Around homes (see the section on Reducing Structure Ignitability beginning on page 31);
- 2. Along evacuation and travel routes and in the creation of landscape fuel breaks (pages 39-47);
- 3. In the Gallinas Municipal Watershed (page 48);
- 4. Around critical infrastructure (page 49); and
- 5. Throughout the County to improve watershed health and reduce fire hazard (page 50).

### **Completed, Ongoing and Planned Projects in the County**

The principal public land managers in the study area are the USDA Forest Service, the Bureau of Land Management, U. S. Fish and Wildlife Service and the National Park Service (NPS). In addition, the New Mexico State Forestry Division is actively working with private landowners to encourage forest health and fire hazard reduction projects.

All of these entities have completed ongoing, and/or planned fuels reduction treatments in the study area. These treatments vary from prescribed fire to hazard tree/hazardous fuels removal. The maps in **Figures 12** and **13** show the boundaries of treatment areas for projects in and near communities. More detailed information on each treatment can be gathered from the respective agency. A thorough "ground truthing" should then follow to determine the condition of the treatment.







Figure 13. Completed and Ongoing Fuels Treatment Projects – East

### Fuels Treatment Action Items – General:

**Very High Priority:** Conduct mechanical and prescribed fire fuels treatments on federal land management agency (USFS, BLM, NPS, and USFWS) lands to reinforce fuels treatment projects on private lands.

**Very High Priority:** Evacuation routes or primary travel routes should be identified and forested routes should be reinforced with fuels treatments.

**Very High Priority:** Support the use of prescribed fire and wildfire use projects by the federal land management agencies to re-introduce fire into the ecosystem.

**Very High Priority:** Promote use of prescribed fire on private lands. Look for opportunities to use the Wyden Amendment to conduct prescribed fire activities on private land when it is adjoining federal land.

**High Priority:** Continue to use fuels treatments that emphasize uneven aged, nonuniform residual stand structures that result in breaking the crown continuity in order to inhibit crown fires. Consider use of multiple entry thinning systems over a period of years to reduce impact.

High Priority: Maintain and monitor fuels treatments.

**High Priority:** The New Mexico Department of Transportation (NM-DOT) should prioritize mowing near high risk communities, at least during seasons of high fire danger. NM-DOT should conduct fuels treatments on median right-of-ways near communities at risk. Need to continue to try to involve NM-DOT in the CWPP process.

**High Priority:** Continue to promote use of small diameter forest products to reduce cost of thinning. Encourage development of the industry by increasing workforce skills, the use of mechanization and technology, and the creation of small wood markets.

**High Priority:** Encourage individual landowners to mow fuels near homes and along roadways and fence lines during times of high fire danger.

# Thinning for Fuels Reduction Specific to Evacuation/Travel routes and Landscape Fuel Breaks

The use of fuels treatments under normal burning conditions can limit uncontrolled spread of fires and aid firefighters in slowing the spread rate. Under extreme burning conditions where spotting occurs for miles ahead of the main fire and probability of ignition is high, even the best fuel treatments are not effective. That being said, however, fuel breaks have proven to be effective in limiting the spread of crown fires.

Fuels treatments are often easiest to construct along existing roadbeds. Roadside thinning should include an area of at least 100' on either side of the centerline of the route, where practical. This distance should be modified to account for increased slope and other topographic features that increase fire intensity. This is especially important in communities with steep, narrow roads and few turnouts. In these areas, safer access for

firefighters would make an impact on the number of structures that could be defended in a wildfire. Existing and natural barriers to fire should be incorporated into the project dimensions. Evacuation / travel routes greatly benefit from these types of treatments.

A fuel break is a strip of land of varying width, depending on fuel and terrain, in which fuel density is reduced, thus improving fire control opportunities. Vegetation is thinned removing diseased, fire-weakened and most standing dead trees. Ladder fuels, such as low limbs and heavy regeneration are removed from the remaining stand. Brush, dead and down materials, logging slash and other heavy ground fuels should be chipped on site, removed, or burned.

Fuels treatment guidelines for roadside thinning and designated landscape fuel breaks will vary depending on the forest type and other environmental factors. Each project will have a site specific treatment prescription developed by the appropriate agency or professional land management consultant.

Projects would be conducted with the cooperation of landowners. The federal land management agencies would follow their project development and implementation procedures. Roadside projects should be adjacent and contiguous. If this is not possible, more intensive thinning may need to occur within the road easement. Enlarging the project dimensions would allow more options for vegetative selection while still protecting the access/egress corridor.

An issue in mechanical thinning is the removal of cut materials. It is important to



note that in New Mexico's dry climate slash decomposes very slowly. One consequence of failing to remove slash is to add to the surface fuel loading, perhaps making the area more hazardous than before treatment. It is important that slash materials be disposed of by piling and burning, chipping, physical removal from the area, or lopping and scattering. Of all of these methods lopping and scattering is the cheapest, but also the least effective since it adds to the surface fuel load.

It is also important to note that fuels treatments must be maintained to be effective. Thinning usually accelerates the process of regenerative growth. The effectiveness of the fuel treatment may be lost in as little as three to four years if ladder fuels and regeneration are not controlled. Fuel treatments should not be conducted without a maintenance plan.

One of the most difficult issues in establishing and maintaining fuels treatments is securing cooperation and participation of landowners. Ownership maps of the area indicate that implementation of fuels reduction projects recommended here may require the approval of public land management agencies as well as private landowners.

