

San Miguel County All Hazard Mitigation Plan

2011



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INTRODUCTION

The San Miguel County All Hazard Mitigation Plan was created to reduce and eliminate losses from natural and manmade hazard events and to better protect the people and property of County from the effects of hazard events. The towns of Mountain Village, Norwood, Ophir, Sawpit and Telluride, other county special districts, the public and the fire protection districts of Egnar, Telluride and Norwood all participated in the creation of this document.

This document is intentionally written so that all stakeholders can understand more about the County's hazard risks and mitigation strategies. As a result of reading this, we hope that readers will recognize that mitigation responsibility rests with everyone – not just with county and other public agencies. We encourage people to do mitigation planning at every level – at home, in the workplace and in their communities.

This plan was also developed to allow San Miguel County and its participating jurisdictions to be eligible for certain federal disaster assistance, specifically, the Federal Emergency Management Agency's (FEMA) Hazard Mitigation Grant Program (HMGP) and Pre-Disaster Mitigation program, as well as earning credits for the National Flood Insurance Program's Community Rating System. This hazard mitigation plan documents the multi-jurisdictional, multi-hazard mitigation planning process, which is intended to meet the requirements of the Federal Disaster Act of 2000.

The San Miguel County All Hazard Mitigation Plan is considered a living document that should be revisited on a regular basis for updates, in the event of a hazard related disaster and if priorities should change. A copy of this document and other comprehensive plans relevant to this document are available on the San Miguel County website at www.sanmiguelcounty.org/plans.

BACKGROUND

Hazard mitigation is defined by FEMA as “any sustained action taken to reduce or eliminate long-term risk to human life and property from a hazard event.” On average, each dollar spent on mitigation saves society an average of \$4 in avoided future losses in addition to saving lives and preventing injuries (National Institute of Building Science Multi-Hazard Mitigation Council 2005).

The rising costs of natural and human-caused disasters at the end of the 20th century led many leaders to consider how to better protect people and their communities. Congress passed the Disaster Mitigation Act of 2000 to establish a unified national hazard mitigation program. The Disaster Mitigation Act amended the Robert T. Stafford Disaster Relief and Emergency Assistance Act of 1988 (Stafford Act), which in turn had amended the Disaster Relief Act of 1974. The Disaster Mitigation Act placed new emphasis on hazard mitigation planning in state and local units of government, requiring adoption of mitigation plans as a prerequisite for certain assistance programs.

A multi-hazard or “All-Hazards” approach to mitigation planning encompasses both natural and manmade hazards. The Colorado Division of Emergency Management (CDEM) and FEMA have a goal for all communities within the state of Colorado to establish local hazard mitigation plans as a means to reduce and mitigate future losses from natural or man-made hazard events and update these plans regularly at five year increments.

JURISDICTION PROFILES

SAN MIGUEL COUNTY



LOCATION, TOPOGRAPHY AND ENVIRONMENTAL FEATURES

San Miguel County is located in Southwestern Colorado, approximately 360 miles SW of Denver. The County is approximately 1,287 square miles that ranges from southwestern semi-arid desert to high alpine mountains. The County has five designated planning regions as defined in the County's Comprehensive Development Plan: the Telluride Regional Area, the Telluride/Ophir High Country Area, the San Miguel Canyon, the West End and Wright's Mesa. There are five incorporated areas within San Miguel County: Telluride, Mountain Village, Ophir, Sawpit and Norwood. In addition, there are also several clustered development areas, subdivisions and/or wildland-urban interface areas within the County.

COUNTY PROFILE AND DEVELOPMENT TRENDS

The town of Telluride, which serves as the county seat, is approximately 65 miles from the nearest cities of any size, and therefore serves as a hub for the smaller towns within the County. San Miguel County has two major highways which serve as the major transportation routes for motorists and freight. Although historically present, there is no railroad service in the County. San Miguel's main economic bases are tourism, ranching, and recreation. San Miguel hosts one of Colorado's major ski areas at Telluride/Mountain Village.

San Miguel County has a regional airport with daily commercial flights throughout the year which increase during the height of ski season. The elevation of Telluride Regional Airport is 9078 feet above sea level. Since the 2005 All Hazard Mitigation Plan was developed, the Telluride Airport has undergone some significant changes that have improved safety and accessibility for larger planes. Construction in 2009 reduced the runway gradient and in 2010 the airport installed a Material Arresting Systems (EMAS) and widened the safety areas on each side of the runway to 250 feet from the runway centerline. The Airport also added a new 1500-gallon Aircraft Rescue & Firefighting vehicle to its emergency response equipment.

The towns of Telluride, Mountain Village, Ophir, Sawpit and Norwood serve as hubs for the County as well as several small unincorporated communities such as Egnar, Lawson Hill, Telluride Ski Ranches, Trout Lake, San Juan Vista, The Bluffs, Wilson Mesa, Dry Creek, Aldasoro Ranches, Placerville, Miramonte Ranches, Slick Rock and Egnar. Many of these communities are situated next to Wilderness Areas, Forest Service and BLM lands. The entire County population as of the 2000 Census was 6,594 persons, 2,907 of which live in unincorporated areas. The 2009 Census estimated that the County population will be 7,558.

Additionally, the County is a tourist destination and has an estimated peak season population of almost 15,000. Population increases are most likely to occur during the three months of the summer tourism season, four months of hunting season and the five months of the ski season.

San Miguel County also hosts many events which bring thousands of visitors to the Town of Telluride and the Mountain Village. Large festival events such as the Film Festival, Bluegrass Festival and Blues and Brews; ski meets, races and events, the San Miguel Basin Fair and Rodeo and Telluride's 4th of July parade and fireworks display are population surge events. Across the county, various bike races and runs are also held throughout the summer. These are just a few of the many other activities and events that attract people to the area.

San Miguel County has over 800 miles of maintained state highways and county roads, not including many more miles of trails and bike paths. The county has over 700 miles of waterways and has combined water storage capacity of approximately 21,421 acre-feet in reservoirs, dams and lakes. The San Miguel and the Dolores Rivers are the major rivers in the County, into which numerous creeks, streams and ditches empty.

San Miguel's water supply varies from reservoir storage to wells. The Town of Telluride is supplied by the Stillwell and Mill Creek water treatment facilities. The Mountain Village water supply is provided by wells. Some of the remote subdivisions are served by independent wells and others by central systems supplied by wells or reservoirs. Sewage for both Telluride and Mountain Village is processed by the Telluride Regional Wastewater Treatment facility at Society Turn. The Town of Norwood's water is

supplied by Gurley Reservoir and Lone Cone Mountain, known locally as 'The Lone Cone.' Sewage from the town of Norwood is processed by the town's sewer treatment plant.

The County's Environmental Health Office issues septic tank permits that comply with state guidelines. Ground water contamination from individual sewage disposal systems, typically consisting of septic tanks and leach fields, is controlled through a permit system that incorporates soil test pits, percolation (perk) tests and compliance with state mandated setback requirements.

Of the 1,287 square miles of land within San Miguel County, about 66% are public lands and are controlled by agencies like the US Forest Service, Bureau of Land Management, Bureau of Reclamation, Colorado State Land Board or Division of Wildlife.

San Miguel County attracts outdoor enthusiasts of all types. Summer heat is moderated by higher elevations and proximity to mountain ranges which allow for seasonal monsoonal weather patterns. Winter brings snow which tempts skiers, snowmobilers and winter sport participants. Besides permanent residents, there are many seasonal homes within the County which are occupied only part of the year. Many homes are built close to amenities and major transportation routes, while others are in extremely remote locations, often near wilderness, Forest Service or BLM lands.

San Miguel County's growing season is relatively short, making the climate not conducive for growing produce outdoors; however, the area does produce a hay crop which relies heavily on water availability from snowpack spring run-off. There are still many large ranches in the County and hay is grown for the purpose of feeding the local livestock.

SAN MIGUEL COUNTY LAND USE CODES

The unincorporated areas of San Miguel County are zoned through the County's Land Use Code. The current Code was adopted in 1990 to better manage the impact of growth. There are approximately 146 subdivisions in San Miguel County. The incorporated towns within the County have enacted zoning and other land use regulations for development within their respective jurisdictions. The following table outlines all county land use codes in use and the percentage of the county affected by the respective land use code.

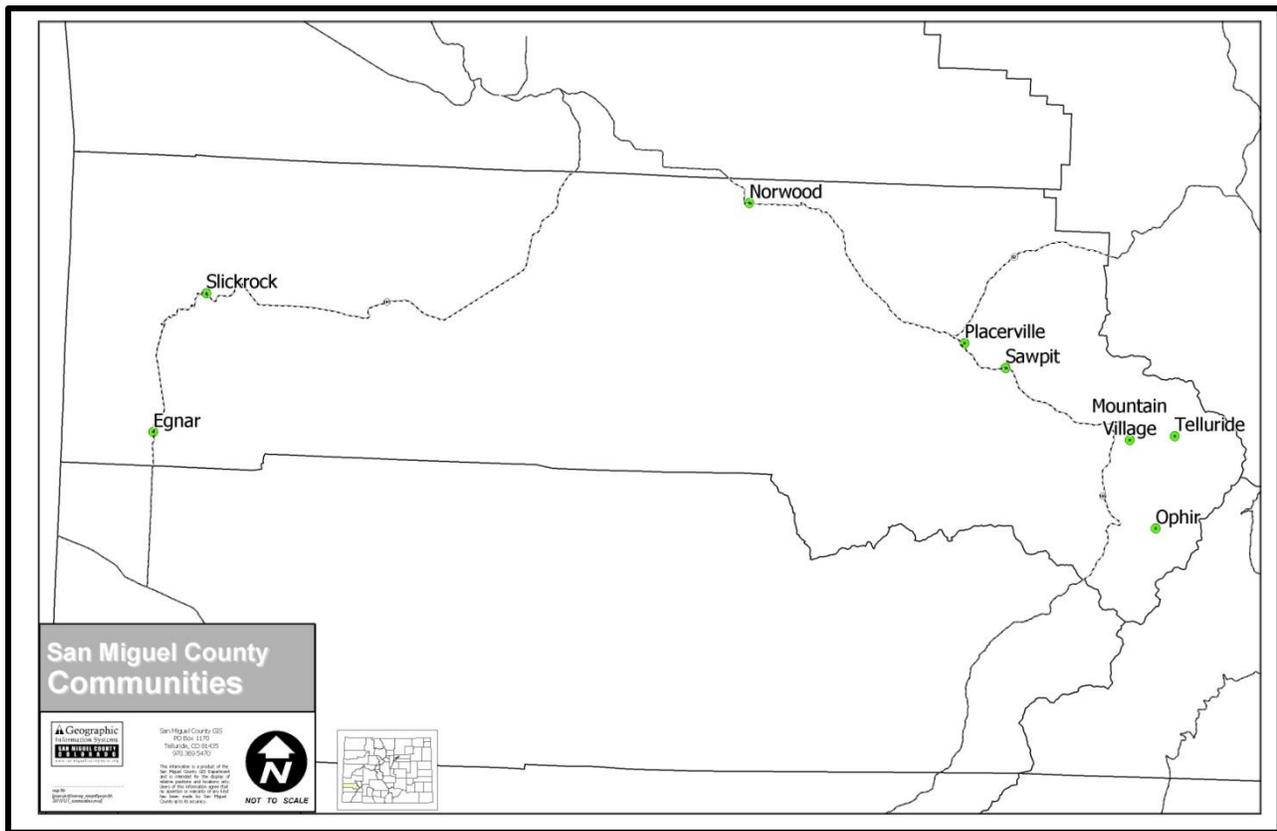
Table 1 County Land Use Codes in Use

Land Use Code	Description	Acres	% of County
AHPUD - Affordable Housing PUD	Section 5-305	197	0.024
AR-1 - Accommodations & Recreation	Not in current code	<1	0
AR-2 - Accommodations & Recreation	Not in current code	5	0.001
F - Forestry, Agriculture & Open	Section 5-307	333837	40.413
HC - Heavy Commercial	Section 5-308	14	0.002
HCA - High Country Area	Section 5-321	26869	3.253
I - Low Intensity Industrial	Section 5-309	50	0.006
LD - Low Density	Section 5-304	2916	0.353
MD - Medium Density	Section 5-303	543	0.066
MH - Mobile Home	Section 5-312	199	0.024
OS - Open Space	Section 5-314	792	0.096
P – Park	Section 5-313	12	0.002
PC - Placerville Commercial	Section 5-311	7	0.001
PR - Placerville Residential	Section 5-310	24	0.003
PUB – Public	Section 5-315	319	0.039
PUD - Planned Unit Development	Not in current code	1089	0.132
PUDR - Planned Unit Development Reserve	Section 5-317	233	0.028
R- Single-family Residential	Section 5-306	187	0.023
RG - Rangeland Grazing	Section 5-318	6987	0.846
Split - has two zone districts		311	0.038
TC - Town Commercial	Not in current code	4	0.001
WE - West End	Section 5-320	411000	49.754
WM - Wright's Mesa	Section 5-319	36923	4.47

San Miguel County has experienced 80.5% population growth since 1990 (Source: State of Colorado Natural Hazards Mitigation Plan, 2004). The majority of the development and growth has been in the East County region, primarily in the box canyon formed by the San Miguel River where the town of Telluride lies. The nature of this dramatic and scenic steep sided valley has resulted in focused development pressures since the late 1980's. While there is significant growth within San Miguel County, the County is managing growth

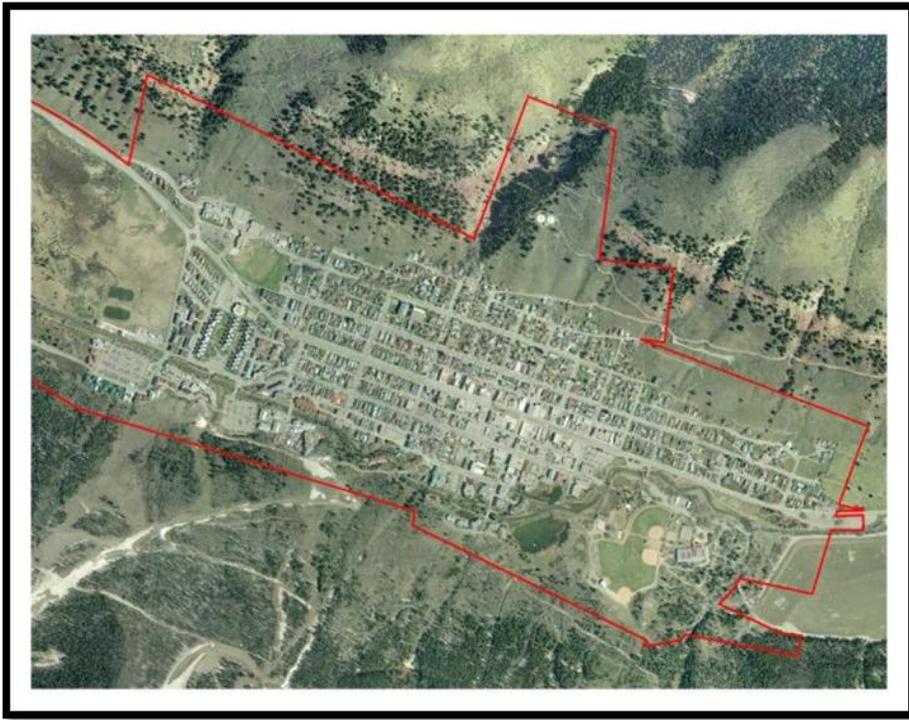
so as not to increase vulnerability to hazards. These measures are discussed further in the Capability Assessment section of this plan. Additional details on projected growth and development, and growth management can be found in the *Telluride Regional Area Master Plan and the San Miguel County Comprehensive Development Plan*. Because of the large amount of publicly owned land within the County, some growth and expansion constraints are already in place. The limited availability of private land, overall remoteness of the County, presence of the Telluride Ski Resort and scenic splendor has led to a higher than normal cost of living in the County, which is especially noticeable near the Telluride Regional Area. This has contributed to an increase in the number of commuters that live outside the region. Many commute to work in Telluride over mountain passes from neighboring Ouray, Montrose, and Dolores Counties.

INCORPORATED AREAS



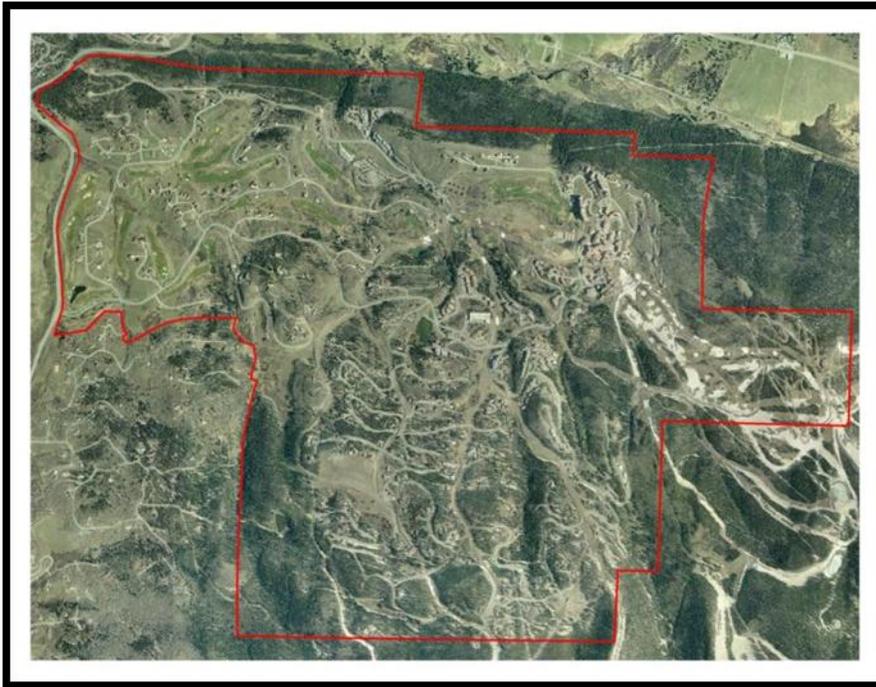
TELLURIDE

The Town of Telluride is the County seat for San Miguel County and is located at the beginning of the San Miguel River. The Town is comprised of roughly fifty square blocks and according to 2009 census information the town is estimated to have 2400 residents. Telluride Elementary, Middle School and High School have students from the entire county, although private education opportunities do exist. The three-mile entrance spur of Highway 145 becomes Colorado Avenue, the main street of the commercial core. The town of Telluride is rich in historically significant architecture, open space, and traditional design elements. Tourism brought by historical significance and summer/ winter recreation opportunities drives the economy in Telluride.



MOUNTAIN VILLAGE

The Town of Mountain Village is located just over the mountain from the Town of Telluride and serves as the main resort area for the Telluride Ski Area. The Town of Mountain Village in association with the homeowners association operate and manage the Gondola, which serves as free transportation between Telluride and Mtn. Village. Many homes in Mountain Village serve as vacation or second homes. The 2009 Census estimated that the population in Mtn. Village was approximately 1389 people. The Ski Resort, mountain lodges and hotels are significant contributors to Mountain Village's economy.



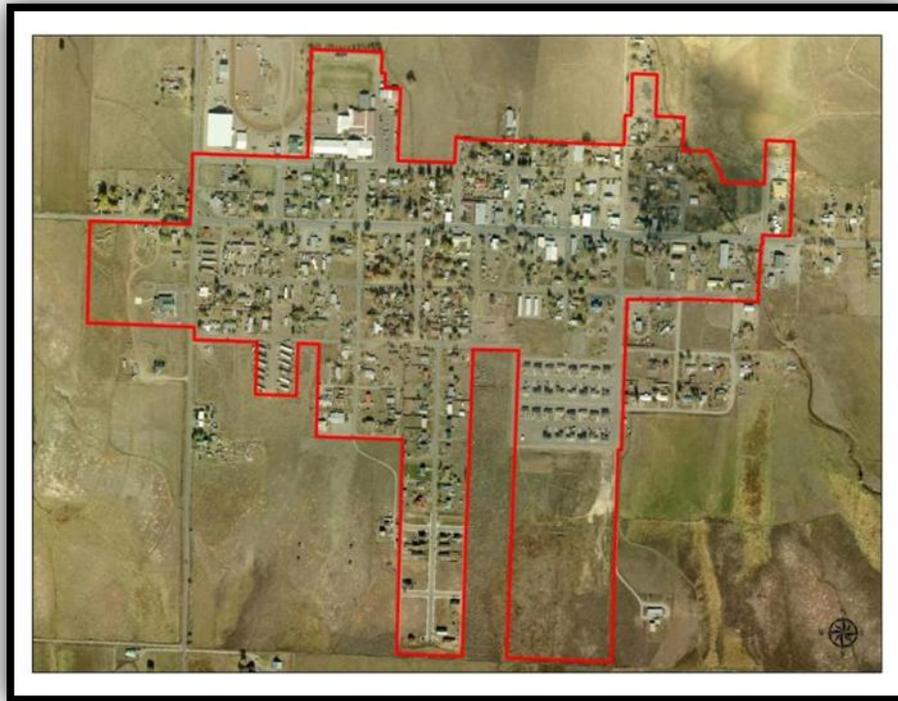
OPHIR

The town of Ophir is a small high mountain community that offers residents a secluded lifestyle. The road that leads to Ophir off Hwy 145 is often closed in the winter due to avalanches that block access and occasionally knock out power lines. Ophir’s population was estimated to be 128 by 2009 Census information. Most Ophir residents commute to the towns of Telluride and Mountain Village to work and purchase commodities.



NORWOOD

The Town of Norwood is located above the San Miguel River Canyon on Wright's Mesa. Norwood's main industries are ranching and tourism. Norwood is the home of the County's Fair Grounds, which hosts a major Fair and Rodeo every July and an annual Horse Racing event each June. The 2009 Census estimated that Norwood's population was 460 people. The Norwood Elementary, Middle and High Schools attract students from all around the County and even neighboring Montrose County.

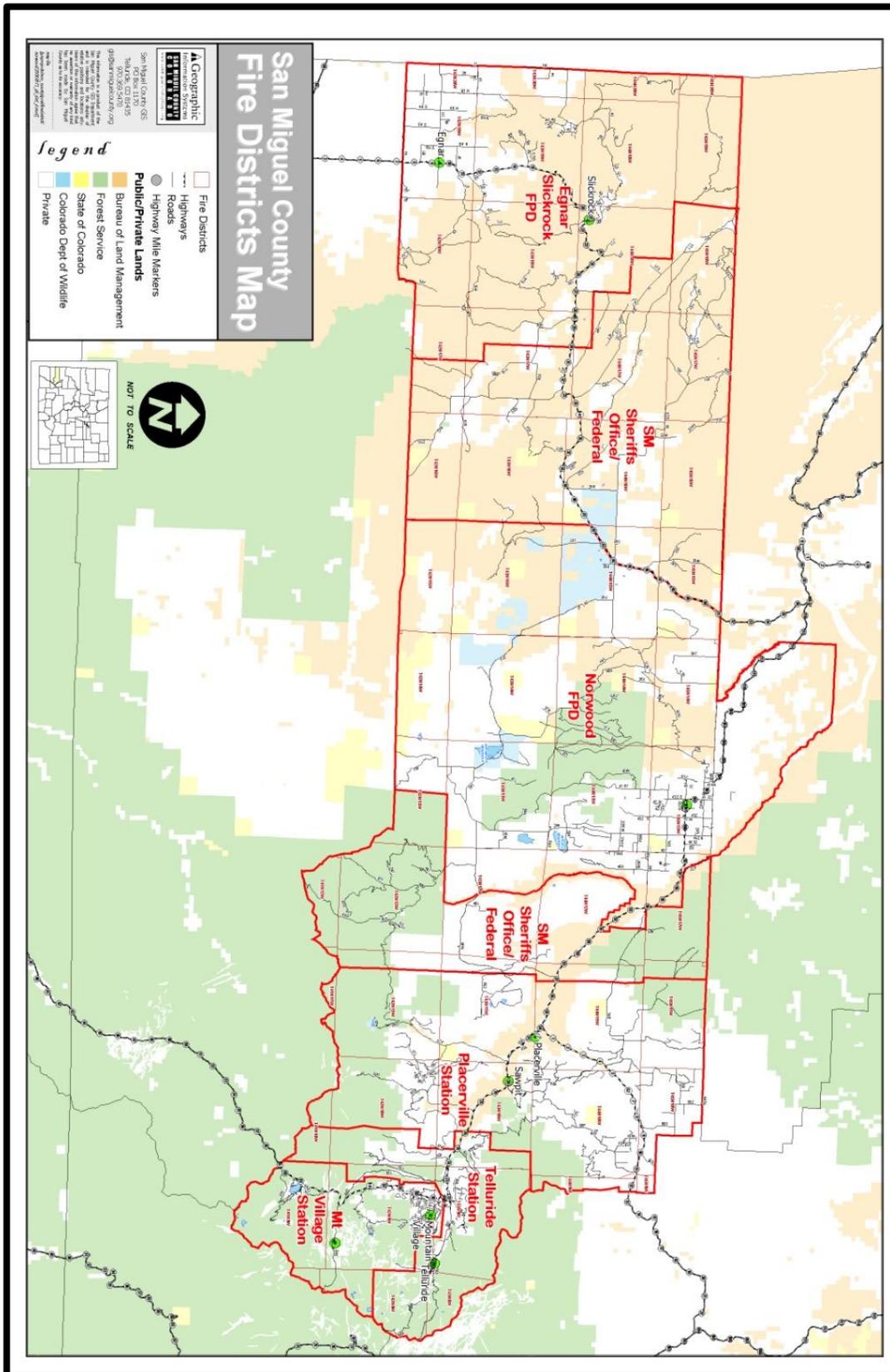


SAWPIT

Sawpit is located on the San Miguel River just a few miles downstream from the Town of Telluride. Residents rely on the Towns of Telluride, Mountain Village and other surrounding communities for job opportunities. There is a small general store and gas station located just off of HWY 145. The 2009 Census estimated that 23 people permanently reside in the town of Sawpit.

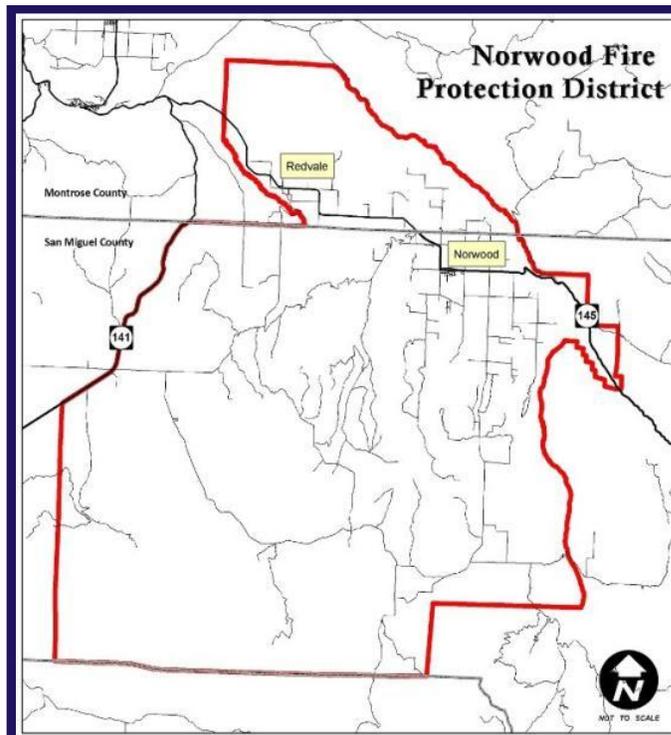


FIRE PROTECTION DISTRICTS



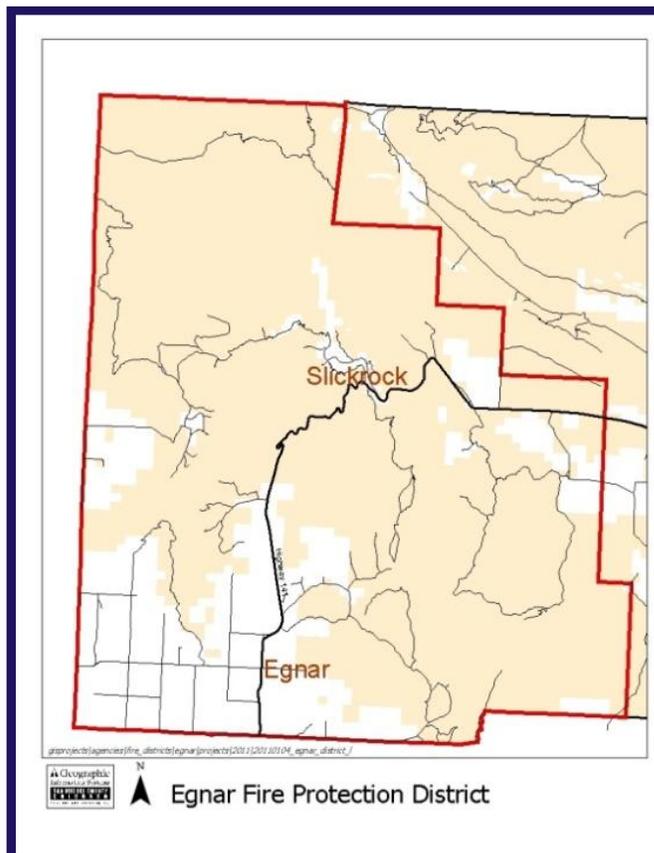
NORWOOD FIRE PROTECTION DISTRICT

The Norwood Fire Protection District was established in 1953 and originally consisted of 70 square miles around the towns of Norwood and Redvale. In 2008 the district was expanded to an area of 380 square miles. The district serves a population of approximately 2,500 in south central Montrose County and central San Miguel County. A five member elected board of directors oversees the operation and budgets for the Norwood ambulance and Norwood fire rescue.



EGNAR/SLICK ROCK FIRE PROTECTION DISTRICT

The Egnar-Slickrock Volunteer Fire Department was formed in the late 1970s to serve the west end of San Miguel County adjacent to Dolores County to the south and the Utah state line to the west. Once a thriving little town serving the uranium and copper mines of Disappointment Valley, the Dolores River corridor and the northeastern edge of the Great Sage Plain, Egnar now is a quiet agricultural community disbursed across 350 square miles of remote farmland, high desert valleys and canyon country. Some portions of ESVFD's district can only be accessed from Utah. Twenty-four volunteer firefighters and two volunteer EMTs comprise ESVFD team. The department has two stations covering the district. The main station is located in Egnar. Station two serves the Slickrock area. Approximately 15 active volunteers service the district.



THE PLANNING PROCESS

BACKGROUND

The original San Miguel County All Hazard Mitigation Plan was completed in 2005. To assist in the update of the plan, San Miguel County has an established All Hazard Planning Group (AHPG) which is made up of County stakeholders, jurisdictional representatives, special district representatives and other key players. The County Emergency Management Coordinator (EMC) began the planning process as early as June 2010 to update the existing plan. The EMC met with State Mitigation Specialists from CDEM to discuss the new requirements for the planning process update to the current plan. A grant was successfully obtained from The Colorado Department of Emergency Management’s State Hazard Mitigation Grant program to fund hiring a temporary employee to assist in updating the plan.

During the initial planning meeting, the Planning Group established the planning process that would guide the County and its stakeholders through meeting all of the necessary plan requirements. The original plan development was facilitated by AMEC Earth and Environmental in 2005. The AHPG decided that a revised version of the original plan’s process would be used in the update of the plan. This document was modified to better fit the current FEMA planning requirements and County objectives. Each section of the 2005 plan was revised during this planning process to reflect current data.

PLANNING REQUIREMENTS

In the following table you will find information on both FEMA’s 4-Phase Planning Process and San Miguel County’s modified planning process. The planning process on the *left* correlates with the planning steps, on the *right*, that San Miguel County developed to help guide the development of this document.

FEMA’s 4 Phase Planning Process	SMC’s Modified Planning Process
1. Organize Resources 201.6(c)(1) 201.6(a)(3) 201.6(b)(2)&(3) 201.6(b)(1)	Organize Resources 1. Organize the Planning Effort 2. Include all Jurisdictions 3. Coordinate with other Departments & Agencies 4. Involve the Public
2. Asses Risks 201.6(c)(i) 201.6(c)(ii)	Asses Risks 5. Identify the Hazards 6. Review existing capabilities and assess vulnerability
3. Develop the Mitigation Plan 201.6(c)(3)(i) 201.6(c)(3)(ii) 201.6(c)(3)(iii)	Develop the Mitigation Plan 7. Set goals 8. Review possible mitigation actions 9. Draft Implementation Action Plan
4. Implement the Plan and Monitor Progress 201.6(c)(5) 201.6(c)(4)	Implement the Plan and Monitor Progress 10. Adopt the plan 11. Implement, Evaluate and Revise the Plan

ORGANIZE RESOURCES

Requirement 201.6(c)(1)

[The plan shall document] the planning process used to develop the plan, including how it was prepared, who was involved in the process, and how the public was involved.

San Miguel County originally finalized the All Hazards Mitigation plan in 2005. The planning process began in 2004 with county officials and emergency responders reviewing and updating the San Miguel County Emergency Operations Plan and then beginning the planning process for the All-Hazards Plan. Representatives from the County's Fire Departments, EMS, local law enforcement, a citizen member and the Emergency Management Coordinator participated in the planning process. Additional planning members included the County Administrator, County Attorney, Planning Director, County Road and Bridge Department and representatives from the towns of Telluride, Mountain Village, Ophir, Sawpit and Norwood. Federal and State partners such as the US Forest Service and Colorado State Forest Service also participated.

To begin the process of organizing resources locally, the EMC presented information on the new requirements for the update to the current plan during the August 28th, 2010 general meeting of the All Hazard Planning Group. Next, a formal letter was sent out in September to an expanded list of all potential stakeholders, to include local government representatives, schools and all special districts. The letter invited these stakeholders to participate in the planning process beginning with the kick off meeting to be held Oct 7th. A copy of the letter and the list of all invited stakeholders can be found in [Appendix B](#) in the Planning Documents section.

AHPG OCTOBER 7TH MEETING

The San Miguel County's Emergency Management Coordinator and the Planning Coordinator recapped the new requirements for updating the All Hazard Mitigation Plan, updated the 2005 project list and facilitated updating the risk perception process used in the previous plan. The main purpose for this meeting was to discuss the status of previously identified mitigation actions, gather information on any existing plans within each jurisdiction and complete a risk perception worksheet.

The worksheet lists each identified hazard and asks each participating stakeholder to rank each hazard's likelihood of future occurrence and severity. The AHPG also discussed other County documents that will aid in the update of this plan and how this plan will be incorporated into other County planning efforts. Additionally, the AHPG brought up two additional hazards for consideration in this plan that was not previously identified in the existing plan (critical infrastructure failure and extreme winter weather).

Another topic that was reviewed and discussed at the planning meeting was the role that the AHPG would have during the planning process. The AHPG's role was to:

- Meet the 2000 Disaster Mitigation Act's (DMA) regulations for serving as an all-hazard planning Group (AHPG).
- Facilitate the planning process and assist in facilitating the required public input process both during and after the drafting stage.

- Participate in the identification and prioritization of mitigation actions.
- Meet the DMA planning regulations regarding the participation of each local government within the planning area including facilitating the formal adoption of the plan in each jurisdiction.
- Assist in determining the areas within the planning area where levels of risk differ.

NOVEMBER 10TH MEETING

The AHPG reviewed the results from the risk assessment worksheets that were completed during the previous planning meeting. Some of the risk perceptions for some of the identified hazards were reviewed and changed after further consideration. The AHPG also discussed the Goals and Objectives from the previous 2005 planning effort and recognized that 28 out of the 30 previously identified mitigation actions have either been completed or are in progress.

The County Emergency Management Coordinator and the Planning Coordinator presented the requirements pertaining to this part of the planning process including the NFIP requirements. The AHPG decided that the overarching goals from the 2005 plan were to remain the goals for this planning effort. They also discussed that while the goals will remain the same, some of the planning objectives will change. Instead of identifying planning objectives, the AHPG felt that if critical mitigation actions were identified first, then they could be grouped to fit into the corresponding objectives.

With the previous mitigation actions in mind, the list of hazards and the corresponding risk perception for each jurisdiction, AHPG members were asked to brainstorm ideas for either the continuation of previously identified ongoing mitigation actions and for new mitigation actions. The group was provided with a list of potential mitigation actions and was asked to indicate at least one mitigation action for each of the high and medium risk hazards for their jurisdiction and for the County as a whole. The list was compiled by the Planning Coordinator and distributed back to the AHPG for the prioritization process.

The list of mitigation actions was formatted into a table that allowed each member of the AHPG to indicate whether each hazard met all of the STAPLEE decision requirements and whether the project was of high, medium or low priority for the jurisdiction.

San Miguel County recently completed their Community Wildfire Protection Plan. This plan indicates high risk wildfire areas and provides prescriptions or mitigation actions that serve to lower the wildfire risk. Many of the AHPG members indicated carrying out the prescribed wildfire mitigation projects as one of their mitigation actions in this plan. The CWPP Annual Work Plan contains specific mitigation actions and can be found in Appendix D.

JANUARY 6TH MEETING

The January 6th meeting was used as a work session for the All Hazard Planning Group. Planning status was discussed and the proposed public information process was outlined. Stakeholders worked on prioritizing their jurisdictions mitigation actions as well as prioritizing the overall County mitigation actions. They also worked on Mitigation action project descriptions. See [Mitigation Actions](#)

COORDINATION

Requirement 201.6(a)(3)

Multi-jurisdictional plans may be accepted as appropriate; as long as each jurisdiction has participated in the process...State wide plans will not be accepted as multi-jurisdictional plans.

Requirement 201.6(b)(2)

In order to Develop a more comprehensive approach to reducing the effects of natural disasters, the planning process shall include: An opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, and agencies that have the authority to regulate development, as well as businesses, academia and other private and non-profit interests to be involved in the planning process.

Requirement 201.6(b)(3):

In order to develop a more comprehensive approach to reducing the effects of natural disasters, the planning process shall include: Review and incorporation, if appropriate, of existing plans, studies, reports, and technical information.

Planning Steps 2 and 3 are to include all jurisdictions in the planning process and coordinate with other departments and agencies. All the special districts within the county, as well as all incorporated areas and any other stakeholder that was deemed significant to the planning process, were asked to participate. A list of all invited jurisdictions and special districts can be found in [Appendix B](#). This list differs from the list of actual participating stakeholders below.



Photo 1 October Planning Meeting All Hazards Planning Group

Table 2: Participating Jurisdictions

List of Participating Jurisdictions	Continuing Participation from 2005 Plan	New Participation since 2005 Plan
San Miguel County	X	
Town of Mountain Village	X	
Town of Norwood	X	
Town of Ophir	X	
Town of Sawpit	X	
Town of Telluride	X	
Telluride Fire Protection District		X
Norwood Fire Protection District		X
Egnar/ Slick Rock Fire Protection District		X

The All Hazard Planning Group was asked to review the draft plan both prior to and during the public involvement stage and report back comments to the Emergency Management Coordinator. Extensive comments were received from various parties. The Telluride Fire Protection District, San Miguel County Sheriff’s Office, The Town of Telluride Planning Department, San Miguel County Planning Department and San Miguel Public Health and Environment all provided comments on the plan. Those comments were evaluated for content and were either noted and/or included in the final version of this plan.

List of Participating AHPG Representatives and Agencies:

Egnar Slickrock FPD	Ralph Sublett
County Public Health	June Nepsky
Egnar Slickrock FPD	Tom Dickson
MIFMU	Chris Barth
Mountain Village Planning	Dave Bangert
Mountain Village PD	Chris Broady
National Weather Service	Jim Pringle
National Weather Service	Aldis Strautins
USFS/Norwood Chamber	Judy Schutza
Norwood Fire Protection District	Ted Mueller
Planning Coordinator	Lilia Colter
San Miguel Power	Jim Hubbs
San Miguel Power	Glen Livengood
San Miguel County (SMC) Finance	Ramona Rummel
SMC, Open Space and Recreation	Linda Luther-Broderick
SMC, Planning Departement	Karen Henderson
SMC Environmental Health	Dave Schneck
SMC GIS	Heather Widlund
SMC Road & Bridge	Mike Horner
SMC Health Departement	June Nepsky
SMC Sheriff's Office	Bill Masters
SMC Sheriff's Office/Emergency Mgmt	Jennifer Dinsmore
Source Gas	Brien Gardner
Source Gas	Peter Cooke
Source Gas	Rodney Forsythe
Telluride F.P.D	Emil Sante
Telluride F.P.D	John Bennett
Telluride Medical Center	Eric Adolphi
Telluride Marshal's Office	Daniel C. Pauley
Telluride Marshal's Office	James Kolar
Town of Mountain Village	Chad Root
Town of Norwood	Patti Grafmyer
Town of Ophir	Randy Barnes
Town of Sawpit	Mike Kimball
Town of Telluride	Karen Guglielmone

PLAN IMPLEMENTATION

San Miguel County and the incorporated jurisdictions and special districts utilize a variety of planning documents and mechanisms such as the County's Comprehensive Development Plan, Telluride Regional Area Master Plan and the County's Emergency Operations Plan to guide growth, development, economic activity and hazard mitigation planning. The County seeks to integrate existing planning efforts and policies to further implement mitigation actions and hazard preparedness and awareness into the communities. The County recognizes that as it continues to expand, hazard identification and mitigation is crucial for ensuring safety to the communities. This plan seeks to implement goals and work plans from other previously existing County documents and plans and utilize this document (when completed) as a reference and guide for reducing property damage, loss of life or injury due to the natural and manmade hazards profiled in this plan.