# Fuels Treatment Action Items – Thinning for Fuels Reduction Specific to Evacuation/Travel routes and Landscape Fuel Breaks:



Figure 14: Evacuation/Travel Route Treatment Areas – West



Figure 15. Evacuation/Travel Route Fuels Treatment Areas - East

- A. Highway 63 (Pecos Canyon),
- B. Forest Road 223-Iron Gate CG
- C. Forest Road 123-Dalton Canyon,
- D. Windsor Creek access,
- E. Forest Road 122-Holy Ghost area,
- F. Macho Canyon access road.
- G. Forest Road 86-Bull Creek
- H. County Road 44A.-Lower Colonias
- Ι. Forest Road 569.-Upper Colonias
- J. Pine Forest Road-World College
- K. Chapel Road-Pendaries
- L. Highway 50-Pecos
- M. Pinon Ridge Road-Hwy 50
- N. Forest Road 263-upper Gallinas
- O. Highway 65-Porvenir Canyon / Gallinas C CC. County Road 23
- Ρ. County Road 18A-Mineral Hill area

- Q. County Road 3A.Las Dispensas
- Highway 266-Las Tusas/San R. Ignacio
- S. County Road A2 South-Las Dispensas
- Т. Highway 276-Rociada
- U. County Road 25A-Sheridan
- V. Interstate 25.
- W. Highway 3.
- X. US 84.
- Y. Highway 105
- Z. Highway 518
- AA. Highway 104
- BB. Hwy 419 w/ Harding County

# **Evacuation/Travel Route Treatments – Forested areas:** (The list is arranged in order of priority)

- A. Highway 63 (Pecos Canyon). Hazardous fuels reduction efforts along Highway 63 from Monastery Lake to the northern end of Cowles. Fuels mitigation consisting of limbing and thinning to a <u>minimum</u> of 200' wide is recommended. Extra effort should be made in the Cowles area which will help to protect the community of Grass Mountain. This entire project will benefit all the communities located off of highway 63 which are rated from HIGH to EXTREME hazard.
- B. Forest Road 223. Hazardous fuels reduction efforts along FR 223 from highway 63 to the Iron Gate campground, also incorporating FR 223A. Fuels mitigation consisting of limbing and thinning to a <u>minimum</u> of 200' wide is recommended (where steep slopes and ravines exist below the road, additional fuels reduction will be warranted). This will benefit the extreme rated Grass Mountain community.
- C. Forest Road 123. Hazardous fuels reduction efforts along FR 123 from highway 63 to the extreme rated Dalton Canyon community. Fuels mitigation consisting of limbing and thinning to a <u>minimum</u> of 200' wide is recommended.



- D. Windsor Creek access road. Hazardous fuels reduction efforts consisting of limbing and thinning to a <u>minimum</u> of 200' wide is recommended. Windsor Creek community carries a very High hazard rating.
- E. Forest Road 122. Hazardous fuels reduction efforts along the access road into the Holy Ghost area. Fuels mitigation consisting of limbing and thinning to a <u>minimum</u> of 200' wide is recommended.
- F. **Macho Canyon access road.** Hazardous fuels reduction efforts along Macho Canyon (63B). Fuels mitigation consisting of limbing and thinning to a <u>minimum</u> of 200' wide is recommended. This thinning should be connected to the completed home defensible space where available.
- G. Forest Road 86. Hazardous fuels reduction efforts along FR 86 from the town of Pecos to the northern most section of the Bull Creek community. Fuels mitigation consisting of limbing and thinning to a <u>minimum</u> of 200' wide is recommended (where steep slopes and ravines exist below the road, additional fuels reduction will be warranted). Previous fuels reduction work has been completed in the area and should be incorporated into this recommendation.

- H. **County Road 44A.** Hazardous fuels reduction efforts along County Road 44A from the town of Pecos to the VERY HIGH rated Lower Colonias community. Fuels mitigation consisting of limbing and thinning to a <u>minimum</u> of 200' wide is recommended (where steep slopes and ravines exist below the road, additional fuels reduction will be warranted).
- Forest Road 569. Hazardous fuels reduction efforts along Forest Road 569 from County Road 44A to the VERY HIGH rated Upper Colonias community. Fuels mitigation consisting of limbing and thinning to a <u>minimum</u> of 200' wide is recommended (where steep slopes and ravines exist below the road, additional fuels reduction will be warranted).
- J. Pine Forest Road. Hazardous fuels reduction efforts from County Road 11A northward to the end of Pine Forest Road. Fuels mitigation consisting of limbing and thinning to a <u>minimum</u> of 200' wide is recommended, this project should be incorporated into individual home defensible spaces where completed. The World College has completed some fuels reduction work and this thinning can build off of that. The road that circles around north of the college should have thinning efforts implemented on the uphill side (north) to a minimum of 100'. Where steep slopes and ravines exist additional fuels reduction will be warranted. These efforts will benefit the VERY HIGH rated Montezuma community and the World College.
- K. Chapel Road. Hazardous fuels reduction efforts along Chapel Road from County Road 3A north into the VERY HIGH rated Pendaries community. Some treatments have been completed in this area, ground truthing to verify the quality and then fuels mitigation consisting of limbing and thinning to a <u>minimum</u> of 200' wide is recommended (where steep slopes and ravines exist below the road, additional fuels reduction will be warranted) to complete this project.
- L. Highway 50. Hazardous fuels reduction efforts from I-25 (Santa Fe County) to the town of Pecos. Fuels mitigation consisting of limbing and thinning to a <u>minimum</u> of 200' wide is recommended (where steep slopes and ravines exist below the road, additional fuels reduction will be warranted). This will also help to protect the homes situated further to the north of this road.
- M. Pinon Ridge Road. Hazardous fuels reduction efforts from Hwy 50 northward to the end of the road. Fuels mitigation consisting of limbing and thinning to a <u>minimum</u> of 200' wide is recommended (where steep slopes and ravines exist below the road, additional fuels reduction will be warranted). This work should connect to extended defensible space of homes in the area, which will enhance this treatment. A few individual home treatments have been completed up in the northern end of the community.
- N. Forest Road 263. Hazardous fuels reduction efforts along Forest Road 263 from the upper end of the HIGH hazard rated Upper Gallinas community to the highway 65 intersection. Fuels mitigation consisting of limbing and thinning to a <u>minimum</u> of 200' wide is recommended (where steep slopes and ravines exist below the road, additional fuels reduction will be warranted). Fuels treatments have been completed in the Western Life camp area and can be incorporated into this project.