At the October 7th meeting, stakeholders were asked to list pertinent plans from their agency. San Miguel County seeks to implement information from the following documents to assist with the update of this plan.

LOCAL COMPREHENSIVE PLANS

SAN MIGUEL COUNTY

- San Miguel County Master Plan
 - Wright's Mesa Master Plan
 - San Miguel County Open Lands Plan
 - Trails Master Plan
- San Miguel County Land Use Code
- San Miguel County Emergency Operations Plan
- San Miguel County All Hazard Mitigation Plan
- San Miguel County Community Wildfire Protection Plan
- FEMA Flood Insurance Study, 1992
 - 08113C0287D (Town of Telluride)
 - 08113C0291D (includes east end of Telluride)
 - 08113C0256C (Town of Sawpit)

TOWN OF MOUNTAIN VILLAGE

- Town of Mountain Village Comprehensive Plan
- Mountain Village Wildfire Mitigation/Forest Health Plan

TOWN OF NORWOOD

- Norwood Master Plan
- Norwood Land Use Code
- Norwood Hydrology Study and Future Needs Study (in progress)

TOWN OF OPHIR

- Ophir Master Plan
- Ophir Land Use Code

TOWN OF SAWPIT

- Town of Sawpit Land Use Code
- Sawpit Water Protection Plan

TOWN OF TELLURIDE

- Telluride Regional Area Master Plan
- Surface Water Hydrology Study, 1996
- FEMA Flood Insurance Study, 1992:08113C0287D
- Cornet Creek Hazard Maps, Mudflow and Flood Studies (Various Years), Drainage Study
- Cornet Creek Drainage Study, 1985
- Cornet Creek Debris and Flood Control, 1983
- Cornet Creek Flood Study, 1974-5
- Debris Flow Hazard On Cornet Creek at Telluride, 1974
- Preliminary Report-Mudflow Hazard on Cornet Creek
- Preliminary Hazard Map of Telluride, Colorado
- Drainage Master Plan, 1983
- Investigation of Cornet Creek, August 2003 Flooding

OTHER PLANS, STUDIES ETC.

- Gunnison Montrose Uncompahgre (GMUG) Land and Resource Management Plan
- Uncompahgre Travel Plan
- MIFMU Wildfire Prevention Guide
- Ready, Set, Go! Your Personal Wildfire Action Plan
- Wilkinson Public Library Disaster Plan
- Operational/Continuous Operations, Emergency Procedures (Wilkinson Public Library)
- SMPA Emergency Response Plan

INVOLVE THE PUBLIC

Requirement 201.6(b)(1)

In order to develop a more comprehensive approach to reducing the effects of natural disasters, the planning process shall include: an opportunity for the public to comment on the plan during the drafting state and prior to plan approval.

PUBLIC INVOLVEMENT DURING THE DRAFTING STAGE

Planning Step 4 is to involve the public in the planning process. The public was allowed to comment on the draft plan for a two week period, prior to submission to the State of Colorado. The Draft Plan was posted and/or hard copied in the following locations during the public comment period from January 12th through the 26th:

- San Miguel County website-available for download
- Wilkinson Public Library (Telluride)
- Norwood Public Library
- San Miguel County Commissioner's Office, Telluride
- San Miguel County Finance Office, Norwood

The County Emergency Management Coordinator and Planning Coordinator held public meetings on January 13th in Telluride and January 18th in Norwood. The purpose of these meetings was to present and discuss the County's approach to hazard mitigation planning and to allow the public to review the plan and ask any questions.

Press Releases were sent out to all local media outlets, flyers placed throughout public buildings in participating jurisdictions as well as radio interviews on the importance on the public's involvement in the process (KOTO, January 7th). A copy of the Press Release may be found in the Planning Documents [Appendix B](#). Though efforts were made to involve the public and ask for their input on the plan, no one attended either of the public meetings.

PUBLIC INVOLVEMENT PRIOR TO PLAN APPROVAL

Once the public and the stakeholder group submitted any final changes and/or suggestions from the public involvement period, the 'Final Draft' was submitted to the State Office of Emergency Management.

Prior to receiving final approval from FEMA and the state, the plan was posted in its 'Final Draft' form at the San Miguel County Commissioner's Office in Telluride, at the County Finance Office in Norwood and on the County's website. The plan has been provided for all stakeholders to place on their respective websites, as well as available for all planning commission meetings.

In addition, another opportunity for public review and comment was held on March 16th at the Telluride Board of Commissioner's meeting room. Comments on the plan continued to be solicited during the final draft stage of the planning process.

Press Releases were sent out to all local media outlets and flyers placed throughout public buildings in participating jurisdictions. A copy of the Press Release may be found in the Planning Documents [Appendix B](#). Though efforts were made to involve the public and ask for their input on the plan, no one attended either of the public meetings.

The plan will continue to be available for comment until it is adopted by each participating jurisdiction. Once finalized and adopted by all jurisdictions, the plan will continue to be available for public viewing. Contact information will be provided in the event a member of the public has comments or suggestions for future updates to the plan.

HAZARD IDENTIFICATION

FEMA defines risk as “the impact that a hazard would have on people, services, facilities, and structures in a community and refers to the likelihood of a hazard event resulting in an adverse condition that causes injury or damage.”

The risk assessment process allows a community to better understand their potential risk and associated vulnerability to natural hazards. This information provides the framework for a community to develop and prioritize mitigation action strategies and plans to help reduce both the risk and vulnerability from future hazard events. The risk assessment for this All Hazard Mitigation Plan followed the methodology described in the FEMA publication 386-2 “Understanding Your Risks – Identifying Hazards and Estimating Losses” (FEMA, 2002) and was based on a four-step process:

- Identify hazards
- Profile hazard events
- Inventory assets
- Estimate losses

After hazards are identified and profiled, the County’s assets will be inventoried and potential for loss will be estimated. The end of this section will include a detailed profile of the County’s existing mitigation capabilities. Existing mitigation capabilities are another component of risk assessment. Here, risk and vulnerability are analyzed in light of what existing mitigation capabilities exist.

IDENTIFYING HAZARDS

Requirement 201.6(c)(2)

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

FEMA’s Step 5 in the planning process is to identify the hazards. The AHPG conducted a Hazard Identification study to determine what hazards threaten the planning area. Since the 2005 plan, San Miguel County has restructured how hazards are categorized and has even added a few hazards that were not previously considered. This section of the plan documents and profiles the possible hazards in San Miguel County. Hazards have been separated into two categories: hazards that are considered natural hazards and hazards that are considered to be man-made.

Requirement 201.6(c)(i)

[The risk assessment shall include a] description of the type and location of all natural hazards that can affect the jurisdiction.

METHODOLOGY

The AHPG used a variety of sources to identify and profile the hazards in San Miguel County. The original All Hazard Mitigation Plan was of course used as a baseline. Where available, GIS data on hazards was obtained and utilized. Previous efforts to identify hazards in the County, as documented in the County's Comprehensive Development Plan, including the Telluride Regional Area Master Plan - as part of the County Master Plan and the County's Emergency Operations Plan - were incorporated into the Hazard Identification process as well. Additional data from the National Oceanic and Atmospheric Administration (NOAA), the National Climatic Data Center (NCDC), and the State of Colorado Natural Hazard Mitigation Plan (2004) were used to develop a list of those natural hazards of significance to the participating communities within the planning area.

Requirement 201.6(c) (2) (i)

The risk assessment shall include a description of the...location and extent of all natural hazards that can affect the jurisdiction. The plan shall include information on previous occurrences of hazard events and on the probability of future hazard events.

Each hazard was profiled in more detail that included the geographical area affected, the specific impact or problem areas, the frequency/likelihood of future occurrence, hazard severity and other hazard specific details secondary. Members of the AHPG were given a worksheet where they were asked to rank each hazard's likelihood of future occurrence and the severity of impact in terms of percentages of the planning area that would be affected. The worksheet included the 2005 risk perception and severity. Subsequently, the Planning Coordinator analyzed the responses from each worksheet and averaged out the answers to come up with each hazard's likelihood of future occurrence and overall risk perception, which is detailed in the Risk Assessment Section.

NATURAL HAZARDS

The natural hazards identified and investigated in San Miguel County are listed below:

- Avalanche
- Dam Failure
- Debris Flows
- Drought
- Earthquake
- Flooding
- Extreme Winter Weather
- Wildfire
- Natural Health Hazards
- Severe Weather

MANMADE HAZARDS

The following manmade hazards are addressed:

- Power Outages
- Critical Infrastructure Failure
- Technological Hazards
- Terrorism
- Transportation Accidents
- Hazardous Materials

DECLARED DISASTER HISTORY

According to the Town of Telluride Master Plan (1987) Floods and railroad disasters devastated and isolated Telluride several times in the period before World War I. The table below highlights some of the recent events that have affected the County that resulted in a disaster declaration. The County has been declared as part of two Presidential Disaster Declarations, most recently in 2002 for the statewide wildfires (DR-1421-CO) and in 1984 for the Western Slope Floods (DR-719-CO) as one of 15 counties declared. The following table details these and other events. Additional details and history are included in the following hazard profiles.

Table 3

EVENT/HAZARD	YEAR	DECLARATION TYPE	REMARKS/DESCRIPTION
Flood	1984	Presidential	Included in 1984 Presidential Disaster Declaration with 14 other Western Slope Counties
Drought	2000	USDA	
Drought	2002	USDA	Included in Statewide USDA declaration
Wildfire	2002	Presidential	Included in Statewide declaration

NATURAL HAZARDS

AVALANCHE

Hazard Profile: An avalanche is a mass of snow sliding down a mountainside. An avalanche occurs when the stress (from gravity) trying to pull the snow downhill exceeds the strength (from bonds between snow grains) of the snow cover. There are four ingredients of an avalanche: a steep slope, a snow cover, a weak layer in the snow cover, and a trigger. About 90% of all avalanches start on slopes of 30-45 degrees; about 98% of all avalanches occur on slopes of 25-50 degrees. Avalanche cycles are typically preceded by large snowfall events. In Colorado more than 80% of these fall during or just after large snowstorms.

Avalanches release most often on slopes above timberline that face away from prevailing winds (leeward slopes collect snow blowing from the windward sides of ridges.) Avalanches can run, however, on small slopes well below timberline, such as gullies, road cuts, and small openings in the trees. Very dense trees can anchor the snow to steep slopes and prevent avalanches from starting; however, avalanches can release and travel through a moderately dense forest. Generally, the avalanche season extends from late fall to early spring. The most avalanche-prone months are, in order, February, March, and January. Avalanches caused by thaw occur most often in April (*Source: Colorado Avalanche Information Center*).

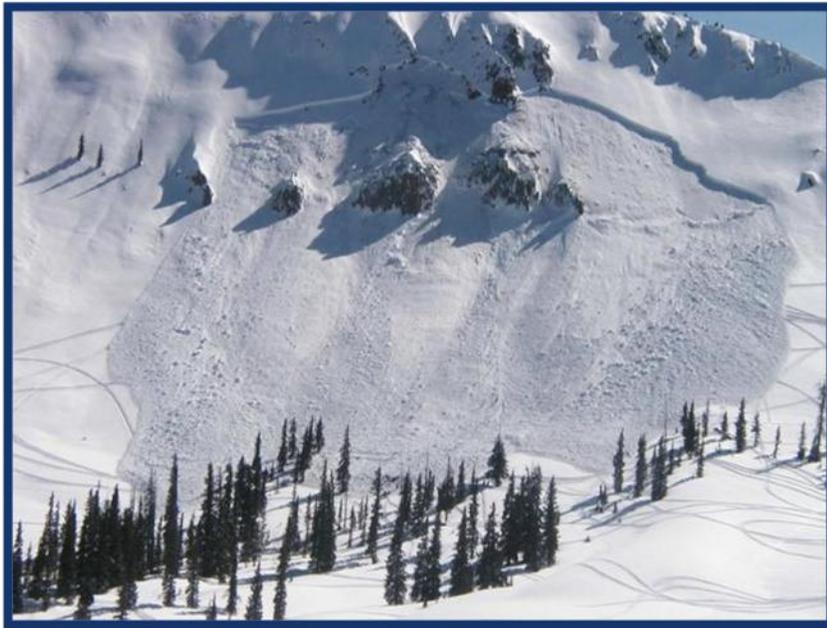


Photo 2 Bear Creek Avalanche (March 2003) showing snowmobile tracks.

Factors contributing to avalanche include temperature patterns, precipitation patterns, wind patterns, steep slopes and triggers (i.e. human body weight, snowmobile). The avalanche danger increases with major snowstorms and periods of thaw. The State of Colorado has the most deaths due to avalanches in the United States. Due to the steep mountainous terrain, high elevations, and winter snows in San Miguel County there are avalanches every winter. The San Juan Mountains that form the dramatic scenery in eastern San Miguel County are regarded as one of the most avalanche prone regions in

Colorado and ranks high among avalanche prone areas on earth (Source: Colorado Avalanche Disasters, Jenkins). San Miguel County is ranked ninth within the top ten counties for avalanche fatalities in Colorado with 10 fatalities between 1950 and 2008.

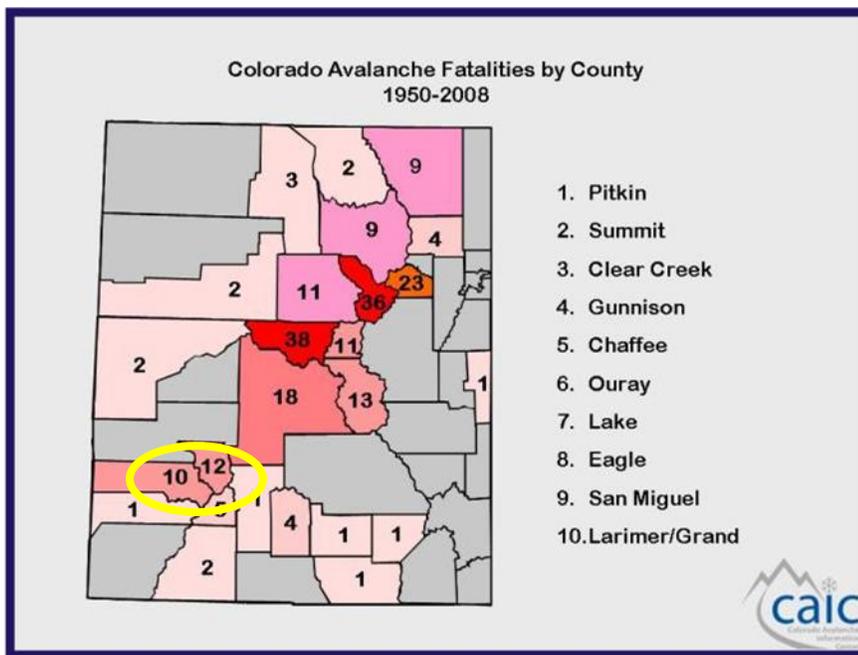


Figure 1: Avalanche Fatalities by County

Source: <http://avalanche.state.co.us>

PAST OCCURRENCES:

Historical data indicates that the County has had 10 fatalities due to avalanches between 1950 and 2008. Most of the fatalities were caused by triggers from backcountry travelers and recreationists. (Source: Colorado Avalanche Information Center). The 1986-87 winters were a particularly deadly season. According to research of historical data, Ophir has had at least six avalanches (1860, 1885, 1918, 1951, 1958, and 1959) in the past 114 years that have either reached or closely approached the town. San Miguel County also experiences planned avalanche triggers which help to mitigate against slides that could cause significant property damage and life loss.

<http://www.avalanche.org/~moonstone/zoning/natural%20hazards%20in%20mountain%20colorado.htm>

During the spring of 2004 a snowstorm loaded the avalanche prone slopes above and around the Town of Ophir. During the course of a single day more avalanches ran than had been seen by locals in more than a decade. The avalanches snapped a power line tower, engulfed a horse barn, closed the three-mile access road to town and trapped residents for three days. Highway 145 over Lizard Head Pass was closed for two days. A company that does avalanche hazard consultation used a helicopter and hand-tossed bombs to trigger avalanches on remaining unsafe areas so that County road crews could begin digging out. These spectacular avalanches were captured in the 2004 Film “Out of Ophirica” by Judah Kuper, who witnessed the events as a stranded Ophir local.

<http://www.mountainphotographer.com/out-of-ophirica/>



Photo 3: Ophir Slide 2008

There is much historical evidence that avalanches have consistently wreaked havoc in the mountainous areas of San Miguel County. Specifically, historic mining activity and winter living in the Telluride and Ophir areas were often disrupted by avalanche events. On February 28, 1902 an avalanche struck the Liberty Bell Mine above Telluride, killing 16-19 miners and destroying boarding and bunkhouses (Source: *Colorado Avalanche Disasters, Jenkins*).

SPECIFIC IMPACT AREAS:

The Town of Ophir and its access road are subject to the threat of avalanche activity seasonally. State Highway 145 from the Ophir turn-off to the edge of the County line on Lizard Head Pass are also impacted seasonally by avalanche activity or the threat of avalanche occurrence. As State Highway 145 continues into neighboring Dolores County, avalanche danger continues. Avalanches also pose a serious threat to backcountry recreationists, but developed areas and transportation corridors within avalanche run-out zones are at risk as well.

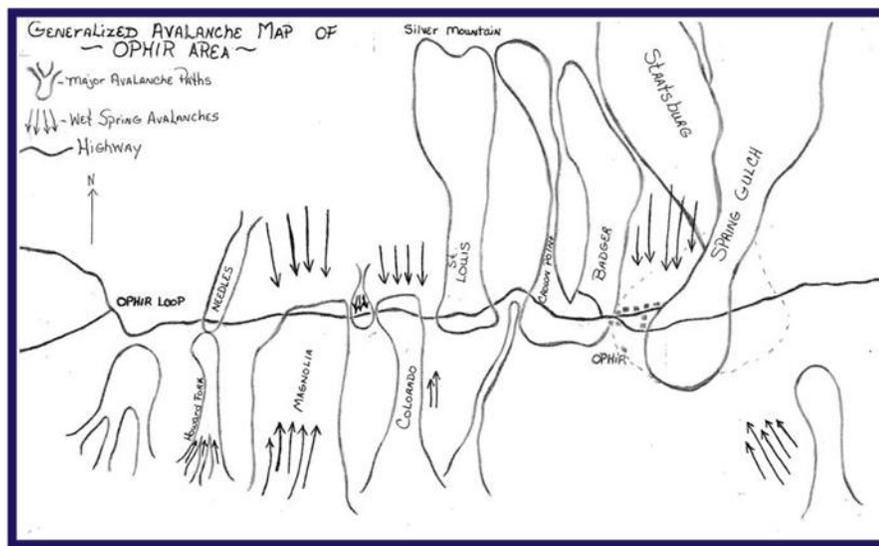


Figure 2: Ophir Slide Path Map

FREQUENCY/LIKELIHOOD OF OCCURRENCE:

Because of the high frequency of past occurrences, the areas specified above in San Miguel County are **Highly Likely** to experience avalanche activity in the future. Studies of major avalanches in the Ophir area indicate an average recurrence interval of approximately 20 years or a 5% chance any given year.

SEVERITY OF IMPACT:

A road closed due to avalanche activity can result in serious transportation disruptions due to the limited number of roads in the County. Stranded travelers or commuters are often faced with a lack of lodging availability or affordability. Fatalities as a result of avalanches in San Miguel County have occurred, as indicated by Figure 1.

Avalanche impacts on the Hesperus power line, which supplies the Telluride/Mountain Village region with power, resulted in rolling brownouts in Telluride for three days in 2004. Brownouts are controlled

power reductions in which the utility company decreases the voltage on the power lines, so customers receive weaker electric current. Brownouts can be used if total power demand exceeds the maximum available supply.

DEBRIS FLOWS, LANDSLIDES AND ROCKFALL

MUD AND DEBRIS FLOWS:

According to the Colorado Geological Survey, a mudslide is a mass of water and fine-grained earth materials that flows down a stream, ravine, canyon, arroyo or gulch. If more than half of the solids in the mass are larger than sand grains—rocks, stones, boulders—the event is called a debris flow. Due to the geology and steep topography in San Miguel County, mud and debris flows occur in the eastern portion of the County and in the San Miguel River Canyon following heavy rains. Debris and mudflows generally occur during the late summer monsoon season. Many of Colorado's older mountain communities built in major mountain valleys are located on or near debris fans. A debris fan is a conical landform produced by successive mud and debris flow deposits, and the likely spot for a future event.

The mud and debris flow problem can be exacerbated by wildfires that remove vegetation that serves to stabilize soil from erosion. Heavy rains on the denuded landscape can lead to rapid development of destructive mudflows. Nearby La Plata County experienced damaging mudflows in the area burned by the Missionary Ridge fire in 2002. Debris flows and mudslides can occur rapidly with little warning during torrential rains.

LANDSLIDES

A landslide is a general term for a variety of mass-movement processes that generate a down slope movement of soil and rock. Landslides, for the purposes of this plan, include slumps and mud and debris flows. Some of the natural causes of ground instability are stream and lakeshore erosion, heavy rainfall, and poor quality natural materials. In addition, many human activities tend to make the earth materials less stable and, thus, increase the chance of ground failure. Human activities contribute to soil instability through grading of steep slopes or overloading them with artificial fill, by extensive irrigation, construction of impermeable surfaces, excessive groundwater withdrawal, and removal of stabilizing vegetation. Landslides typically have a slower onset compared to debris flows and can be predicted to some extent by monitoring soil moisture levels and ground cracking or slumping in areas of previous landslide activity.

ROCKFALL

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



Figure 3: Rockfall Zones

Source: Town of Telluride

Rockfall hazard areas in San Miguel County usually are marked by the presence of fist to boulder-sized rocks (at least 10 inches in diameter) that accumulate below cliff areas, steep slopes, or talus fields on mountainsides. Spring is typically the landslide/rockfall season in Colorado as snow melts and saturates soils and temperatures enter into freeze/thaw cycles.

Figure 4: Primary Rockfall zones in Telluride

Source: Town of Telluride



PAST OCCURRENCES

Telluride and San Miguel County has a history of damaging mud and debris flows, landslides, and rockfalls. Telluride experienced damaging debris flows in Cornet Creek 1914 and 1969. The July 27, 1914 event filled the town with mats of debris and mud from two to five feet deep, including the downtown area. The debris flow originated from a cloudburst above the Cornet Creek drainage that set previously saturated mud and rock into motion. One life was lost and the damage was estimated at around \$250,000 (1914 dollars). The event of 1969 was not as destructive and affected the western edge of town (Source: *Flood Insurance Study, San Miguel County 1978*). During the 1984 spring floods landslides destroyed several irrigation ditches in San Miguel and Ouray Counties. A large landslide that slid onto Haskell Hill Road stopped traffic for extended periods. In 1987 a section of the airport runway constructed on Mancos Shale experienced a landslide that deposited onto Highway 145 on the Keystone Hill. Nearly all twelve of the flood events listed in the National Climatic Data Center (NCDC) Storm Event database (1996-2004) had serious mudslide and rockfall activity associated with them. These mud and debris flows have been responsible for major disruptions in traffic as well as property damage, according to the NCDC records.

Rains during July 1999 produced numerous small debris flows, rockfalls, and sediment-charged water floods originating in the steep cliffs both between Placerville and Ilium along Hwy 145 and along Leopard Creek along Hwy 62. Water and debris washed across State Highway 62, undercutting the roadbed causing extensive damage.

Mud flows and flooding in 2001 closed Highway CO 145 between Sawpit and top of Keystone Hill for approximately 12 hours due to almost 100 small slides. Once again, heavy rains produced numerous small debris flows, rockfalls and sediment-charged water floods originating in the steep cliffs between Placerville and the top of Keystone Hill along Hwy 145. There were approximately 100 vehicles trapped.

In 2007, Telluride experienced a smaller mud-flood event that damaged several homes along Cornet Creek.

The 2010 summer monsoon season brought many mud and debris flows across Hwy 145 from Keystone Hill to the bottom of Norwood Hill. The Hwy was closed several times to allow for debris and mud removal. The San Miguel river canyon also experienced a fire early in the summer season, which left the ground susceptible for mud and debris flows when summer rains saturated the soil.



Photo 4 Elk Meadows Slide May 2009

SPECIFIC IMPACT AREAS

There are a few major areas in San Miguel County that are considered to be favorable to landslide, mud and debris flows, and rockfall activity. These areas are listed below:

Towns of Telluride and Ophir and Colorado Highway 145
 Norwood Hill just east of Norwood
 Keystone Hill below Society Turn
 East of the Ophir Road, Ophir Curves

Also, the Sawpit, Fall Creek and Placerville developments have also been effected by debris flows after cloud burst rains and heavy monsoonal patterns. Other areas at the base of steep slopes, near steep mountain drainages or debris fans are at risk. The Town of Telluride is built on the debris fan formed from Cornet Creek. The Town of Telluride's cemetery is located on another debris fan. All cliffs above the North side of the Town of Telluride and most along the only access road to the town are a serious source of rockfall hazard to residents and buildings.

SEVERITY OF IMPACT

Debris Flows, Landslides and Rockfall events happen frequently in San Miguel County. Debris flows and rockfall events have closed roads in the past, becoming an inconvenience for travelers and commuters. Historically debris flows have also gone through houses causing property damage.

LIKELIHOOD OF FUTURE OCCURRENCE

Debris flows and rockfall events are **highly likely** to occur in the future for the areas specified above. Landslides are likely to occur in the areas specified above if the necessary soil moisture content or saturation point is reached.

DAM FAILURE**HAZARD PROFILE**

There are thousands of dams throughout the Western United States. In San Miguel County, dams help mitigate flooding activity, provide for water storage and supply for agriculture and human use, serve as recreational areas and supply power generation. There are several factors that influence the potential for dam failure and the severity of its impacts. These factors have to do with the amount of water that is held back by the dam, the design and construction of the dam and the amount/type of development that is located below the dam.

There are many potential factors that may cause a dam to fail:

- Heavy prolonged rainfall (can result in overtopping)
- Earthquake (can severely damage the structural integrity of the dam)
- Improper design, structure maintenance or negligent operation
- Secondary impact from the failure of an upstream dam
- Deliberate destruction through criminal or terrorist activity

An enormous amount of water is often released when a dam failure occurs. Loss of life and property, along with catastrophic damage to roads, bridges and other forms of infrastructure could potentially occur.

Dam failure can occur quickly or it can be a result of degradation resulting in small leaks that eventually weaken the structure to the point of failure. However, if dams are inspected regularly then warning signs can be addressed. Dams can fail at any time of the year, but failures due to natural phenomena usually occur during the late winter or early spring when rains combined with rapid snowmelt can cause overtopping events.

PAST OCCURRENCES

San Miguel County has experience dam failure in the past. In September of 1909 a dam above Trout Lake failed, which subsequently caused Trout Lake dam to fail and inundate houses from Ames to Placerville along the South Fork and main stem of the San Miguel River. The train track from Vance Junction to Placerville was washed out. There were no human fatalities, but several animals died (*Source: Conversations at 9000 feet*). According to the AHPG members, Blue Lake and Alta Lake dams (1960's) have failed in the past, but specific dates and impacts were not known.

In addition to man-made dams, San Miguel County has many beaver dams that are subject to breaching during high flows. This occurred during the 1984 flood event when a beaver dam breached above Forest Access Road 625, sending water at high velocities down a steep hillside, destroying portions of the road (*Source: 1984 Flooding After Action Report*).

The following dams are rated "high hazard" according to the projected destructive forces and impacts if the dam accidentally failed. The rating does not reflect the structural integrity or maintenance level of the dam. A failure of these dams, however, would inundate areas of San Miguel County and could result in losses of life and property.

DAMS IN SAN MIGUEL COUNTY

Table 4 Dams in San Miguel County

DAM	STREAM or RIVER	STORAGE CAPACITY (ACRE-FEET)	AFFECTED JURISDICTION	OWNER
Trout Lake Dam	San Miguel River, Lake Fork	2,572	San Miguel County & Sawpit	Public Service Company
Miramonte Reservoir	West Naturita Creek San Miguel River	6,857	Norwood, San Miguel County Wrights Mesa	Colorado Div. of Wildlife
Gurley Reservoir	Gurley Canyon San Miguel River	10,039	San Miguel County	Farmer's Water Development Co.
Lone Cone Reservoir	Goshorn Creek, San Miguel River	1,840	Norwood San Miguel County	Lone Cone Ditch

In the previous version of the County All Hazard Plan, Priest Lake was listed. This dam was breached in 2004 by the US Forest Service due to both its classification as a high hazard and for its stability concerns.

SPECIFIC IMPACT AREAS

Areas most affected areas are the inundation areas downstream from the Trout Lake Dam and the towns of Sawpit and Placerville and, to some extent, the town of Norwood downstream from the Gurley Reservoir. Note: Specific impacts and downstream areas are listed with the *Emergency Preparedness Plan* for each dam on file at the County Sheriff's Office. Due to the sensitive nature of this information it is not replicated in this publicly available plan.

LIKELIHOOD OF FUTURE OCCURRENCE

There are no official recurrence intervals calculated for dam failures. The possibility for future dam failure remains, but the likelihood as a result of natural hazards is extremely low. It is **unlikely** that a dam will fail in San Miguel County. However, acts of terrorism and the chance of other natural phenomenon make it extremely difficult to predict future occurrence intervals for this hazard.

SEVERITY OF IMPACT

If a dam were to fail catastrophically in San Miguel County, the potential for property damage, road damage and road closures exist.

DROUGHT

HAZARD PROFILE

Droughts are typically long-term hazard events which have impacts that can potentially last for long periods of time. Unlike most hazard events which typically have quick on-sets, a response and recovery phase, it is difficult to place a start and end date to a drought period.

Drought occurs when the normal amount of moisture is not available to satisfy and area's usual water consumption trends. Drought is a condition of climatic dryness, which is severe enough to reduce soil moisture and water below the minimum necessary for sustaining plant, animal, and human life systems. Lack of annual precipitation and poor water conservation practices could result in drought conditions. A number of secondary hazards are associated with drought. This will result in an increased fire danger in urban natural areas and the wildland/urban interface as well as wildland/open space areas. This also increases the risk to public safety personnel as they respond to these incidents. The reduction in vegetation cover will expose soil to wind and erosion. The quality of rivers and lake water will change and sediment transport regimes of streams will be altered. Deterioration in water quality is the result. The onset of drought is typically very slow and can take years before the consequences are realized. Droughts can be a short-term event over several months or a long-term event that lasts for years or even decades.

FEMA has four categories of drought:

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

The onset of drought in western mountainous counties such as ours is usually signaled by a lack of significant winter snowfall. The County receives the majority of its precipitation as snow in the higher elevations during the months of November-April. Hot and dry conditions that persist into spring, summer and fall can aggravate drought conditions, making the effects of drought more pronounced as water demands increase during the growing season and summer months

The AHPG also discussed the impact that a 'winter drought' would have on the County, specifically the towns of Telluride and Mountain Village. The amount of precipitation in the winter time determines the snowpack and therefore the spring runoff. The AHPG wanted to bring specific attention to winter drought for the economic impact that it would potentially have on the ski towns and the County overall. If a winter drought were to occur, revenue from winter tourism would decline significantly having an economic impact on local industries etc. The magnitude of the drought's impact will be directly related to the severity and length of the drought. Secondary effects include increased susceptibility to wildfires and pine beetle infestations.

This particular hazard affects the entire geographic area included in this plan.

FEMA explains that there is not a "precise and universally accepted definition [which] adds to the confusion about whether a drought exists, and if it does the degree of severity." FEMA also explains that

“drought impacts are less obvious and are spread over a larger geographic area.” Because Colorado has a semi-arid climate, drought will occur in the future.

Source: www.fema.gov

PAST OCCURRENCES:

San Miguel County and Colorado has been in a multi-year drought that began in 1997 and continued into 2004. The winter of 2005 brought plentiful snow that helped to alleviate drought conditions during the initial planning process. San Miguel County has not been considered to be in a drought since the 2005 plan.

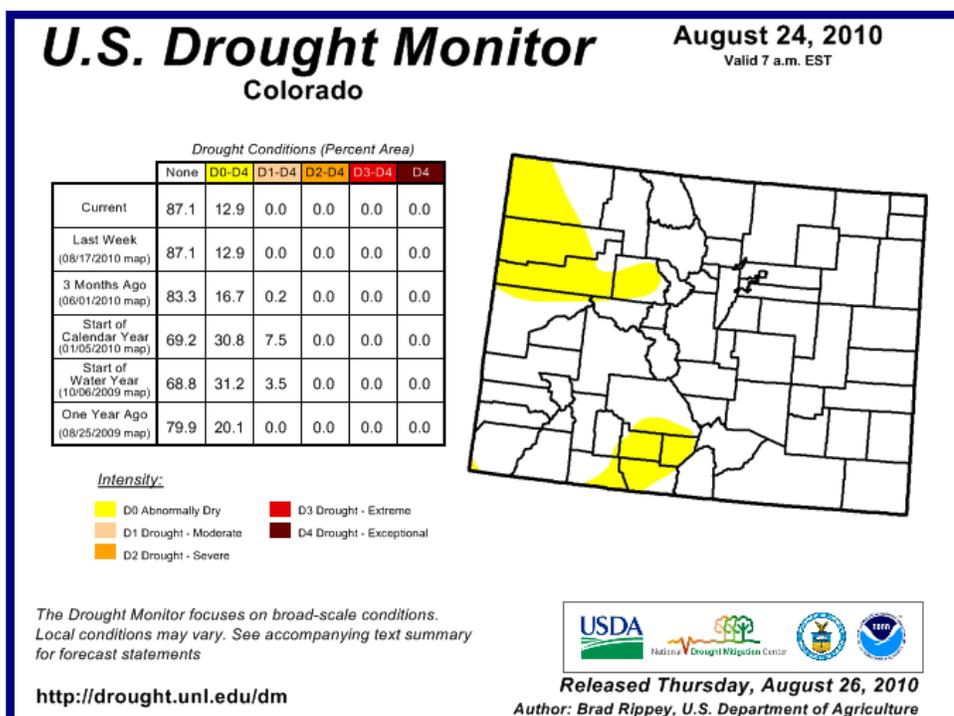


Figure 5: US Drought Monitor

Source: [Http://drought.unl.edu/dm](http://drought.unl.edu/dm)

Colorado has experienced other droughts in 1996, 1994, 1990, 1989, 1979-1975, 1965-1963, 1957-1951, 1941-1931, and 1905-1893 (Source: Colorado Drought Mitigation and Response Plan, 2001). Although drought conditions can vary across the state, it is likely that San Miguel County suffered during these dry periods.

SPECIFIC IMPACT AREAS

The entire County is at risk to drought conditions including the populated areas of local communities and San Miguel County (domestic needs) and widespread areas of the County (agricultural needs). The impacts will vary throughout the County, but a severe drought will affect the entire economy, particularly the skiing and tourism industry in the eastern County and the agricultural industry in the West End.

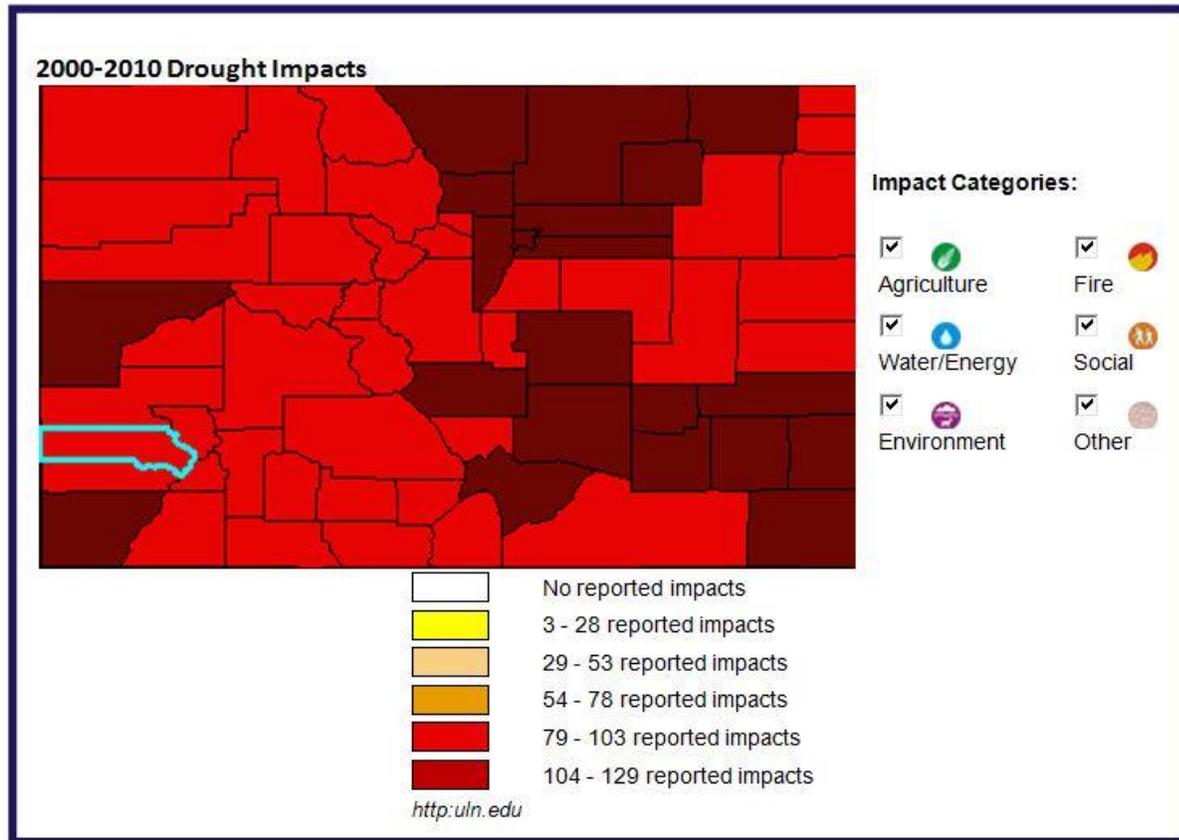


Figure 6: San Miguel County Drought Impacts

Source: [Http://uln.edu](http://uln.edu)

LIKELIHOOD OF FUTURE OCCURRENCE

Because of San Miguel County’s geographic location, climate type and historical records, it is **highly likely** that the County will experience drought conditions in the future.

SEVERITY OF IMPACT

Drought is one of the few hazards that have the potential to directly or indirectly impact each and every person within San Miguel County, as well as adversely affect the local economy. The impacts would result in mandatory water restrictions associated with domestic supplies, agricultural losses and economic impacts associated with those losses, economic impacts to tourism and recreation industries, increased wildland firefighting costs, and increased costs for water.

EARTHQUAKES

HAZARD PROFILE

The sudden movement on faults is responsible for large earthquakes. By studying the geologic characteristics of faults, geoscientists can often determine when the fault last moved and estimate the magnitude of the earthquake that produced the last movement. Because the occurrence of earthquakes is relatively infrequent in Colorado and the historical earthquake record is short, accurate estimations of

magnitude, timing or location of future dangerous earthquakes in Colorado are difficult to estimate. However, geological research indicates that components (faults) of earthquakes are prevalent in Colorado. The following map indicates that potentially active faults exist in the vicinity of San Miguel County that are capable of producing damaging earthquakes of Magnitude 6.25. Damage and life loss from earthquakes can be devastating to communities, particularly where historic buildings exist that were not designed to withstand seismic forces.

Part of what makes earthquakes so destructive is that they generally occur without warning. The main shock of an earthquake can usually be measured in seconds, and rarely lasts for more than a minute. Aftershocks can occur within the days, weeks, and even months following a major earthquake.

Table 5 Mercalli Intensity Scale

Modified Mercalli Intensity	Description	Richter Magnitude
I	Instrumental: detected only by seismographs	3.5
II	Feeble: noticed only by sensitive people	4.2
III	Slight: like the vibrations due to a passing train; felt by people at rest, especially on upper floors	4.3
IV	Moderate: felt by people while walking; rocking of loose objects, including standing houses	4.8
V	Rather strong: felt generally; most sleepers are awakened and bells ring	4.9-5.4
VI	Strong: trees sway and all suspended objects swing; damage by overturning and falling loose objects	5.5-6.0
VII	Very Strong: General alarm, walls crack and plaster falls	6.1
VIII	Destructive: car drivers seriously disturbed; masonry fissured, chimneys fall, poorly constructed buildings are damaged.	6.2
IX	Ruinous: some houses collapse where ground begins to cracks and pipes break open.	6.9
X	Disastrous: ground cracks badly, many buildings destroyed and railway lines bent, landslides on steep slopes.	7.0-7.3
XI	Very Disastrous: Few buildings remain standing, bridges destroyed, all services (railways, pipes, cables) out of action, great landslides and floods	7.4-8.1
XII	Catastrophic: total destruction, objects thrown into air, ground rises and falls in waves.	8.1

Source: math/sciencenucleus.org

The faults that exist within the County that are suspected to have had movement with the Quaternary age (past 1.6 million years) are the Big Gypsum Valley Graben Faults, the Dolores Fault Zone, and the San Miguel Canyon Faults. The faults that lie in nearby Ouray County are suspected to pose the greatest risk by the Colorado Geological Survey. These faults are the Busted Boiler (Late Quaternary movement within 130,000 years) and the Roubideau faults (movement in the Holocene or past 15,000 years). *Source: Colorado Natural Hazard Mitigation Plan 2004 Earthquake Evaluation Report*

PAST OCCURRENCES

Although not as frequent or as large as California, Colorado has experienced earthquakes in its relatively short period of historic record. The following earthquakes have had epicenters in San Miguel County, but it is likely that the County was shaken by earthquakes in neighboring Ouray County as well. A map of Colorado Earthquake Hazards developed by the Colorado Office of Emergency Management in 1999 depicts the location of historic epicenters and potentially active faults. A section of this map is included as well as more information on the quakes shown within the County.

Some recent seismic activity in the western portion of the County has been attributed to human causes from the Colorado River Desalinization project being conducted by the Bureau of Reclamation (BLM). The Bureau is working in the Paradox Valley in neighboring western Montrose County to reduce the amount of salt entering the Dolores River. Salty water is being intercepted before it can contaminate the Dolores River and disposed by a combination of evaporation ponds and deep well injection. Since 1995 they generated more than 3,000 minor earthquakes. After a Magnitude 4.3 in May of 2000 was triggered, injections were reduced to every other month. There have been no more earthquakes over M 4.0 since then (Source: CGS RockTalk Pub Volume 5, No. 2 April 2002).

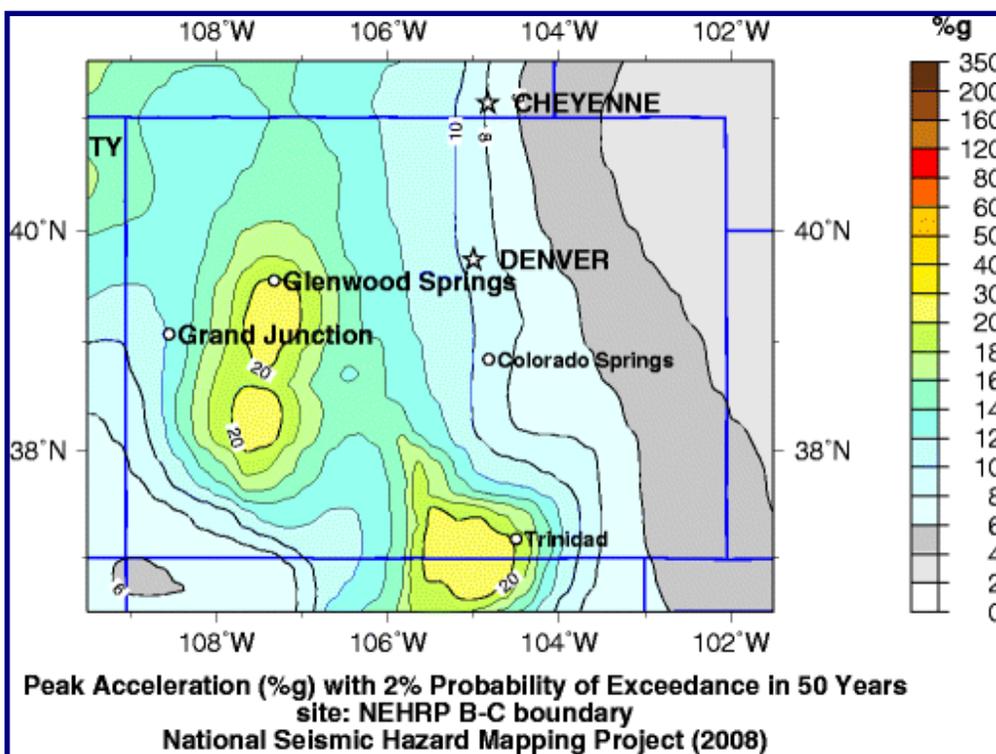
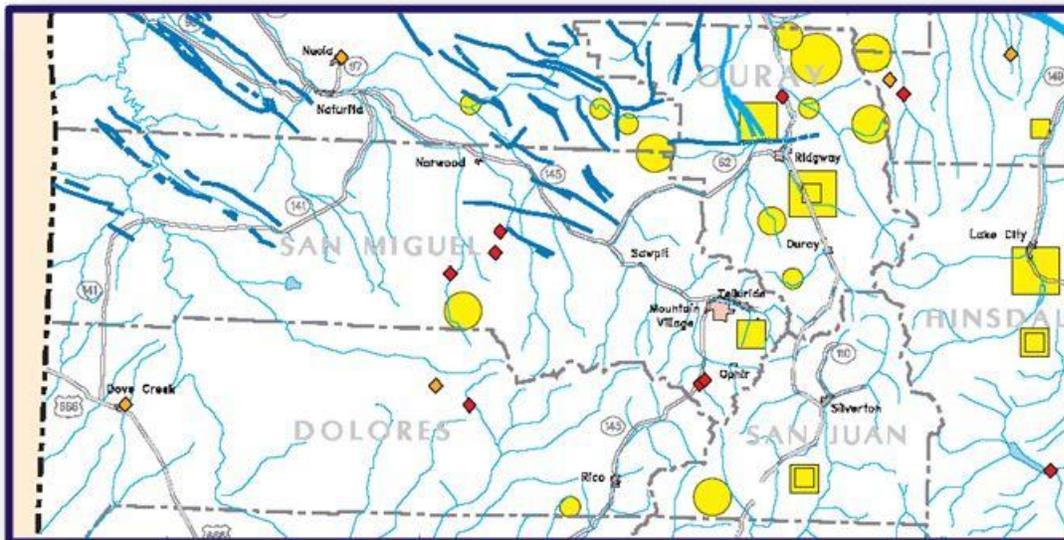


Figure 7 Earthquake Acceleration Source: <http://earthquake.usgs.gov>

EARTHQUAKE HAZARD MAP SHOWING SOUTHWESTERN COLORADO



Map explanation: Circles are epicenters recorded instrumentally 1962-1966. Squares are approximate locations of pre-instrumental earthquakes between 1867-1961 representing strength by Modified Mercalli Intensity. Earthquakes in and nearby San Miguel County are in the Magnitude 3-5.5 range and Intensity V-VI range. Blue lines are faults suspected of movement within the past 1.6 million years (Quaternary). Diamonds represent the location of Class I (red) and Class II (orange) dams

Source: Colorado Earthquake Hazards, a Map of Earthquakes and Related Hazards in Colorado, Colorado Office of Emergency Management, 1999.

Figure 8: Earthquake Hazard Map

Past Quakes within San Miguel County:

- January 1, 1894, Telluride, Intensity IV
- February 3, 1970, South of Norwood
- September 13-15, 1994, Norwood

LIKELIHOOD OF FUTURE OCCURRENCE

Minor earthquakes have occurred in the past in San Miguel County. Even though earthquakes do not occur very often in San Miguel County, it is **likely** that an earthquake will occur in the future. It is **unlikely** however, that a large or catastrophic earthquake will occur.

SEVERITY OF IMPACT

Telluride Regional Area: The Town of Telluride, due to the nature of the historic building stock as well as being a population center in the Eastern County, could endure the greatest losses if a significant earthquake were to occur. Mountain Village could also see significant impacts if a larger earthquake were to occur due to the taller buildings (hotels) that make up much of Mountain Village's built

environment. Earthquakes can cause significant damage to structures (primarily taller structures in the Mountain Village, cause landslides and structure fires as well.

EXTREME WINTER WEATHER

HAZARD PROFILE

Blizzards, ice storms and extremely cold temperatures can combine to make extreme winter weather events. San Miguel County is high in elevation and is located against the San Juan Mountain range, making it susceptible to such extreme winter hazards. The eastern end of the county, which is the most mountainous, is the most at risk for these extremes. Areas such as the Telluride Region, Town of Ophir and Ophir High Country are considered the particular at risk areas. These storms can cause low visibility, treacherous driving conditions, power outages, road closures, collapsed buildings and an increase in avalanche activity.

Improved weather forecasting has enabled many extreme weather events to be predicted hours or days in advance. Large storms have the capability of dumping large amounts of snow in a short period of time depending on the amount of moisture the storm is carrying. Temperatures can fluctuate, rapidly dropping to well below freezing.



Photo 5: Norwood Fire Department responds to a transportation accident

Source: www.norwoodfiredistrict.org

PAST OCCURRENCES

The SHELDUS database listed the following extreme winter storms since 1985:

Table 6: Extreme winter weather

Begin Date	Hazard Type	State	County	Injuries	Fatalities	Property Damage*	Crop Damage*
2/1/1989	Winter Weather	CO	San Miguel	0.32	0.00	79365.10	79365.10
2/8/1995	Winter Weather	CO	San Miguel	0.00	0.00	40697.67	0.00

12/8/1998	Winter Weather	CO	San Miguel	0.00	0.00	15000.00	0.00
12/1/2008	Winter Weather	CO	San Miguel	0.00	0.00	3000.00	0.00
1/10/1993	Winter Weather	CO	San Miguel	0.00	0.00	2777.78	0.00
11/30/2007	Winter Weather	CO	San Miguel	0.00	0.00	1428.57	0.00
12/1/2007	Winter Weather	CO	San Miguel	0.00	0.00	1428.57	0.00
10/10/1986	Winter Weather	CO	San Miguel	0.00	0.00	847.46	84.75
1/31/1985	Winter Weather	CO	San Miguel	0.00	0.00	793.65	0.00
1/30/1985	Winter Weather	CO	San Miguel	0.00	0.08	793.65	0.00
Total				0.83	1.13	148010.71	166616.51

Table 7: Averages for Telluride, Colorado 1900-2009

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average Max. Temperature (F)	37.2	39.5	43.3	52.0	61.8	72.3	76.9	74.2	68.8	59.1	46.5	38.1	55.8
Average Min. Temperature (F)	5.2	8.4	14.2	22.7	29.9	35.5	41.5	40.9	34.3	25.5	14.9	6.8	23.3
Average Total Precipitation (in.)	1.63	1.69	2.16	2.20	1.76	1.16	2.44	2.91	2.13	1.92	1.55	1.54	23.09
Average Total SnowFall (in.)	27.6	25.4	30.9	21.1	6.5	0.7	0.0	0.0	1.0	9.0	20.6	24.2	167.0

Table 8: Averages for Norwood, Colorado 1924-2009

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average Max. Temperature (F)	37.4	41.5	48.6	58.0	68.1	78.7	83.9	80.7	73.4	62.1	48.0	38.7	59.9
Average Min. Temperature (F)	9.6	14.6	21.8	28.3	35.9	43.7	50.0	48.9	41.8	31.9	20.5	11.9	29.9
Average Total Precipitation (in.)	0.95	0.93	1.14	1.22	1.12	0.78	1.86	1.96	1.77	1.59	1.11	0.97	15.41
Average Total SnowFall (in.)	12.7	10.5	9.8	5.3	0.8	0.0	0.0	0.0	0.1	2.3	7.7	10.9	60.2

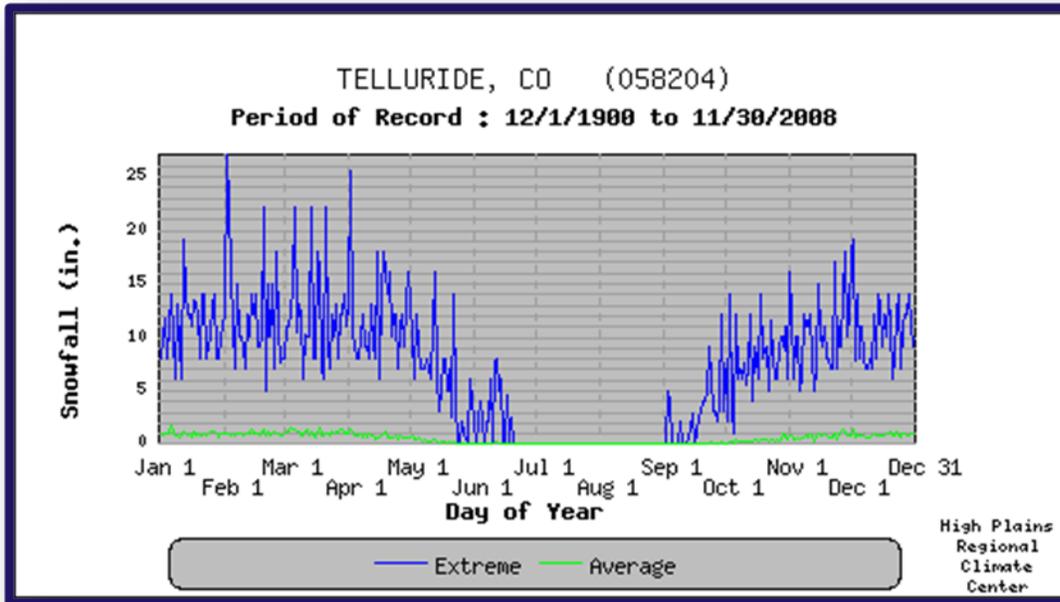


Figure 9: Telluride Snowfall Averages

- - Extreme is the greatest daily snowfall recorded for the day of the year.
- - Average is the average of all daily snowfall recorded for the day of the year.

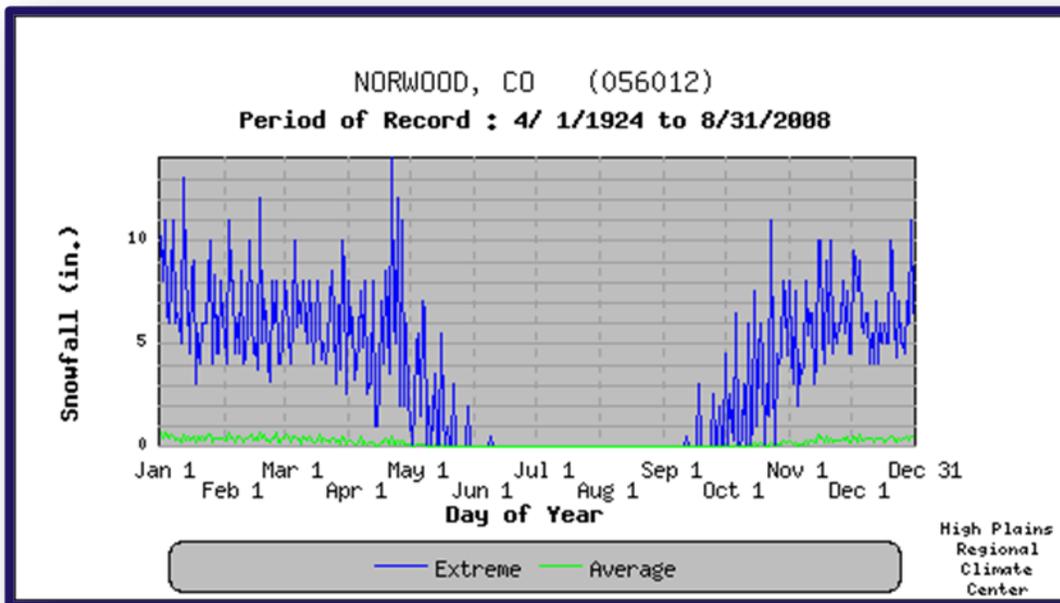


Figure 10: Norwood Snowfall

Table 9: TELLURIDE COLORADO, MONTHLY SNOWFALLS 1985-2008

YEAR	JULY	AUG	SEPT	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE	ANN
1985-86	0	0	3	4	38	31	5	23	37.5	29	18	0	188.5
1986-87	0	0	8	17	57	9	34	60	45	16	6	0	252
1987-88	0	0	0	2	19.5	36	48	16	23	24	14	0	182.5
1988-89	0	0	0	0	47	47	31	48	23	4	0	0	200
1989-90	0	0	0	10	7	15	12	14	59	46	19	0	182
1990-91	0	0	0	10	43.5	25	37	16	76	26	4	0	237.5
1991-92	0	0	0	20	57	24	20.5	33	58	9	1	0	222.5
1992-93	0	0	0	5	47.5	26	60	74	39	24	21	1	297.5
1993-94	0	0	0	2	14.2	25	22.5	27.4	7.5	28.5	0	0	127.1
1994-95	0	0	0	6.5	37.5	11.5	30.5	12	47	22.4	8.5	0	175.9
1995-96	0	0	2	4	11	10	43.5	15.6	12.5	19.3	0	0	117.9
1996-97	0	0	6.5	13.5	24.8	29.6	35.9	22.8	6.1	25.4	0	0	164.6
1997-98	0	0	0	12	18.5	17.1	18.9	21.6	42.4	20.7	5	0	156.2
1998-99	0	0	0	9.5	28.5	11.6	34	15	17	32.8	17.5	0	165.9
1999-00	0	0	0	0	3.5	12.6	28.1	18	36.1	8.5	0	0	106.8
2000-01	0	0	0.1	2.2	9.3	13.5	26.5	24.5	16	15	10	3	120.1
2001-02	0	0	0	2	29	22	4.1	7.5	16	2.3	2.3	0	85.2
2002-03	0	0	0	10.8	14.8	13.7	12.1	18.9	20.5	9.3	3.4	0	103.5
2003-04	0	0	0	0	12.2	32.8	10.7	24.6	8.5	13.1	0	0	101.9
2004-05	0	0	0	6	29.5	5.7	22.8	19.1	24.4	14.6	2.3	0	124.4
2005-06	0	0	0	2.6	3.5	21	24.8	11.2	23.8	7.7	0	0	94.6
2006-07	0	0	8.8	8	11.7	23.5	11.5	31.6	11.9	12.3	10.8	0	130.1
2007-08	0	0	0	9	6	24.3	49	33.9	12.8	20.5	5.5	0	161

LIKELIHOOD OF FUTURE OCCURRENCE

Extreme winter weather is **Highly Likely** to occur in San Miguel County in the future. Extreme winter weather is recognized as a fact of life for San Miguel County. However, secondary impacts that can result from extreme winter weather can have significant impacts on the County overall.

SEVERITY OF IMPACT

The AHPG feels that although winter weather is a fact of life in San Miguel County, it is important to include because sometimes extreme winter weather has significant impacts on critical infrastructure such as power, gas and water. The County can also be impacted economically from extreme winter weather if crops are damaged.

FLOODS

HAZARD PROFILE

Floods can amount to be some of the most frequently occurring, costly disasters experienced. Floods can be caused by any number of differing weather events and can cause injuries, property damage including structural and landscape and loss of life. In San Miguel County, the flood season generally extends from late spring to fall. Snowmelt floods typically occur with rapid rises in temperature in May or June. The most flash flood prone months are late July and August, when the summer “monsoon” weather pattern appears. The fall months can also be wet and rainy in southwest Colorado. San Miguel County is susceptible for flooding events. The different types of flooding are described below.

RIVERINE FLOODING

Defined as when a watercourse exceeds its “bank-full” capacity and is usually the most common type of flood event. Riverine or flash flooding generally occurs as a result of prolonged rainfall, or rainfall that is combined with soils already saturated from previous rain events. The amount of precipitation, precipitation intensity and density, soil type and moisture and vegetation all influence the likelihood and severity of a riverine flooding event. San Miguel County experiences flash flooding due to intense cloudburst storms over small and steep watersheds in the summer monsoon season and early fall. The spring snow run-off can also cause riverine flooding with the combination of warmer spring temperatures and spring rain. San Miguel County is extremely susceptible to this type of flooding given the steep mountainous terrain and the multitude of creeks and streams that eventually flow into the San Miguel River. Riverine flooding can be worsened if debris blocks the flow of water, causing it to back up and then eventually surge.

Slow rise floods associated with snowmelt and sustained precipitation usually are preceded with adequate warning, though the event can last several days. Flash floods, by their nature, occur very suddenly but usually dissipate within hours. Even flash floods are usually preceded with warning from the National Weather Service in terms of flash flood advisories, watches, and warnings.

Sources of riverine flood problems in the County include the San Miguel River, The Dolores River, Cornet Creek, Bear Creek, Specie Creek, Big Bear Creek, Leopard Creek, Fall Creek, and numerous intermittent creeks and drainages.

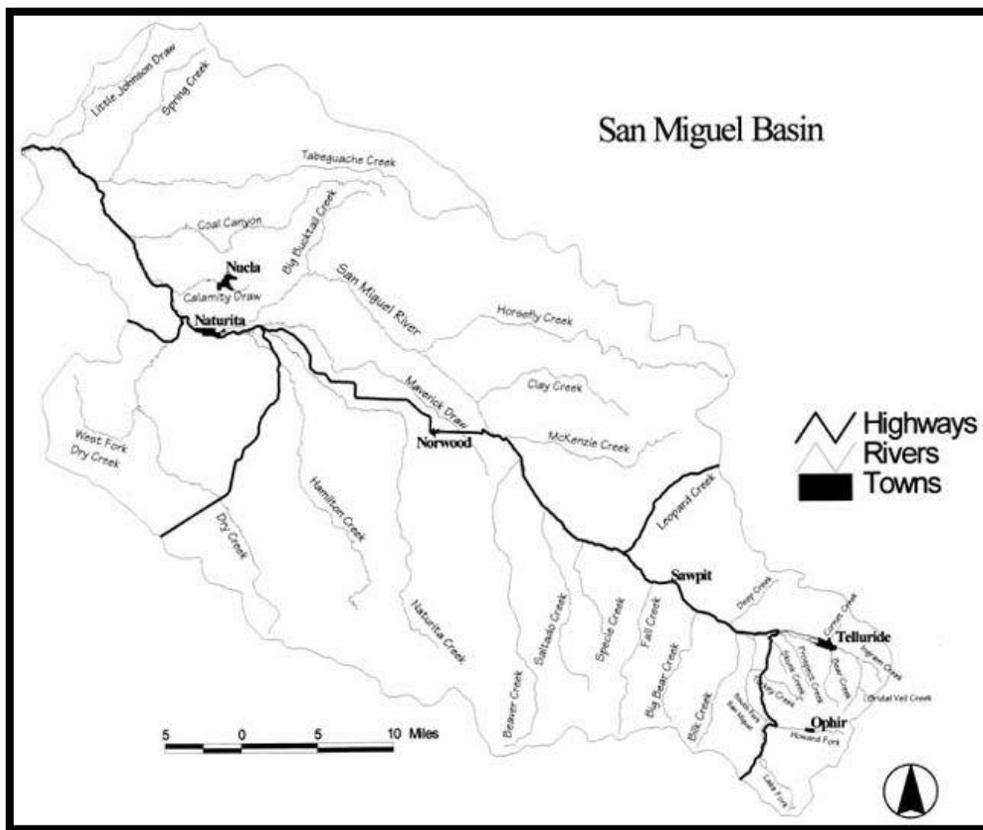


Figure 11 San Miguel Watershed Map



Photo 6: Flooding on Leopard Creek

Source: Linda Luther-Broderick

STREET FLOODING

The conversion of land from its natural state to parking lots, roads and buildings causes land that could once absorb moisture to be impermeable. When heavy rains occur where there is development, large amounts of water flow on top of the impermeable surface until reaching drainage systems that may back up due to excess water. Although San Miguel County has relatively low amounts of dense urbanization, heavy rains can still cause street drainage systems to become overwhelmed and thus produce street flooding.



Photo 7: Street Flooding in Telluride Corner of N Alder and E Colorado

Source: Town of Telluride

ICE JAM FLOODS

During the winter months, the San Miguel River can have ice jams at constrictions on the river, usually near bridges. An ice jam flood could potentially cause water to back up over roads or onto the many properties along the San Miguel River, or for large ice flows to take out or damage bridges. Ice flows may be anticipated by the formation of ice dams and very cold temperatures which are manifested in the blue color of the ice. Ice Jam flooding in the past may have been stimulated by releases from the Ames Power Plant. Coordination with the Power Plant, monitoring and control efforts with explosives by the County Road and Bridge Department have largely mitigated this problem.

ICE FLOW PROCESS ON THE SAN MIGUEL RIVER

The San Miguel River experiences a range of ice processes each winter that have important consequences for the ecosystem and can threaten human life and structures built in the floodplain. Flow manipulation and water withdrawals can greatly affect these processes.

Ice growth in rivers occurs when heat is lost to the atmosphere after the water temperature has reached 0 degrees Celsius (32 degrees F). There are several heat sources that must be overcome for this to occur. During winter the river is fed by groundwater that enters at a temperature of plus several degrees Celsius. Effluents from sewage treatment plants and hydropower station discharges also typically contribute heat to the river. Solar radiation causes warming of rivers, and as ice grows, latent heat is released to the water.

In turbulent rivers such as the San Miguel, only a fraction of a degree of 'supercooling' below the freezing point is needed to form small floating ice crystals called 'frazil'. For a time, turbulence keeps frazil ice well mixed in the river flow, giving the water a milky appearance. Frazil eventually collects together forming ice 'flocs' and 'pans' on the water surface that continue to be transported by the river flow. The path of this moving ice eventually becomes blocked and it is frozen into a stable ice cover.

When frazil ice contacts either the stream bed or banks, it accumulates to form anchor ice or shore ice. Dynamic ice breakup occurs when the forces applied to stationary ice exceed the support from the streambed or banks. When this happens, destructive surges can be initiated that continue to grow larger as they travel downstream.

Within the San Miguel Basin, river ice breakup typically occurs during two seasonal periods. In the upper basin, ice breakup occurs in the winter, commonly within a few weeks of the winter solstice. In the lower basin ice jamming and flooding usually occur during the spring thaw.



Photo 8: Ice Jam along San Miguel River

Source: Linda Luther-Broderick

FLOODPLAINS

The channel and the area adjacent to the channel are known as the floodplain. In its common usage, the floodplain most often refers to that area that is inundated by the 100-year flood or the flood that has a 1% chance of occurrence in any given year. Floodplains are generally illustrated on inundation maps, which show areas of potential flooding and water depths. The 100-year flood is the national standard to which communities regulate their floodplains through the National Flood Insurance Program (NFIP). Communities are also mapped using Flood Insurance Rate Maps or (FIRMS). FIRMS are the national minimum standard to which communities regulate their floodplains. The NFIP rating for a community is based off of this standard. For more information on Flood regulations in San Miguel County see: Flood Vulnerability

The potential for flooding can change and increase through various land use changes and changes to land surface. A change in environment can create localized flooding problems in and outside of natural floodplains by altering or confining watersheds or natural drainage channels. These changes are commonly created by human activities. These changes can also be created by other events such as wildfires. Wildfires create hydrophobic soils – a hardening or “glazing” of the earth’s surface that prevents rainfall from being absorbed into the ground, thereby increasing runoff, erosion and downstream sedimentation of channels.

The total annual precipitation in eastern San Miguel County is approximately 24 inches with 2 to 3 inches occurring as thunderstorms during the months of April, May, July, and August. Snow records show an average of 126 inches per year with a monthly average of 20 inches plus for November, December, January, February, March and April.

PAST OCCURRENCES

Western Colorado received a Presidential Disaster Declaration in 1984 after one of the most severe and extensive snowmelts in the history of Colorado that spring. Widespread flood and landslide damage on the Western Slope impacted populated areas causing damages to roads and bridges, public facilities, and agricultural lands. Damage totaled over \$29 million dollars. San Miguel County was one of 15 counties included in the disaster declaration. The County incurred \$93,726 in Public Assistance eligible damages.



Photo 9: Historic Flooding Event Cornet Creek

Source: www.sanmiguelcounty.org (Historical Society)

According to the 1984 Western Slope Disaster ‘After Action Report’ from the Division of Disaster and Emergency Services (Now Colorado Division of Emergency Management): “High floodwaters in Fall Creek downed trees and inundated roadways making travel along County Road M44 nearly impossible. Floodwaters in Bear Creek destroyed trees, caused logjams, and destroyed bank protection. Along Specie Creek Road 44, Specie Creek caused heavy damage to the road and bridge structures in seven locations totaling over \$66,000 in damage.”

According to the Cornet Creek Study (2009) Historically, numerous debris flows have occurred along Cornet Creek, with the two most destructive events occurring on July 27, 1914, and August 1, 1969. Excerpt from the Colorado Public Works Journal, 2011:

“Though Town of Telluride was platted away from the mouth of the San Miguel at the valley floor, it was instead situated directly on the alluvial fan of Cornet Creek. Draining an approximate 2.4 square miles watershed of high mountainous terrain to the north, the creek runs directly through town en route to its confluence with the westerly flowing San Miguel. During torrential rains on July 27, 1914, the creek turned into a deluge of mud ‘very conservatively estimated at between eight and 10 feet in height,’ according to the Telluride Journal...The mudflow and the estimated 20 tons of boulders it mobilized were deposited primarily along the eastern side of the alluvial fan after washing out a berm constructed just years earlier at the mouth of the canyon to divert flows away from (other) portions of town.”

These events caused deposits of mud and rock with widespread depths of about 2 feet ranging to as much as 6 feet in localized areas (Mears et al., 1974). The most recent flooding event occurred on July 23, 2007, blocked culvert and bridge crossings, and damaged property on the north side of town. Most of the significant flood events have been caused by heavy rainfall following a period of prolonged wet weather. The NCEM database lists 12 significant flood events between 1996-2010. Most of these events were accompanied with debris flows and mudslides.



Photo 10: 1984 Flood Photos

19 FLOOD event(s) were reported in San Miguel County, Colorado between 01/01/1950 and 05/31/2010.	Mag: Dth: Inj: PrD: CrD:	Magnitude Deaths Injuries Property Damage Crop Damage
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Table 10: National Climatic Data Center Storm Event Database Records for Floods

Colorado								
Location or County	Date	Time	Type	Mag	Dth	Inj	PrD	C r D
Telluride	07/17/96	05:30 PM	Flash Flood	N/A	0	0	4K	0
East Portion	07/31/99	02:00 PM	Flood	N/A	0	0	50K	0
Placerville	08/05/99	08:00 AM	Flash Flood	N/A	0	0	5K	0
Sawpit	08/10/99	12:45 PM	Flash Flood	N/A	0	0	0	0
Sawpit	08/25/99	01:15 PM	Flash Flood	N/A	0	0	0	0
Ophir	07/08/00	08:00 PM	Flash Flood	N/A	0	0	0	0
Telluride	08/06/01	03:02 PM	Urban/sml Stream Fld	N/A	0	0	0	0
Telluride	08/08/01	02:00 PM	Flash Flood	N/A	0	0	400K	0
Fall Creek	08/09/01	02:25 PM	Flash Flood	N/A	0	0	0	0
Placerville	08/10/01	01:30 PM	Urban/sml Stream Fld	N/A	0	0	0	0
Fall Creek	08/13/01	06:30 PM	Urban/sml Stream Fld	N/A	0	0	0	0
Telluride	08/14/01	05:00 PM	Urban/sml Stream Fld	N/A	0	0	0	0
Telluride	07/22/02	12:40 PM	Flash Flood	N/A	0	0	0	0
Placerville	09/10/02	04:40 PM	Urban/sml Stream Fld	N/A	0	0	2K	0
Placerville	08/03/03	02:23 PM	Flash Flood	N/A	0	0	100K	0
Telluride	08/13/03	07:25 PM	Flash Flood	N/A	0	0	20K	0
Placerville	09/09/03	03:30 PM	Flash Flood	N/A	0	0	0	0
Placerville	07/10/06	12:45 PM	Flash Flood	N/A	0	0	0	0
Egnar	08/22/06	04:50 PM	Flash Flood	N/A	0	0	0	0
TOTALS:					0	0	581K	0

Source: ncdc.com

In addition, the SHELVDUS database lists a flood on 3/25/1998 that caused \$15,000 of property damage in the County. The San Miguel County Flood Insurance Study indicates that floods have occurred in the San Miguel Basin in 1909, 1911, 1913, 1923, 1927, 1964, and 1966. The most damaging were the 1909 and 1911 floods (discussed in more detail in the Dam Failure Flooding section), but little information exists on the extent and amount of damage.

FLOODS AND MUDSLIDES OF JULY 31, 1999 (NCDC HISTORIC EVENT PROFILE)

Heavy rains resulted in widespread flash flooding, mudslides, and turned Leopard Creek into a raging torrent which overflowed its banks and washed across State Highway 62, undercutting the roadbed. Eyewitnesses reported trashcans, canoes, trees, and other debris floating down the swollen San Miguel River which parallels State Highway 145. The flash floods and mudslides filled up the lower floors of some houses up to 4 feet deep, tore down fences, washed out driveways, washed away elevated gasoline and propane tanks, and floated some vehicles. In addition to the mudslides and rockslides on State Highways 62 and 145, eight County roads were damaged; ten mudslides occurred on Fall Creek Road, three mudslides covered South Fork Road above Ames, and additional mudslides were reported at Silver Pick, Sawpit Hill, Ophir Pass, Tomboy Road, and on Deep Creek Road. Flood damage occurred in the communities of Fall Creek, Placerville, and Sawpit. Pea-sized hail accumulated up to 8 inches deep on State Highway 62 atop Dallas Divide.

SPECIFIC IMPACT AREAS

Towns of Telluride and Sawpit and the unincorporated communities along the San Miguel River Canyon and its tributaries would be impacted. Ames to Placerville is the highest risk section, but the community of Ellersville is also at risk. Six bridge locations on the San Miguel River are monitored by County Road and Bridge and the County Sheriff's Office.



Photo 11: Mudslide on Hwy 145 near Beaver Canyon 2010

LIKELIHOOD OF FUTURE OCCURRENCE

Given the historical records for flooding events and the climatic patterns that San Miguel County is used to, it is **highly likely** that a Riverine, Street or Ice Jam flooding event will occur in the future.

SEVERITY OF IMPACT

For Telluride the magnitude is potentially catastrophic, with more than 50% of the town in the floodplains of Cornet Creek and the San Miguel River. There has been much development along the San Miguel River Canyon from Ilium to Placerville. Some homes along the river could be significantly impacted if the river were to experience a significant flooding event. Roads closed due to floods can also result in serious transportation disruptions due to the limited number of roads in the County. Mud and debris flows often accompany floods, which increase the impact of the event overall.

NATURAL HEALTH HAZARDS**PANDEMIC FLU**

A pandemic is a global disease outbreak. A pandemic flu is a virulent human flu that causes a global outbreak, or pandemic, of serious illness. A flu pandemic occurs when a new influenza virus emerges for which people have little or no immunity, and for which there is no vaccine. This disease spreads easily from person-to-person, and causes serious illness and can sweep across the country and around the world in very short time. The US Center for Disease Control and Prevention has been working closely with other countries and the World Health Organization to strengthen systems to detect outbreaks of influenza that might cause a pandemic and to assist with pandemic planning and preparation.

Most recently, health professionals have been concerned by the possibility of avian (or bird) flu pandemic associated with a highly pathogenic avian H5N1 virus. Since 2003, avian influenza has been spreading through Asia. A growing number of human H5N1 cases contracted directly from handling infected poultry have been reported in Asia, Europe, and Africa, and more than half the infected people have died. There has been no sustained human-to-human transmission of the disease, but the concern is that H5N1 will evolve into a virus capable of human-to-human transmission. There are also recent concerns with the potential for a widespread outbreak of H1N1 (Swine Flu). Researchers are in the process of developing a distributable vaccine for the strand.

An especially severe influenza pandemic could lead to high levels of illness, death, social disruption, and economic loss. Impacts could range from school and business closings to the interruption of basic services such as public transportation, health care, and the delivery of food and essential medicines.

However, on June 23rd 2010, the Center for Disease Control announced that the Public Health Emergency for 2009 H1N1 Influenza expired on June 23, 2010. On August 10, 2010, the World Health Organization (WHO) International Health Regulations (IHR) Emergency Committee declared an end to the 2009 H1N1 pandemic globally.

PAST OCCURRENCES

There have been three acknowledged pandemics in the twentieth century:

- **1918-19 Spanish flu (H1N1)**—This flu is estimated to have sickened 20-40 percent of the world's population. Over 20 million people lost their lives. Between September 1918 and April 1919, 500,000 Americans died. The flu spread rapidly; many died within a few days of infection, others from secondary complications. The attack rate and mortality was highest among adults 20-50 years

old; the reasons for this are uncertain. There has been a more recent outbreak of the H1N1 virus which is affecting many people. A vaccine is now available in limited supply.

- **1957-58 Asian flu (H2N2)**—This virus was quickly identified due to advances in technology, and a vaccine was produced. Infection rates were highest among school children, young adults, and pregnant women. The elderly had the highest rates of death. A second wave developed in 1958. In total, there were about 70,000 deaths in the United States. Worldwide deaths were estimated between 1 and 2 million.
- **1968-69 Hong Kong flu (H3N2)**This strain caused approximately 34,000 deaths in the United States and more than 700,000 deaths worldwide. It was first detected in Hong Kong in early 1968 and spread to the United States later that year. Those over age 65 were most likely to die. This virus returned in 1970 and 1972 and still circulates today.
- **2009-2010 Swine flu (H1N1)** this is a new influenza virus causing illness in people. This new virus was first detected in people in the United States in April 2009. This virus spread from person-to-person worldwide, probably in much the same way that regular seasonal influenza viruses spread. CDC laboratory studies have shown that no children and very few adults younger than 60 years old have existing antibody to 2009 H1N1 flu virus; however, about one-third of adults older than 60 may have antibodies against this virus. It is unknown how much, if any, protection may be afforded against 2009 H1N1 flu by any existing antibody. (www.cdc.gov)

Table 11: Influenza-Associated Deaths by Age Group, Colorado 2009-10

Age	Deaths	%	CO population Distribution	Rate per 100,000
0-17	12	17.4	1318802	.91
18-24	4	5.8	466280	.86
25-49*	23	33.3	1804500	1.27
50-64	19	27.5	928421	2.05
65+	11	15.9	488725	2.25
TOTAL	669	100.0	5006729	1.38

Source: www.cdphs.com

SPECIFIC IMPACTED AREAS

A Pandemic flu has the chance of affecting everyone in the County. Population areas usually have a higher infection rate due to close living arrangements. Pandemic flu generally affects the young, the elderly and those with already weakened immune systems.

LIKELIHOOD OF FUTURE OCCURRENCES:

It is **likely** that pandemic flu will occur in the future. According to historical data, three influenza pandemics have occurred since 1918. This is an average of a pandemic every 29.66 years. Although scientists cannot predict when the next influenza pandemic will occur or how severe it will be, wherever and whenever it starts, everyone around the world will be at risk. If an influenza pandemic does occur, it is likely that many age groups would be seriously affected. The greatest risk of hospitalization and death, as seen during the pandemics of 1957 and 1968 as well as during annual outbreak of influenza will be to

infants, the elderly and those with underlying health conditions; however in the 1918 pandemic most deaths occurred in young adults. However, advancements in medicine, preventative measures and specifics of the strain can be the deciding factors between the severity of the pandemic. (source: www.cdc.gov)

SEVERITY OF IMPACT

Pandemic flu can vary greatly in the impacts it has on a population. Some strains affect different age groups making it hard to predict specific impacts. If a pandemic flu outbreak were to occur in San Miguel County, chances that the disease would be affecting surrounding counties are high. Therefore, area hospitals and medical offices could become overwhelmed with infected patients. In a serious flu outbreak, schools and businesses would have to be shut down to prevent further spread of the disease. This could have significant economic impacts on the County as well.

PLAGUE

Plague is believed to have been introduced to North America from Asia, arriving for the first time at about the year 1900 during the peak of the last worldwide outbreak when it was spread from port-to-port by ships and ship rats. The disease gained a foothold among California ground squirrels in the San Francisco Bay Area and during the next 50 years it moved eastward among wild rodents to its present distribution, which includes Colorado. It was first seen in the state in San Miguel County in 1941 and appeared in several east-slope locations in 1943. Plague is now firmly established and is now frequently detected in rock squirrels, prairie dogs, wood rats and other species of ground squirrels and chipmunks. It is also seen in fox squirrels, an introduced tree squirrel common in city parks and Front Range residential areas. Wild rabbits also became involved in the plague cycle.

The epidemic form of the disease has been known since antiquity for the devastation caused by world-sweeping outbreaks such as the "Black Death" in the Middle Ages. Today, improved sanitation practices and rat control have reduced the threat of epidemics in developed countries. Nevertheless, plague is firmly entrenched among wild rodents in North America and individual cases continue to occur among humans exposed to these animals and their fleas. (source: <http://www.cdph.state.co.us/dc/zoonosis/plague/plaguefacts.html>)

PAST OCCURRENCES

There have been no cases of *pneumonic* Plague in San Miguel County. However, San Miguel County has had 2 cases total, one being septicemic and the other being bubonic. The 1979 case was septicemic, the victim survived but there are no details on exposure. However, it is thought to have occurred through a flea bite. The 1999 case was bubonic, the victim, who was a vet tech who had contact with sick cat survived as well. (Source: Elizabeth Lawaczeck: CDPHE)

SPECIFIC IMPACT AREAS

There is an established Prairie Dog colony on the Valley Floor near the Town of Telluride. The Bike path and other walking trails are in close vicinity of the colony. Also, the Valley Floor is public land where many people exercise and walk their dogs. The rural areas surrounding the town of Norwood also have some established Prairie Dog colonies. However, these colonies are often set in agricultural pastures away from most public access.