- O. Highway 65 (Porvenir Canyon / Gallinas Creek). Hazardous fuels reduction efforts along this road from the El Porvenir youth camp to the town of Montezuma. Fuels mitigation consisting of limbing and thinning to a <u>minimum</u> of 200' wide is recommended (where steep slopes and ravines exist below the road, additional fuels reduction will be warranted). Fuels treatments have been completed all along this proposed project; thorough ground truthing will need to verify the quality. This project will benefit the communities of El Porvenir and Gallinas which are both rated HIGH hazard.
- P. County Road 18A. Hazardous fuels reduction efforts along this County Road 18A which is a loop off of the 19A road. Other difficult to access primitive roads exist within this HIGH rated Mineral Hill community which should be considered. Fuels mitigation consisting of limbing and thinning to a <u>minimum</u> of 200' wide is recommended (where steep slopes and ravines exist below the road, additional fuels reduction will be warranted).
- Q. County Road 3A. Hazardous fuels reduction efforts along County Road 3A from the forest boundary to highway 518. Fuels mitigation consisting of limbing and thinning to a <u>minimum</u> of 200' wide is recommended (where steep slopes and ravines exist below the road, additional fuels reduction will be warranted). This project will benefit the communities of Pendaries (VERY HIGH rated), San Ignacio, and Las Dispensas (both HIGH rated).
- R. **Highway 266.** Hazardous fuels reduction efforts along County Highway 266 to highway 94. Fuels mitigation consisting of limbing and thinning to a <u>minimum</u> of 200' wide is recommended (where steep slopes and ravines exist below the road, additional fuels reduction will be warranted). This project will benefit the communities of San Ignacio and Las Tusas (both HIGH rated).
- S. County Road A2 (south). Hazardous fuels reduction efforts along County Road 2A from the HIGH rated town of Las Dispensas to County Road 3A. Fuels mitigation consisting of limbing and thinning to a <u>minimum</u> of 200' wide is recommended (where steep slopes and ravines exist below the road, additional fuels reduction will be warranted).
- T. Highway 276. Hazardous fuels reduction efforts along highway 276 from the town of Rociada to the forest boundary. Fuels mitigation consisting of limbing and thinning to a <u>minimum</u> of 200' wide is recommended (where steep slopes and ravines exist below the road, additional fuels reduction will be warranted). This will help to protect the HIGH rated community of Rociada Valley.
- U. County Road 25A. Hazardous fuels reduction efforts along County Road 25A through the HIGH rated community of Sheridan. Fuels mitigation consisting of limbing and thinning to a <u>minimum</u> of 200' wide is recommended (where steep slopes and ravines exist below the road, additional fuels reduction will be warranted).

### Evacuation/Travel Route Treatments – Grassland areas:

In addition to the roadside thinnings above there are many communities which will benefit from the reduction of grass fuels adjacent to the roadway. This will help to slow any fire starts and provide an improved barrier for use by suppression forces. The following roadways are recommended to be mowed during times of high fire danger. Further ground truthing and funding will dictate adding to this list.

# Specification: minimum width along each side of 15 feet, height mowed to 5 inches.

- V. Interstate 25.
- W. Highway 3.
- X. US 84.
- Y. Highway 518.
- Z. Highway 105.
- AA. Highway 104.
- BB. Hwy 419. This should be coordinated with Harding County and considered as a cross-boundary project benefiting both counties.
- CC. County Road 23.

### LANDSCAPE FUEL BREAKS

- 1. **Bull Creek Fuel Break**. In 2000, the Viveash Fire significantly altered the fuels north and west of the VERY HIGH rated Bull Creek Community. It is suggested that fuels treatments be implemented to wrap around the south side of the community. Individual home sites within the community should conduct fuels reduction thinning and defensible space treatments to compliment this fuel break recommendation.
- 2. Eastern Santa Fe National Forest, Fuel Break Connection. Major groups of fuel breaks have been completed on the eastern side of the SFNF. These fuel breaks should be connected in the future. The following communities will directly benefit from these efforts; Pendaries, San Ignacio / Las Tusas, El Porvenir, Upper Gallinas, Gallinas, and Mineral Hill which all rate at a hazard of VERY HIGH or HIGH. Individual home sites which abut Forest Service land should have defensible space treatments to complement these fuel breaks.

NOTE: Land ownership will determine the exact locations of the fuel breaks.



Figure 16. Example of a fuel break/fuel treatment on private land in the Gallinas Watershed

### GALLINAS WATERSHED THINNING **Priority Level – Very High**

An Environmental Assessment for the Gallinas Municipal Watershed Wildland-Urban Interface Project was published in January, 2004. The purpose of the project is to reduce the potential for large scale, high intensity crown fire and spread in the watershed by reducing surface fuels and opening the forest canopy. About 17,000 people in Las Vegas, New Mexico and surrounding villages depend on Gallinas Creek for their water. Gallinas Creek feeds the Peterson, Bradner and Storrie Lake reservoirs, providing a major source of municipal water (Environmental Assessment for the Gallinas Municipal Watershed Wildland-Urban Interface Project, Santa Fe National Forest, January, 2006).