LIKELIHOOD OF FUTURE OCCURRENCE

Plague is a hot topic among public health officials in San Miguel County. Although there have been two reported cases in San Miguel County, the AHPG feels that with the newly established colony in relatively close proximity to the Town of Telluride that the chances of future occurrence are likely.

SEVERITY OF IMPACT

Plague can be deadly if not caught quickly. Many of the symptoms are similar with other diseases and can be overlooked by physicians. If a large rodent die off occurs, it is extremely important that people and their animals stay away from areas with infected rodents. It is also important that rodent populations are monitored and any symptoms of a mass die off are reported to State Health Officials.

WEST NILE VIRUS

The impact to human health that wildlife, and more notably, insects, can have on an area can be substantial. Mosquitoes transmit the potentially deadly West Nile virus. West Nile virus first struck the western hemisphere in Queens, New York, in 1999 and killed four people. Since then, the disease has spread across the United States. In 2003, West Nile virus activity occurred in 46 states and caused illness in over 9,800 people.

Most humans infected by the virus have no symptoms. A small portion develops mild symptoms that include fever, headache, body aches, skin rash, and swollen lymph glands. Less than one percent of those infected develop more severe illness such as meningitis or encephalitis, symptoms of which include headache, high fever, neck stiffness, stupor, disorientation, coma, tremors, convulsions, muscle weakness, and paralysis. Of the few people who develop encephalitis, fewer than 1 out of 1,000 infections die as a result.

Mosquitoes carry the highest amounts of virus in the early fall, thus there is a peak of disease in later August and early September. The risk of infection decreases as the weather becomes colder and mosquitoes die off.

There is no specific treatment for the infection or a vaccine to prevent it. Treatment of severe illness includes hospitalization, use of intravenous fluids and nutrition, respiratory support, prevention of secondary infections, and good nursing care. Medical care should be sought as soon as possible for persons who have symptoms suggesting severe illness. People over 50 years of age appear to be at high risk for the severe aspects of the disease.

The Towns of Telluride and Mountain Village have a Mosquito Abatement plan that was developed in 2004 which addresses mosquito management. Public Health Officials have been working to educate the public about the disease and working with local agencies to help reduce mosquito population and breeding grounds.

Table 12: West Nile Virus Cases by Colorado County

County of Residence	New cases	Clinical diagnosis			Total cases	Total deaths
		Fever	Meningitis	Encephalitis		
Adams	.	1	1	1	3	.
Arapahoe	.	3	2	2	7	.
Baca	.	1	.	.	1	.
Boulder	.	4	1	1	6	.
Delta	.	1	.	.	1	.
Denver	.	.	1	.	1	.
Douglas	.	1	.	.	1	.
El Paso	.	1	.	.	1	.
Jefferson	.	1	.	.	1	.
Kit Carson	.	1	.	.	1	.
La Plata	.	1	.	1	2	.
Larimer	.	10	2	1	13	.
Mesa	.	8	3	1	12	1
Moffat	.	1	.	.	1	.
Phillips	.	4	.	.	4	1
Prowers	.	2	1	1	4	1
Pueblo	.	1	1	.	2	.
Sedgwick	.	2	.	.	2	.
Weld	.	12	5	1	18	1
COLORADO	.	55	17	9	81	4

*Counties not listed have no cases of West Nile Virus

SPECIFIC IMPACT AREAS

All areas of San Miguel County can be affected by West Nile Virus. However, wetland areas or areas that have large amounts of standing water provide excellent breeding grounds for mosquitoes. San Miguel County has an advantage in fighting the spread of this disease due to the high altitude and therefore shorter summer seasons and cooler relative temperatures. The shorter summer season provides less time for mosquitoes to live.

LIKELIHOOD OF FUTURE OCCURRENCES

San Miguel County has not had a reported human case of West Nile Virus for the last three years. However, the disease can occur again in the future following a particularly wet spring and summer season or if temperatures do not get cold enough during the winter months to kill off the mosquito population entirely. Therefore, even though the disease hasn't occurred in the County for quite some time, it is still likely that West Nile could occur in the future.

SEVERITY OF IMPACT

As long as mosquito management plans and educational measures are in place, the affects of West Nile virus usually remain isolated to the victim. Therefore, the severity of independent West Nile cases are relatively low when considering the overall impact that individual infections have on the County as a

whole. However, if mosquito population was to get out of control and the disease was infecting larger numbers, the severity could increase.

SEVERE WEATHER

Colorado’s topography and climate often produce damaging, severe weather events that can contribute to other problems such as floods and debris flows. For the purpose of this plan severe weather is defined as any damaging weather event and includes hail, lightning, high wind, heavy rain and tornadoes. The following sections discuss weather typically experienced in San Miguel County.

HAIL

Hail is a round ball of ice that falls from a cumulonimbus (thunderstorm) cloud. Hail can range in diameter from pea sized to baseball or even grapefruit sized. The greater the diameter the more destructive and dangerous the hail can be. Hail can result in property damage and injury. Hail often accompanies thunderstorms during June through September and can break windows, dent automobiles, damage rooftops, ruin crops and injure persons. Hail can affect the entire County but the West End is more susceptible to crop damage, while the East End is more susceptible to property damage.

Table 13: NCDC HAIL EVENTS 1981-2004

Location	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
1 San Miguel	08/09/1981	1710	Hail	0.75 in.	0	0	0	0
2 Norwood	07/17/2000	02:40 PM	Hail	0.75 in.	0	0	0	0
3 Telluride	07/17/2000	03:00 PM	Hail	0.75 in.	0	0	0	0
4 Egnar	09/29/2000	01:45 PM	Hail	0.75 in.	0	0	0	0
5 Norwood	06/01/2003	12:15 PM	Hail	1.00 in.	0	0	0	0

LIGHTNING

Lightning poses a serious risk to human life such as outdoor recreationists, particularly in the Ophir/Telluride High Country Region and to agricultural and other field workers in the West End of the County. Lightning can also cause damage to buildings and is a frequent cause of wildfires. Lightning usually occurs during the thunderstorm season during June through September. The High Country Region experiences frequent lightning storms in the summertime.

Table 14: National Climatic Data Center Lightning Events

Begin Date	Hazard Type	State	County	Injuries	Fatalities	Property Damage	Crop Damage
6/27/2002	Lightning	CO	San Miguel	0	0	3000	0
9/20/1997	Lightning	CO	San Miguel	0	0	2000	0
6/17/1995	Lightning	Co	San Miguel	2	0	0	0
4/24/1994	Lightning	Co	San Miguel	0	0	5000	0
Totals				2		10000	

HEAVY RAINS

In Southwestern Colorado, heavy rains are generally associated with summer monsoonal patterns. The term monsoon generally refers to a seasonal wind shift, or monsoon circulation, that produces a radical change in moisture conditions in a given area or region. In the Southwestern United States, this shift in wind direction is primarily the result of two meteorological changes:

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

These two features then combine to create a strong southerly flow that helps bring in moisture (i.e., from the Gulf of Mexico, the Gulf of California, and the Pacific Ocean) that lifts and forms thunderstorms when it encounters the higher terrain of southern Colorado, including San Miguel County. The monsoons are significant to San Miguel County for two reasons. First, on the positive side, the monsoons can help temper the fire season. Second, heavy monsoon rains can lead to flooding, debris flows, trigger rockfall and rockslides and contribute to landslide/slope stability problems in San Miguel County. The monsoons typically begin in mid to late July and continue through mid August. (See flooding)

HIGH WINDS

Wind is the movement of air from areas of high pressure to areas of low pressure. The greater the difference in pressure the stronger the wind will be. Associated with wind hazards are utility outages, arcing power lines, downing of trees, debris blocking streets and an occasional structure fire. The SHELUDS database reveals that San Miguel County has experienced damaging wind events in recent years, with at least \$155,197 in losses since 1969. The entire County can be subject to high winds. High winds often occur with weather fronts that pass through in the spring and fall, or during summer thunderstorms.

Table 15: National Climatic Data Center Wind Events

EVENT DATE	TYPE	LOCATION	DAMAGE
12/21/1969	WIND	SAN MIGUEL	\$2,167
02/14/1995	WIND	SAN MIGUEL	\$6,667
02/26/1996	WIND	SAN MIGUEL	\$2,500
04/18/1996	WIND	SAN MIGUEL	\$1,500
06/17/1998	WIND	SAN MIGUEL	\$50,000
08/08/1998	WIND	SAN MIGUEL	\$3,333
04/09/1999	WIND	SAN MIGUEL	\$333
06/02/1999	WIND	SAN MIGUEL	\$1,000
04/18/2000	WIND	SAN MIGUEL	\$78,947
11/29/2000	WIND	SAN MIGUEL	\$2,500
12/10/2000	WIND	SAN MIGUEL	\$6,250

TORNADOES

The County Local Emergency Operations Plan identifies that tornadoes can accompany severe summer thunderstorms. The rotating winds of a tornado can exceed 200 miles per hour. Most tornadoes occur in the month of June. Tornadoes in San Miguel County are rare and have a relatively short duration, usually moving a short distance on the ground. Tornadoes can occur in western San Miguel County and would most likely affect the communities of Norwood, Slick Rock and Egnar.

SPECIFIC IMPACT AREAS

The western portion of San Miguel County is most likely to experience this hazard event.

LIKELIHOOD OF FUTURE OCCURRENCE

It is **Highly Likely** that San Miguel County will experience the elements of severe weather in the future.

SEVERITY OF IMPACT

Improved weather forecasting has enabled many extreme weather events to be predicted hours or days in advance. Some events such as thunderstorms that produce hail and lightning can develop rapidly and without warning. Usually these events are over in a matter of hours. Extreme temperatures, severe winter storms, heavy rains and high winds can last for several days but usually are preceded with warnings from the National Weather Service. Severe weather events often trigger other hazards such as avalanches, wildfires, floods, critical infrastructure failure and can disrupt transportation corridors.

WILDFIRES

HAZARD PROFILE

Wildfires are an ongoing concern for San Miguel County. Fire conditions arise from a combination of hot weather, an accumulation of vegetation, and low moisture content in the air. When combined with high winds and years of drought and beetle killed trees, these conditions increase the potential for a

wildfire to occur. A fire along the Wildland Urban Interface (WUI) can result in major losses of property and structures. By definition the Wildland Urban Interface can be explained as “the line area or zone where structures meet or intermingle with undeveloped wildland or vegetative fuel.” (Fire in the West, The Wildland Urban Interface Problem).

Wildfires can start suddenly due to lightning or human causes. Small fires can grow rapidly when adequate fuels coincide with weather and topography favorable to fire. Wildfires can last from several hours to several months. Seasonal patterns, temperature patterns, precipitation patterns, and growth are all factors that influence wildfire behavior and intensity. Another contributing factor to fuel loads in the forest are standing trees killed by pine bark beetles, which have been affecting the forests of southwest Colorado since 2002. Oil and gas drilling activities have also increased the chance of ignitions in the western part of the County.

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

1. **Fuel:** Fuel is the material that feeds a fire and is a key factor in wildfire behavior. Fuel is generally classified by type and by volume. Fuel sources are diverse and include everything from dead tree needles and leaves, twigs, and branches to dead standing trees, live trees, brush, and cured grasses. Also to be considered as a fuel source, are man-made structures and other associated combustibles. The type of prevalent fuel directly influences the behavior of wildfire. Light fuels such as grasses burn quickly and serve as a catalyst for fire spread. The volume of available fuel is described in terms of Fuel Loading.
2. **Topography:** An area’s terrain and land slopes affect its susceptibility to wildfire spread. Fire intensities and rates of spread increase as slope increases due to the tendency of heat from a fire to rise via convection. The natural arrangement of vegetation throughout a hillside can also contribute to increased fire activity on slopes.
3. **Weather:** Weather components such as temperature, relative humidity, wind, and lightning also affect the potential for wildfire. High temperatures and low relative humidity dry out the fuels that feed the wildfire creating a situation where fuel will more readily ignite and burn more intensely. Wind is the most treacherous weather factor. The greater a wind, the faster a fire will spread, and the more intense it will be. Winds can be significant at times in San Miguel County, though the highest winds usually occur during the winter and spring, not during the summer fire season. In addition to high winds, wind shifts can occur suddenly due to temperature changes or the interaction of wind with topographical features such as slopes or steep hillsides. Related to weather is the issue of recent drought conditions contributing to concerns about wildfire vulnerability. During periods of drought, the threat of wildfire increases.

Large forest areas adjoining highways, oil and gas drilling sites, campsites, and recreational activity/lodging are susceptible to lightning strikes, unsupervised controlled burns, and accidental fire activity resulting in wildfires. Additional factors which may affect wildland fires in San Miguel County are increased drought conditions, additional subdivisions, increase in aircraft accidents and increase in outdoor fire activity.

PAST OCCURRENCES

San Miguel County has experienced multiple wildfires. The 2002 wildfire season was the worst on record. It began in April and continued until early fall, with the peak activity in June and July when several large and damaging fires burned simultaneously across the state.

The West Beaver Fire began June 21 and was contained on July 1st. Lightning ignited the fire on the forested east slope of Lone Cone Mountain and consumed 580 acres. The cost of fighting the fire was \$1.5 million. The Burn Canyon fire was started by lightning on July 7th in the Uncompahgre National Forest about six miles southwest of Norwood. The fire consumed 31,300 acres of forest and injured 9 persons. This fire was the largest naturally caused fire in Colorado’s history. The cost of fighting the fire was 35.3 million dollars. Several structures were threatened and residences in the community of Redvale were evacuated. Fortunately no structures were lost. Colorado received FEMA Fire Suppression Assistance/Fire Management Assistance for this fire.

Table 16 Recent Fires in San Miguel County

NAME	DATE	LOCATION	IMPACTS	CAUSE
West Beaver Fire	June 22nd 2002	15 miles west of Telluride near Lone Cone Mountain.	Acres burned: 580 Structures lost: 0 Injuries: 1 Cost: \$1.5 m	Lightning
Burn Canyon Fire	July 9, 2002	About six miles southwest of Norwood in the Uncompahgre	Acres burned: 31,300 Injuries: 2 Cost: \$35.3 m	Lightning
Beaver Fire	July 5, 2003	9 miles southwest of Placerville	Acres burned: 165	
Alta Lakes Fire	July 10, 2003	Alta Lakes 4 mi SW of Telluride	Acres burned: 120 Cost: \$307,000	Human
Hamilton Mesa Fire	July 19, 2003	Hamilton Mesa	Acres burned: 2,064 Cost: \$290,000 Structures Threatened: 3	Lightning
Craig Draw Fire	July 17th 2005	Craig Draw	Acres burned: TBD Cost: 3 Million	Lightning
Beaver Canyon Fire	May 22nd 2010	5 Miles E/SE of Norwood in San Miguel Canyon	Acres Burned: 2,641 Cost: 1.3 million	Power Line



Photo 12: Burn Canyon Fire 2002: Source Sheriff's Office



Photo 13: 2010 Beaver Canyon Fire

Source: Telluride Daily Planet



Photo 14: Beaver Canyon Fire 2010

Source: San Miguel County Sheriff's Office

SPECIFIC IMPACT AREAS:

The County’s Community Wildfire Protection Plan outlines the specific areas of the county and their corresponding wildfire risk level. The Wildland-Urban Interface (WUI) is described as the area where structures and other features of human development meet and intermingle with undeveloped wildland or vegetative fuels. These human developments include communities and infrastructure such as power, gas and telephone lines. Communities within WUI risk substantial threats to life, property and infrastructure.

Table 17: CWPP Hazard Ratings

Community Name	Fire Protection District	Hazard Rating
Aldasoro	Telluride	Low
County Line Road (Egnar)	Egnar/Slick Rock	Low
Egnar	Egnar/Slick Rock	Low
Norwood Agricultural Area	Norwood	Low
Ophir	Telluride	Low
San Bernardo/Priest Lake	Telluride	Low
Redvale	Norwood	Low
Slick Rock	Egnar/Slick Rock	Low
Egnar Agricultural Area	Egnar/Slick rock	Moderate
Gurley Lake Ranch	Norwood	Moderate
Hastings Mesa	Telluride	Moderate
Ilium Valley/ Ames	Telluride	Moderate
Lower Mountain Village	Telluride	Moderate
Mountain View	Norwood	Moderate
Thunder Road	Norwood	Moderate
Two Rivers Subdivision	Telluride	Moderate
Telluride/ Hillside	Telluride	Moderate
Miramonte Ranch	Norwood	High
Specie Mesa	Telluride	High
Iron/Mackenzie Springs	Telluride	High
Lower Valley	Telluride	High
Trout Lake	Telluride	High
Upper Mountain Village	Telluride	High
Beaver Pines	Norwood	Very High
Brown Ranch	Telluride	Very High
Fitts Subdivision	Norwood	Very High
Lawson Hill	Telluride	Very High
Spud Patch	Egnar/Slick Rock	Extreme
Deer Mesa	Norwood	Extreme
Mailbox	Norwood	Extreme

(Source: San Miguel County CWPP)

LIKELIHOOD OF FUTURE OCCURRENCE:

It is **highly likely** that a wildfire will occur in San Miguel County in the future. Whether started by natural causes (lightning) or by human negligence, intent or error, wildfires have been a historical hazard and will continue to be in the future.

SEVERITY OF IMPACT:

Wildfire has the potential to cause widespread and severe damage to watersheds and property in the planning area. Although a natural process, wildfires can mar scenic view-sheds, potentially reducing property values and negatively impacting the tourism-based economy that much of the eastern half of the County depends on. Life safety and human health are serious concerns due to the limited evacuation routes and high influx of visitors to the eastern County during summer festivals.



Photo 15: Burn Canyon Fire Devastation 2002

Source: San Miguel County Sheriff's Office

MANMADE HAZARDS

The causes of manmade hazards tend to be more diverse less predictable than the causes of most natural hazards. Manmade Hazards result in 'man-made accidents' because the trigger event is human action (or inaction) when dealing with technologies. Manmade hazards are really failures in complex systems caused by technical, social, organizational or operational defects.

As such, manmade hazards exist within San Miguel County. Given that including these hazards is not a requirement of DMA 2000 planning regulations they are not profiled in the same detail in this plan as the natural hazards. Some of the potential problems are listed in this plan for consideration of additional study in future updates to this plan.

Although natural hazards are separated into a different category, it is important to realize that some of these hazards profiled in the previous section have secondary impacts that include critical infrastructure failure. Aside from a general system failure or break, natural hazards can have a significant impact on essential utilities and lifelines.

CRITICAL INFRASTRUCTURE FAILURE

Critical Infrastructure in this plan is defined as the network of important systems that deliver essential services citizens rely on. It includes water and sewerage, electricity and gas telephones and transport. The AHPG decided that it would be beneficial to add critical infrastructure failure to the list of hazards to be included in the 2010 All-Hazards Mitigation Plan.

San Miguel County as a whole has experienced critical infrastructure failure in the past and will most likely experience failure again in the future.

TERRORISM

The term terrorism refers to intentional criminal and malicious acts. For the purposes of this risk assessment terrorism refers to the use of Weapons of Mass Destruction (WMD), including, biological, chemical, nuclear, and radiological weapons; arson, incendiary, explosive, and armed attacks; industrial sabotage and intentional hazardous materials releases and cyber-terrorism.

Terrorism has become a much higher priority since the event of September 11, 2001. Although our community does not consider itself as a priority target, the possibility exists and has become an increased concern. Shortly after the 9/11 incident we experienced a period of heightened concern over biological agents.

What the all-hazards approach can contribute to the effort to deal with terrorism in its many forms is a basic framework for structuring the emergency response, preparing for the response, and recovering from attacks, as well as developing appropriate measures to prevent or reduce the impact of the attacks – whatever form the attacks may take. Although Terrorism is classified under the 'Manmade Hazard' section of this plan, it is important to note that some of the 'natural hazards' identified in the previous section can be caused by terrorist activities.

San Miguel County is perceived to be at low risk because of the remote location of the County and low population density; though there are high profile individuals who may live or visit the area. Potential impact areas include, but are not limited to the Towns of Telluride and Mountain Village and the Trout Lake Dam.

TECHNOLOGICAL HAZARDS

Technological Hazards in this document refer mainly to cyber attacks. San Miguel County is at relatively low risk for technological hazards such as computer or system hacking. Although some systems have confidential information, the County has taken precautions and set up protective measures from this type of hazard, to include redundant backup systems and disaster recovery systems as they relate to data recovery.

TRANSPORTATION ACCIDENTS

There are several transportation routes through San Miguel County. State Highways 145, 62 and 141 are the most heavily traveled roads in the County. In addition, County Roads carry a substantial amount of traffic, especially during times when the highway becomes impassible due to road or weather conditions. All roadways in the county may experience heavy commuter and truck traffic during all months of the year, with county roads getting increased use during the summer months. Severe winter weather increases the number of transportation accidents. County and State highway officials have constructed guardrails along dangerous sections of the road to help curb vehicles from sliding off the road during icy driving conditions.

Transportation accidents are difficult to mitigate given the fact that the causes of accidents vary so widely. San Miguel County and the Colorado Department of Transportation (CDOT) work closely together to keep roads open and safe to travelers by offering assistance when needed and enforcing Colorado laws.

HAZARDOUS MATERIAL INCIDENTS

The population of San Miguel County is susceptible, at any time, to accidents involving hazardous materials on roads, highways, and at fixed facilities that manufacture, use or store dangerous chemical substances. The release of hazardous materials can threaten people and natural resources in the immediate vicinity of the accident. Air releases can prompt large-scale population evacuations and spills into water or onto the ground can adversely affect public water and sewer systems.

The Emergency Management Team separates these Hazardous Materials incidents into two categories, Fixed Facilities and Transportation. A fixed-facility incident is an uncontrolled release of chemicals or other potentially hazardous materials from a facility. A transportation incident refers to accidental and uncontrolled releases of chemicals or other hazardous materials during transport (i.e., highways, pipelines and airways). A hazardous materials incident may occur at any time during routine business operations or as a result of a natural disaster.

Fixed facilities include companies that store hazardous waste at their facility and also all hazardous waste sites. According to the Material Safety Data Sheets (MSDS), there are a few facilities in San Miguel County that hold hazardous materials although none of them exceed the threshold amount.

Transportation of hazardous materials is common in San Miguel County, especially on State Highway 141 which is the only designated HAZMAT transport route through the county. Since San Miguel County is surrounded by mountains and diverse terrain, transportation of HAZMAT materials is limited on the high mountain passes. In addition, severe weather conditions, ice, wildlife and the potential for debris make transporting dangerous materials a significant risk.

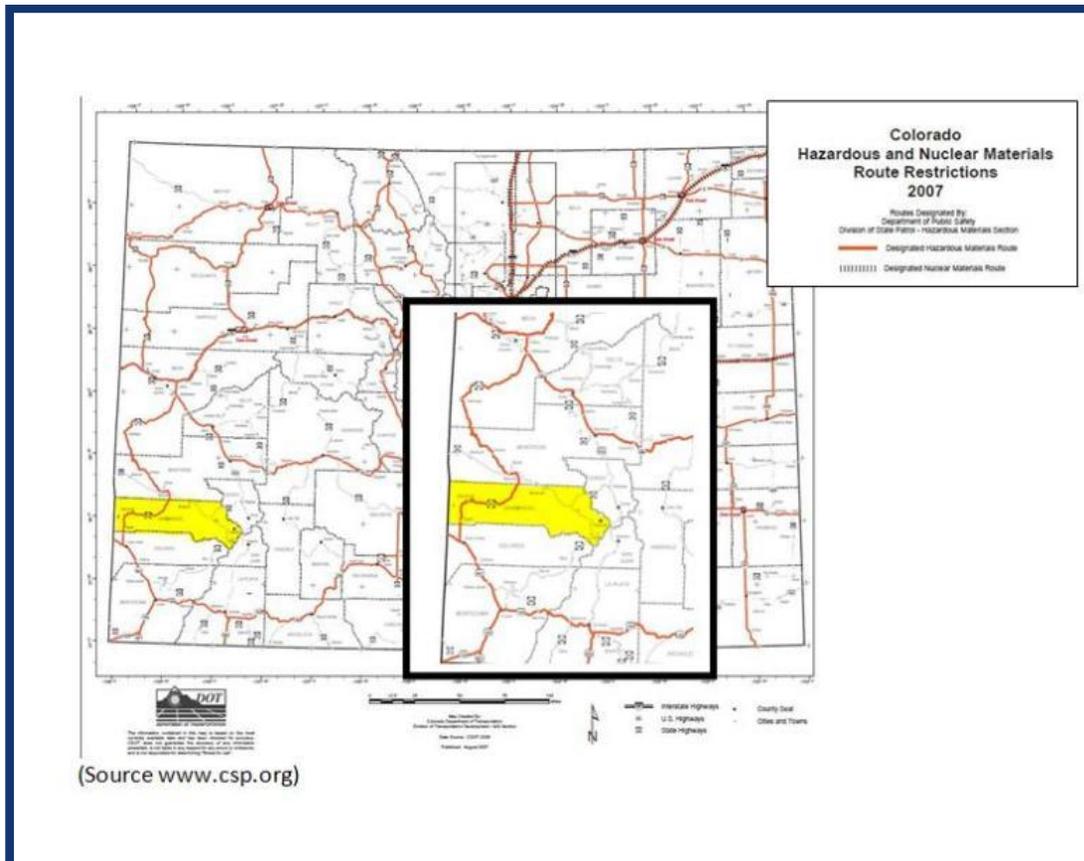


Figure 12: Hazardous Transportation Routes Colorado and San Miguel County

Facilities that manufacture, store or transport hazardous materials in San Miguel County are subject to the requirements of SARA Title III. Facilities subject to SARA Title III are required to report chemical inventories to State and Local officials and to cooperate with local agencies in preparing for hazardous materials accidents.

Colorado Department of Transportation was able to identify three historic hazardous materials spills in San Miguel County:

- 4-30-2007, Highway 141 MP 26, 60 gallon diesel spill from a truck crash;
- 4-7-2008, Mountain Village, 136 Country Club Drive, assisted Mountain Village with a leaking 2000 gallon underground tank.
- 3-4-2009, Highway 145 MP 77.2, 100 gallon diesel fuel spill from a truck crash.

RISK ASSESSMENT

ASSESSMENT PROCESS

After the hazards were identified by the Planning Group, the next step in the planning process was to determine what impact the identified hazards could potentially have on structures, populations, critical facilities and infrastructure. This section attempts to quantify the perceived risk for the hazards identified in the previous section. The Risk Assessment methodology used the following steps:

The Planning Coordinator and Emergency Management Coordinator created a Risk Perception Worksheet that profiled each hazard identified by the planning group. AHPG participants were asked to fill out the 2010 perceived risk and the impact categories for each hazard in each jurisdiction and for the County as a whole. Each category was given a numerical value and responses were analyzed and averaged.

From the results, each hazard was identified as being *high, medium or low risk* to the County as a whole and to each of the 5 jurisdictions. Risk perception results were also reached by:

1. Assessing the exposure of people and property in the entire County and by each jurisdiction.
2. Obtaining hazard maps, where available.
3. Utilizing previous risk assessments where available.

Summarizing what is at risk to the *High and Medium* risk hazards using one of the following methods, according to existing data availability:

1. GIS analysis, where possible
2. Interpreting impacts based on hard copy hazard maps
3. Estimating losses based on past events-Assessing, where possible, how future development trends may increase or decrease risk
4. Likelihood of Occurrence was ranked accordingly: Highly Unlikely: 0, Unlikely: 1, Likely: 2, Highly Likely: 3
5. Severity of Impact was also determined for each hazard: Extremely limited: 0, Limited: 1, Critical: 2 and Catastrophic: 3

Table 18: Risk Assessment Scoring Example

HAZARD	LIKELIHOOD	LIKELIHOOD SCORE	SEVERITY OF IMPACT	IMPACT SCORE	2010 PERCEIVED RISK SCORE	2010 PERCEIVED RISK
DAM FAILURE	HIGHLY UNLIKELY	0	CRITICAL	2	2	LOW
EXTREME WINTER WEATHER	HIGHLY LIKELY	3	LIMITED	1	4	MED
WILDFIRE	HIGHLY LIKELY	3	CATASTROPHIC	3	6	HIGH

Based on these factors the hazard was given a rating based on its ‘score’ from 0 to 6.

- Low (0.0-3.0)
- Medium (3.1-4.25)
- High (4.26-6.0)

Table 19: The AHPG Risk as Perceived worksheet with averaged results.

Hazard	County Risk Perception	Telluride Risk Perception	Mtn. Village Risk Perception	Ophir Risk Perception	Sawpit Risk Perception	Norwood Risk Perception
Wildfire	High 5.53	Medium 4.0	High 5.5	Medium 3.5	High 5.53	High 6.0
Drought	High 4.73	Medium 4.0	High 5.5	Low 3.0	High 4.73	High 6.0
Extreme Winter Weather	High 4.42	Medium 4.0	Medium 4.0	High 4.5	High 4.42	Medium 4.0
Critical Infrastructure Failure	High 4.33	Medium 4.0	Medium 4.0	Low 2.0	High 4.33	Medium 4.0
Severe Weather: (Hail, Lightning, Heavy Rain, Tornadoes and High Winds)	Medium 3.72	Medium 3.8	Medium 4.0	Low 3.0	Medium 3.72	Low 3.0
Riverine Flooding	Medium 3.52	Medium 4.0	Low 3.0	Medium 4.0	Medium 3.52	Low 3.0
Hazardous Materials Spill	Medium 3.5	Low 3.0	Medium 4.0	Low 2.0	Medium 3.5	Low 2.0
Pandemic Flu	Medium 3.41	Medium 4.0	Medium 4.0	Medium 3.41	Medium 3.41	Medium 4.0
Avalanche	Medium 3.25	Low 1.0	Low 1.0	High 4.5	Low 0	Low 0
Debris Flow, Landslides and Rockfall	Medium 3.25	High 5.0	Low 3.0	Medium 4.0	High 4.25	Low 0
Street Flooding	Low 2.81	Medium 4.0	Low 1.5	Low 3.0	Low 3.5	Low 3.0
Earthquake	Low 2.65	Low 2.0	Low 3.0	Low 3.0	Low 2.65	Low 1.0
Terrorism	Low 2.53	Low 2.5	Low 2.5	Low 2.0	Low 2.53	Low 0.0
Ice Jam Flooding	Low 2.25	Low 2.0	Low 1.0	Low 0.0	Low 2.25	Low 1.0
West Nile	Low 2.0	Low 0.0	Low 1.0	Low 2.0	Low 2.0	Low 3.0
Plague	Low 2.0	Low 0.0	Low 1.0	Low 2.0	Low 2.0	Low 2.0
Dam Failure	Low 1.8	Low 0.0	Low 1.0	Low 0.0	Low 1.8	Low 1.0
Transportation Accidents	Low 2.8	Low 0.0	Low 1.0	Low 1.0	Low 2.5	Low 1.0
Technological Hazards	Low 0.0	Low 2.0	Low 2.0	Low 1.0	Low 1.0	Low 0.0

Table 20: AHPG (continued) Fire Protection District Risks as Perceived

Hazard	Norwood Fire Protection District	Telluride Fire Protection District	Egnar Fire Protection District
Wildfire	High 5.57	Medium 4.0	High 5.20
Drought	High 5.5	Medium 4.0	High 5.5
Extreme Winter Weather	High 4.44	Medium 4.0	Medium 4.0
Critical Infrastructure Failure	Medium 4.15	Medium 4.0	Medium 4.0
Severe Weather: (Hail, Lightning, Heavy Rain, Tornadoes and High Winds)	Medium 3.00	Medium 3.8	Low 3.0
Riverine Flooding	Medium 3.25	Medium 4.0	Low 3.0
Hazardous Materials Spill	Medium 3.75	Low 3.0	Medium 3.4
Pandemic Flu	Medium 3.5	Medium 4.0	Medium 4.0
Debris Flow, Landslides and Rockfall	Medium 3.25	High 5.0	Low 0
Avalanche	Low 1.0	Low 1.0	Low 0
Street Flooding	Low 2.81	Medium 4.0	Low 2.0
Earthquake	Low 2.65	Low 2.0	Low 1.0
Terrorism	Low 2.53	Low 2.5	Low 0.0
Ice Jam Flooding	Low 2.25	Low 2.0	Low 1.0
West Nile	Low 2.0	Low 0.0	Low 1.0
Plague	Low 2.0	Low 0.0	Low 2.0
Dam Failure	Low 1.8	Low 0.0	Low 2.0
Transportation Accidents	Low 2.8	Low 0.0	Low 2.4
Technological Hazards	Low 1.5	Low 2.0	Low 1.5

RISK AS PERCEIVED BY THE AHPG SUMMARY

Based on the results from the AHPG Risk Perception worksheet, the Hazards have been grouped into High, Medium and Low Risk categories for the entire County. Each Jurisdiction has specific results that differ from the County results. The hazards are not ranked in order within each category

High Risk

- Wildfire
- Drought
- Debris Flow
- Extreme Winter Weather
- Critical Infrastructure Failure

Medium Risk

- Riverine Flooding
- Severe Weather
- Hazardous Material Spill
- Pandemic Flu
- Avalanche
- Landslides

Low Risk

- Street Flooding
- Earthquake
- Terrorism
- Ice Jam Flooding
- West Nile
- Plague
- Dam Failure
- Transportation Accidents
- Technological Hazards

EXISTING MITIGATION CAPABILITIES

The AHPG felt it important to consider existing capabilities before assessing the vulnerability that the County and each jurisdiction has to each hazard. Natural hazard mitigation in San Miguel County began long before this planning process as evidenced in several plans, procedures and activities already underway. In addition, there are multiple resources available to stakeholders. The purpose of this section is to highlight these activities and resources to incorporate them into the County's overall mitigation strategy. The following information identifies existing mitigation strategies for the hazards likely to affect San Miguel County.

FLOOD

FLOOD INSURANCE AND FLOODPLAIN MANAGEMENT

San Miguel County and the Towns of Norwood and Telluride participate in the National Flood Insurance Program (NFIP). The Town of Telluride participates in the NFIP Community Rating System (CRS), a program established to provide discounts on flood insurance policies to residents of communities that take on additional floodplain management responsibilities above and beyond the standards required with NFIP participation. The CRS communities list shows that Telluride entered the CRS in 10/1/1994 and currently is rated an 8 out of 10; the lower the rating the better.

Telluride residents in the floodplain receive a 10 to 15% discount on their policy, and those with policies outside of the floodplain receive a 5% discount, since non flood-prone property already receives a "built-in" discount for being less at risk to begin with. This plan will earn the town additional CRS credits, contributing to Telluride's overall floodplain management program.

In the next few pages, the Flood Insurance Rate Maps (FIRM) FEMA has available are displayed. The maps lose detail posted in the plan, but are available for viewing and purchase at:

<http://msc.fema.gov/webapp/wcs/stores/servlet/FemaWelcomeView?storeId=10001&catalogId=10001&langId=-1>

San Miguel County residents may search for the following map IDs in the system to view and purchase:

- 08113C0287D Includes main Telluride area
- 08113C0291D Includes very east end of Telluride
- 08113C0256C Includes Sawpit

FEMA FIRM 08113C0291D Includes very east end of Telluride

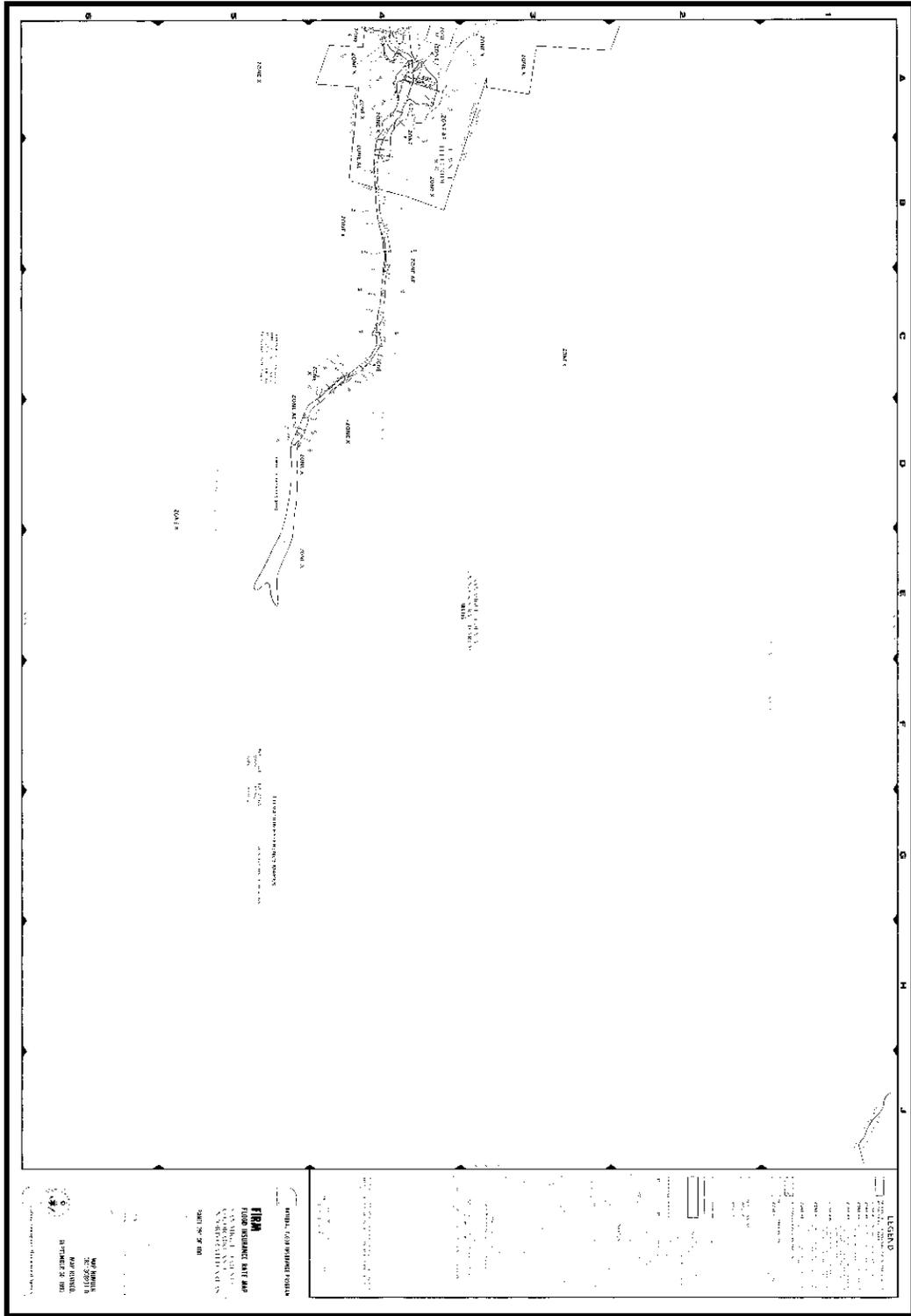


Figure 14 FEMA FIRM East end of Telluride

FEMA FIRM 08113C0256C Includes Sawpit

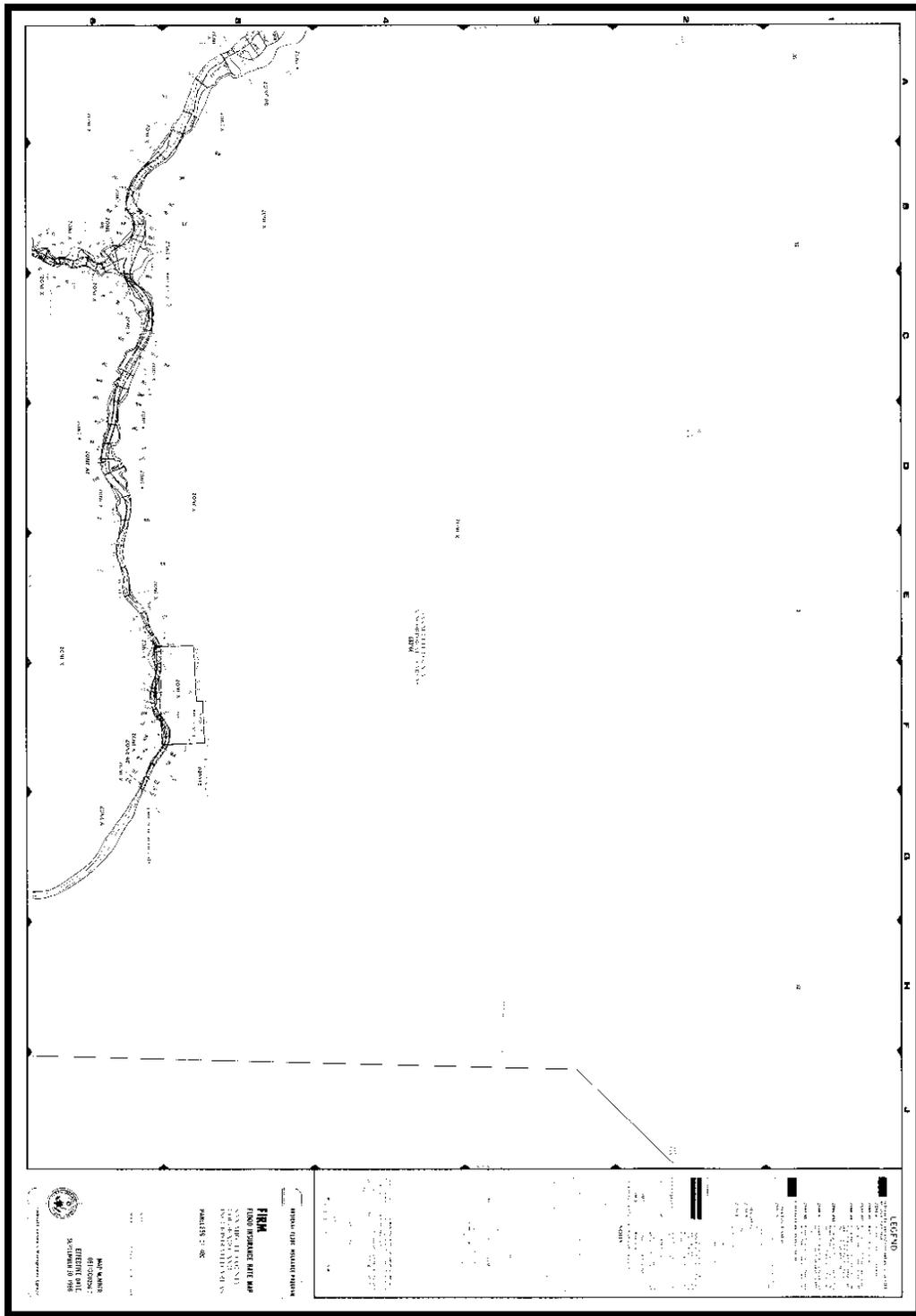


Figure 15 FEMA FIRM 08113C0256C Sawpit

San Miguel County - NFIP Participation Information				
Category	Data		Category	Data
Date Joined NFIP	9/29/1978		Number of Policies in force	56
CRS class/discount	N/A		Insurance in Force	\$ 15,683,200.00
CAV date	N/A		Number of Paid Losses	4
CAC date	N/A		Total Losses Paid	\$ 26,903.15
Date of Current FIRM	9/30/1992		Substantial Damage claims since 1978	0
Town of Norwood – NFIP Participation Information				
Category	Data		Category	Data
Date Joined NFIP	1/27/1985		Number of Policies in force	0
CRS class/discount	N/A		Insurance in Force	\$ 0.00
CAV date	N/A		Number of Paid Losses	0
CAC date	N/A		Total Losses Paid	\$ 0.00
Date of Current FIRM	9/30/1992		Substantial Damage claims since 1978	0
Town of Telluride – NFIP Participation Information				
Category	Data		Category	Data
Date Joined NFIP	9/15/1978		Number of Policies in force	345
CRS class/discount	8 / 10%		Insurance in Force	\$ 83,887,500.00
CAV date	8/17/2009		Number of Paid Losses	3
CAC date	6/02/2008		Total Losses Paid	\$ 88,699.76
Date of Current FIRM	9/30/1992		Substantial Damage claims since 1978	1

Figure 16 NFIP Participation Information

CAC = Community Assistance Contact
 CAV = Community Assistance Visit
 CRS = Community Rating System
 FIRM = Flood Insurance Rate Map
 NFIP = National Flood Insurance Program

The Town of Sawpit has a Special Flood Hazard Area identified on a Flood Insurance Rate Map dated 9/30/1988, but does not participate in the program. NFIP sanctions have been in effect since 9/30/1989, which means that Sawpit residents in identified flood hazard areas cannot get flood insurance or Federal disaster assistance for repairs if flooded, and no Federally-backed mortgages.