There are approximately 54,000 acres that comprise the watershed, of which 33,000 acres are administered by the U.S Forest Service. Of these acres only 11,300 acres were considered available for the project after eliminating the Pecos Wilderness and the spruce-fir habitat type. The project will treat 8,169 acres. In addition there are approximately 21,000 acres of forested and non-forested lands in the watershed which are privately owned that are not covered by the Forest Service project but should be considered for treatments by New Mexico State Forestry and community cooperators such as the Tierra y Montes Soil and Water Conservation District (DN/FONSI Gallinas Municipal Watershed WUI, Santa Fe National Forest, June 21, 2006)

The project considered water quality, smoke management and potential for escaped fire as key issues. Alternative 1: Mechanical-in-place treatment was chosen as the best course of action. The project will emphasize mechanical thinning with follow up broadcast burning. In June 2006, the U.S Forest Service, Santa Fe National Forest issued a Decision Notice and a Finding of No Significant Impact. The decision was appealed, but upheld in the fall of 2006. Projects are currently underway.

### **CRITICAL INFRASTRUCTURE FUELS TREATMENTS**



Figure 17. Critical Infrastructure at Risk

 Power Line Thinnings. Priority level - High. There are over 150 miles of power lines (14 KV) within the Santa Fe National Forest in San Miguel County. The rural electric cooperative has been advised to cut any tree that can potentially fall into a power line. In the future new power lines will be required to be underground. There are additional high voltage power lines (120/230 KV) that run along Hwy I-25 from the County line to Las Vegas, to north of Tecolote and southwest to Rowe Mesa. These power lines should also be maintained to reduce fuels within their right-of-way.





2. Improvement Point Treatments. Priority Level: Moderate. This project focuses on providing point protection to well sites, radio repeater sites, schools, airports, municipal reservoirs, railroad crossings, fire stations, the State Hospital at Montezuma and other structures. Thinning to defensible space standards (zone 1 and 2) is recommended for a distance of at least three times the height of the fuels. Refer to pages 31-34 for guidelines.

### GENERAL FOREST HEALTH AND FIRE HAZARD REDUCTION TREATMENTS Priority level - High

The forests in the San Miguel County area have changed greatly due to the lack of forest fires. Since the 1900's, agencies and state and local governments have suppressed wildfires, eliminating the beneficial, low level intensity surface fires.

A healthy southwest forest can withstand natural fires and minimize damage to watersheds. However, scientific research consistently shows that southwest forests today are more susceptible to high-severity crown fires due to past fire suppression. Forests in the San Miguel County area are very dense. The majority of the trees are small and less fire resistant. Trees are so crowded that their growth is suppressed.

Federal land management agencies, New Mexico State Forestry, and community cooperators such as the Tierra y Montes Soil and Water Conservation District should continue to conduct forest and fire management projects including general fuels treatments that improve ecosystem health and lower the risk of catastrophic fire.

Forest health and fire hazard reduction treatments will vary for each specific forest cover type and site. In general forest stand densities would be reduced. Tree spacing would be irregular, with some trees in clumps. Canopy cover would be more open to slow crown fires. Tree densities would be higher on north and east facing slopes and in drainages. Densities would be lower on ridge tops. Prescribed fires and Wildfire Use fires should be encouraged. Fires would primarily be surface fires (Environmental Assessment for the Gallinas Municipal Watershed Wildland-Urban Interface Project, Santa Fe National Forest, January, 2006).

## EVACUATION/TRAVEL ROUTE IDENTIFICATION AND IMPROVEMENT

Many of the communities in the study area will benefit from the fuel treatments recommended along their access routes. Some of the communities in the study area have a single narrow access route with heavy fuel loads. It is especially important in these single access areas to remove hazardous fuels that could compromise safe access. Furthermore emergency responders are more likely to access the area if they feel that their escape route will not become compromised.

The best solution would be to have all evacuation/travel routes wide enough to safely accommodate both residents leaving the area and emergency responders entering the area. To achieve this, a combination of road side pullouts, road surface improvement, and roadside thinning of the vegetation will need to take place.

People live in inaccessible forest areas that can suddenly be threatened by wildfire. Citizens must take individual responsibility to plan their evacuation and prepare for their safety during an emergency. In the event that residents and responders alike are not able to safely escape, establishment of safety zones should be considered. Safety zones should be located in advance. The safety zone should be improved so as to accommodate a large number of people and equipment (civilians and firefighters). If this is not possible, additional safety zones should be constructed. In some areas several communities may have a need for the same safety zone. A helicopter landing zone / med-evac site should be incorporated into the safety zone (located where it can be kept secure for safety reasons). The areas will need to be well marked. Educational materials supported by public meetings will need to be generated.

Safety zones are areas of last resort and their locations should be considered carefully. The San Miguel CWPP Core Team recommends the establishment of a task force to evaluate each evacuation route and each community for safety zones. The task force should be comprised of County officials, fire, law enforcement and emergency management experts, and community members to focus on this issue.

### Evacuation/Travel Route Action Items – General:

Very High Priority: Designate potential evacuation routes and safety zones. Evacuation routes and safety zones should be marked and forested area should be reinforced with fuels treatments.

**High Priority:** Complete the rural addressing system and implement a community notification system (such as Reverse 911 or Dialogic).

High Priority: Identify potential safety zones and shelters of last resort.

**High Priority:** Plan and practice evacuations with communities, local government emergency management, law enforcement, fire departments, Red Cross and state and federal agencies. **High Priority:** Camps should develop individual evacuation plans, post them, and provide them to local law enforcement and fire departments. These plans should be included in the San Miguel County Emergency Operations Plan.

The communities that should be considered highest priority for evacuation/access route creation and/or improvement are:

- o All communities within or adjacent to Highway 63 (Pecos Canyon)
- o Bull Creek
- o Upper / Lower Colonias
- o Pendaries and Rociada Valleys
- o Upper Gallinas
- o San Ignacio / Las Dispensas
- o El Porvenir
- o Gallinas

The recommendations below contain suggestions on ways to improve the routes; such as improving the road surface, adding pull outs, signage, etc. Hazardous fuels reduction is a base recommendation and was described on pages 43-46. If it is the only recommended treatment, it is repeated briefly here.

#### **Summary of Evacuation Action Item Locations**

- 1. Highway 63 (Pecos Canyon from Monastery Lake to Cowles)
- 2. Forest Rd. 223 (Hwy 63 to Iron Gate)
- 3. Forest Rd 123 (Hwy 63 to Dalton Canyon)
- 4. Windsor Creek access road
- 5. Forest Rd 122 (Holy Ghost area)
- 6. Macho Canyon access road
- 7. Forest Rd 86 (Pecos to Bull Creek)
- 8. County Rd 44A (Pecos to Lower Colonias)
- 9. Forest Rd 569 (Upper Colonias to Co Rd 44A)
- 10. Pine Forest Road (Montezuma area)

- 11. Chapel Road (Co Rd 3A to Pendaries)
- 12. Pinon Ridge Road (from Hwy 50)
- 13. Forest Road 263 (Upper Gallinas to Hwy 65)
- 14. Highway 65 (Porvenir/Gallinas Creek)
- 15. County Road 18A (Mineral Hill area)
- 16. County Road 3A (Pendaries,San Ignacio, Las Dispensas)
- 17. Highway 266 (to Hwy 94)
- 18. County Road A2 (south) (Las Dispensas)
- 19. Highway 276 (Rociada)
- 20. County Road 25A (Sheridan)



Figure 19. Proposed Evacuation/Travel Routes

### Evacuation/Travel Route Action Items – Specifics:

- 1. **Highway 63 (Pecos Canyon).** This project focuses on efforts to create a viable evacuation/travel route along Highway 63 from Monastery Lake to the northern end of Cowles. Additional road pullouts should be constructed in areas void of significant vegetation.
  - Safety zones are recommended in:
    - The Cowles area
    - The Tres Lagunas / Terrero area
    - El Macho area

NOTE: These safety zones could be used by significant numbers of people, therefore larger acreage sites should be planned for.

- 2. Forest Road 223. This project focuses on efforts to create a viable evacuation/travel route along FR 223 from highway 63 to the Iron Gate campground. The road surface will need improving, additional road pullouts should be constructed in areas void of significant vegetation. Improve road signage made of non-combustible materials.
  - A safety zone is recommended in the Grass Mountain summer home area.
- 3. **Forest Road 123.** This project focuses on efforts to create a viable evacuation/travel route along FR 123 from highway 63 to the Dalton Canyon community. The road surface will need improving and additional road pullouts should be constructed in areas void of significant vegetation.
- 4. **Windsor Creek access road.** This project focuses on hazardous fuels reduction efforts along this road.
- 5. **Forest Road 122.** This project focuses on hazardous fuels reduction efforts along this road into the Holy Ghost area.
- 6. **Macho Canyon access road.** This project focuses on efforts to create a viable evacuation/travel route along Macho Canyon (63B). The road surface will need improving.
- 7. Forest Road 86. This project focuses on efforts to create a viable evacuation/travel route along FR 86 from the town of Pecos to the northern most section of the Bull Creek community. The road surface will need improving and additional road pullouts should be constructed in areas void of significant vegetation. Improve road signage made of non-combustible materials.
  - Safety zones are recommended in:
    - The Bull Creek meadow
    - Intersection of Cow Creek and FR 86
- 8. **County Road 44A.** This project focuses on efforts to create a viable evacuation/travel route along County Road 44A from the town of Pecos to the VERY HIGH rated Lower Colonias community. The road surface will need

improving and additional road pullouts should be constructed in areas void of significant vegetation. Improve road signage made of non-combustible materials.

- A safety zone is recommended at the intersection of County Road 44B and FR 204.
- 9. Forest Road 569. This project focuses on efforts to create a viable evacuation/travel route along Forest Road 569 from County Road 44A to the VERY HIGH rated Upper Colonias community. The road surface may need improving and additional road pullouts should be constructed in areas void of significant vegetation. Improve road signage made of non-combustible materials.
- 10. Pine Forest Road. This project focuses on efforts to create a viable evacuation/travel route along County Road 11A northward to the end of Pine Forest Road. The road surface will need improving and additional road pullouts should be constructed in areas void of significant vegetation. Improve road signage to help flow through the town of Montezuma. These efforts will benefit the VERY HIGH rated Montezuma community and the World College.
- 11. **Chapel Road.** This project focuses on efforts to create a viable evacuation/travel route along Chapel Road from County Road 3A north into the VERY HIGH rated Pendaries community. The road surface may need improving and additional road pullouts should be constructed in areas void of significant vegetation. Improve road signage made of non-combustible materials and post detailed maps showing major intersection locations to help direct evacuating residents and visitors out of the area.
- 12. **Pinon Ridge Road.** This project focuses on efforts to create a viable evacuation/travel route from Hwy 50 northward to the end of the road. The road surface will need improving and improve road signage made of non-combustible materials to aid in evacuation flow.
- 13. **Forest Road 263.** This project focuses on hazardous fuels reduction efforts along this Forest Road 263 from the upper end of the HIGH hazard rated Upper Gallinas community to the highway 65 intersection.