FLOODPLAIN MANAGEMENT ORDINANCE

A floodplain management ordinance exists in the town of Telluride that outlines regulatory requirements for development within the floodplain intended to reduce flood losses and promote wise use of the floodplain. This ordinance contains the standard language required as a participant in the NFIP, as well as a one-foot freeboard requirement. The Planning Department enforces the ordinance and the Town of Telluride’s web page contains information on how residents can obtain floodplain information.

- Cornet Creek Hazard Maps, Mudflow and Flood Studies (Various Years), Drainage Study
- Surface Water Hydrology Study, 1996
- FEMA Flood Insurance Study, 1992
- Coronet Creek Drainage Study, 1985
- Coronet Creek Debris and Flood Control, 1983
- Coronet Creek Flood Study, 1974-5
- Debris Flow Hazard On Cornet Creek at Telluride, 1974
- Preliminary Report-Mudflow Hazard on Cornet Creek
- Preliminary Hazard Map of Telluride, Colorado
- Drainage Master Plan, 1983
- Flood Insurance Study, 1978
- Investigation of Cornet Creek, August 2003 Flooding
- Cornet Creek Study, 2007 & 2009

COMPLETED ROAD AND BRIDGE PROJECTS

San Miguel County's Road and Bridge Departments maintain all County roads year round (unless otherwise stated). The department is responsible for maintaining 648 miles of primary and secondary roads within the County. San Miguel County R&B has developed a 10 year construction plan in order to improve roads and transportation in the County. SMC is broken into four districts for County maintenance:

- District 1, Deep Creek Shop - Roads east of Goodenough Gulch and Specie Creek
- District 2, Norwood Shop - Roads on Wrights Mesa and the Lone Cone
- District 3, Basin Shop - Roads west of Miramonte, Dry Creek Basin to Slickrock
- District 4, Egnar Shop - Roads west of Slickrock to the Utah and Dolores County boundaries

Spring is challenging as the department tries to deal with spring runoff from the snow melt. While roads are drying out, they need to be graded while they have optimum moisture. The Department also spends time treating busy dirt roads with dust retardant. Summer month tasks include paving and chip-seal projects as well as any culvert and cattle guard repairs. Gravel hauling occurs most of the summer in all districts. Roads are graded as they become rough but in the summer roads often require a water truck and compactor to properly grade them.

Fall usually involves gravel hauling and attempting to keep snow routes as smooth as possible through grading. The Department spends a significant amount of time doing repairs and extensive maintenance on snow removal equipment. In the winter months, the main challenge for the Department is to keep the roads plowed and sanded during times of peak use.

Since the 1984 spring runoff where Specie Creek, Fall Creek and Bear Creek Roads were completely washed out, Road & Bridge has worked on channel improvements by replacing undersized culverts and armoring the stream banks along the County Roads with heavy rip rap to prevent erosion. Only minor shoulder damage has occurred since 1984 due to spring runoff. In addition, since 1984, San Miguel County has replaced seven substandard bridges along the San Miguel River with structures that are designed to carry the 100 year flood plus 1 foot. The box culvert on the Howards Fork near Ames was also replaced with flow capacity expanded. Additional bridges replaced to increase flood capacity are located in Disappointment Valley and Dry Creek Basin.

DROUGHT

PUBLIC EDUCATION

The New Community Coalition (TNCC) works to provide the public with information/awareness programs during drought and non-drought years and provides information and ideas for water storage projects.

- Increased water storage
- Installation of new dry hydrants

WILDFIRE

SAN MIGUEL COUNTY COMMUNITY WILDFIRE PROTECTION PLAN

Community Wildfire Protection Plan was completed in 2009 with the collaboration of private, local, state and federal partners. The plan accomplishes the following:

1. Provide a comprehensive, scientifically-based analysis of wildfire related hazards and risks in the Wildland-Urban Interface (WUI) areas of San Miguel County and a portion of Montrose County within the Norwood Fire Protection District.
2. Using the results of the analysis, generate recommendations designed to prevent and/or reduce the damage associated with wildfire to values in the study area.
3. Create a Community Wildfire Protection Plan (CWPP) document that conforms to the standards for CWPPs established by the Healthy Forest Restoration Act (HFRA) and the Colorado State Forest Service.
4. This plan will complement local agreements and existing plans for wildfire protection and aid in implementing a seamless, coordinated effort in determining appropriate fire management actions in the study area.

Goals for the plan:

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, watersheds, and quality of life.

To accomplish these goals, the following objectives were identified:

1. Establish an approximate level of risk (the likelihood of a significant wildfire event in the study area).
2. Provide a scientific analysis of the fire behavior potential of the study area.
3. Group neighborhoods into “communities” that represent relatively similar hazard management needs.
4. Identify and quantify factors that limit (mitigate) undesirable fire effects on the values at risk (hazard levels).
5. Recommend and prioritize specifications that will reduce hazards associated with the values at risk.

SAN MIGUEL COUNTY WILDFIRE SAFETY PROGRAM

Colorado State Forest Service, USFS, BLM, Egnar Fire Protection District, Norwood Fire Protection District, Telluride Fire Protection District, citizens and San Miguel County initiated an effort in 2003 and 2004 to mitigate wildfires within San Miguel County. While saving lives is their first priority, a firefighter's second mandate is to save structures in the event of a wildfire. The purpose of the Wildfire Safety Program is to assist homeowners, firefighters, and the community in the event of a wildfire by providing them with the following information:

- A. For the homeowner, specific information about how to make their homes less susceptible to wildfire,
- B. For the firefighter, an assessment of the structure with respect to access, materials and vegetation- specific information to make fighting fires safer for all emergency personnel, and
- C. For the community, the ability to map structures and access in wildfire-prone areas of the County.

The premise of the Wildfire Safety Program was to educate homeowners about Home Fire Protection in a region where wildfire is an integral part of the ecosystem. As San Miguel County grows, property owners encroach more and more on wildlands, making their susceptibility to fire greater. San Miguel County is using protocol from the Fire-wise program to provide homeowners with information about how they can protect themselves; this protocol includes information about access, vegetation and topography, defensible space, structure information, utilities, and water sources.

COLORADO EMERGENCY FIRE FUND

San Miguel County also participates in the Colorado Emergency Fire Fund (EFF). This fund, established in 1967, assists the payment of expenses when catastrophic wildfires exceed a participating County's resources. 35 Colorado counties contribute to EFF. A County's annual assessment for EFF is calculated using a formula based on the acreage of private watershed and the annual property tax valuation. Counties with large amounts of private watershed land and a high assessed valuation pay more into the fund than rural counties with large acreage of federal lands and low assessed valuation. Emergency funding requests must originate from the County Sheriff and State Forester approval is required. The fund has paid for nearly 3 million dollars of suppression costs since its inception (*Source: Colorado State Forest Service*).

ASSISTANCE FROM COUNTY ROAD AND BRIDGE DEPARTMENT

Road & Bridge employees are trained to run dozers to help control forest fires plus and they can provide additional support with water trucks as necessary. During fire season tenders with water are staged near high risk areas wherever possible.

WILDFIRE ANNUAL OPERATING PLAN

The purpose of the Wildfire Annual Operating Plan (AOP) is to set forth standard operating procedures, agreed procedures and responsibilities to implement cooperative wildfire protection on all lands within San Miguel County. Every spring, fire cooperators meet to discuss new laws as they relate to fire response and agency responsibilities, establish communication plans and confirm resource rates. All parties who participate agree to reciprocal mutual aid assistance throughout the initial attack period that can be up to 24 hours, which may end earlier by mutual agreement, and preferably by 11:59 p.m.

for ease in financial accounting of costs incurred. “Initial attack period” is defined as fire suppression from the time of initial report of the fire to the agreed upon termination of mutual aid.

OTHER WILDFIRE CAPABILITIES

The CWPP contains extended capability lists by Fire Protection District.

- Coonskin Ridge Prescriptions 2009
- Wildland Interface and High Risk Potential Study on Fire District 2008
- TOMV Wildfire Mitigation/ Forest Health Plan 2010

WINTER STORM

SNOW REMOVAL

Road & Bridge has increased its fleet of snow removal equipment over the years to provide higher levels of service in the populated areas of the County. The department is capable of handling a very severe winter storm with the exception of the outlying areas as these areas may be snowed in for up to three or four days. County Road and Bridge have identified critical areas where snow fencing is beneficial therefore, each year the department plows high ridges in fields adjacent to the roads to act as snow fencing. This is a very effective method of snow fencing which has been in use for many years.

AVALANCHE CONTROL

The Road and Bridge Department periodically closes County roads at risk to avalanches during major storms or when doing control work. The County Road and Bridge department has a contract with a local avalanche hazard consulting firm. Using the firm’s helicopters, bombs, and avalanche expertise, avalanches can be remotely triggered following heavy snow cycles after any persons that may be at risk have been safely evacuated. Telluride Ski Area also employs its own Ski Patrol staff to control and safely trigger avalanches within the ski area boundaries.

COUNTY PLANS

SAN MIGUEL COUNTY COMPREHENSIVE DEVELOPMENT PLAN

The County’s Planning Department has the Comprehensive Development Plan and Land Use Code available to the public on the County’s website. The plan originated in 1978, was amended in 2001 and was most recently updated in 2008. The Comprehensive Plan serves to guide future decisions by public and private entities about the physical development of the County. The entire San Miguel County Comprehensive Development Plan can be viewed online at: <http://www.sanmiguelcounty.org/departments/planning/index.html>

TELLURIDE REGIONAL AREA MASTER PLAN 1989, AMENDED 1991

This plan is part of the County’s Comprehensive Development Plan. The Telluride Regional Area Master Plan represents a policy statement about community goals and desires. It is also a statement of community values and ideals. It is to be used as a guide for decision-making by residents and officials in San Miguel County, private investors and developers, Federal agencies such as the U.S. Forest Service and Bureau of Land Management, the State of Colorado, and other bodies who must understand the County’s direction. It is the responsibility of developers

to show that a proposed development conforms to the goals and objectives and the Future Land Use Map of the plan. The Telluride Regional Area Master Plan can be viewed at:

<http://www.sanmiguelcounty.org/departments/planning/index.html>

WRIGHT'S MESA MASTER PLAN

This plan is part of the County's Comprehensive Development Plan. The Wright's Mesa Master Plan is a policy document intended to provide guidance for future land use activities. In accordance with Colorado law, as a part of the county's Comprehensive Plan, it is not a regulatory document. It contains a Vision, goals and policies, a Future Land Use Plan and specific strategies. This Plan is an update to the 1998 Master Plan and reflects the work of a Citizen Advisory Committee (CAC) appointed by the Board of County Commissioners, as well as a great deal of input from the public during various events in 2007. The plan can be viewed online at:

<http://www.sanmiguelcounty.org/departments/planning/index.html>

SAN MIGUEL COUNTY LAND USE CODE

The recommendations spelled out in the Comprehensive Plan are implemented through the County's Land Use Code and Zoning regulations. The San Miguel County All-Hazard Mitigation Plan does not constitute any section of the Comprehensive Plan but serves to emphasize the importance of those elements of the plan related to hazard mitigation. The entire Land Use Code can be viewed online at:

<http://www.sanmiguelcounty.org/departments/planning/index.html>

COUNTY EMERGENCY OPERATIONS PLAN

In February 2004, the revised San Miguel County Emergency Operations Plan was signed and put into effect. The plan currently describes the preparation and emergency response necessary by the County to react to emergency situations that require the County's resources. The plan also provides information on the Emergency Response Teams, and their responsibilities in the case of an emergency. The remainder of the plan contains the procedure for specific hazards unique to San Miguel County and the responsibilities of each department in the event of each hazard.

PUBLIC HEALTH EMERGENCY OPERATIONS PLAN

The San Miguel County Department of Health and Environment has developed Public Health emergency Operations Plan to prepare for leading the response to Public Health emergencies and disasters.

ENVIRONMENTAL HEALTH

The Environmental Health Department administers County regulations with respect to environmental quality and public health, safety, and welfare. The Environmental Health Specialist conducts routine inspections of food services (restaurants), retail food stores, daycare centers and performs school safety inspections. The Department administers the permitting of individual sewage disposal systems (septic systems), and operates the Norwood Solid Waste Transfer Station.

The Environmental Health Department also monitors air quality in the Town of Telluride on a continuous basis. The department monitors water quality and quantity in the San Miguel River. In addition, they help to identify wetlands or geohazards on county resident's property. They help to administer environmental standards contained in the County Land Use Code and promote education on these standards in reclamation, habitat improvement, xeriscaping or selection.

OTHER COUNTY CAPABILITIES

COUNTY EMERGENCY MANAGEMENT PROGRAM

The County's Emergency Management program addresses the four phases of emergency management that include preparedness, mitigation, response and recovery. The County Emergency Manager is officially the Sheriff who has an Emergency Management Coordinator located within the County Sheriff's Office.

The Office of Emergency management provides a structure for anticipating and dealing with emergency incidents and recognizes that disasters are recurring through phases:

1. Prevention has taken a more prominent role in the U.S. after September 11, 2001. From terrorism to disease outbreaks, prevention can involve intelligence, surveillance and detection, and even vaccinations. Those phases include preparing for disasters through training, exercises, planning, and public education to name a few preparedness activities.
2. Reducing or eliminating impacts of hazards is a constant goal of EM through mitigation programs.
3. If disaster occurs, responding to the event and managing the immediate effects on the community.
4. After the emergency phase has passed, often even during, recovery begins; the task of returning a community to the pre-disaster state which could take many years to achieve and in some cases may never be achieved.

GENERAL PREPAREDNESS CAMPAIGN

To provide the public with general preparedness information for a variety of hazards, the County's Preparedness website links citizens to information on hazards such as Preparing your Home and Family, Winter Preparedness and Preparedness information for the Workplace and Employees. Specific disaster preparedness information is also provided for Pandemic flu, Wildfire, Terrorism, etc.

COUNTY WILDFIRE MITIGATION BROCHURES

In 2009 as a result of the Community Wildfire Protection Plan, Wildfire Mitigation Brochures were created by the County Office of Emergency Management as a way for the public to become informed of mitigation efforts they could make to benefit themselves, their community and the county as a whole by doing mitigation work on their property. The brochures were created with assistance from the Southwest Firewise Council. They are available at various locations throughout the county such as the County Offices in Telluride, the Town of Mountain Village, fire protection district offices and on the web at <http://www.sanmiguelcounty.org/firewise.html>

Fire's Natural Role (part 1)

Fire is not new to Colorado forests. For centuries it has been a natural, healthy part of the ecosystem. An important distinction of wildland fires is that all forests do not burn in the same way. Tree species vary and each forest type has an historical fire regime, or interval and intensity at which fires occurred. This cycle has been altered over the last 100 years by human uses such as logging, livestock grazing, and fire suppression.

Preparing for Wildfire (part 2)

We don't have to worry often about hurricanes and tornadoes in southwestern Colorado, but we do need to think about wildfire. We live in a fire-dependent ecosystem often affected by drought. Adjusting to this fact and being prepared is the price we must pay to live in such a beautiful place.

Getting the Work Done (part 3)

Wildfires are common and recurring in Colorado. Defensible space is probably the single most important factor in saving a home from wildfire. Thinning out vegetation and removing burnable materials around homes creates defensible space. Creating defensible space around your home can involve a lot of work. Many homeowners have the time, energy, and tools to do the job themselves. Others decide to hire hazardous fuel reduction companies to do the work for them.

Increasing Your Property Value (part 4)

Have you painted and remodeled, but you're still looking for a great way to increase the value of your property? Well, there's something else you can do, and it will also increase the safety of your neighborhood and community at the same time. Create defensible space.

Community Efforts (part 5)

Wildfire...The word alone conjures frightening images of damage, destruction, and injury in an uncontrollable event. Preparedness...Knowledge and careful planning reduce anxiety and bring the situation under control. Firewise of San Miguel County...Where wildfire meets preparedness and healthy, natural communities flourish.

SAN MIGUEL COUNTY WEED CONTROL

The State of Colorado gave the County authority to enforce the Colorado Weed Control Act to control foreign and noxious weeds within the County, in conjunction with the U.S. Forest Service.

BUILDING DEPARTMENT AND CODES

The Building Department issues permits for structural and non-structural building and development within San Miguel County. The Department is also responsible for assigning and reassigning physical addresses outside the municipalities.

The Uniform Building Code had been adopted in all the incorporated areas and the eastern unincorporated areas of San Miguel County in 1972. The code did not apply to the West End of the County to conform to the County Comprehensive Plan's goal to preserve the rural and rugged character of the region. Over the years several updates and modifications to the building code occurred, including adoption of the 2003 International Fire Code, the Prescriptive Energy Code and Green Building Standard requirements.

In January 2011, the International Building Codes were adopted by the Board of County Commissioners. This comprehensive code features time-tested safety concepts, structural, and fire and life safety provisions covering means of egress, interior finish requirements, comprehensive roof provisions, seismic engineering provisions, innovative construction technology, occupancy classifications and the latest industry standards in material design. It is founded on broad-based principles that make possible the use of new materials and new building designs.

All adopted building codes may be accessed on the county's website at: <http://www.sanmiguelcounty.org/departments/building/index.html>

GIS AND MAPPING CAPABILITIES

The County has a Geographic Information System (GIS) and Information Technology (IT) Department that provides mapping and database support to multiple County departments and services. The following efforts will support natural hazard mitigation, in addition to the mapping and analysis that was done to support this planning process:

- **Geohazard Mapping.** The County has completed a multi-year project to create digital geohazards maps at the 1:24,000 USGS quadrangle scale for quads that cover portions of eastern San Miguel County only. The mapping is based on the work of Michael Bovis with the University of Colorado's Institute for Arctic and Alpine Research (INSTAAR) done in 1976. The mapping identifies geologic problems areas such as debris fans, rockfall, landslides, subsidence, talus and colluvial slopes, and physiographic floodplains, and ranks the significance of each geohazard.
- **Intranet Mapping.** County GIS has completed an internal online mapping application so that all County departments will have desktop access to the County's spatial data resources.
- **Addressing.** County GIS is undertaking an effort to improve digital addressing in support of 9-1-1 and other emergency response applications. A task force has been formed to create a consistent addressing system for the unincorporated areas of the County, as well as solve existing addressing problems.
- **Upgrades.** San Miguel County will be performing an upgrade to its online interactive mapping system at the beginning of 2011. This upgrade will enable the County to develop specific, focused map viewers targeting incidents and user types. Currently the County only offers a single viewer that tries to meet all needs, which leads to some confusion in a quick-response situation. For example, during a wildfire, it would be a simple matter to offer a new map viewer with specific data and tools for that incident, and remove it when no longer needed. In a large-scale disaster, this speed and responsiveness could be critical for spatial analysis needs as well as public information.
- **Pictometry.** Unlike traditional geospatial information systems that rely only on a top down view of an area, Pictometry captures images from an angle and creates a more natural three dimensional view so that users can see land features and structures more clearly. Though the locational data makes it possible for users to measure geographic details such as distance, height, latitude and longitude coordinates and relative positioning.

COUNTY EVACUATION AND WARNING SYSTEMS

TARGET NOTIFICATION SYSTEM (TNS)

The County utilizes a Target Notification System to provide targeted, geographically specific emergency notification to residents. Pre-planned target areas have been set up in the system to notify residents in the event of a hazard situation the County. An example of a preplan area is the Trout Lake Inundation area and the larger communities in the county such as Telluride, Norwood and Ophir.

WIRELESS EMERGENCY NOTIFICATION (WENS) CAMPAIGN

The WENS system is used for general alerts regarding road closures, road conditions or severe weather and is primarily for commuters, visitors and residents. A text message will be sent to your mobile number AND/OR email outlining the nature of the emergency.

LOCAL BROADCAST MEDIA

The County also utilizes the EAS to broadcast warnings over local radio stations. The authority to initialize this utility lies with the incident commander and/or Sheriff. The request is made through the San Miguel Dispatch Center.

TELLURIDE CAPABILITIES**TOWN OF TELLURIDE LAND USE CODE**

The purposes of the Telluride Land Use Code are to assure the proper and sensitive development of land within Telluride; to protect and enhance the quality of life in Town and its environs; and to establish a clear, consistent, predictable and efficient land development review process.

The regulations of the code that pertain to hazard mitigation are:

Prevent Hazardous Development. Prevent development that creates or adds to existing geologic hazards, erosion, flooding, or other potential dangers to life and safety, or which detracts from the quality of life in the Town. 1-103.G.

Violation of Geologic Hazard or Floodplain Regulations. Any person who knowingly engages in a development in a designated area of geologic hazard or floodplain hazard or who conducts a designated activity of local or state interest, and who does not first obtain a permit pursuant to this Title, or who does not comply with permit requirements, or who acts outside the authority or contrary to the conditions of the permit, is guilty of a misdemeanor for each such violation or occurrence. Each day of a continuing violation shall be deemed to be a separate offense. 1-303.D.

Such person may be punished by a fine not to exceed one thousand dollars (\$1,000), or by imprisonment for a period not to exceed ten (10) days, or by both such fine and imprisonment. Such person may also be enjoined by the Town or the Colorado Land Use Commission from engaging in such development or conducting such activity, and may be subject to such other criminal or civil liability as may be prescribed by law.

Article 8 Matters of Local and State Interest, Division 5 and Division 6, address **Geologic Hazard Control** and **Floodplain Hazard Control**, respectively. Each Division contains several sub-parts that explain general provisions and development regulations.

Floodplain Management

As a CRS community Telluride has an active floodplain management program as previously discussed. The Town building official is also the floodplain manager who is responsible for implementing the Town's floodplain ordinance.

Drainage Planning and Improvements

The town has a drainage master plan and conducts ongoing channel and culvert cleaning and maintenance, particularly those areas affected by the Cornet Creek drainage. The Townsend Street culverts were replaced with a span bridge in 2005. Removal of gravel and sediment deposits from the channel occurred along the stretch of the creek alongside Galena Street.

The Town staff periodically monitors the Cornet Creek above the falls (in the Uncompahgre National Forest) just outside of town for snags or other debris that can block the channel. Debris flow warning systems have been considered in the past, but no cost effective or reasonable solutions have been determined to date.

Hazard Mapping

The Town has the Floodplain and Geological Hazards Maps available as a PDF document on the Town website.

MOUNTAIN VILLAGE CAPABILITIES

EVACUATION AND SHELTER PLAN

Mountain Village has developed a plan for evacuation routes and a shelter in the event of a natural disaster such as a wildfire occurs. A link to the plan may be accessed on the web at: <http://www.mountain-village.co.us/index.aspx?nid=433>

WATER STORAGE

The Town of Mountain Village has a 3 million gallon tank which is stored in the Ski Ranches, two miles above the town. The water is available via hydrants throughout the town.

TOWN OF MOUNTAIN VILLAGE COMPREHENSIVE PLAN

The Town of Mountain Village began its Comprehensive planning process in 2008. As of December 2010 the plan has not been formally adopted, but is scheduled to be adopted in 2011. The Mountain Village Comprehensive Plan serves to embody the community's vision and values, enable a community to maintain and enhance its attributes, guide growth, development and economic health, and be a long-range, forward-looking advisory document and set aspirations and intentions.

LAND USE ORDINANCE

The Town of Mountain Village Land Use Ordinance is established was established to achieve several goals: to promote public health, safety and welfare; to promote the economic vitality of the Town, to guide development within the town limits, etc. The entire plan may be found at <http://www.mountain-village.co.us/DocumentView.aspx?DID=23>.

NORWOOD CAPABILITIES

NORWOOD LAND USE CODE

The Norwood Land Use Code was updated in 2008. The regulations in this document were established for the purpose of promoting the health, safety and general welfare of the Town of Norwood. They have been designed to lessen the congestion in the streets, to secure safety from fire, panic and other dangers, to provide adequate light and air, to prevent the overcrowding of land, to avoid undue concentration of population, to promote energy conservation and to facilitate the adequate provision of

transportation, water, sewerage, schools, parks and other public requirements to guide development within the town limits. The plan may be accessed at: <http://www.town.norwood.co.us/documents/town/Land%20Use%20Code%20with%20new%20changes.pdf>

NORWOOD MASTER PLAN

WATER STORAGE

Town of Norwood Water Commission has a contract with Farmers Water Development Company to purchase 300 Acre feet of water per year for a set price. The Town has two reservoirs for storage. Reservoir #1 holds 18.4 Acre Feet and Reservoir #2 holds 91 Acre Feet. If the dam on the Gurley reservoir should happen to be breached, the Norwood Water Commission would access water at the reservoirs via the Gurley Ditch system. This system was recently tested in the fall of 2010 when the Gurley Reservoir was drained for repairs.

OPHIR CAPABILITIES

AVALANCHE CONTROL

Ophir and San Miguel County are working on an intergovernmental agreement on avalanche control. Gates prevent access to and from town during high hazard periods. Many of the residents of this small community are highly aware of the risks associated with living in the Ophir valley, and are willing to adjust their schedules around Mother Nature as necessary.

Town of Ophir Master Plan

The Ophir Master Plan is a policy document that establishes a community vision for future development and growth management in the Ophir region. The Plan is comprised of this text and graphics in this text, Future Land Use maps and the Major Streets Plan map. Numerous public meetings, opinion surveys, and studies were conducted as part of creating this Plan. The Plan is intended to promote better decision making by providing a comprehensive view of planning issues related to future development and growth management. The plan may be accessed at: <http://www.sanmiguelcounty.org/plans/> and on the Ophir Town website.

Town of Ophir Land Use Codes

The Town of Ophir Land Use Code guides development within town of Ophir in the interest of protecting their local resource, the natural environment, while at the same time allowing for the use of the land. The plan may be accessed at: <http://www.sanmiguelcounty.org/plans/> and on the Ophir Town website.

SAWPIT CAPABILITIES

TOWN OF SAWPIT LAND USE CODE

Guides development within town of Sawpit. The plan may be accessed at: <http://www.sanmiguelcounty.org/plans/>

TOWN OF SAWPIT SOURCE WATER ASSESSMENT REPORT

The Town of Sawpit Source Water Assessment Report provides the Sawpit public water system an opportunity to use preventative approaches for protection. The plan may be accessed at:

<http://www.sanmiguelcounty.org/plans/>

OTHER STATE AND FEDERAL CAPABILITIES

COLORADO DIVISION OF EMERGENCY MANAGEMENT

The Division of Emergency Management (DEM) is responsible for the state's comprehensive emergency management program which supports local and state agencies. Activities and services cover the four phases of emergency management: Preparedness, Prevention, Response, and Recovery for disasters like flooding, tornadoes, wildfire, hazardous materials incidents, and acts of terrorism.

Planning and training services to local governments include financial and technical assistance as well as training and exercise support. Services are made available through local emergency managers supported by DEM staff assigned to specific areas of the state. During an actual emergency or disaster, DEM coordinates the state response and recovery program in support of local governments. DEM maintains the state's Emergency Operations Center (SEOC) where representatives from other state departments and agencies come together to coordinate the state response to an emergency situation.

COLORADO OFFICE OF HOMELAND SECURITY

The Governor's Office of Homeland Security coordinates state, regional and local efforts to prepare Colorado's communities to be capable of preventing attacks and protecting against, responding to, and recovering from all hazards by developing, implementing, resourcing, exercising, and evaluating our State Homeland Security Strategy.

COLORADO INFORMATION ANALYSIS CENTER

In response to the 2001 September 11th attacks, the United States has created specialized agencies to coordinate efforts to prevent, protect against, respond to, recover from, and prosecute acts of terrorism. The CIAC is a multi agency fusion center created to help prevent terrorism incidents in Colorado. The CIAC is designed to link all stakeholders in Colorado, from local and federal law enforcement officers, to bankers and school teachers. It emphasizes detection, prevention, and information-driven response to protect the citizens and critical infrastructure of Colorado. This counterterrorism effort is centralized in order to enhance interagency cooperation and expedite information flow.

THE COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT (CDPHE)

The department serves the people of Colorado by providing high-quality, cost-effective public health and environmental protection services. The department focuses on evidence-based best practices in the public health and environmental fields and plays a critical role in educating our citizens so they can make informed choices. In addition to maintaining and enhancing our core programs, we continue to identify and respond to emerging issues that could affect Colorado's public and environmental health.

The department pursues its mission through broad-based public health and environmental protection programs, including disease prevention; control of disease outbreaks; health statistics and vital records; health facilities licensure and certification; health promotion; maternal, child, adolescent, and women's health; tuberculosis prevention and treatment; refugee health assessment; prevention and treatment of sexually transmitted infections including HIV; nutrition services; suicide and injury prevention; emergency medical services; disease prevention and intervention services for children and youth;

minority health improvement and health disparities reduction; laboratory and radiation services; and emergency preparedness. The department's environmental responsibilities span a full array of activities, including air and water quality protection and improvement; hazardous waste and solid waste management; pollution prevention; environmental leadership; and consumer protection.

COLORADO OUTDOOR RECREATION SEARCH AND RESCUE (CORSAR) CARD

Colorado residents and visitors are well served by dedicated volunteer search and rescue teams, but mission costs are often in the thousands of dollars. By purchasing a CORSAR card you are contributing to the Search and Rescue Fund, which will reimburse these teams for costs incurred in your search and rescue. Funds remaining at the end of the year are used to help pay for training and equipment for these teams. Anyone with a current hunting/fishing license, or boat, snowmobile, ATV registration is already covered by the fund.

The card is not insurance and does not reimburse individuals nor does it pay for medical transport. Medical transport includes helicopter flights or ground ambulance. If aircraft are used as a search vehicle, those costs are reimbursed by the fund. If the aircraft becomes a medical transport due to a medical emergency, the medical portion of the transport is not covered.

Cards may be purchased at most sporting goods stores in the county, at the Sheriff's Office or online at http://dola.colorado.gov/dlg/fa/sar/sar_purchase.html. The CORSAR cards are available for \$3 for one year and \$12 for five years.

THE COLORADO AVALANCHE INFORMATION CENTER

The Colorado Avalanche Information Center maintains a mountain weather and avalanche information hotline and website. The number for the Durango and Southern Mountain region is 970-247-8187, 303-275-5360 for Denver, and the website address is <http://geosurvey.state.co.us/avalanche>. The website and phone line provide warnings to backcountry travelers, as well as tips on how to avoid being caught in an avalanche.

THE COLORADO DEPARTMENT OF TRANSPORTATION

The Colorado Department of Transportation (CDOT) is responsible for avalanche and rockfall control programs on Highways 62 and 145. Current rockfall mitigation techniques employed include jersey barriers on Highway 145 near the Ophir Road and some recently constructed barriers on Norwood Hill. CDOT has gates to close Highway 145 near Ophir during high avalanche hazard or control work.

STATE OF COLORADO WATER CONSERVATION

The State of Colorado Water Conservation Board has prioritized all 64 counties in Colorado with regards to the Floodplain Map Modernization Program. The modernization program will convert paper Flood Insurance Rate Maps to a digital, GIS-based format aimed to improve floodplain management. San Miguel County is priority 17 out of 64.

STATE GEOLOGIC HAZARD REVIEW PROCESS

The Colorado Geological Survey performs subdivision development reviews to ensure that potential geologic problems have been identified, and if so, adequately addressed. These reviews are required to be submitted by County planning departments for new subdivisions (voluntary for cities or towns) as required by Senate Bill 35 (1972). School sites must be submitted by school districts as directed by House Bill 1045 (1984). Other proposed uses including airports, landfills, water treatment plants, utility

rights of way, highway rights of way, as well as the effects of large developments such as mines and ski areas are required to be reviewed under House Bill 1041 (1974).

NATURAL RESOURCES CONSERVATION SERVICE

This Federal Agency in the U.S. Department of Agriculture (USDA) helps with the protection and development of soil resources within the County.

USDA BRAND INSPECTOR

The USDA Brand Inspector is responsible for inspections and control of livestock ownership.

BLM RESOURCE MANAGEMENT PLANS

The BLM is in the beginning stages of revising their Resource Management Plans for both the Dolores and Uncompahgre Field Offices. The current plans may be accessed on the web at: http://www.blm.gov/co/st/en/fo/ufo/uncompahgre_rmp/ufo_rmps_amendments.html

PREVIOUS MITIGATION ACTION STATUS

In the 2005 plan, there were several mitigation actions captured. The following table notes the mitigation project descriptions and the completion date or status.

Table 21: Completed 2005 Mitigation Actions

Project Description	Completion Date/ Description
Develop south end fire protection infrastructure (San Bernardo)	Fire Station Complete 2009
Improve County addressing for emergency response	90% complete
Additional water storage for fire and drought mitigation	Mtn. Village additional water, dry hydrants (2)
Hire Wildfire Mitigation Specialist	CWPP job announcement
Insect Mitigation Plan for wetlands to prevent vector disease	Plans developed
Emergency Evacuation Plan	Final Drafting Stages
Redundant Radio Towers	Ongoing three 800 DTRS
New Garage for Emergency Response Vehicles	Complete in 2009
Rockfall mitigation on Norwood Hill	Almost Complete
Improve debris drainage systems Keystone Hill	Complete
Surge Population Mitigation plan	Drafting stages (not finalized)
Trout Lake Dam Penstock Reinforcement	Critical sections replaced after 2005

Table 22: 2005 Ongoing Mitigation Actions

Project Description	Ongoing status
Education of rural living	Continuous education campaign/ program
Critical facility alternatives analysis	Ongoing
Develop public officials buy-in and awareness	CC adopted NIMS requirements in 2010
Public Education on hazards and mitigation	Ongoing-educational brochures, Pub Ed Campaign
Ophir Road Avalanche Studies/Control	Ongoing-annual control work
County wildfire education program-Fire Wise construction	Ongoing- CWPP educational campaign Mtn. Village adopted Firewise construction 5/2010
Bury power lines/Reinforce power lines in Avalanche prone areas	Ongoing-lines being buried at slick rock hill
Encourage back country and fishing licenses	Ongoing, vendors sell permit packages
Avalanche mitigation in Lizard Head Pass area	Ongoing annually (but needs improvement)
Bury power lines in wildfire prone areas	Ongoing, Sunshine Project 2010- 2012
Airport Mudslide Mitigation	Ongoing, as necessary
Flood Insurance Workshops	Ongoing, Elk Meadows and Lawson Hill HOA workshop was help after slide incident
Rockfall Mitigation Ophir, Downhill	Seasonal Work ongoing as needed by CDOT

VULNERABILITY ASSESSMENT

Planning Step 6 was to perform a Vulnerability Assessment. After reviewing all of the identified hazards and the existing mitigation capabilities, the AHPG assessed the vulnerability/ impact that each hazard has the potential to have on the County and the jurisdictions within the County. The County's vulnerability to each hazard can only be determined when historical frequency, current AHPG risk perception, existing mitigation capabilities, past mitigation actions, potential for life loss and the potential for property damage is analyzed.

Requirement §201.6(c)(2)(ii):

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

[The risk assessment] must also address National Flood Insurance Program (NFIP) insured structures that have been repetitively damaged floods.

Requirement §201.6(c)(2)(ii)(A):

The plan should describe vulnerability in terms of the types and numbers of existing and future buildings, infrastructure, and critical facilities located in the identified hazard areas.

Requirement §201.6(c)(2)(ii)(B):

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

Requirement §201.6(c)(2)(ii)(C):

[The plan should describe vulnerability in terms of] providing a general description of land uses and development trends within the community so that mitigation options can be considered in future land use decisions.

EXPOSURE ASSESSMENT

As a starting point, the AHPG utilized the County Assessor’s data to define a baseline against which all other disaster impacts could be compared. The baseline is the catastrophic, worst-case scenario: the assessed value of the entire County as a whole. The value is deceptively low in that it only reflects commercial and residential property, but no infrastructure or other economic impact.

Table 23: Total Assessed Value In San Miguel County 2010

CLASS	VALUE
Residential	\$6,749,189,604
Commercial	\$430,810,379
Industrial	\$17,949,342
Agricultural	\$27,641,752
Natural Resources	\$13,010,211
Producing Mines	Unknown
Oil and Gas	\$53,940,665
Vacant	\$845,339,360
Other (Exempt)	Unknown
TOTAL	\$8,137,881,313

Table 24: Structures and Population by Jurisdiction

JURISDICTION	TOTAL wuiS (2004)	TOTAL STRUCTURES (2010)	TOTAL POPULATION (2009) estimate
Unincorporated County	2,400	2,838	3,158
Telluride	1,972	2,294	2,400
Mountain Village	1,036	1,732	1,389
Norwood	256	299	460
Ophir	67	76	128
Sawpit	24	24	23
Total	5,755	7,263	7,558

Source: San Miguel County GIS and US Census Bureau

From the information above, it was determined that since 2004, 1,508 structures have been built in San Miguel County. It is important to determine which structures are the most vulnerable and to estimate their potential loss.

The section below seeks to portray the vulnerability of the County as a whole to each hazard while utilizing information such as:

- Hazard related impacts such as life loss, safety and health
- Insurance coverage, claims paid and repetitive losses

- Values at risk
- Critical Facilities at risk
- Identification of cultural and natural resources at risk
- Overall community impact
- Development trends

Events that have a low historical frequency and thus have been given a lower risk rating may also have a huge impact if they occur. For example, Telluride has never had a wildfire put the town in danger. But, if a wildfire were to threaten the town, it would most likely have a significant impact on the community in terms of property loss and damage, economic loss etc.