Note: A secondary means of egress is possible from the 263 / 65 intersection. This entails using the Forest Road 156 to Forest Road 18 which leads to highway 283 in the Mineral Hill area. This route could be useful in a few situations but is not recommended due to the route being more hazardous than traveling down the Gallinas Canyon road.

- 14. **Highway 65 (Porvenir Canyon / Gallinas Creek).** This project focuses on efforts to create a viable evacuation/travel route. Fuels treatments have been completed all along this proposed project. This project will benefit the communities of El Porvenir and Gallinas both HIGH hazard rated.
- 15. **County Road 18A.** This project focuses on efforts to create a viable evacuation/travel route along this County Road 18A which is a loop off of the 19A road. The road surface will need improving and additional road pullouts should be constructed in areas void of significant vegetation. Improve road signage to help flow out of the area.

- 16. County Road 3A. This project focuses on efforts to create a viable evacuation/travel route along County Road 3A from the forest boundary to highway 518. The road surface will need improving and additional road pullouts should be constructed in areas void of significant vegetation. Improve road signage to help flow from the area. This project will benefit the communities of Pendaries (VERY HIGH rated), San Ignacio, and Las Dispensas (both HIGH rated).
- 17. **Highway 266.** This project focuses on efforts to create a viable evacuation/travel route along County Highway 266 to Highway 94 by reducing hazardous fuels. This project will benefit the communities of San Ignacio and Las Tusas (both HIGH rated).
- 18. County Road A2 (south). This project focuses on efforts to create a viable evacuation/travel route along County Road 2A from the HIGH rated town of Las Dispensas to County Road 3A. The road surface will need improving and additional road pullouts should be constructed in areas void of significant vegetation. Improve road signage to help flow from the area.
- 19. **Highway 276.** This project focuses on efforts to create a viable evacuation/travel route along highway 276 from the town of Rociada to the Forest boundary by reducing fuels. Improve road signage to help flow from the area.
- 20. **County Road 25A.** This project focuses on efforts to create a viable evacuation/travel route along County Road 25A through the HIGH rated community of Sheridan. The southern portion of the road will need to be connected to US 84. The road surface will need improving and additional road pullouts should be constructed in areas void of significant vegetation. Improve road signage to help flow in both directions.

### **Other Evacuation/Travel Route Recommendations**

- In order to reduce conflicts between evacuating citizens and incoming responders, it is desirable to have nearby evacuation centers for citizens and staging areas for fire resources. Evacuation centers should include heated buildings with facilities large enough to handle the population. Schools and churches are usually ideal for this purpose. Fire staging areas should contain large safety zones, a good view in the direction of the fire, easy access and turnarounds for large apparatus, a significant fuel break between the fire and the escape route, topography conducive to radio communications, and access to water. Local responders are encouraged to preplan the use of potential staging areas with property owners.
- □ Identify and pre-plan alternate escape routes and staging areas.
- Perform response drills to determine the timing and effectiveness of fire resource staging areas.
- □ Educate citizens on the proper escape routes, and evacuation centers to use in the event of an evacuation.
- □ Use a community notification system or call lists to warn residents when an evacuation may be necessary. Notification should also be carried out by local

television and radio stations. Any existing disaster notification systems, such as tornado warnings, should be expanded to include wildfire notifications.

- □ Emergency management personnel should be included in the development of preplans for citizen evacuation.
- Post placards clearly marking "fire escape route" or similar wording. This will provide functional assistance during an evacuation and communicate a constant reminder of wildfire to the community. The placards should start from the furthest point into the subdivision and work outward. These placards greatly assist responding firefighters from other agencies who may not be familiar with the layout of the subdivision.

## LOCAL PREPAREDNESS AND FIREFIGHTING CAPABILITIES

San Miguel County fire suppression is provided by a mixture of rural fire departments, town/city fire departments, New Mexico State Forestry, and federal land management agencies. Coordination between agencies with regards to firefighter training and communications will greatly enhance the safety and effectiveness during fire suppression.



San Miguel County should take the lead and strive to coordinate and support the

following recommendations. Land management agencies within the County have the ability to call upon agency experts from outside the County and should be viewed as a valuable resource before, during, and after wildfire incidents.

### Training Action Items:

**High Priority:** Develop a regional training program to facilitate local training for structural and wildland firefighting. This should be coordinated by San Miguel County.

**High Priority:** Work with state and federal agencies to conduct basic wildfire suppression and multi-agency ICS training.

- I-100 (basic ICS) for all firefighters and I-200 (Intermediate ICS) for all fire officers. National Incident Management System (NIMS) courses could satisfy these recommendations. See www.fema.gov for more information.
- A San Miguel County tailored Basic Wildland Firefighting and Fire Behavior (NWCG S-130/190) for all city and County fire department members.
- At a minimum, have the safety and structure triage units from S-215 Fire Operations in the Urban Interface presented to all city and County fire department members.
- Provide a NWCG S-234 Firing Operations course to city and County fire department members.
- Organize and facilitate table-top or sand-table wildfire exercises with all County agencies attending.
- Organize and facilitate an annual wildfire interface training exercise within the communities outlined in this CWPP and encourage multi-agency participation.
- Encourage personnel to participate in out-of-County training opportunities.
- Encourage personnel to participate in Federal and NMSF prescribed fire opportunities. These burns should also be scheduled on weekends so as to attract volunteer firefighter who otherwise would not be able to attend.