WILDFIRE

San Miguel County recently completed a Community Wildfire Protection Plan (CWPP) which provides a comprehensive, scientifically-based analysis of wildfire related hazards and risks in the Wildland Urban Interface (WUI) areas of San Miguel County and a portion of Montrose County within the Norwood Fire Protection District. Using the results of the analysis, recommendations were designed to prevent and or reduce the damage associated with wildfire.

The following tables were taken out of San Miguel County’s Community Wildfire Protection Plan. Subdivisions or populated areas are broken down by Fire Protection District and given a low, moderate, high, very high or extreme wildfire hazard rating.

Table 25: Norwood Fire Protection District WUI Communities

WUI NAME	PARCELS	Hazard Rating
Norwood Agricultural Area	275	Low
Redvale	?	Low
Gurley Lake Ranch	38	Moderate
Mountain View	23	Moderate
Thunder Road	16	Moderate
Miramonte Ranch	20	High
Beaver Pines	16	Very High
Fitts	56	Very High
Deer Mesa	?	Extreme
Mailbox	?	Extreme

Table 26: Telluride Fire Protection District WUI Communities

WUI NAME	PARCELS	Hazard Rating
Aldasoro	180	Low
Ophir	185	Low
San Bernardo/Priest Lake	33	Low
Hastings Mesa	427	Moderate
Ilium Valley/Ames	87	Moderate
Lower Mountain Village	1322	Moderate
Two Rivers Subdivision	80	Moderate
Telluride/Hillside	2567	Moderate
Iron/ Mackenzie Springs	104	High
Specie Mesa	?	High
Down Valley	292	High
Trout Lake	110	High
Upper Mountain Village	620	High
Brown Ranch	33	Very High
Lawson Hill	198	Very High

Table 27: Egnar-Slick Rock Fire Protection District WUI Communities

WUI NAME	PARCELS	Hazard Rating
Egnar	12	Low
County Line Road	19	Low
Slick Rock	6	Moderate
Egnar Agricultural Areas	135	Moderate
Spud Patch	37	Very High

Source: San Miguel County CWPP

ANALYZING DEVELOPMENT TRENDS

Growth pressures, Telluride Regional area cost of living, and the desire to live in forested areas are spurring in growth in the wildland/urban interface in eastern San Miguel County and in other Colorado Counties. Structures in the woods put more people and property at risk to wildfires. San Miguel County is extremely concerned about wildfires and has initiated aggressive efforts to inform property owners of the risks, and what they can do to mitigate impacts. The CWPP is described in further detail in the *Existing Hazard Mitigation Programs and Capabilities* section. The limited number of fire protection districts, application of building codes, and resulting lack of insurance in the West End of the County puts new housing there at higher risk. Some homeowners association’s covenants do not allow for the creation of defensible space.

VULNERABILITY

Any major wildfire anywhere near populated areas in San Miguel County will have significant impacts on the community as a whole. After considering historical events, existing mitigation capabilities, hazard ratings from the County’s CWPP and considering life, safety and potential economic impacts, the AHPG determined that San Miguel County is **Highly Vulnerable** to the impacts of a significant wildfire. Certain areas in San Miguel County are more likely to experience wildfires than others, which increases the vulnerability for those areas specified in Profiling Hazards.

DROUGHTS

Drought is different than many of the other natural hazards in that it is not a distinct event, and has an unusually slow onset. Drought can severely impact a region both physically and economically. Adequate water is the most critical issue: agricultural, manufacturing, tourism and commercial and domestic use all require a constant, reliable supply of water. Water supply is affected both by decreased storage in reservoirs and dry wells resulting from a lowering of the water table. Reservoir storage and ground-water supply are related, in that when reservoirs run dry users rely more on wells to pump groundwater, which in turn lowers the water table and also increases pumping charges due to increased use of electricity.

With the recent multi-year drought that affected San Miguel County from 1998 to 2005 and Colorado’s drought history it is evident that the entirety of San Miguel County is vulnerable to drought. The impacts of future droughts will vary depending on the region. The agricultural economy of the West End will experience hardships associated with a reduction in water supply, including agricultural losses. The Eastern County will see an increase in dry fuels and beetle kill and associated wildfires, and loss of

tourism revenue during the ski season. The hydroelectric power plants within the County may have reduced power generation during times of drought. Water supply issues for domestic needs will be a concern for the entire County during droughts.

ANALYZING DEVELOPMENT TRENDS

As the population grows so do the water needs for household, commercial, industrial, recreational, and agricultural uses. Vulnerability to drought is likely to increase with these increased water needs.

VULNERABILITY

After considering historical events, existing mitigation capabilities, potential impacts in terms of life loss, safety and considering future water demands and economic impacts, the AHPG determined that San Miguel County as a whole is moderately vulnerable to drought events. The western portion of the County has a slightly increased vulnerability compared to the County as a whole when climate and agriculture as an economic base are taken into consideration.

LANDSLIDES/DEBRIS FLOWS AND ROCKFALL

Rockfalls and landslides are most likely to impact transportation corridors. There is a serious risk to life safety to travelers due to the relatively frequent occurrence of rockfalls. There are also economic impacts from traffic delays or disruptions, which could be potentially major with the lack of viable alternative transportation corridors in the County. Mudflows originating from Cornet Creek, based on historic incidents, will continue to pose a serious threat to the Town of Telluride's residents and residential and commercial property.

ANALYZING DEVELOPMENT TRENDS

Hazard maps and land use codes have been designed to discourage development in hazard prone areas. Redevelopment of existing properties within some of these areas continues, however, putting new and more expensive homes at risk within the Town of Telluride.

VULNERABILITY

The eastern portion of San Miguel County including the San Miguel River Canyon East of Placerville and the Town of Telluride are **Highly Vulnerable** to the impact of Debris Flows. Steep canyon walls coupled with summer monsoon rains have caused debris flows and rockfall in the past. The impacts of debris flows cannot be lessened by obtaining flood insurance because 'dirty water' does not qualify for flood claim reimbursement. Historical events and calculated impacts, the potential for life loss and property damage make the **County as a whole moderately vulnerable** to landslide, Debris flow and Rockfall events, with specified areas having increased vulnerability.

EXTREME WINTER WEATHER

Winter storms are primarily a life safety risk, but can also impact the local economy when transportation and commercial activities are disrupted. Winter storms are occasionally severe enough to overwhelm snow removal efforts, transportation, livestock management, and business and commercial activities. Travelers on highways in San Miguel County, particularly along remote stretches of road can become stranded, requiring search and rescue assistance and shelter provisions. The County can experience high winds and drifting snow during winter storms that can occasionally isolate individuals and entire communities and lead to serious damages to livestock and crops.

ANALYZING DEVELOPMENT TRENDS

Urban population growth and suburban sprawl have complicated the task of promptly and adequately responding to winter storm emergencies. The principal public health and safety problems are power outages, stranded motorists, road closures, and limited capabilities to respond to citizen's calls for emergency services. Water system problems and broken water pipes create additional problems for fire services agencies. The trend of an increasing amount of commuters coming from outside the County indicates that more travelers will be at risk to winter storms in the future. Winter storms can also strand visiting skiers, although an extended stay may be a relatively easy, but expensive hardship to endure assuming lodging is available.

VULNERABILITY

San Miguel County, along with many other Colorado and mountain Counties, look at winter weather and its associated hazards and potential inconveniences as an accepted way of life. Overall, San Miguel County residents are used to dealing with extreme winter weather. The high frequency of occurrence according to historical events makes this hazard a high risk hazard. When factors such as community preparedness, potential for life loss, overall community impact and property damage and infrastructure damage is taken into account, the County as a whole has a **moderate vulnerability** to extreme winter weather.

SEVERE WEATHER

Severe weather, for the purpose of this plan includes hail, lightning, high winds, heavy rains and tornadoes. All severe weather has the potential to cause life loss, property damage or destruction and cause economic disturbance. Residents in San Miguel County know that the weather can change extremely quickly and are used to dealing with the elements. However severe weather can interrupt daily functioning, potentially destroy buildings and cause disruption to critical infrastructure.

ANALYZING DEVELOPMENT TRENDS

Highly vulnerable structures in San Miguel County such as communication towers and lift towers have been equipped with lightning rods to help mitigate against damage from lightning strikes. Severe weather in San Miguel County is sometimes very location specific, at times occurring in remote unpopulated areas and other times affecting towns or subdivisions. The Western portion of the County is more susceptible for tornado activity solely because of the flatter landscape. However, tornado occurrences in the County are extremely rare. Heavy cloud burst rain, which is usually associated with summer monsoon thunder and lightning storms can cause isolated or extensive riverine and street flooding events as well as debris flows and landslides. High winds have the potential for knocking out power and communication lines as well.

VULNERABILITY

Overall, the County as a whole is **moderately vulnerable** to severe weather events. Critical infrastructure failure due to severe weather can have significant impacts if extensive repair is needed as a result. Facilities that depend on constant communication and electricity have been equipped with generator back up power in case of a disturbance in service.

CRITICAL INFRASTRUCTURE FAILURE

For the purpose of this plan, critical infrastructure is defined as including electricity, gas, water, sewer and communication lines (including cellular communication). Critical infrastructure services can be interrupted in San Miguel County for many reasons. Severe weather, extreme winter weather, wildfires, avalanches and floods can knock out any of the services listed above. Outages can range from minutes to days depending on damage and the extent of needed repairs.

ANALYZING DEVELOPMENT TRENDS

In San Miguel County, power outages and communication disruptions occur occasionally. More intense disruptions of gas and water lines have occurred in the past but happen less frequently. As more and more people move to the area, the demand for such services increases, therefore increasing the impact if an outage occurs. Some County residents have alternate energy sources such as generators or wood stoves.

VULNERABILITY

The time of year greatly influences the severity of the impact that a critical infrastructure failure would have on the County. Overall, the County is **moderately vulnerable** to a critical infrastructure failure. Vulnerability during the **winter months increases** as the potential for pipes to freeze and warmth is a concern.

AVALANCHE

In addition to the risk to backcountry travelers in the wintertime in the Telluride/Ophir High Country region, avalanches in San Miguel County pose the most risk to transportation and power infrastructure, and the Town of Ophir. Avalanches can have wide ranging impacts inside and outside of the County by disrupting power and transportation over Lizard Head Pass, as was mentioned in the hazard profile. The specific risks to the town of Ophir are discussed in this section.

The Institute of Arctic and Alpine Research (INSTAAR) at the University of Colorado in Boulder has studied the Avalanche hazard in the vicinity of the Town of Ophir, at the request of the Town and San Miguel County. The slide zones and impact areas are represented on the following maps. The Spring Gulch slide path represents the greatest threat to the town. The third map represents a proposed mitigation option for the Town

Source: <http://www.avalanche.org/~moonstone/zoning/natural%20hazards%20in%20mountain%20colorado.htm>

According to County GIS the town of Ophir has 67 structures with a Census 2000 population of 115 persons. According to the map, developed in 1976, approximately seven structures are at risk. There could be more development in the remaining town site at present. There is also a power line that runs through the valley that is at risk.

In addition to Ophir, nearby Highway 145 have slides that have closed Lizard Head Pass and impacted power lines. County Emergency Management has a map of these slide zones, which are controlled by CDOT.

ANALYZING DEVELOPMENT TRENDS

The remoteness, climate, and hazards of the Ophir area have kept growth at a slow pace compared to other parts of the County. There is concern among residents that the area may become attractive to those who wish to build second homes. Currently about 80% of the population lives there year round.

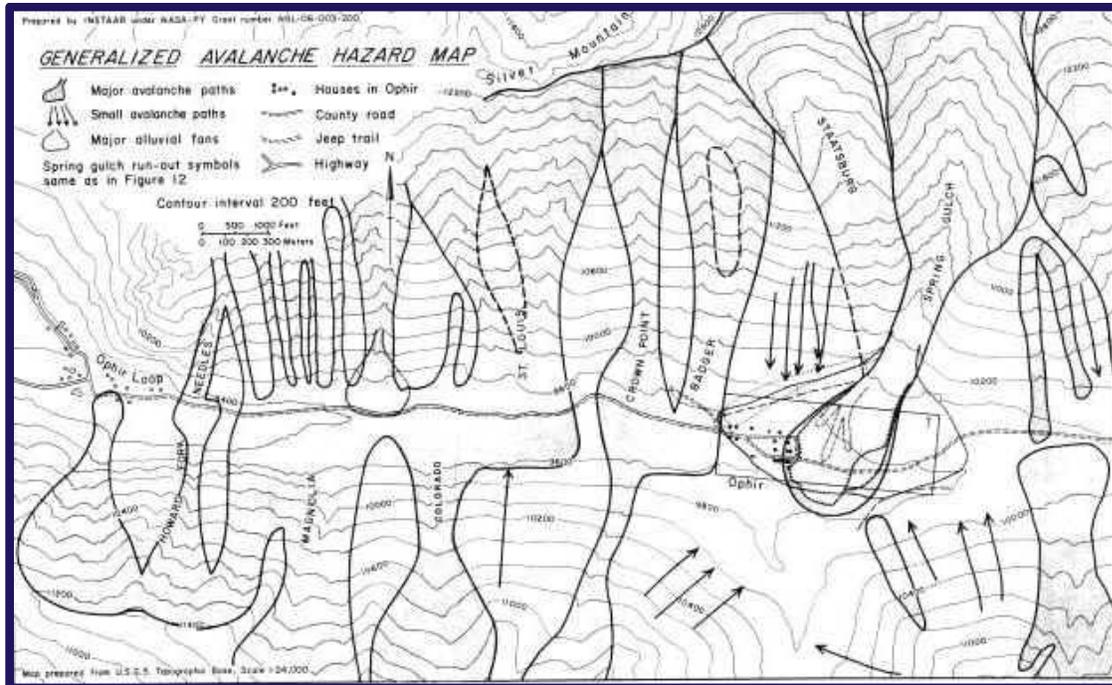


Figure 17: Ophir Avalanche Slide Map

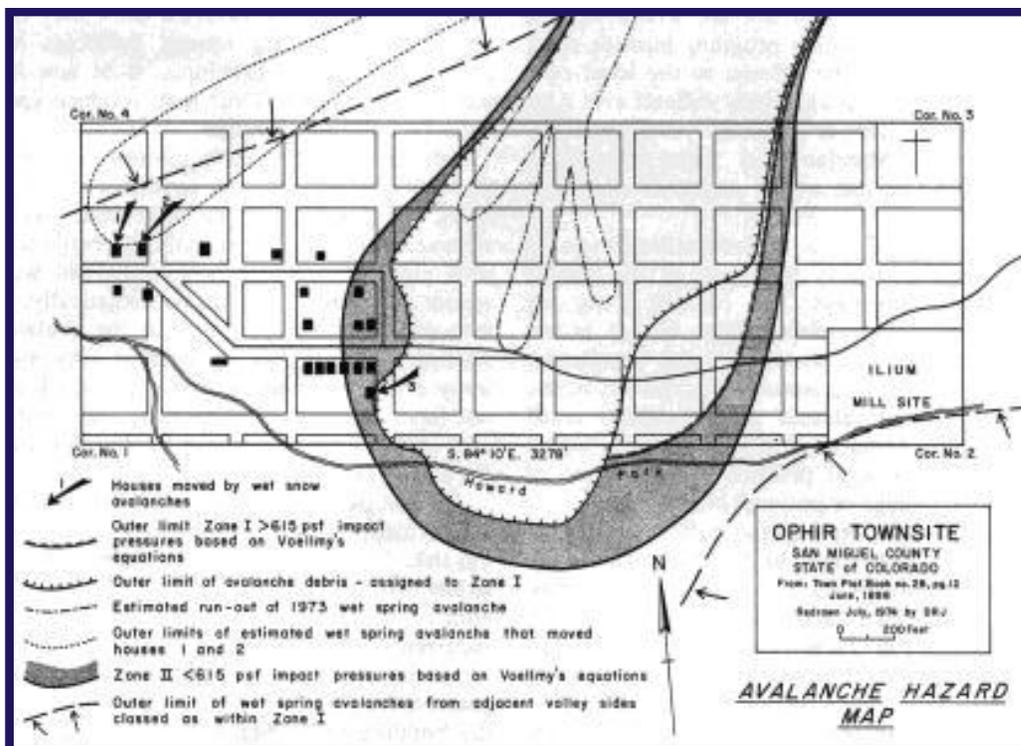


Figure 18: Ophir Avalanche Hazard Map

(Map showing possible avalanche mitigation option proposed in 1976 INSTAAR study)

VULNERABILITY

The eastern portion of the County has a significantly higher vulnerability to avalanches due to the geographic layout of the County. Specifically, **Ophir has a high vulnerability** to avalanches because quite often avalanches cut off the only access to and from the town and come exceptionally close to homes and other infrastructure. Mitigation efforts have been made in this area to reduce impacts of avalanche events, but the vulnerability in that specific area remains high when the potential for life loss, property damage and historical frequency are considered. The remainder of the **County has a low vulnerability** to avalanche events due to the lack of historical events and geographic landscape.

FLOOD

The risk of flooding is greatest in the eastern portion of the County where population growth and suburban development have altered natural drainage systems and can contribute to unpredictable flash floods during storm water runoff. Although structural improvements exist on some streams in San Miguel County, intense thunderstorms can occasionally generate stream flows capable of overwhelming structural design capacities. Urbanization and development along streams also increases the amount of floating debris that can obstruct bridges and culverts, leading to more extensive flood damages.

Flood Insurance Claim Analysis. According to the National Flood Insurance Program claims data, San Miguel County has had 4 claims (losses) reported in the unincorporated area between 1978-2010; see the table on page 89. This does not include uninsured losses. Telluride claimed 4 losses in that time period, but received no payouts. San Miguel County has no repetitive loss properties to date.

ANALYZING DEVELOPMENT TRENDS

Floodplain management ordinances enforced within San Miguel County and Telluride is helping to limit problems with flooding in new development, thus it is the existing structures in the floodplain that remain most at risk. Floodplain management is discussed further in the Existing Hazard Mitigation Programs and Capabilities section.

VULNERABILITY

Ice Jam floods occur regularly on the San Miguel River during the winter months. The homes along the banks of the river usually see a rise in the water level and large blocks of floating ice pass by during an ice jam flood. Ice jam floods have the potential to back up water behind bridges if enough ice becomes lodged in front or under a bridge. Overall, San Miguel County has a **low vulnerability** to Ice Jam flooding, **while residents along the San Miguel River have a slightly increased vulnerability.**

Riverine Flooding poses the greatest impact to the Town of Telluride. Although, it sometimes difficult to separate debris flow and flooding events. Cornet Creek in Telluride has ‘flooded’ many adjacent homes over differing historical events. Other areas in San Miguel County that could experience flooding are homes located right along the San Miguel River. Quick spring runoff from warming temperatures and a heavy spring rain could lead the river to raise enough to flood some homes. The **County as a whole is moderately vulnerable to riverine flooding but the Town of Telluride is highly vulnerable to flooding events.**

San Miguel County has a **low vulnerability** to **street flooding** events. Due to the small nature of the towns, the amount of impermeable ground that supports street flooding events is mitigated by storm drainage systems. However, localized street flooding events have occurred in the past in the Town of Telluride. Area specific protective measures have been implemented in these localized events to protect against future events.

FLOOD METHODOLOGY PREVIOUS PLAN

After reviewing the 2005 All Hazards Mitigation Plan and consulting with the County Planning Department and State Mitigation Officers, San Miguel County opted to change the methodology for finding the vulnerability to flood events. In the previous plan, a 300 ft buffer was created around the San Miguel River and parcels that were located within the buffer zone were considered vulnerable structures. See excerpt below from the previous document:

The County used their GIS capability to model flood risk for this plan. Unfortunately there are no digital floodplain maps available for the County, so an overlay of the FEMA floodplain boundaries was not possible during the time this plan was initially prepared. Alternatively, the County used GIS to create a 300-yard ‘buffer’ on the San Miguel River from just above the Town of Telluride to the County Line. The 300 yard buffer layer was overlaid on the County’s parcel layer to determine the number of developed parcels within 300 yards of the river. Based on this analysis, there are approximately 2,427 parcels and 2,098 structures within 300 yards of the river. This total includes the Towns of Telluride and Sawpit and structures in the unincorporated area as well. (Note: According to the FEMA Community Information System, 1997, San Miguel County had 723 persons, 245 residential, and 55 other structures located in flood hazard areas Source: Colorado All Hazards Mitigation Plan 2004). The 300 yard buffer area is likely to be larger than the actual 100-year floodplain.

NEW FLOOD METHODOLOGY UPDATE

As an alternative of using the 300 ft buffer methodology, which doesn’t take elevation change into consideration, the Planning Coordinator and the Emergency Management Coordinator had a meeting

with the County Planning Department and the County GIS Department to discuss other possible solutions. During this meeting it became apparent that San Miguel County does not have comprehensive floodplain maps for all major drainages within the County.

The County Planning Department explained how they deal with regulating development within or near a floodplain, even though floodplain maps may or may not exist. The San Miguel County Land Use Code includes a section on Areas and Activities of Local and State Interest/"1041" Environmental Hazard Review. Section 5-403 relates to Floodplain Hazard Areas (see below). This section also addresses Avalanche Areas, Landslide Areas, Potentially Unstable Slopes, Rockfall Areas, Slopes Greater Than 30 Percent, Alluvial Fans, Talus Slopes, Mancos Shale, Faults, Expansive Soil and Rock and Ground Subsidence.

The County Land Use Code states that if no adequate hazard-free area exists on the parcel the applicant will need to obtain a Floodplain Development Permit. The applicant is required to provide information from a registered Colorado Engineer that the proposed development site is outside the 100-year floodplain. If the building site is within the 100-year floodplain and there exists no site outside the 100-year floodplain the engineer will determine what the base flood elevation is for the building site and must comply with the County Floodplain Standards as listed in Appendix A of that document. All activities proposed within a floodway must demonstrate through a floodway analysis and report by a Colorado Registered Professional Engineer that there are no adverse floodway impacts resulting from the project. The County Floodplain Regulations are amended from time to time to follow Colorado's floodplain rule changes.

An applicant who applies for a Floodplain Permit must submit an application for County Planning Commission and/or Board of County Commissioner review and approval. If it is determined that the proposed development will not increase the water surface elevation or cause potential harm during a flood event and receives approval from the BOCC, Planning Department staff send a copy of the approved Floodplain Permit (County Commissioner Resolution) and FEMA Elevation Certificate (for structures) to the FEMA office in Denver.

It should be noted that while the state does not require permits on stream reaches that have not had elevations established the County requires the above information for all development along all waterways even if the base flood elevation has not been established. Below are Land Use Code excerpts:

Land Use Code

5-403 Floodplain Hazard Areas

In addition to the development standards in 5-402 and the San Miguel County Floodplain Regulations (refer to Appendix A), the standards in this section apply to mapped floodplain hazard areas as depicted in the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map, National Flood Insurance Program, and to areas later found to be in flood hazard areas.

*5-403 A. **If no adequate hazard-free area exists on a site,** development proposed within final base flood elevations Zones A1-30 and/or regulatory floodway shall:*

- 1. Have the lowest floor (including basement) elevated to one foot above the base flood level or be designed so that below the base flood level the structure is water tight with walls substantially impermeable to the passage of water and with structural components having the capability of resisting hydrostatic and hydrodynamic loads and effects of buoyancy; and*

II. *Be designed by a qualified professional engineer who shall certify that the flood proofing methods identified in Section 5-403 A.I. are adequate to withstand the flood depths, pressures, velocities, impact and uplift forces and other factors associated with the base flood.*

APPENDIX A FLOODPLAIN REGULATIONS

Available on-line at sanmiguelcounty.org

In the past, when asked what improvements the County would like to see in relation to Floodplain mapping that has already been completed, County staff has continually requested that the following areas have the elevations mapped:

- Howard Fork
- Leopard Creek
- Fall Creek
- Big Bear Creek
- South Fork
- Dolores River
- San Miguel River

The County and each of the jurisdictions have identified that obtaining digital floodplain maps and base flood elevation maps be a high priority mitigation action

DAM FAILURE

San Miguel County has five class I dams. Dam failure can occur as a result of a natural phenomenon occurrence such as overtopping due to spring run-off or heavy rains, an infrastructure failure due to lack of repair or maintenance and as an act of deliberate criminal activity or terrorism. Dam failure can create catastrophic flooding events for populated areas located below dams.

In September of 1909, the only San Miguel County historical record of dam failure occurred at Trout Lake. An entry in a Publication by Christian J. Buys, "Historic Telluride" reads:

'On September 5, 1909, a powerful cloudburst drenched a precipitous basis above the small settlement of Ames, where years before Lucian Nunn had damned (sic) both Hope Lake and Trout lake to protect his power plant against dry summers. Both dams burst, sending a wall of water and debris rushing down the canyon. Although the torrent of water did not wipe out the power plant, it decimated over a dozen miles of railroad grade along the San Miguel River between Telluride and Placerville.'

However, like earthquakes, this hazard has a low probability high consequence vulnerability rating.

ANALYZING DEVELOPMENT TRENDS

There are many homes located below Trout Lake Dam in San Miguel County. Most of the development exists along the San Miguel River in the canyon miles downstream from the dam itself. Dam failure, although not likely in the County could result in property loss or damage, life loss or injury and negative economic impacts.

VULNERABILITY

San Miguel County as a whole is **moderately vulnerable** to dam failure. Though the likelihood of an event such as this occurring is low, the severe impacts of such an event must be taken into consideration.

HAZMAT SPILL

San Miguel County has roads that are identified as hazardous materials transportation routes. Hwy 141 which runs through the Western part of the County is one such road. Other highways in San Miguel County also see heavy truck traffic. Inclement winter weather and the nature of mountain roads make hazardous materials spills along transportation corridors a viable concern. Hazardous material spills and the potential secondary impacts related to spills have the chance of occurring on any of the major highways in San Miguel County. The type and impact of the specific chemical spill can have varying consequences.

ANALYZING DEVELOPMENT TRENDS

Although nuclear transportation is limited to Hwy 141 other chemicals that are potentially hazardous are allowed to be transported on Hwy 145 and Hwy 62. The western part of the County where the transportation of nuclear chemicals is allowed is substantially less populated, especially directly along roadways. However, the other main transportation routes do have significant development close to the roadways.

VULNERABILITY

The overall vulnerability for the County is moderate, with areas such as Egnar/ Slick rock having a slightly increased vulnerability due to the type of chemicals that are allowed to be transported through the area.

TRANSPORTATION ACCIDENTS

Transportation accidents, whether severe or minor, are inevitable. Mountainous roads coupled with inclement weather increase the chances for transportation accidents to occur on any State highway or County road. Even with perfect driving conditions, accidents happen for a multitude of reasons.

ANALYZING DEVELOPMENT TRENDS

As more and more people move to the County and towns expand, roadways become used more and more increasing traffic and the potential for transportation accidents. Because development in San Miguel County also occurs along the transportation routes the potential for secondary impact exists. The Telluride, Norwood and Egnar Fire Protection Districts all have trained firefighters and Emergency Medical Response personnel that are trained to deal with accidents. County Road and Bridge and Colorado Department of Transportation work around the clock to keep transportation routes safe and free of obstacles that may cause accidents.

VULNERABILITY

San Miguel County as a whole has a **low vulnerability**/high likelihood for transportation accidents. Although inconvenient and sometimes tragic accidents are a fact of life and a risk people take daily when they get into their vehicles to drive. Accidents can cause traffic delays but are usually minor. Transportation accidents and their impact are best judged on a case by case individual basis.

TECHNOLOGICAL HAZARDS

Technological hazards are a low frequency **low vulnerability** for San Miguel County. Computer hacking does not pose an extreme threat for the communities in the County. The amount of confidential or sensitive information stored in 'hackable' computer systems is very little. If a computer system were to be compromised and information was obtained; the AHPG seemed to agree that the impact would not be severe.

TERRORISM

Since the Terrorist Attacks of September 11th, 'terrorism' as a concept has taken on a new meaning for most of the world. It is important that criminal activity such as setting buildings on fire can be concluded as an act of arson or can be viewed as an act of terrorism. Terrorism is a subjective and case based definition depending on motive etc. San Miguel County has a low vulnerability for terrorist events of epic proportions solely based upon the lack of motive for such an attack in the area. However, that is not to say that San Miguel County is not vulnerable to acts of domestic terrorism or criminal activity deemed to be terrorism. Based on the sensitive nature of this subject, The AHPG agreed **not to assess the vulnerability** to terrorism.

PANDEMIC FLU

Pandemic flu is a major concern for Public Health Officials. The disease is constantly mutating into different strains and is thus difficult to prevent completely. San Miguel County works closely with health officials to keep an eye on the spread of the disease and provides public information for disease prevention, identification and treatment.

Today, an especially severe influenza pandemic could lead to high levels of illness, death, social disruption, and economic loss. Impacts could range from school and business closings to the interruption of basic services such as public transportation, health care, and the delivery of food and essential medicines.

ANALYZING DEVELOPMENT TRENDS

Flu has a history in San Miguel County. In fact, the location of the Historic Hospital in Telluride (now the Telluride Historical Museum) was placed far out of town during the 1800's to separate sick patients from the rest of the population. San Miguel County has had 80% growth since the 1990's. Therefore, people are living in closer quarters and come into more contact with each other. Telluride has a well established emergency clinic; the County has nursing practices in both Telluride and in Norwood as part of the Uncompaghre Medical Center. There are also other practicing doctors around the area who can see patients for diagnosis.

VULNERABILITY

Assessing the County's vulnerability to pandemic flu is difficult because the severities of the specific strain and the age group and symptoms are hard to predict. However, any pandemic outbreak of any proportion can cause severe illness, death and/or public disruption. San Miguel County and its incorporated jurisdictions are **highly vulnerable** to the effects of a pandemic flu outbreak, simply due to the nature of the disease and the availability or unavailability of a vaccine.

PLAGUE

The epidemic form of the disease has been known since antiquity for the devastation caused by world-sweeping outbreaks such as the "Black Death" in the Middle Ages. Today, improved sanitation practices and rat control have reduced the threat of epidemics in developed countries. Nevertheless, plague is firmly entrenched among wild rodents in North America and individual cases continue to occur among humans exposed to these animals and their fleas. (source: <http://www.cdphe.state.co.us/dc/zoonosis/plague/plaquefacts.html>) .

Plague is now firmly established and is now frequently detected in rock squirrels, prairie dogs, wood rats and other species of ground squirrels and chipmunks. Wild rabbits also became involved in the plague cycle. For San Miguel County, the concern lies in the newly established prairie dog colony just outside of the Town of Telluride. The location where the colony exists is in close proximity to the frequently used bike path and is on public open space, popular with dog owners and outdoor enthusiasts. There are also several colonies located in the western side of the County, but they are usually located on large ranches or out in fields.

ANALYZING DEVELOPMENT TRENDS

Pastures once used for agricultural purposes, cattle grazing or areas of land that have been disturbed create ideal colony locations for Prairie Dogs. Therefore, development in general can encourage the rodents to establish themselves in close proximity to human activities and their domesticated animals.

VULNERABILITY

The town of Telluride has a **low vulnerability** to a plague outbreak simply because of the difficulty of human transmission. The County as a whole has a **low vulnerability** to Plague. When life loss, potential for property loss and damage, economic impacts and historical occurrences are taken into account, plague would most likely have individual case impacts versus affecting the County as a whole.

WEST NILE VIRUS

The impact to human health that wildlife, and more notably, insects, can have on an area can be substantial. Mosquitoes transmit the potentially deadly West Nile virus to alike. Most humans infected by the virus have no symptoms. A small portion develops mild symptoms that include fever, headache, body aches, skin rash, and swollen lymph glands. Less than one percent of those infected develop more severe illness such as meningitis or encephalitis, symptoms of which include headache, high fever, neck stiffness, stupor, disorientation, coma, tremors, convulsions, muscle weakness, and paralysis. Of the few people who develop encephalitis, fewer than 1 out of 1,000 infections die as a result.

Mosquitoes carry the highest amounts of virus in the early fall, thus there is a peak of disease in later August and early September. The risk of infection decreases as the weather becomes colder and mosquitoes die off.

ANALYZING DEVELOPMENT TRENDS

Areas of standing water are of particular concern for preventing the spread of West Nile Virus. Public Health Officials in San Miguel County have been working to educate the public about the disease and working with local agencies to help reduce mosquito population and breeding grounds.

VULNERABILITY

As a whole, San Miguel County has a **low vulnerability** to West Nile Virus. The County has had very few infections compared to other locations in Colorado and none have been deadly. The potential impacts that West Nile could have on the County are minimized by the County's high elevation and shorter growing months. Infections are on a case by case basis and mitigation efforts have significantly reduced mosquito population and desirable breeding grounds for the insects.

EARTHQUAKES

Colorado has a relatively short historic record of earthquakes, which makes for a limited data set when making assumptions based on past events. A lot of unknowns remain about the earthquake potential in San Miguel County and Colorado in general.

Based on the fact that there have been earthquake epicenters inside the County boundaries, as well as in neighboring counties, earthquakes will likely occur in the future. Based on historic events, these will likely be in the range of Magnitude 5.5 or lower, which is strong enough to be felt and potentially cause damage. According to the USGS damage usually occurs with earthquakes in the Magnitude 4-5 range, but many variables affect damage such as building age, soil type, distance from the epicenter, etc. With the historic building stock in Telluride there is potential for a moderate sized event to do some structural damage, but most impacts would likely be to non-structural items within the buildings such as light fixtures, toppling of shelves, cracked walls and chimneys. Falling items within buildings will likely pose the greatest risk to life safety.

According to the Colorado Geological Survey, as identified earlier in this document, the maximum credible earthquake for nearby for a fault in nearby Ouray County (see map in Earthquake hazard profile section) is Magnitude 6.25. Scientists are unable to predict when the next major earthquake will occur in Colorado; only that one will occur. Research based on Colorado's earthquake history suggests that an earthquake of 6.3 or larger has a one percent (1%) probability of occurring each year somewhere in Colorado (*Charlie, Doehring, Oaks Colorado Earthquake Hazard Reduction Program Open File Report 93-01, 1993*).

So the question is what would happen if San Miguel County were to experience a 6.25 earthquake? FEMA's GIS based earthquake loss estimation tool, HAZUS-MH, was utilized to model a hypothetical 'what if?' scenario, based on the Colorado Geological Survey's maximum credible earthquake of M 6.25 for a fault in nearby Ouray County (see map in Earthquake hazard profile section). In 2005, a HAZUS level 1 scenario was run with an M 6.25 event located at the northeast corner of the County, near the junction of San Miguel, Ouray, and Montrose County lines by the Dallas Divide.

According to this scenario an estimated 488 buildings will be at least moderately damaged, which is over 16% of the total building inventory in the County (according to HAZUS inventory data). The model estimates 64 households would be displaced due to the earthquake. Casualty estimates, assuming the earthquake occurred at 2 pm would be 25 persons. Of this total 23 would be minor injuries, 1 serious, and 1 estimated death. Total economic loss estimated for the earthquake is \$55.54 million dollars, which includes building and lifeline related losses based on the HAZUS inventory in the region.

ANALYZING DEVELOPMENT TRENDS

Any new construction built to code in the Eastern County should generally be able to withstand earthquakes. Oil and gas development in the West End may be at risk from faults and man-caused earthquakes in the region.

VULNERABILITY

Earthquakes represent a low probability, high consequence hazard for San Miguel County. Even though the AHPG did not rank earthquake as a high or medium risk hazard, an earthquake event could have potentially high consequences for the County as a whole. Because Earthquakes do not occur often in San Miguel County and when they do occur their effects are not catastrophic, one would judge the vulnerability to San Miguel County to be low. However, if a large magnitude earthquake were to occur in San Miguel County, the destruction would most likely be severe. County and Town building codes help to mitigate the potential effects of an earthquake, but none the less a significant earthquake, if it were to occur would be devastating. Therefore, San Miguel County's **vulnerability to earthquakes is high**. Mountain Village may have a slightly increased vulnerability based on the built environment of large hotels and condo complexes.

VULNERABILITY REVIEW AND CONCLUSIONS

After completing the risk assessment, defining the current mitigation capabilities and reviewing the vulnerability of each jurisdiction to each hazard, the AHPG came to the following general conclusions:

- 1. Wildfire continues to be a significant threat to the County and its residents. This threat is growing with more development in forested areas. The County's Wildfire Safety Program and Community Wildfire Prevention Plans are proving to be valuable tools to mitigate future losses.*
- 2. Flooding will continue to be a threat to existing development within the San Miguel River floodplain. Floodplain management ordinances for Telluride and the County have been effective in reducing risk to future growth in floodplains, but much of the existing Town of Telluride is at risk. Flood insurance is currently the most appropriate mitigation option in Telluride for existing structures, given that the high property values and historic structures in town make acquisition/elevation projects technically and financially difficult.*
- 3. Avalanches have been responsible for more lives lost than any other recent hazard, but this is primarily due to unwise backcountry travel. Portions of the Town of Ophir and certain County roads and State Highways are at risk to large avalanches. Avalanches can restrict access into and out of the County on Highway 145 over Lizard Head Pass for days, as well as access in and out of Ophir.*
- 4. Landslides, mud and debris flows, and rockfall come with the territory of steep, eroding slopes in the eastern County. Debris and mudflows have inundated Telluride twice in the past 100 years. Many of the culverts are undersized to handle a flood and debris flow on Cornet Creek. The County and the Town of Telluride have geohazard regulations in their respective Land Use Codes. Transportation corridors remain at risk and pose safety concerns to travelers and emergency responders. More rockfall control efforts are needed along the State Highways in the County.*
- 5. Ongoing drought has impacted the tourism and agriculture economies within the County, and contributed to increasing the wildfire hazard in the past, and it will continue to do so in the future.*

6. *Problems associated with severe weather and extreme winter weather occur almost every year and exacerbate problems with geologic hazards, avalanches, flooding, and wildfire.*
7. *Earthquakes pose a low probability but high consequence event, particularly with the presence of historic building stock located in Telluride.*
8. *Transportation routes over mountain passes are susceptible to severe weather avalanches and rockslides, potentially limiting emergency ingress and egress and causing dangerous driving conditions for commuters and tourists. HAZMAT spills will continue to be a concern along transportation corridors. These concerns have been voiced to the Colorado Department of Transportation in the past, and will be documented in this plan's recommendations.*
9. *The County Power plant and power outages from severe weather and avalanches are an ongoing concern.*
10. *Facilities that store gas, propane, chemicals and other hazardous materials could cause additional health and safety concerns if impacted by a natural or man-caused event, these event can also cause a disruption in the services they provide creating more potential issues.*
11. *Many plans, procedures, and policies exist that either promote public safety or wise development procedures within the County and the incorporated towns. Often the implementation of these capabilities is hindered by lack of funding, staffing, political or public pressures, and respect for private property rights.*

CRITICAL FACILITY AND INFRASTRUCTURE INVENTORY

The next step in the planning process is to identify what critical facilities could be affected. This requires determining which facilities and areas in the community are considered critical and why they are considered critical (i.e. is the facility in the flood plain, storing hazardous materials, or a primary shelter?) Each critical facility was mapped by the County GIS director by using air photos, topographic maps and local knowledge of the inventory. Table 3 represents the critical facilities and areas of concern identified by San Miguel County. Detailed maps of the locations of these facilities are not included in Appendix B for security reasons.

CRITICAL FACILITIES

For the purpose of this plan, Critical Facilities are defined as facilities that provide a necessary service before, during, and after times of disaster. These generally include:

- Airports
- Fire stations
- Law enforcement facilities
- Schools
- Governmental buildings
- Medical facilities
- Shelters

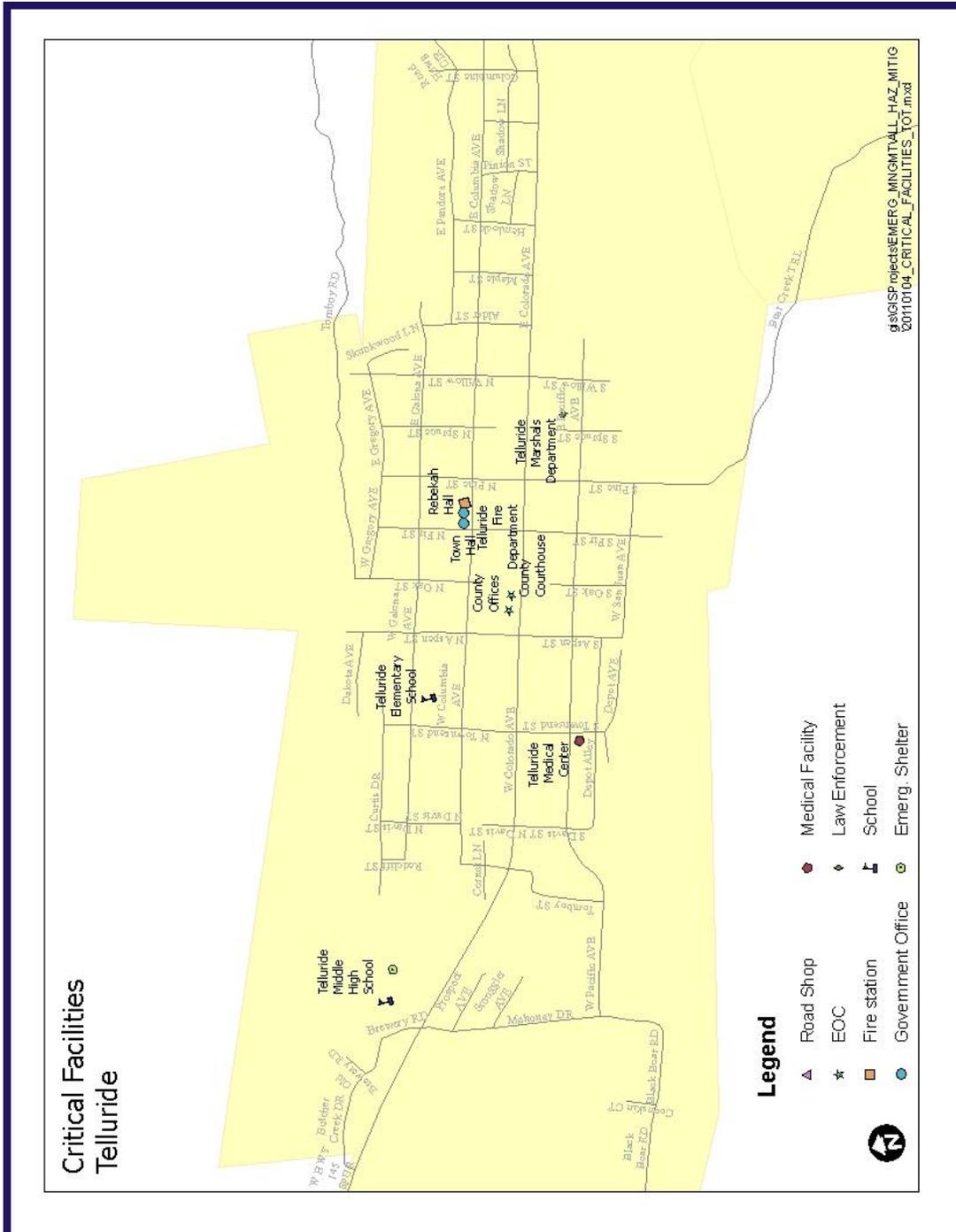


Figure 19: Telluride Critical Facilities Map

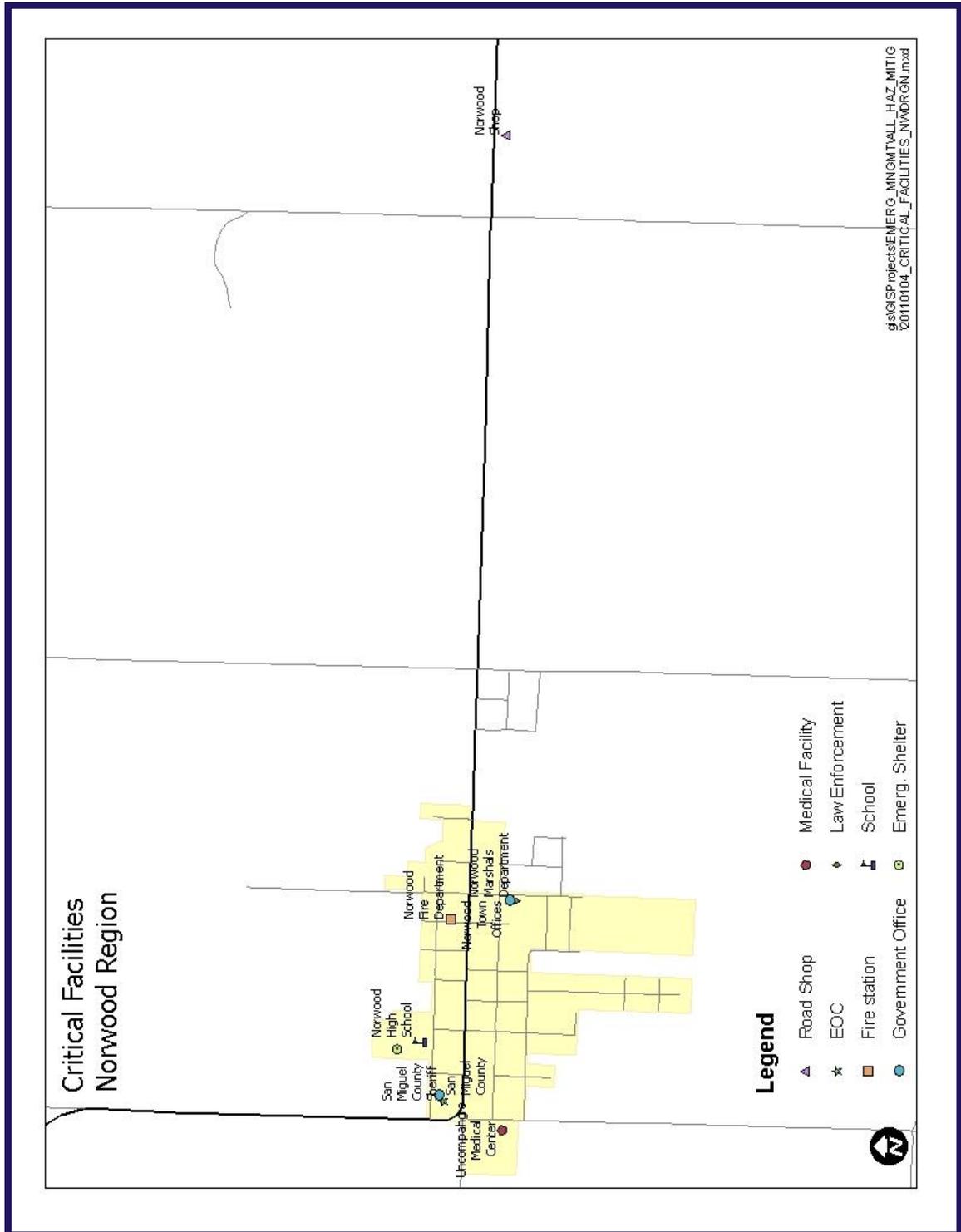


Figure 20: Norwood Critical Facilities Map

CRITICAL INFRASTRUCTURE

The County also defined Critical Infrastructure. These generally include:

- Dams, water treatment, water storage, water supply
- Electric power lines, sub-stations
- Sewer lines and treatment plants
- Telephone facilities
- Communication Towers
- Transportation routes

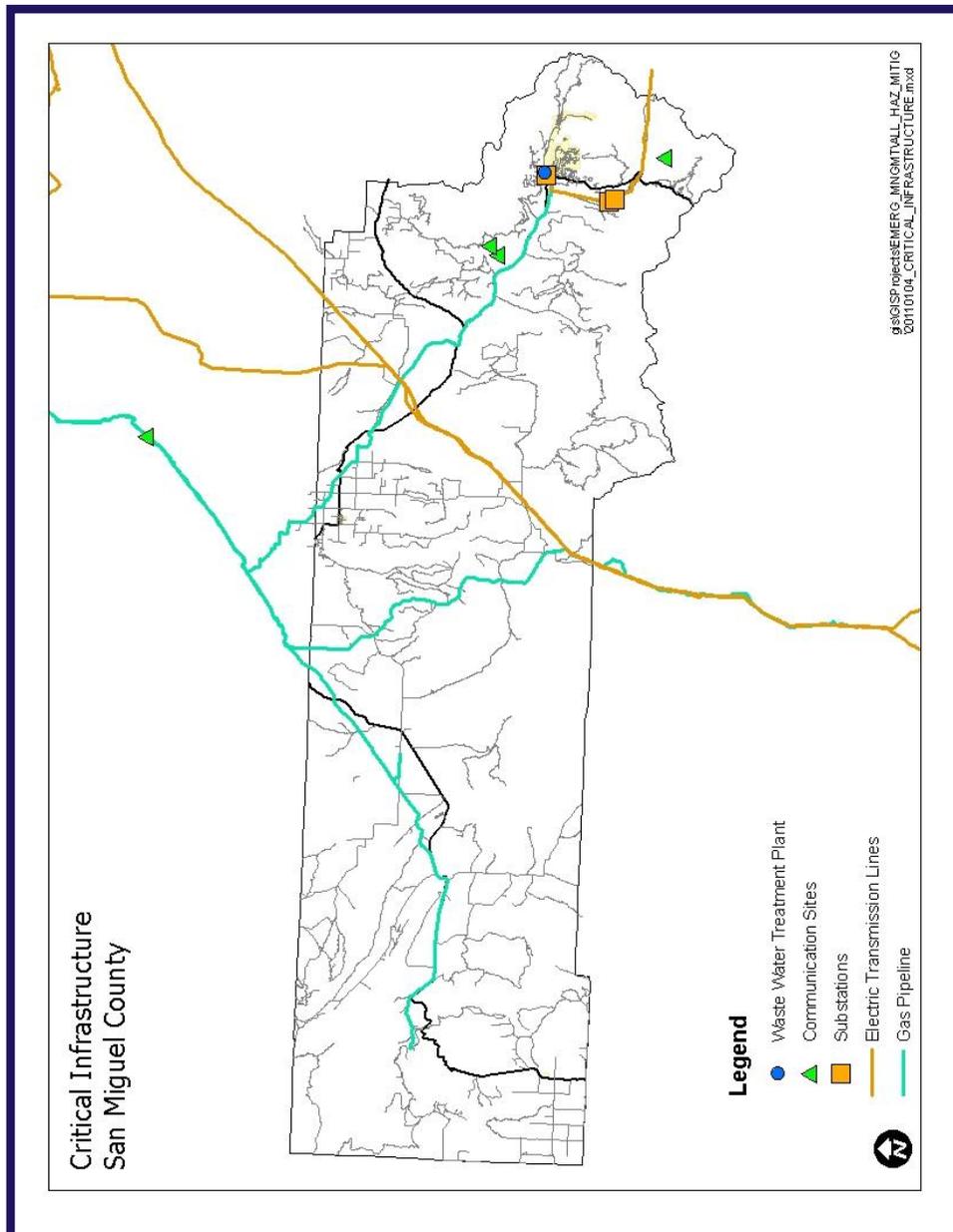


Figure 21: Critical Infrastructure San Miguel County

CRITICAL FACILITIES POTENTIALLY AT RISK

The table below displays the facilities that were determined to be at risk to a natural or manmade hazard, where existing data allowed.

Table 28: Critical Facilities Information

Facility Name	Facility Type	Generat or	Type of Hazard
County Administration	Gov	Y	Debris flow, Flood
Courthouse	Gov		Debris flow, riverine flooding,
Sheriff's Office	Law	Y	Rockfall, Wildfire, access limited by flooding events,
Public Health Clinic-County Nurse	Health		Debris flow, riverine flooding, earthquake
Telluride Town Hall	Gov		Debris Flow, riverine flooding
Telluride Marshal	Law		Debris flow, riverine flooding
MV Town Hall	Gov		Wildfire
MV Police Dept.	Law	Y	Near Landslide deposits, wildfire
Gondola	Transportation	Y	Most identified hazards
MV Fire Dept	Fire	Y	Near Landslide deposits, wildfire
Fire Station #4	Fire		Rockfall, landslides, wildfire, extreme winter weather
Telluride Regional Airport	Transportation		Debris flow, Landslide, Severe Weather, earthquake, extreme winter weather, manmade
Telluride Fire House	Fire		Debris flow, riverine flooding
Telluride Medical Center	Health	Y	Debris flow, riverine flooding
Telluride Water/Sewer Treatment	Utilities		Flood, severe weather, earthquake, extreme winter weather
Telluride Festival Grounds	Recreational		Severe weather, Flood, Wildfire
Telluride Public Wks	Utilities		Flood

Facility Name	Facility Type	Generator	Type of Hazard
Norwood Hill Bridge	Transportation	N/A	Rockfall
Trout Lake Dam	Utilities	N/A	Earthquake, Flood, severe weather, manmade
Hope Lake Dam	Utilities	N/A	Earthquake, Flood, manmade
Miramonte Reservoir	Utilities	N/A	Earthquake, Flood, manmade
Ames Hydro-Generator	Utilities	Y	Wildfire
Bridal Vail Generator	Utilities		Wildfire
Placerville Bridge	Transportation		Flood, Ice Jams
Placerville Fire Dept.	Fire		Flood, riverine flooding, Debris flow, rockfall, landslide
Road & Bridge-Deep Creek Shop	Transportation		Flood, Debris flow, rockfall, landslide,
San Miguel Power & Lines	Utilities	Y	Manmade, severe weather, wildfire, avalanche, extreme winter weather
Telluride Middle/High School	School/Shelter		Debris flow, wildfire, rockfall
Last Dollar Mountain Communication Tower	Communications Tower	Y	wildfire, severe weather, extreme winter weather
Grey Head Communications Towers	Communications Towers		wildfire, severe weather, extreme winter weather
Cell Communication Towers	Communications Towers		wildfire, severe weather, extreme winter weather
Norwood School/Shelter	School/Shelter		Extreme winter weather, tornado, wildfire, severe weather

MITIGATION STRATEGY

DEVELOPING THE STRATEGY

This section of the plan details the County's mitigation strategy and how it was formulated. The mitigation strategy was developed through an eight-step process that entailed:

1. Review existing mitigation goals and actions
2. Determine status of 2005 goals and actions
3. Define 2010 mitigation Goals
4. Compile new mitigation actions
5. Evaluate, describe and prioritize actions
6. Consider mitigation alternatives
7. Assemble a mitigation action plan
8. Implement through existing plans and programs

After reviewing the results of the 2010 risk assessment, the current mitigation capabilities and discussing the vulnerability of the county and each jurisdiction to each of the defined hazards, the AHPG decided that following the 2005 mitigation strategy is a successful way to implement the result from this planning process. San Miguel County's mitigation strategy involves:

- COMMUNICATE the hazard information collected and analyzed through this planning process so that the community better understands what can happen where, and what they can do themselves to be better prepared. Also, publicize the "success stories" that are achieved through ongoing efforts;
- IMPLEMENT the Mitigation Actions encompassed in this plan;
- MOM - monitor Multi-Objective Management opportunities, so that funding opportunities may be shared and "packaged" and broad constituent support is gained; and
- UTILIZE existing rules, regulations, policies and procedures already in existence that reduces future hazard losses, as feasible.

SETTING MITIGATION GOALS

Requirement §201.6(c)(3)(i):

[The hazard mitigation strategy shall include a] description of mitigation goals to reduce or avoid long-term vulnerabilities to the identified hazards.

Due to the fact that is plan is an update to the 2005 plan, the AHPG reviewed the goals from the previous document. Originally, The AHPG began setting mitigation goals in 2005 by reviewing goals generated during other mitigation planning efforts such as the State of Colorado Natural Hazard Mitigation Plan 2004 and the Gunnison County All-Hazard Mitigation Plan 2003, and used them as a platform in developing their own. The three goal statements below are associated with several mitigation actions that were compiled by each participating jurisdiction. The AHPG determined that the goals that were originally set in the 2005 plan still match the goals and general guidelines that explain what the County wants to achieve with this plan. These goals and actions provide direction for reducing future hazard-related losses within San Miguel County.

HAZARD MITIGATION GOALS

1. Reduce the potential impact of natural and man-made disasters on the County's citizens and guests.
2. Reduce the potential impact of natural and man-made disasters on Critical Facilities, infrastructure, and Critical Support Services.
3. Reduce the potential impact of natural and man-made disasters on public and private property, the economy, natural environment, and historic resources

DEVELOPING MITIGATION ACTIONS

Requirement §201.6(c)(3)(ii):

[The mitigation strategy shall include a] section that identifies and analyzes a comprehensive range of specific mitigation actions and projects being considered to reduce the effects of each hazard, with particular emphasis on new and existing buildings and infrastructure.

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

Many of the County's and jurisdictions' identified actions fall under more than one, if not all of the Mitigation Goals. San Miguel County's mitigation actions were developed by:

1. Determining the status of the 2005 mitigation actions
2. Compiling a list of ongoing actions identified in the 2005 plan
3. Compiling a list by jurisdiction and County of proposed mitigation actions

4. Completing a mitigation action description worksheet
5. Completing FEMA's STAPLEE matrix to determine each action's viability
6. Prioritizing each action by each of jurisdiction's "subject matter experts"
7. Developing a comprehensive list of the proposed mitigation actions and prioritizing each action against the rest.
8. The results were then compiled and the resulting list of High, Medium and Low priority mitigation actions was completed.

MITIGATION ACTIONS AND IMPLEMENTATION APPROACHES

Requirement §201.6(c)(3)(iii):

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

Mitigation actions are measurable steps or projects that help to attain identified goals. At the November 10th AHPG Meeting, each jurisdiction was asked to review the results of the risk assessment and compile a list of mitigation actions that pertain to each of their identified **High and Medium** risk hazards. The AHPG decided that **low** risk hazards would be mitigated best by public education campaigns that serve to educate the public about all potential hazards facing the planning area.

The AHPG was then emailed a worksheet template designed to help them come up with a description of each of their specific jurisdiction's mitigation actions. They were asked to provide information in each of the following categories:

1. What jurisdiction the action pertained to
2. The Mitigation Action or Project Title
3. Issue/Background pertaining to the action
4. What Hazard/s the action would help mitigate
5. Alternatives to the proposed project or action
6. What office or jurisdiction would be responsible for the action
7. Cost Estimate
8. Benefits or avoided loss due to action completion
9. Potential funding sources
10. Schedule for completion

Each mitigation action's description worksheet can be located in the Mitigation Actions section of this plan. During a planning meeting held in January, all the mitigation action priorities were finalized. The planning coordinator.

PRIORITIZATION EVALUATION

Mitigation actions were prioritized based on a FEMA recommended ‘STAPLEE’ evaluation process. FEMA recommends using the STAPLEE evaluation, as this process addresses all the major factors that may come into play when weighing the costs to the benefits of implementing one action over another. Below is an explanation of the STAPLEE criteria taken from FEMA’s Multi-Hazard Mitigation:

- Social: Does the measure treat people fairly?
- Technical: Will it work? (Does it solve the problem? Is it feasible?)
- Administrative: Is there capacity to implement and manage the project?
- Political: Who are the stakeholders? Did they get to participate? Is there public support? Is political leadership willing to support the project?
- Legal: Does your organization have the authority to implement? Is it legal? Are there liability implications?
- Economic: Is it cost-beneficial? Is there funding? Does it contribute to the local economy or economic development? Does it reduce direct property losses or indirect economic losses?
- Environmental: Does it comply with environmental regulations or have adverse environmental impacts?

Other criteria San Miguel County used to recommend what actions might be more important, more effective, or more likely to be implemented than another included:

1. Does action protect lives?
2. Does action address hazards or areas with the highest risk?
3. Does action protect critical facilities, infrastructure or community assets?
4. Does action meet multiple objectives (Multiple Objective Management)?

PRIORITIZED MITIGATION ACTIONS

Each Jurisdiction’s prioritized mitigation actions are below followed by the priority selection:

TOWN OF OPHIR MITIGATION ACTIONS

#	Mitigation Action	HIGH Priority	MED. Priority	LOW Priority
1	Bury the power line that runs through Ophir Valley	X		
2	Update and expand medical and first responder equipment in Ophir	X		
3	Obtain fire engine to be stationed in Ophir		X	
4	Burry Waterfall Canyon water line to prevent freezing of drinking water source		X	
5	Install street signs and update maps for County Emergency Response Teams	X		
6	Develop methods that allow the town to create power in case of cut off from main power source	X		
7	Rockfall mitigation on Ophir Loop at HWY 145	X		
8	Acquire snowcat and/or snowmobile for winter access if		X	

	avalanches block access			
9	Update snowplow equipment	X		
10	Acquire high speed internet for improved more reliable means of communication	X		

TOWN OF SAWPIT MITIGATION ACTIONS

#	Mitigation Action	HIGH Priority	MED Priority	LOW Priority
1	Address ingress/egress issues to help mitigate the effects of wildfire			X
2	Develop and implement drought awareness for residents			X
3	Map the 100 and 500 year flood plains and develop pre-planned evacuation routes to improve NFIP ratings		X	
4	Improve storm drainage systems to mitigate the potential effects of debris flows and mudslides	X		
5	Continue to regulate HAZMAT transportation routes through Sawpit on HWY 145		X	

TOWN OF NORWOOD MITIGATION ACTIONS

#	Mitigation Action	HIGH Priority	MED. Priority	LOW Priority
1	Improve drought awareness through public education campaign			X
2	Increase water storage for the town of Norwood		X	
3	Develop water usage restrictions to be used during drought periods			X
4	replace old infrastructure		X	
5	improve irrigation systems			X
6	identify and map severe winter weather shelters			X
7	Inventory and increase snow removal equipment	X		
8	Continue to update building codes for snow load capacities		X	
9	Increase public awareness concerning preventative pandemic flu measures			X
10	Identify and map essential infrastructure for the town of Norwood			X

TOWN OF TELLURIDE MITIGATION ACTIONS

#	Mitigation Action	HIGH Priority	MED. Priority	LOW Priority
1	Cornet Creek Flood Mitigation Channel maintenance, sediment and debris removal from falls to confluence with San Miguel River		X	
2	Replace Pacific Ave. culverts with a span bridge		X	
3	Increase Public awareness about Riverine flooding in Telluride			X
4	Storm Drainage Improvements		X	
5	Increase public awareness concerning severe weather in Telluride		X	
6	Identify evacuation and shelter centers and equip with backup generators		X	
7	Avalanche slide path mapping		X	
8	Map rock fall zones in the Town of Telluride		X	
9	HAZMAT training with TFPD		X	
10	Develop a forestry management plan for WUI zones that provides a list to reduce wildfire impact		X	
11	Continue to remove sediment from Instream Sedimentation Basin at the San Miguel River/ Bear Creek confluence.		X	
12	Adopt the 2009 updated rockfall maps	X		
13	Review current rockfall codes to determine needs for improvement	X		
14	Identify locations of previous street flooding incidents from snowmelt or monsoonal rains. Design and implement engineered solutions at each identified problematic location		X	
15	Improve public notification systems		X	

MOUNTAIN VILLAGE MITIGATION ACTIONS

#	Mitigation Action	HIGH Priority	MED. Priority	LOW Priority
1	Address Community Wildfire Protection Plan Actions and prioritize fuel reduction projects	X		
2	Launch public education campaign concerning drought issues in Mtn. Village and discuss potential water restriction implementation if necessary			X
3	Draft and publish an all hazards brochure for public distribution. This brochure will include information on all of the high and medium risk hazards that Mountain Village identified in this plan as well as addressing other hazards		X	
4	Bury power lines in wildfire prone areas (refer to county CWPP)		X	
5	Launch a public education campaign concerning pandemic flu and specify it towards the resources that are available before and during an event to Mountain Village residents		X	

Egnar /Slick Rock Fire Protection District Mitigation Actions

#	Mitigation Action	HIGH Priority	MED. Priority	LOW Priority
1	Add high visibility signage and speed reductions along HAZ transportation routes		X	
2	Fire mitigation (fuels reduction) on public lands in ESR FPD		X	
3	Develop agency wide plan to deal with Hazardous materials spills	X		
4	Improve radio coverage in West End of County	X		
5	Pursue PPE for HAZMAT and ongoing training for Dept personnel		X	
6	Improve mapping for the District			X
7	improve emergency communication to residents (obtain NOAA weather Radios)			X
8	Uniform signage for roads and addresses	X		

TELLURIDE FIRE PROTECTION DISTRICT MITIGATION ACTIONS

#	Mitigation Action	HIGH Priority	MED. Priority	LOW Priority
1	Wildfire Mitigation Fuels Reduction (surrounding mesa's, Mtn Village, Trout Lake)	X		
2	Obtain more dry hydrants and water sources at Trout Lake, Sliverpick Road, McKenzie Springs, Fall Creek Road, Grayhead (pond) Ilium Valley, Sawpit, Ophir and Ames	X		
3	Purchase type II Tender to Station 4		X	
4	Add personnel to Station 4			X
5	Obtain additional County GIS map books for fire vehicles	X		
6	Update and match necessary hose couplings with Ophir, SMC and Norwood		X	
7	Rural fire delivery	X		
8	Obtain computers to allow mobile data for fire engines and ambulances			X
9	Replace apparatus: Truck 2 and Brush 33			X

NORWOOD FIRE PROTECTION DISTRICT MITIGATION ACTIONS

#	Mitigation Action	HIGH Priority	MED. Priority	LOW Priority
1	Develop a system for testing warning siren systems		X	
2	Hire a full time Fire Chief, EMS Coordinator, Fire Fighter Coordinator and Paramedic for NFPD	X		
3	Obtain land for building Gurley Fire Station (Station # 4)		X	

OVERALL COUNTY MITIGATION ACTION PRIORITIZATION

#	County Mitigation Action	HIGH Priority	MED. Priority	LOW Priority
1	Encourage the use of building codes to improve resistance to severe weather		X	
2	Continue avalanche mitigation in Lizard Head Pass Area	X		
3	Identify special needs population to ensure needs are met during extreme weather		X	
4	Conduct public education workshops for training property owners to manage fuel on their own land		X	
5	Continue response training and readiness for Hazardous material spills		X	
6	Encourage public awareness surrounding landslides in the County		X	
7	Hire wildfire mitigation coordinator			X
8	Public information campaigns during drought and non drought periods			X
9	All Hazards Public education campaign (brochure publications, web site posting and public information sessions as needed). Includes efforts to educate the public on ways to prevent, prepare for and recover for and from disasters	X		
10	County wide wildfire education campaign	X		
11	Continue public education to encourage back country and fishing licenses for SAR efforts	X		
12	work with water supply organizations to promote conservation and efficiency initiatives			X
13	Improve and exercise county wide warning systems for hazards	X		
14	Promote disaster preparedness including obtaining disaster preparedness kits		X	
15	Continue to develop Target Notification System for both landline and mobile phone for floodplain occupants	X		
16	Obtain NOAA weather radio transmitter tower for Telluride Region		X	
17	Recruit and train more volunteer weather spotters in the County with an emphasis on areas that aren't currently covered			X
18	Organize Skyward/ HAM Radio operators for emergency communication		X	
19	Prepare a list of severe weather events that would prompt dispatch to notify NWS forecasters in Grand			X

#	County Mitigation Action	HIGH Priority	MED. Priority	LOW Priority
	Junction			
20	Address ingress/egress access issues in subdivisions vulnerable to wildfire	X		
21	Acquire land that remains in the floodplain			X
22	Identify and pursue potential infrastructure improvements to improve water supply systems			X
23	Improve water supply systems to reduce the effects of drought			X
24	Continued Education of Rural living		X	
25	Continue to develop public official buy in and hazard awareness		X	
26	Bury and reinforce power lines in Avalanche prone areas	X		
27	Identify and implement water restriction policies during drought times		X	
28	Map the FEMA floodplain in populated areas of the County		X	
29	Obtain good digital data for mapping critical infrastructure in the County	X		
30	Update GIS imagery (aerial photos) for response and analysis	X		
31	Obtain GIS satellite imagery for wildfire risk analysis		X	
32	update flooding maps to include elevation and hydrologic/ hydraulic analysis	X		
33	Work with CGS, CDOT and USGS to identify and map vulnerable landslide areas and develop slope stabilization projects to protect homes and infrastructure			X
34	Conduct annual workshop for protective and response measures for pandemic flu		X	
35	Work with CDPHE and other health resources to develop or improve continuity of ops plans for clinics Obtain ability to provide adequate basic care in Alternate Care Facility (oxygen generator)		X	
36	Increase public awareness about Prairie Dog population on the Valley Floor and the risk of plague (partner with schools)		X	
37	Obtain technology infrastructure support for maintaining web based communication during emergencies			X
38	Update and improve floodplain regulations for the entire County where appropriate	X		
39	discourage development in floodplains		X	
40	Oppose highways as HAZMAT transportation routes	X		

#	County Mitigation Action	HIGH Priority	MED. Priority	LOW Priority
41	Continue to bury power lines to decrease the effect of extreme winter weather and wildfire		X	
42	Internal inspection of transmission pipeline that serves natural gas to towns in the County		X	
43	Continue and improve avalanche control		X	
44	Inventory snow removal capabilities geographically (what could get cut off)		X	
45	Continue avalanche training for employees who work in avalanche prone areas			X
46	Continue avalanche control program to mitigate against un-planned slides		X	
47	Continue stream bank erosion projects		X	
48	Continue culvert improvements and bridge maintenance including brush clearing, crack sealing and rip-rap placement to prevent scouring		X	
49	Continue to participate with CDOT in the bridge inspection program		X	
50	upgrade snow equipment: - 6-wheel drive motor grader with front plow and snow wing -heavy duty plow with loader mounted rotary snow blower for drifting on mesas		X	
51	Replace bridge that provides access to the Applebaugh subdivision			X
52	Identify areas where snow drifting is problematic and install snow fences to reduce problem		X	
53	Address Community Wildfire Protection Plan Actions and prioritize fuels reduction projects	X		
54	Public Education Campaign on Drought			X
55	Bury power lines in wildfire prone areas		X	
56	All Hazard Education	X		
57	Pandemic Flu education		X	

SAN MIGUEL COUNTY ROAD AND BRIDGE DEPARTMENT MITIGATION ACTIONS

#	Mitigation Action	HIGH Priority	MED. Priority	LOW Priority
1	Continue avalanche training for employees who work in avalanche prone areas	X		
2	Continue avalanche control program to mitigate against un-planned slides	X		
3	Continue stream bank erosion projects		X	
4	Continue culvert improvements and bridge maintenance including brush clearing, crack sealing and rip-rap placement to prevent scouring		X	
5	Continue to participate with CDOT in the bridge inspection program		X	
6	upgrade snow equipment: - 6-wheel drive motor grader with front plow and snow wing - heavy duty plow with loader mounted rotary snow blower for drifting on mesas	X		
7	Replace bridge that provides access to the Applebaugh subdivision		X	
8	Inventory snow removal capabilities geographically (what could get cut off)		X	
9	Identify areas where snow drifting is problematic and install snow fences to reduce problem		X	

EMERGENCY MANAGEMENT MITIGATION ACTIONS

#	Mitigation Action	HIGH Priority	MED. Priority	LOW Priority
1	Identify special needs population to ensure needs are met during extreme weather		X	
2	Conduct public education workshops for training property owners to manage fuel on their own land		X	
3	Continue response training and readiness for Hazardous material spills		X	
4	Encourage public awareness surrounding landslides in the County			X
5	Hire wildfire mitigation coordinator		X	
6	Public information campaigns during drought and non drought periods			X
7	All Hazards Public education campaign (brochure publications, web site posting and public information sessions as needed). Includes efforts to educate the public on ways to prevent, prepare for and recover for and from disasters			X
8	County wide wildfire education campaign			X
9	Continue public education to encourage back country rescue cards/hunting and fishing licenses for SAR efforts		X	
10	work with water supply organizations to promote	X		

	conservation and efficiency initiatives			
11	Improve and exercise county wide warning systems for hazards			X
12	Promote disaster preparedness including obtaining disaster preparedness kits			X
13	Continue to develop Target Notification System Campaign for both landline and mobile phone for floodplain occupants			X
14	Obtain NOAA weather radio transmitter tower for Telluride Region		X	
15	Recruit and train more volunteer weather spotters in the County			
16	Prepare a list of severe weather events that would prompt dispatch to notify NWS forecasters in Grand Junction	X		
17	Organize Skyward/ HAM Radio operators for emergency communication			
18	Run HAZUS level 2 analysis		X	

MITIGATION ACTION WORK PLAN

The final step involved developing an action plan based on the prioritized AHPG mitigation actions. The Mitigation Action Plan’s Project Descriptions summarize the project itself, the agency responsible for implementing each of the prioritized strategies determined in the previous step, as well as when and how the actions will be implemented. The Project description worksheet for each prioritized project also details information regarding how the project will be supported and what the time frame is for implementation of the project.

Detailed Project Descriptions for all of the Mitigation Actions documented in this plan may be found in [Appendix A](#) and is organized by jurisdiction.

IMPLEMENTATION AND MAINTENANCE

Requirement §201.6(c)(4)(i):

[The plan maintenance process shall include a] section describing the method and schedule of monitoring, evaluating, and updating the mitigation plan within a five-year cycle.

IMPLEMENTATION

Where possible, this plan recommends utilizing existing plans and/or programs to implement hazard mitigation in the County. Based on this plan’s capability assessment, the County has and continues to implement policies and programs to reduce losses to life and property from natural hazards. This plan builds upon the momentum developed through previous and related planning efforts and mitigation programs, and recommends implementing projects, where possible, through the following mechanisms:

Table 29: Implementation Strategy

1. San Miguel County Comprehensive Development Plan 1978, amended 2001	2. County Land Use Code
3. Existing County subdivision regulations	4. Existing Floodplain Regulations in San Miguel County and the Town of Telluride
5. Telluride Regional Area Master Plan 1989, amended 1991	6. Telluride Capital Improvement Plan
7. Telluride Drainage Master Plan	8. San Miguel County Open Lands Plan
9. San Miguel County Community Wildfire Protection Plan	10. San Miguel County Wildfire Safety Program data
11. Building Code Utilization	12. Norwood Master Plan
13. Norwood Land Use Code	14. Telluride School Emergency Plan
15. Norwood School Emergency Plan	16. Telluride Ski Area Emergency Plan
17. County Emergency Operations Plan	18. Airport Master Plan
19. Airport Emergency Plan	20. Public Health Emergency Plan
21. Risk Communication Plan	22. Mass Immunization Plan
23. Medical Center Disaster Plan	24. Mountain Village Land Use Ordinance
25. Mountain Village and Town of Telluride Mosquito Abatement Plan	26. Sawpit Source Water Protection Plan
27. Ophir Watershed Protection Plan	28. Telluride Watershed Protection Plan
29. Debris and Flood Control Plan for Cornet Creek, Telluride, Colorado	30. Wilson Mesa Watershed Protection Plan
31. Last Dollar Watershed Protection Plan	32. Local Homeowners Associations Wildfire Plans, where applicable
33. Ten Year County Road and Bridge Plan	

MAINTENANCE

Recognizing that many mitigation projects are ongoing, and that while in the implementation stage communities may suffer budget cuts, experience staff turnover, or projects may fail altogether, a good plan needs to provide for periodic monitoring and evaluation of its successes and failures and allow for updates of the Plan where necessary.

In order to track progress and update the Mitigation Strategies identified in the Action Plan, the county Emergency Management Coordinator will facilitate review and update of during the ongoing All Hazard Planning Group meetings throughout the year. In addition, the County will revisit the San Miguel County Hazard Mitigation annually and/or after a hazard event occurs. A 5-year written update will be submitted to the Colorado Division of Emergency Management and FEMA Region VIII, unless disaster or other circumstances (e.g., changing regulations) lead to a different time frame.

Updates to this plan will consider:

- Changes in vulnerability due to project implementation
- Document success stories where mitigation efforts have proven effective
- Document areas where mitigation actions were not effective
- Document any new hazards that may arise or were previously overlooked
- Incorporating new data or studies on hazards and risks
- Incorporate new capabilities or changes in capabilities (planning and zoning, floodplain regulation changes, etc.)
- Incorporate growth and development-related changes to the County's inventory
- Incorporate new project recommendations or changes in project prioritization

Changes should be made to the plan to accommodate for projects that have failed or are not considered feasible after a review for their consistency with STAPLEE, the time frame, the community's priorities, and funding resources. Priorities that were not ranked high, but identified as potential mitigation strategies, should be reviewed as well during the monitoring and update of this plan to determine feasibility of future implementation. In keeping with the process of adopting the San Miguel County Hazard Mitigation Plan, a public hearing to receive public comment on plan maintenance and updating should be held during the annual review period, and the final product adopted by the Board of County Commissioners appropriately.