**High Priority:** Consider adopting "appropriate response" or indirect fire suppression tactics in remote (eastern County) areas given the threat from heavy fuel loading and lack of County resources.

**High Priority:** Continue to implement a red card fire qualifications system to promote high national standards for wildfire suppression within the County. Use a procedure that is clear and provides due process.

**High Priority:** Work with state and federal agencies to conduct the pack test and annual refresher courses that can be worked into local fire department schedules such as evenings and weekends. Recognize fitness is important and that firefighters need to practice before they qualify with the Pack Test.

**High Priority:** Train local fire departments on how to create defensible space around homes.

### Firefighter Safety Action Items:

**High Priority:** Provide minimum wildland Personal Protective Equipment (PPE) for all career and volunteer firefighters. (See NFPA Standard 1977 for requirements.)

**High Priority:** Ensure that the current fire operations personnel rehabilitation system is sufficient. At a minimum each department should have drinking water and MRE's (meals ready to eat) to support their personnel for 24-48 hours.

**High Priority:** Railroad Crossing Improvements: A number of railroad crossings exist within the HIGH rated Pecos River Valley that posses a very poor surface quality. These rough crossings could damage and possibly immobilize incoming or egressing vehicles. These crossings should be improved.

High Priority: Bridge Load Limits: Post load limits on all bridges.



### **Communications Action Items:**

Communication problems are very commonly linked to tragic results with regards to firefighter safety.

**Very High Priority:** Ensure that the County has the capability to communicate using "narrow band" technology.

High Priority: Develop a Regional Dispatch Center.

**High Priority:** Publish a list of frequencies for each fire department and list the associated channels.

**High Priority:** Consider organizing all fire department frequencies in similar configurations. Develop an inventory of radio equipment and create a list of needs for replacement and new acquisitions.

**High Priority:** Develop and publish a general communications plan for incidents that require multi-fire department response.

High Priority: Conduct communications training.

**High Priority:** Participate in the New Mexico Statewide Interoperability Communications Program to increase competitiveness for communications grants. Ensure the County is meeting statewide standards

### **Equipment Action Items:**

**High Priority:** Develop and publish a list of fire equipment by location. Develop an equipment needs and replacement list.

**High Priority:** Consider using a portion of the County fire protection gross receipts tax for bonding to support purchase of equipment. (*Note: Sandoval and Santa Fe Counties have used a similar process.*)

**High Priority:** Work with San Miguel County Road Department and New Mexico Department of Transportation to train employees, provide employees with personal protective equipment such as fire shirts and fire shelters, and mobilize equipment to fight fires that threaten life and property.

### Water Supply Action Items:

In San Miguel County, like many of the mountainous and rural areas of New Mexico, water is a critical fire suppression issue. Only a few communities have a reliable source of water via hydrants. Most of the communities are reliant on seasonal ponds and creeks. Immediately accessible water sources must always be considered to fully support fire operations.

**Very High Priority:** Need to work with community water associations to ensure new hydrant systems are adequate for fire suppression when water supply is available.

Very High Priority: Need to map existing water sources and make them known (San Miguel County GIS may have already started to map these areas).

**High Priority:** Where secondary pressurized water sources exist (golf courses, development landscaping, and other types of sprinkler systems) develop a procedure detailing how to quickly activate these systems.

**High Priority:** Develop a plan and install dry hydrant and cistern water supply systems around the County. The following list of recommendations is a start to the plan:

Community	Туре	Size
Dalton	Cistern	Small
Grass Mountain	Cistern	Small
Windsor Creek / Holy Ghost	Cistern	Small X 2
Hidden Valley	Cistern	Small
Trujillo	Cistern	Medium
Tecolotito	Cistern	Medium
SE Las Vegas	Cistern	Medium
Trementina	Cistern	Medium

Table 4. Recommended new water supply systems

**High Priority:** Ensure hydrants are operational. Test hydrants annually and guarantee that they are obstruction free and visible.



# **AREAS OF SPECIAL INTEREST**

### Introduction

In addition to residential communities, camps and recreation retreats such as the El Porvenir Church Camp, the Western Life Camp, and Camp Blue Haven have been identified as areas of special concern or interest. In some cases these areas present special problems for firefighters. These recommendations are in addition to, not in place of, other recommendations in this report concerning the community or area where these properties are located.

### Recommendations

- Coordination of these recommendations should be by the San Miguel County Fire Chief.
- Completed and proposed fuel reduction projects should be evaluated for effectiveness and updated. If a "protect in place" strategy is considered it should be evaluated and approved by all fire officials.
- Camps should develop individual evacuation plans, post them, and provide them to local law enforcement and fire departments. These plans should be included in the San Miguel County Emergency Operations Plan.
- Fire danger signage should also be posted at the entrance. The fire danger for the day should be displayed, and this information will need to be kept current. Camp personnel and participants should be provided with wildfire educational materials and made aware of the dangers associated with wildfires.
- An advanced notification system should be created to advise the church camp of a wildfire start in the area.
- Mow grass and weeds along roads to a low height of 5 inches. This should be a minimum of 10 feet from the edge of the road.
- All buildings and improvements adjacent to wildland fuels should follow the recommendations as outlined within the "Reducing Structure Ignitability" section beginning on page 31.

# GLOSSARY

The following definitions apply to terms used in the San Miguel County Community Wildfire Protection Plan.

**1 hour Timelag fuels**: Grasses, litter and duff; <1/4 inch in diameter.

**10 hour Timelag fuels**: Twigs and small stems; <sup>1</sup>/<sub>4</sub> inch to 1 inch in diameter.

100 hour Timelag fuels: Branches; 1 to 3 inches in diameter.

**1000 hour Timelag fuels**: Large stems and branches; >3 inches in diameter.

Active Crown Fire: A crown fire in which the entire fuel complex – all fuel strata – become involved, but the crowning phase remains dependent on heat released from the surface fuel strata for continued spread (also called a Running Crown Fire or Continuous Crown Fire).

**ArcGIS 9.x:** Geographic Information System (GIS) software designed to handle mapping data in a way that can be analyzed, queried, and displayed. ArcGIS is in its ninth major revision and is published by the Environmental Systems Research Institute (ESRI).

**Crown Fire (Crowning):** The movement of fire through the crowns of trees or shrubs, which may or may not be independent of the surface fire.

**Defensible Space**: An area around a structure where fuels and vegetation are modified, cleared, or reduced to slow the spread of wildfire toward or from the structure. The design and distance of the defensible space is based on fuels, topography, and the design/materials used in the construction of the structure.

**Energy Release Component:** An index of how hot a fire could burn. ERC is directly related to the 24-hour, potential worst case, total available energy within the flaming front at the head of a fire.

**Extended Defensible Space** (also known as Zone 3): A defensible space area where treatment is continued beyond the minimum boundary. This zone focuses on forest management with fuels reduction being a secondary consideration.

**Fine Fuels**: Fuels that are less than <sup>1</sup>/<sub>4</sub> inch in diameter such as grass, leaves, draped pine needles, fern, tree moss, and some kinds of slash which, when dry, ignite readily and are consumed rapidly.

**Fire Behavior Potential**: The expected severity of a wildland fire expressed as the rate of spread, the level of crown fire activity, and flame length. Fire Behavior Potential is derived from fire behavior modeling programs using the following inputs: fuels, canopy cover, historical weather averages, elevation, slope, and aspect.

**Fire Danger**: Not used as a technical term in this document due to various and nebulous meanings that have been historically applied.

**Fire Hazard**: Given an ignition, the likelihood and severity of Fire Outcomes (Fire Effects) that result in damage to people, property, and/or the environment. Fire Hazard is derived from the Community Assessment and the Fire Behavior Potential.

**Fire Mitigation**: Any action designed to decrease the likelihood of an ignition, reduce Fire Behavior Potential, or to protect property from the impact of undesirable Fire Outcomes.

**Fire Outcomes (aka Fire Effects)**: A description of the expected effects of a wildfire on people, property, and/or the environment based on the Fire Behavior Potential and physical presence of Values at Risk. Outcomes can be desirable as well as undesirable.

**Fire Risk**: The probability that an ignition will occur in an area with potential for damaging effects to people, property, and/or the environment. Risk is based primarily on historical ignitions data.

**Flagged Addressing**: A term describing the placement of multiple addresses on a single sign, servicing multiple structures located on a common access.

**FlamMap:** A software package created by the Joint Fire Sciences Program, Rocky Mountain Research Station. The software uses mapped environmental data such as Elevation, Aspect, Slope, and Fuel Model, along with fuel moisture and wind information, to generate predicted fire behavior characteristics such as Flame Length, Crown Fire Activity, and Spread Rate.

**Flame Length**: The distance between the flame tip and the midpoint of the flame depth at the base of the flame (generally the ground surface) – an indicator of fire intensity.

**Fuel break**: A natural or constructed discontinuity in a fuel profile used to isolate, stop, or reduce the spread of fire. Fuelbreaks may also make retardant lines more effective and serve as control lines for fire suppression actions. Fuel breaks in the WUI are designed to limit the spread and intensity of crown fire activity.

**ICP (Incident Command Post):** The base camp and command center from which fire suppression operations are directed.

**ISO (Insurance Standards Office):** A leading source of risk information to insurance companies. ISO provides fire risk information in the form of ratings used by insurance companies to price fire insurance products to property owners.

**Jackpot Fuels:** a large concentration of discontinuous fuels in a given area such as a slash pile.

**Passive Crown Fire:** a crown fire in which individual or small groups of trees torch out (candle), but solid flaming in the canopy fuels cannot be maintained except for short periods.
**Slash:** Debris left after logging, pruning, thinning, or brush cutting; includes logs, chips, bark, branches, stumps, and broken understory trees or brush.

**Spotting**: Behavior of a fire producing sparks or embers that are carried by the wind and start new fires beyond the zone of direct ignition by the main fire.

**Structural Triage:** The process of identifying, sorting, and committing resources to a specific structure.

**Surface Fire:** A fire that burns on the surface litter, debris, and small vegetation on the ground.

**Timelag**: Time needed under specified conditions for a fuel particle to lose 63 percent of the difference between its initial moisture content and its equilibrium moisture content.

Values at Risk: People, property, ecological elements, and other human and intrinsic values within the project area. Values at Risk are identified by inhabitants as important to the way of life of the study area and are specifically susceptible to damage from undesirable fire outcomes.

**WHR (Community Wildfire Hazard Rating** *also known as* **Community Assessment)**: A fifty-point scale analysis designed to identify factors which increase the potential for and/or severity of undesirable fire outcomes in WUI communities.

**WUI (Wildland Urban Interface)**: The line, area, or zone where structures and other human development meet or intermingle with undeveloped wildland or vegetative fuels. Sometimes referred to as Urban Wildland Interface, or UWI.