APPENDIX A: MITIGATION ACTION WORK PLAN

OPHIR MITIGATION ACTIONS

Project Title	Bury the Power Line through the Ophir Valley
Jurisdiction	Town of Ophir
Issue/Background	In the past, Power has been lost due to avalanches, windstorms and other severe weather that knock down the lines.
Hazard/s Addressed	Avalanche, extreme winter weather, severe weather, wildfire
Other Alternatives	Do nothing and continue to lose power due to hazards
Responsible Office	Town of Ophir, San Miguel County
Cost Estimate	1M or more
Benefits	Protects critical infrastructure against addressed hazards, protects community and prevents economic losses
Potential Funding	Grants, SMC, Tri-State
Schedule	5 Years

Project Title	Update and expand medical equipment
Jurisdiction	Town of Ophir
Issue/Background	Much of the Towns EMS and Search and Rescue equipment is outdated, Ophir is a secluded area and response time from Fire Departments is long.
Hazard Addressed	All Hazards
Other Alternatives	Use what they currently have
Responsible Office	Town of Ophir, County Emergency Management, Fire Protection District
Cost Estimate	15K
Benefits	Provide up to date medical and search and rescue equipment for dealing with life safety and response issues due to hazards
Potential Funding	Town of Ophir, Fire Protection District, SMC
Schedule	Complete by 2012

Project Title	Obtain a fire engine for new fire station near Ophir
Jurisdiction	Town of Ophir
Issue/Background	The town of Ophir has looked into obtaining a fire engine for the volunteer fire fighters who reside in Ophir. Funding for the truck is lacking, thus fire fighters must leave Ophir to get the truck and return to the incident
Hazard Addressed	All- response equipment for any hazard event
Other Alternatives	Rely on Mt Village and San Bernardo Stations which increases vital response time
Responsible Office	Fire Protection Districts, County
Cost Estimate	200K-500K
Benefits	Increase public safety and decrease incident response time, provide better service to the citizens of Ophir
Potential Funding	Grants, Fire Protection District, County
Schedule	2 years

Project Title	Bury Waterfall Canyon water supply line
Jurisdiction	Town of Ophir
Issue/Background	This water line provides Ophir with its drinking water. It is an above ground water line, subject to freezing and damage due to hazards
Hazard Addressed	Extreme winter weather, Severe weather, wildfire
Other Alternatives	Do nothing and continue to have interrupted water service due to freezing
Responsible Office	Town of Ophir
Cost Estimate	1M
Benefits	Protect residents water supply, reduce damage due to potential hazards, avoid costly repairs and interrupted service
Potential Funding	Grants, SMC,
Schedule	5 Years

Project Title	Install street signs and update maps
Jurisdiction	Town of Ophir
Issue/Background	Ophir has no street signs and emergency response has been lost in the past when trying to respond to an incident
Hazard Addressed	All
Other Alternatives	None
Responsible Office	Ophir, SMC Emergency Management
Cost Estimate	5K
Benefits	Properly display signs and map streets in Ophir to improve response to any hazard
Potential Funding	Grants, town of Ophir
Schedule	2012
Project Title	Create alternative power source
Jurisdiction	Town of Ophir

Issue/Background	Ophir experiences power outages frequently. Whether the power is knocked out by an avalanche or severe weather, having back up power would highly benefit the town's residents
Hazard Addressed	Avalanche, Wildfire, Severe Weather, Extreme Winter Weather
Other Alternatives	Do nothing and continue to experience frequent outages
Responsible Office	Town of Ophir
Cost Estimate	\$200,000
Benefits	Protect the town, town facilities such as the water plant; avoid economic losses and potential issues due to having loss of power.
Potential Funding	Grant funds, SMC
Schedule	2012

Project Title	Conduct Rockfall Mitigation on Ophir Loop on HWY 145
Jurisdiction	Town of Ophir/ CDOT
Issue/Background	Rockfall is a common issue along this stretch of State Highway. Many cars have been damaged and a large enough event could cause loss of life or shut down the highway.
Hazard Addressed	Rockfall, Transportation Accidents, Hazardous Materials Spill
Other Alternatives	None
Responsible Office	CDOT
Cost Estimate	\$500,000
Benefits	Avoid future damage and reduce the likelihood of a major rockfall event that could result in life loss, transportation accidents, HAZMAT spills and road closure.
Potential Funding	CDOT
Schedule	2 years

Project Title	Acquire a snowcat/snowmobile for emergency use during road closures
Jurisdiction	Town of Ophir
Issue/Background	The town of Ophir is cut off frequently from the rest of the world when avalanches block the only road to the town. Having a snowcat and or snowmobile would allow a means of transportation over the avalanche path for medical emergencies, supply delivery etc.
Hazard Addressed	Avalanche
Other Alternatives	Ski in and out
Responsible Office	Ophir
Cost Estimate	\$5,000 (snowmobile) \$50,000 (snowcat)
Benefits	Provide increased public safety during avalanche events
Potential Funding	Grants
Schedule	2 years

Project Title	Update town's snowplow equipment
Jurisdiction	Town of Ophir
Issue/Background	Ophir receives a tremendous amount of snow and high winds which cause snow to drift over roads. Upgraded snow equipment would help keep the town's one access road open.
Hazard Addressed	Extreme winter weather, avalanche, transportation accidents
Other Alternatives	Continue to use old equipment which is unreliable and continues to break.
Responsible Office	Town of Ophir
Cost Estimate	\$250,000
Benefits (avoided losses)	Avoid added mechanical costs for repairing old equipment; avoid economic loss, transportation accidents.
Potential Funding	Grants, donations
Schedule	2 years

TOWN OF MOUNTAIN VILLAGE

Project Title	Address Community Wildfire Protection Plan Actions and prioritize fuels reduction projects
Jurisdiction	Town of Mountain Village
Issue/Background	San Miguel County recently completed their CWPP. The town of Mountain Village was broken into upper and lower sections. The upper section received a high wildfire hazard rating. The CWPP outlines prescriptions for reducing wildfire risk.
Hazard Addressed	Wildfire
Other Alternatives	none
Responsible Office	Town of Mountain Village
Cost Estimate	Depends on the scope of the project outlined in the CWPP
Benefits (avoided losses)	Avoid loss of life, homes and economic effects due to a wildfire. Mitigation helps reduce the severity of a fire and helps firefighters combat the fire more effectively.
Potential Funding	FEMA, State Forest Service Grants, Land owners,
Schedule	2012

Project Title	Public Education Campaign on Drought
Jurisdiction	Town of Mountain Village
Issue/Background	San Miguel County has experienced drought in the past. It is important to educate residents on the effects of drought and how they can help mitigate the effects once in a drought cycle. Also, talking about potential water restrictions in the case of a drought beforehand helps plan for such an event.
Hazard Addressed	Drought
Other Alternatives	None
Responsible Office	Town of Mountain Village and SMSO
Cost Estimate	2K
Benefits (avoided losses)	Protects residents from economic loss and helps protect the surrounding environment
Potential Funding	Town of Mountain Village
Schedule	5 years

Project Title	All Hazard Education
Jurisdiction	Town of Mountain Village
Issue/Background	This plan has identified several high and medium risk hazards for the town of Mountain Village. Providing an educational brochure on the risks to residents is a good way to get people thinking about hazards that could potentially affect them.
Hazard Addressed	All
Other Alternatives	None
Responsible Office	Town of Mountain Village
Cost Estimate	2K for brochure printing and distribution
Benefits (avoided losses)	Helps to get residents thinking about the hazards that could potentially affect them and gives them resources to help conduct pre event mitigation work.
Potential Funding	FEMA, SMSO, Town of Mountain Village
Schedule	2012

Project Title	Bury power lines in wildfire prone areas
Jurisdiction	Town of Mountain Village
Issue/Background	The County CWPP outlined areas of risk due to wildfire. Critical infrastructure supply lines are at risk to damage and or loss during wildfire events.
Hazard Addressed	Wildfire
Other Alternatives	None
Responsible Office	Town of Mountain Village, SMPA
Cost Estimate	5M
Benefits (avoided losses)	Burying critical infrastructure supply lines helps mitigate the loss of supply and damage to the lines if a wildfire event were to occur.
Potential Funding	FEMA
Schedule	5 years

Project Title	Pandemic Flu education
Jurisdiction	Town of Mountain Village
Issue/Background	After the recent outbreak of H1N1, the Town of Mountain Village feels it is important to continue to provide the public with resources that are available both during and preceding an outbreak
Hazard Addressed	Pandemic Flu
Other Alternatives	None
Responsible Office	SMC Public Health and Environment, Town of Mountain Village
Cost Estimate	2K
Benefits (avoided losses)	Education is a preventative measure that can help reduce the severity of a potential outbreak and gives residents the resources needed during an event and helps them prepare for an outbreak in the future.
Potential Funding	SMC Public Health and Environment, Town of Mountain Village
Schedule	2012

TOWN OF NORWOOD

Project Title	Establish water usage schedule
Jurisdiction	Town of Norwood
Issue/Background	Setting policies and education the area residents regarding water use restrictions. The NWC has a policy for restricted use at different levels of water shortages.
Hazard Addressed	Drought, wildfire
Other Alternatives	None
Responsible Office	Town of Norwood/ Norwood Water Commission (NWC)
Cost Estimate	No cost associated
Benefits	Public participation and understanding of the importance of water restrictions help mitigate against a severe drought. Conserve water for essential operations during a severe drought period
Potential Funding	SMC, Town of Norwood
Schedule	Update and implement policies in 2011

Project Title	Infrastructure upgrade
Jurisdiction	Town of Norwood
Issue/Background	Much of the water infrastructure in over 30 years old and was not properly installed. A portion of the infrastructure is undersized for the amount of customers. The NWC needs to replace the water mains with new large pipe and loop the line so stagnation does not occur. Additional pressure reducing valves need to be installed to help maintain constant pressure.
Hazard Addressed	Critical Infrastructure failure
Other Alternatives	Do nothing, rely on existing infrastructure, risk major line failure
Responsible Office	Town of Norwood/ NWC
Cost Estimate	3 Phase / Phase 1 \$5,465,000
Benefits	The upgrade of the infrastructure will benefit everyone to alleviate the majority of the water main breaks; looping the line allows water to continue to flow in one distribution line to Norwood. Helps mitigate secondary effects due to critical infrastructure failure such as economic loss.
Potential Funding	DOLA, Colorado Water Power Authority
Schedule	In 2009 Capital improvement plan

Project Title	Weather shelter map
Jurisdiction	Town of Norwood
Issue/Background	Educate town residents and visitors of the locations of the extreme winter weather shelters in the area.
Hazard Addressed	Extreme winter weather, severe weather
Other Alternatives	None
Responsible Office	Town of Norwood
Cost Estimate	Little to no cost, brochure and map printing costs
Benefits	When a snow event takes place the residents are aware of the locations of weather shelters if needed. Visitors stranded by weather have designated locations that can accommodate them. Posting this information on the Chamber website and making maps available in town would be a good way to spread the word. This would help to prevent life loss or injury due to adverse driving conditions in extreme weather events.
Potential Funding	Town of Norwood
Schedule	Complete in 2011

Project Title	Increase snow removal equipment
Jurisdiction	Town of Norwood
Issue/Background	The town of Norwood has limited equipment that is antiquated and limited employees to run the equipment. Norwood has approximately 4 miles of streets that snow is removed from. This does not include alley ways or public parking lots. Per an agreement with CDOT, the town must remove the snow in the middle of Grand Ave. within 72 Hours of a snow event.
Hazard Addressed	Extreme winter weather
Other Alternatives	None, rely on existing equipment
Responsible Office	Town of Norwood
Cost Estimate	\$ 50,000
Benefits (avoided losses)	New and bigger equipment allows snow to be removed more quickly from streets, therefore reducing the likelihood of transportation accidents. Also allows the town to provide mutual aid if needed to other jurisdictions.
Potential Funding	General Fund, Grants
Schedule	December 2011

Project Title	Update building codes
Jurisdiction	Town of Norwood
Issue/Background	Update the town's building codes to better prepare new construction for heavy snow loads on building roofs.
Hazard Addressed	Extreme winter weather, severe weather
Other Alternatives	None
Responsible Office	Town of Norwood
Cost Estimate	\$500
Benefits (avoided losses)	Update the codes to be consistent with the San Miguel County Building Department. The Town of Norwood contracts with the building department for their services. Updating codes mitigates property damage, property loss, life loss or injury due to extreme or severe weather events.
Potential Funding	Town general fund, 2011 budget
Schedule	Adopt the 2009 Building Codes in 2011

Project Title	Pandemic Flu Prevention
Jurisdiction	Town of Norwood
Issue/Background	With the recent outbreak of the H1N1 pandemic, the town of Norwood feels it is important to educate its citizens on prevention and protective measures regarding the flu.
Hazard Addressed	Pandemic Flu
Other Alternatives	None, rely on County Health resources for education measures
Responsible Office	Town of Norwood
Cost Estimate	Little or no cost
Benefits (avoided losses)	Education campaigns regarding protection and prevention measures for pandemic flu are an essential way to mitigating the potential for a severe outbreak. Educational measures can help reduce disease spread and reduce life loss
Potential Funding	SMC, town of Norwood
Schedule	2012

Project Title	Map critical infrastructure
Jurisdiction	Town of Norwood
Issue/Background	In the case of a disaster event, having Norwood’s infrastructure lines mapped would be beneficial for determining damage, and preventative measures.
Hazard Addressed	ALL
Other Alternatives	None, lack maps
Responsible Office	Town of Norwood, County GIS department
Cost Estimate	\$2500
Benefits (avoided losses)	Having the infrastructure maps available during any hazard event can help to prevent secondary disaster events from occurring such as explosions.
Potential Funding	SMC, Town of Norwood
Schedule	2012

Project Title	Drought awareness Education Campaign
Jurisdiction	Town of Norwood
Issue/Background	The service area includes 85 miles of water line within two counties. Drought has had severe effects on the area in the past and it is important to educate residents about drought mitigation and water usage reduction
Hazard Addressed	Drought
Other Alternatives	None
Responsible Office	Town of Norwood, NWC
Cost Estimate	Little cost
Benefits (avoided losses)	Make public aware of drought measure ahead of time, reduce water usage which help can help to alleviate drought severity
Potential Funding	Town of Norwood
Schedule	2011

Project Title	Acquire additional potable water tanks
Jurisdiction	Town of Norwood
Issue/Background	The NWC has low pressure zones due to service line installed above the elevation of the water treatment plan. Installation of potable water tanks at strategic locations would alleviate low pressure within the system. Also, water storage in potable tanks could be useful during wildfire or drought events.
Hazard Addressed	Critical Infrastructure failure, drought, wildfire
Other Alternatives	None, rely on unreliable system
Responsible Office	Town of Norwood, NWC
Cost Estimate	\$ 150 per every 100, 000 gallons of holding capacity
Benefits (avoided losses)	NWC would be able to allow taps to be sold in the affected areas,

losses)	which would generate more monthly income for the town, holding tank capacity could be beneficial in a drought event and could be beneficial for helping fight wildfire by protecting property.
Potential Funding	DOLA, Colorado Water Power Authority
Schedule	TBD

Project Title	Installation of Irrigation System
Jurisdiction	Town of Norwood
Issue/Background	Currently there is no town irrigation system
Hazard Addressed	Drought, wildfire
Other Alternatives	None
Responsible Office	Town of Norwood
Cost Estimate	\$100,000
Benefits (avoided losses)	The town residents would be able to enjoy green lawn without the cost of using treated water. Norwood would be able to utilize the 119 shares of irrigation that they hold from the Gurley Reservoir. This would promote conservation of treated town water and would also provide a way for residents to help mitigate against wildfire by irrigating their property.
Potential Funding	Water conservation agencies, SMC, Town of Norwood
Schedule	TBD

Project Title	Continued Compliance with the NFIP program and implementation of measures to help improve CRS ratings where appropriate
Jurisdiction	Town of Norwood
Issue/Background	A community's participation and compliance with NFIP ensures that a community manages ordinances to reduce future flood damage. In exchange, the NFIP makes Federally backed flood insurance available to homeowners, renters, and business owners in these communities. The Community Rating System (CRS) is a way to gauge a community's compliance level and makes community with higher (better) CRS ratings eligible for insurance discounts.
Hazard Addressed	Flooding, street flooding
Other Alternatives	none
Responsible Office	Planning
Cost Estimate	unknown
Benefits (avoided losses)	If the jurisdictions within San Miguel County were to improve their CRS rating, the potential for further discounts on insurance would exist. Also, jurisdictions that currently do not participate in the NFIP should look into the benefits of participating.
Potential Funding	FEMA
Schedule	5 years

TOWN OF SAWPIT

Project Title	Address ingress/ egress issues in the town of Sawpit
Jurisdiction	Town of Sawpit
Issue/Background	The town of Sawpit needs to address this issue to allow for fire apparatus to access homes and properties.
Hazard Addressed	Wildfire, Debris flow, flooding and any hazard requiring emergency response
Other Alternatives	Take no action
Responsible Office	TFPD, Sawpit and homeowners
Cost Estimate	\$25K
Benefits (avoided losses)	Addressing this issue helps provide homeowners increased safety by insuring that emergency response apparatus can reach their homes in a timely fashion
Potential Funding	Grants, homeowners, SMC
Schedule	Completed by 2015

Project Title	Continue to insist that Hwy 145, which runs through Sawpit, remain an non-designated Hazardous Materials transportation route
Jurisdiction	Town of Sawpit
Issue/Background	Hwy 145 is currently not a designated hazardous materials transportation route. However, in the winter, it is designated as an alternative route. Sawpit residents are concerned about the Hwy becoming a primary route and want to ensure that this action does not take place.
Hazard Addressed	Hazardous materials spills, Transportation accidents
Other Alternatives	Take no action, if the hwy does become an alternate route, stopping HAZMAT loads in a safe place until the primary route is reopened would mitigate this problem
Responsible Office	CDOT, Sawpit and SMC
Cost Estimate	No cost
Benefits (avoided losses)	Keeping Hazardous materials from being transported on Hwy 145 mitigates the chances for spills, contamination, secondary accidents etc.
Potential Funding	None needed
Schedule	2011

Project Title	Map 100 and 500 Year floodplains in the Town of Sawpit
Jurisdiction	Town of Sawpit
Issue/Background	The town of Sawpit currently has no 100 or 500 year floodplain maps.
Hazard Addressed	Riverine flooding, debris flow
Other Alternatives	Continue to use old out of date maps
Responsible Office	Town of Sawpit, SMC GIS
Cost Estimate	\$5000
Benefits (avoided losses)	Avoid future building in floodplains and allow homeowners who have built in the floodplain to become better educated about their property and the hazard that a potential flooding event could have.
Potential Funding	SMC, FEMA
Schedule	1-5years

Project Title	Stormwater Drainage Maintenance
Jurisdiction	Town of Sawpit
Issue/Background	The town of Sawpit experiences street flooding, debris flow and riverine flooding during the summer monsoon season. Preparing and implementing a maintenance plan for keeping the drainage ways and culverts free of debris helps to mitigate the severity of these flooding events
Hazard Addressed	Flooding, riverine flooding, street flooding and Debris flows
Other Alternatives	None
Responsible Office	Town of Sawpit, SMC
Cost Estimate	\$5,000 annually
Benefits (avoided losses)	This project would decrease the severity of possible flooding and debris flow events and would therefore reduce the risk of property loss, injury of loss of life.
Potential Funding	SMC Road and Bridge, FEMA
Schedule	1-5 years

TOWN OF TELLURIDE

Project Title	Cornet Creek Channel Maintenance
Jurisdiction	Town of Telluride
Issue/Background	Cornet Creek has a history of debris flows of various sizes. Small to moderate events can be mitigated by channel maintenance.
Hazard Addressed	Debris flow, riverine flooding, street flooding
Other Alternatives	Take no action and risk a major flooding event
Responsible Office	Telluride Public works Department
Cost Estimate	Up to \$50,000 annually depending on required maintenance
Benefits (avoided losses)	Maintains maximum channel flood flow capacity throughout town to mitigate adverse flood impacts to private property.
Potential Funding	Operating and capital improvement budgets.
Schedule	Annual maintenance

Project Title	Replace Pacific Ave. culverts with a span bridge
Jurisdiction	Town of Telluride
Issue/Background	Cornet Creek carries significant sediment loads, which it deposits at its downstream flat segment, prior to the confluence with the San Miguel River. The culverts trap sediment, sometimes reducing flow capacity and are more difficult to maintain.
Hazard Addressed	Debris flow, riverine and street flooding
Other Alternatives	Continue to clean culverts annually
Responsible Office	Telluride Public Works Department
Cost Estimate	\$50,000
Benefits (avoided losses)	Maintains maximum channel flood flow capacity throughout the town to help mitigate adverse flood impacts to private property. Decreases maintenance costs
Potential Funding	Capital budget or grant funding
Schedule	2016

Project Title	Increase public awareness about riverine flooding and debris flow in Telluride
Jurisdiction	Town of Telluride
Issue/Background	Telluride has experienced two significant debris flow events on the Cornet Alluvial fan. The San Miguel River is highly constrained. It is important that the residents in the town understand the risks and are educated about preventative measures.
Hazard Addressed	Riverine flooding, street flooding and debris flow
Other Alternatives	No action
Responsible Office	Telluride planning and public works departments

Cost Estimate	\$1,000/year
Benefits (avoided losses)	Educate the public to reduce property damage or loss and reduce the potential for severe injury of life loss due to an extreme flooding or debris flow event
Potential Funding	Operating budget
Schedule	Ongoing

Project Title	Storm Drainage Improvements
Jurisdiction	Town of Telluride
Issue/Background	Telluride is located in a river valley. Portions of the town were once wetlands, crating low spots with poor/difficult drainage
Hazard Addressed	Riverine flooding, street flooding, debris flow
Other Alternatives	Do nothing and continue to have storm drains become overwhelmed during weather events
Responsible Office	Telluride Public Works Department
Cost Estimate	\$500K
Benefits (avoided losses)	Safer travel for vehicles and pedestrians, less long term maintenance of asphalt and or chipseal
Potential Funding	Capital and operating budgets and or grants
Schedule	2011-15

Project Title	Continue to remove sediments from In-stream sedimentation basin at Bear Creek/ San Miguel confluence
Jurisdiction	Town of Telluride
Issue/Background	The San Miguel River does not have sufficient energy to transport its sediment load from the upper basin and maintain sufficient flood flow capacity. A 2001 restoration design created the ISB to solve this problem
Hazard Addressed	Flooding
Other Alternatives	No action
Responsible Office	Telluride Public Works Department
Cost Estimate	\$10K-20K annually
Benefits (avoided losses)	Maintains the sediments flux through the town of Telluride and helps to avoid excess aggradations
Potential Funding	Operating budgets/ grants
Schedule	Annual Maintenance

Project Title	Adopt 2009 updated Rockfall maps
Jurisdiction	Town of Telluride
Issue/Background	A 2009 study updated rockfall hazards information in the Town of Telluride. While not significantly different from the existing rockfall hazard mapping, it is more refined.

Hazard Addressed	Rockfall
Other Alternatives	None
Responsible Office	Telluride Public Works Department, Planning Department
Cost Estimate	None
Benefits (avoided losses)	The benefits to adopting the new maps just ensure that the town has the latest version of the document for reference.
Potential Funding	None needed
Schedule	2011

Project Title	Review current rockfall codes to determine needs for improvement
Jurisdiction	Town of Telluride
Issue/Background	A 2009 study updated rockfall hazards information in the Town of Telluride. While not significantly different from the existing rockfall hazard mapping, it is more refined
Hazard Addressed	Rockfall
Other Alternatives	None
Responsible Office	Telluride Planning Department
Cost Estimate	None
Benefits (avoided losses)	Lessen the risk of rockfall and reduce the potential for property damage and or injury or loss of life
Potential Funding	None needed
Schedule	2011

Project Title	Public Education Campaign during drought conditions
Jurisdiction	Town of Sawpit
Issue/Background	Sawpit has experienced drought conditions in the past. It therefore important to educate the homeowners in Sawpit about drought and being 'drought aware'.
Hazard Addressed	Drought
Other Alternatives	Do nothing
Responsible Office	Town of Sawpit and SMSO
Cost Estimate	Cost of holding public meetings and printing brochures
Benefits (avoided losses)	Educate the homeowners on drought awareness; use less water during a drought period.
Potential Funding	SMSO
Schedule	2011 (continuous)

Project Title	Public Education Campaign during drought conditions
Jurisdiction	Town of Sawpit
Issue/Background	Sawpit has experienced drought conditions in the past. It therefore important to educate the homeowners in Sawpit about drought and being 'drought aware'.

Hazard Addressed	Drought
Other Alternatives	Do nothing
Responsible Office	Town of Sawpit and SMSO
Cost Estimate	Cost of holding public meetings and printing brochures
Benefits (avoided losses)	Educate the homeowners on drought awareness; use less water during a drought period.
Potential Funding	SMSO
Schedule	2011 (continuous)

Project Title	Review current rockfall codes to determine needs for improvement
Jurisdiction	Town of Telluride
Issue/Background	A 2009 study updated rockfall hazards information in the Town of Telluride. While not significantly different from the existing rockfall hazard mapping, it is more refined
Hazard Addressed	Rockfall
Other Alternatives	None
Responsible Office	Telluride Planning Department
Cost Estimate	None
Benefits (avoided losses)	Lessen the risk of rockfall and reduce the potential for property damage and or injury or loss of life
Potential Funding	None needed
Schedule	2011

SAN MIGUEL COUNTY

Project Title	Update GIS imagery (aerial photos) for response and analysis
Jurisdiction	SMC
Issue/Background	Imagery is of assistance in identifying, planning, responding to an analysis of disasters
Hazard Addressed	ALL
Other Alternatives	Use existing imagery
Responsible Office	GIS
Cost Estimate	\$200,000 to update the entire county; less to update select areas
Benefits (avoided losses)	Help to identify high-risk areas, identify at-risk structures, use as a mitigation tool, plan evacuations, etc.
Potential Funding	FEMA, State of Colorado CDEM
Schedule	5 years

Project Title	Map the FEMA floodplain in populated areas of the County in digital format
Jurisdiction	SMC
Issue/Background	Digital floodplain data are currently unavailable
Hazard Addressed	Flooding
Other Alternatives	Do nothing rely on existing paper FIRM maps
Responsible Office	SMC GIS
Cost Estimate	\$1M for surveyed data; \$10K for digitized FIRM maps
Benefits (avoided losses)	Better information for regulating building in or near the floodplain which will prevent or minimize future loss of structures
Potential Funding	FEMA
Schedule	10 year

Project Title	Obtain good digital data for mapping critical infrastructure in the County
Jurisdiction	
Issue/Background	Mapping of critical infrastructure assists in disaster response by helping to protect it
Hazard Addressed	Wildfire, flood, avalanche, landslide, debris flow, earthquake or other natural disasters
Other Alternatives	Do nothing and use existing incomplete data
Responsible Office	GIS
Cost Estimate	\$5K for staff time
Benefits (avoided losses)	Avoid loss of critical infrastructure such utility facilities and lines, communication networks. Avoid increased hazard from events such as gas explosions due to wildfire, etc.
Potential Funding	County; FEMA; Private industry (utilities)
Schedule	2 Years

Project Title	Landslide Mapping
Jurisdiction	Work with CGS, CDOT and USGS to identify and map vulnerable landslide areas and develop slope stabilization projects to protect homes and infrastructure
Issue/Background	SMC
Hazard Addressed	Areas of the County are prone to impact from landslide due to steep slopes above homes and precipitation events
Other Alternatives	Landslide, debris flow
Responsible Office	Do nothing.
Cost Estimate	SMC GIS
Benefits (avoided losses)	Depends on completeness of mapping. Range from \$10K for staff time to \$500K for geologic analysis
Potential Funding	SMC, CDOT
Schedule	5 Years

Project Title	Obtain GIS satellite imagery for wildfire risk analysis
Jurisdiction	SMC
Issue/Background	Satellite imagery can be used to analyze forest characteristics for assessing wildfire danger and post-event damage
Hazard Addressed	Wildfire
Other Alternatives	Spot field analysis, which would be more expensive
Responsible Office	SMC GIS
Cost Estimate	\$500K
Benefits (avoided losses)	Loss of structures to wildfire in areas where danger could have been mitigated
Potential Funding	Local counties, private parties
Schedule	10 year

Project Title	Obtain technology infrastructure support to maintaining web based communication during emergencies
Jurisdiction	SMC
Issue/Background	Technology infrastructure is currently vulnerable to impact by all hazards
Hazard Addressed	ALL
Other Alternatives	Do nothing
Responsible Office	IT Department, SMC
Cost Estimate	\$100K
Benefits (avoided losses)	Maintain lines of communication and data integrity via internet during disasters
Potential Funding	SMC, Towns, Department of Homeland Security
Schedule	5 years

Project Title	Conduct annual workshop for protective and preventative response measures for pandemic flu
Jurisdiction	SMC
Issue/Background	SMC Department of Health and Environment has prepared and tested a Pandemic Flu plan that was tested during the H1N1 epidemic. However, the plan needs to be reviewed and exercised annually for improvements and training
Hazard Addressed	Pandemic Flu
Other Alternatives	Do nothing, rely on existing plan or Public Health Emergency Plan
Responsible Office	San Miguel County Department of Health and Environment
Cost Estimate	Depends on future funding from CDPHE, but 20K per year for supplies, planning and exercises
Benefits	Efforts made prior to the emergency benefit the public and prevents any further financial loss or life loss. Also promotes response efficiency and limits the impact of an outbreak. Helps identify gaps within the existing plan
Potential Funding	Emergency Preparedness Dept, CDPHE, SMC
Schedule	Begin in 2011 with public health task force meeting in conjunction with table top exercise, workshops, concluding with a functions exercise by August 2011

Project Title	Increase public awareness about prairie dog population on the Valley Floor and the risk of plague
Jurisdiction	SMC Department of Health and Environment
Issue/Background	County Public Health feels it is important to educate the public about the risks of Plague outbreak in the County
Hazard Addressed	Plague
Other Alternatives	Do nothing and allow public to react based on misconceptions or misinformation
Responsible Office	SMC DPHE
Cost Estimate	2K for brochures, press releases, public meetings
Benefits	Help to mitigate the public's concern by providing appropriate information through educational campaigns relying on media outlets
Potential Funding	SMC, CDHPE
Schedule	Complete by 2012

Project Title	Work with CDPHE and other health resources to develop or improve continuity of operations plans for clinics
Jurisdiction	SMC
Issue/Background	It is the delegated responsibility of the SMC PHE to provide guidance to other health facilities in the County to help them coordinate and develop their continuity of operations plans.
Hazard Addressed	All Hazards are addressed, disaster events with injuries
Other Alternatives	Offer educational information for clinics to improve their own plans.
Responsible Office	SMC DPHE
Cost Estimate	15K
Benefits	Set up an alternative or backup system for providing patient care in the event of a disaster. COOP plans outline procedures for alternate care facilities and MOU agreements.
Potential Funding	CDPHE, SMC
Schedule	2 year

Project Title	Floodplain Regulations
Jurisdiction	SMC
Issue/Background	Continue to regulate building in floodplains and on parcels along waterways. Portions of San Miguel County have not been mapped for floodplain data. It is important to regulate where development occurs to help prevent property damage and or life loss or injury.
Hazard Addressed	Debris Flow, Riverine flooding, landslides
Other Alternatives	No action
Responsible Office	SMC Planning Dept
Cost Estimate	Costs would be associated to the applicant who wants to build near a floodplain or waterway. Cost of engineers time.
Benefits (avoided losses)	Following floodplain regulations allows homeowners to obtain flood insurance. Keeping a handle on where people choose to develop can help mitigate disastrous situations by keeping citizens from building in dangerous areas.
Potential Funding	SMC, homeowners
Schedule	Continuous. Codes adopted in 1990

Project Title	Hazmat Transportation Regulation
Jurisdiction	SMC
Issue/Background	It is important to the citizens of San Miguel County that hazardous materials transportation on the highways and county roads is kept to a minimum.
Hazard Addressed	Hazardous Materials spill, transportation accidents
Other Alternatives	Take no action and allow for transport
Responsible Office	SMC, SMSO, CDOT
Cost Estimate	No direct cost
Benefits (avoided losses)	Limiting the amount of highly hazardous materials that are transported through San Miguel County greatly reduces the chances of a HAZMAT spill and contamination. Regulating what is transported reduces the chances for life loss and injury and also helps to protect the environment
Potential Funding	n/a
Schedule	Continuous

ROAD AND BRIDGE DEPARTMENT

Project Title	Improve and continue Avalanche control work
Jurisdiction	SMC
Issue/Background	SMC’s Road and Bridge Department performs control work along a 2 mile section of County Road 065 for the safety of Ophir residents. There are six avalanche paths capable of reaching the road.
Hazard Addressed	Avalanche, critical infrastructure failure, transportation accidents
Other Alternatives	None
Responsible Office	SMC Road and Bridge
Cost Estimate	4-6K per year
Benefits (avoided losses)	Providing avalanche control work mitigates the chances of an uncontrolled slide and keeps the citizens and visitors of Ophir safe when traveling the County Road in and out of the town. Also, controlling avalanche activity allows for the protection of the infrastructure lines that run to Ophir.
Potential Funding	Road and Bridge, SMC, Town of Ophir
Schedule	Control work is preformed as necessary as determined by the district crew and the Colorado Avalanche Information Center

Project Title	Inventory Snow Removal Capabilities Geographically
Jurisdiction	SMC Road and Bridge
Issue/Background	Residents of the County continue to build their homes and live in remote areas of the County which increases the miles and distances that Road and Bridge must go to provide snow removal services on County Roads
Hazard Addressed	Extreme winter weather
Other Alternatives	None
Responsible Office	Road and Bridge
Cost Estimate	n/a for inventory, but additional equipment costs may be applicable if deemed necessary
Benefits (avoided losses)	Completing this project would allow the department to identify areas that are potentially hazardous during extreme winter weather and would provide an opportunity to look critically at the snow removal on County roads
Potential Funding	SMC
Schedule	2011-continuous

Project Title	Continued Ophir Avalanche studies and Improved Control work
Jurisdiction	SMC, Ophir
Issue/Background	Control work must continue as necessary and avalanche studies are important for determining the work that is necessary to keep citizen safe from uncontrolled avalanches
Hazard Addressed	Avalanche, critical infrastructure failure
Other Alternatives	None
Responsible Office	Town of Ophir would be responsible for hiring a private consulting company to complete the study
Cost Estimate	20K
Benefits (avoided losses)	An in depth avalanche study would provide the necessary information for updating the County's current control schedule. This project would sever to better protect the citizens of Ophir and could help prevent injury or life loss due to an avalanche event
Potential Funding	Road and bridge, Town of Ophir
Schedule	2012

Project Title	Continue to refine SMC's Avalanche Control Program through training opportunities
Jurisdiction	SMC Road and Bridge
Issue/Background	SMC, Road and Bridge have performed avalanche mitigation and control work since the 1980's. It is an important goal of the department to continue to refine the control program as to become more efficient at protecting the Ophir citizens from an uncontrolled avalanche. Improved avalanche training would be beneficial for Road and bridge employees who work in the slide zones.
Hazard Addressed	Avalanche, critical infrastructure failure
Other Alternatives	None
Responsible Office	SMC Road and Bridge
Cost Estimate	2K per year for training and exercises
Benefits (avoided losses)	Avoid loss of life for employees working to clear the road into Ophir
Potential Funding	SMC, Town of Ophir
Schedule	Ongoing

Project Title	Continue Stream Bank Erosion Mitigation Projects
Jurisdiction	SMC Road and Bridge
Issue/Background	Spring runoff or heavy rains may cause stream banks to erode which may cause banks to become unstable and therefore cause road closures. Spring runoff may also soften road shoulders which can be a potential cause for an accident.
Hazard Addressed	Riverine flooding, debris flows, landslides, transportation accidents
Other Alternatives	None
Responsible Office	SMC Road and Bridge
Cost Estimate	Varies depending on project and damage done vs. preventative
Benefits (avoided losses)	Prevents hazardous drop off's along roadways and prevents unstable bridge or stream banks.
Potential Funding	Road and Bridge operating budget
Schedule	2011 and as necessary in the future

Project Title	Continue Culvert Improvements and Bridge Maintenance
Jurisdiction	SMC Road and Bridge
Issue/Background	Damaged or unstable bridges may cause closures for repair work which could affect many homes for which they provide access. Maintenance includes brush clearing, debris removal, crack sealing and rip-rap placement to prevent scouring
Hazard Addressed	Infrastructure failure, Riverine Flooding, Ice Jam flooding, Debris flow, Dam Failure
Other Alternatives	None
Responsible Office	Road and Bridge
Cost Estimate	Depends upon type of work being preformed.
Benefits (avoided losses)	Prevents unnecessary bridge and road closures and mitigates against secondary effects of hazards due to a bridge or culvert failure.
Potential Funding	SMC Road and Bridge, HOA's, CDOT
Schedule	2011 and continuous

Project Title	Continue to participate with CDOT in the bridge inspecting program
Jurisdiction	SMC Road and Bridge
Issue/Background	The nation’s bridges have been and will continue to be evaluated under Federal inspection requirements that are administrated through CDOT. Working with this agency to continue inspecting the bridges along state and county roads endures safety and structure soundness
Hazard Addressed	Riverine flooding, debris flows, transportation accidents, earthquakes
Other Alternatives	None
Responsible Office	Road and Bridge and CDOT
Cost Estimate	None, Part of the federal funds to CDOT
Benefits (avoided losses)	Continuing to work with CDOT to monitor bridge conditions ensures safety to citizens.
Potential Funding	CDOT
Schedule	Annually or after hazard event

Project Title	Upgrade County Snow equipment
Jurisdiction	SMC
Issue/Background	As more residents move to outlying areas of SMC, heavier, newer equipment is required to handle severe winter conditions and assist in Wildfire events
Hazard Addressed	Extreme winter weather, and wildfire
Other Alternatives	None, require residents to maintain roads during winter
Responsible Office	Road and Bridge
Cost Estimate	\$300,000
Benefits (avoided losses)	Improves and upgrades snow removal equipment
Potential Funding	Road and Bridge
Schedule	2012

Project Title	Replace bridge that provides access to Applebaugh Subdivision
Jurisdiction	SMC
Issue/Background	CDOT bridge inspection program has identified this bridge as being substandard to the travel it receives
Hazard Addressed	Riverine flooding, debris flow, extreme winter weather, dam failure, earthquake
Other Alternatives	None
Responsible Office	SMC Road and Bridge
Cost Estimate	\$700K
Benefits (avoided losses)	Avoid loss of access to the subdivision if the bridge becomes impassable. A hazard event (above) may make the bridge unusable. Bringing the bridge up to par reduces the risk for significant damage or bridge failure or collapse.
Potential Funding	Federal Bridge Replacement Program or Applebaugh HOA
Schedule	2012

Project Title	Identify areas where snow drifting is problematic and install snow fences to reduce problem
Jurisdiction	SMC
Issue/Background	Certain stretches of roads that the County Road and Bridge department maintains experience heavy snow drifting in the winter making snow removal more time consuming and dangerous
Hazard Addressed	Extreme winter weather, severe weather (high winds)
Other Alternatives	Close roads during extreme conditions
Responsible Office	SMC Road and Bridge
Cost Estimate	100K
Benefits (avoided losses)	Helps keep roads open during winter weather events and cuts down on time spent plowing roads
Potential Funding	Road and Bridge
Schedule	2012

EMERGENCY MANAGEMENT

Jurisdiction:	San Miguel County
Mitigation Project Title:	All Hazard Publication Education
Issue/Background:	Have a 'one stop shop' for the public to get their preparedness information on all hazards within the county
Hazard Addressed:	All
Other Alternatives:	Public gets information from other various resources
Responsible office:	Emergency Management
Priority:	High
Cost Estimate:	None
Benefits (avoided losses)	Educated Public
Potential Funding:	EM operating budget

Jurisdiction:	San Miguel County
Mitigation Project Title:	Promote Disaster Preparedness
Issue/Background:	Promote disaster preparedness including obtaining disaster preparedness kits and provide general information to the public via printed material and website information. Obtain disaster preparedness kits.
Hazard Addressed:	All Hazards
Other Alternatives:	Not to educate the public and promote preparedness
Responsible office:	Emergency Management
Priority:	High
Cost Estimate:	\$2000
Benefits (avoided losses)	The ability to prepare the public for al disasters is one of the basic functions of Emergency Management.
Potential Funding:	EM operating budget

Jurisdiction:	San Miguel County
Mitigation Project Title:	Drought Public Education
Issue/Background:	Encourage public awareness surrounding awareness during drought and non-drought periods and have Public Information Campaign when in drought period.
Hazard Addressed:	Drought
Other Alternatives:	Not to educate and have the public access information from other resources
Responsible office:	Emergency Management
Priority:	High
Cost Estimate:	\$1000
Benefits (avoided losses)	Educated public
Potential Funding:	EM operating budget

Jurisdiction:	San Miguel County
Mitigation Project Title:	Develop Skyward/HAM Alternate Communication Capability
Issue/Background:	Recruit and organize Skyward/ HAM Radio operators for emergency communication in the county.
Hazard Addressed:	All Hazards
Other Alternatives:	Not to develop this capability. Currently there are no UHF operators working with the county.
Responsible office:	Emergency Management, HAM/RACES organizations
Priority:	Medium
Cost Estimate:	\$2000
Benefits (avoided losses)	The ability to have alternate communication resources disaster response and resource coordination is key to effective Emergency Management.
Potential Funding:	Grant Funding

Jurisdiction:	San Miguel County
Mitigation Project Title:	HazMat Training
Issue/Background:	Continue to support response training and readiness for Hazardous material spills for public safety personnel
Hazard Addressed:	Hazardous Materials Spill
Other Alternatives:	Not to train
Responsible office:	Individual fire, law and EMS agencies, coordinated as needed by emergency management
Priority:	Medium
Cost Estimate:	\$5000
Benefits (avoided losses)	More rapid response to material containment and general education
Potential Funding:	Grants, current operating and training budgets

Jurisdiction:	San Miguel County
Mitigation Project Title:	Identify Special Needs Population
Issue/Background:	Identify special needs population to ensure needs are met during extreme weather
Hazard Addressed:	Severe Weather, Wildfire, Riverine Flooding, Pandemic Flu, Avalanche, Street flooding, Earthquake, Terrorism, Dam Failure
Other Alternatives:	To not identify them or have them volunteer the information to Social Services
Responsible office:	Emergency Management, Social Services, County Health
Priority:	Medium
Cost Estimate:	None (county hours)
Benefits (avoided losses)	Loss of life
Potential Funding:	County in-kind hours

Jurisdiction:	San Miguel County
Mitigation Project Title:	Public Education for Ingress/Egress Issues
Issue/Background:	Homes and properties must be accessible by emergency responders to effectively assist with warning, evacuation, fire fighting measures, etc to protect lives and property.
Hazard Addressed:	Wildfire, Flooding
Other Alternatives:	If homes do not have safe access for responders, life and property are in jeopardy.
Responsible office:	EM, Local Fire Protection District
Priority:	High
Cost Estimate:	\$2000
Benefits (avoided losses)	Prevention or mitigation of loss of life, property and/or resources

Jurisdiction:	San Miguel County
Mitigation Project Title:	Landslide Public Education
Issue/Background:	Encourage public awareness surrounding landslides in the County on topics such as preparedness and flood insurance education
Hazard Addressed:	Debris Flow, Landslides and Rockfall
Other Alternatives:	Not to educate and have the public access information from other resources
Responsible office:	Emergency Management
Priority:	High
Cost Estimate:	\$1000
Benefits (avoided losses)	Educated public
Potential Funding:	EM operating budget
Schedule:	Ongoing

Jurisdiction:	San Miguel County
Mitigation Project Title:	All Hazard Publication Education
Issue/Background:	Have a 'one stop shop' for the public to get their preparedness information on all hazards within the county
Hazard Addressed:	All
Other Alternatives:	Public gets information from other various resources
Responsible office:	Emergency Management
Priority:	High
Cost Estimate:	None
Benefits (avoided losses)	Educated Public
Potential Funding:	EM operating budget
Schedule:	Ongoing

Jurisdiction:	San Miguel County
Mitigation Project Title:	NOAA Radio Transmitter for Telluride Region
Issue/Background:	Currently, the majority of the county is not in a coverage area to receive warning messages through the National Weather Service. Full coverage of the county would be ideal; however, to obtain NOAA Radio Transmitter for Telluride Region first would benefit the largest population. A second tower in the Wright's Mesa Area and a third tower in the Egnar Area would allow coverage for most of the county.
Hazard Addressed:	All Hazards
Other Alternatives:	To continue without NOAA Transmitter coverage.
Responsible office:	Emergency Management
Priority:	High
Cost Estimate:	\$60000
Benefits (avoided losses)	The ability to warn the public effectively for al disasters is one of the basic functions of Emergency Management.
Potential Funding:	Grant Funding
Schedule:	Dependent on Funding

Jurisdiction:	San Miguel County
Mitigation Project Title:	Expand Event Pre-Warn Capability with the NWS
Issue/Background:	Currently, the NWS service responds to request for assistance on an 'as needed basis'. If there were a group of pre-warn events the NWS could assist with events sooner.
Hazard Addressed:	All Hazards
Other Alternatives:	Not to develop this capability. w
Responsible office:	Emergency Management, NWS, San Miguel County and TRUG Dispatch Centers
Priority:	Medium
Cost Estimate:	\$2000
Benefits (avoided losses)	The ability to have alternate communication resources disaster response and resource coordination is key to effective Emergency Management.
Potential Funding:	Grant Funding
Schedule:	Dependent on Funding

Jurisdiction:	San Miguel County
Mitigation Project Title:	SAR Card Public Education
Issue/Background:	Continue public education to encourage back country rescue cards/hunting and fishing licenses for SAR efforts. In the event an individual needs to be rescued, the SAR fund covers costs.
Hazard Addressed:	Severe Weather, Wildfire, Avalanche
Other Alternatives:	Not to obtain a card, thereby increasing costs to agencies and/or individuals
Responsible office:	Sheriff's Office Search and Rescue, EM
Priority:	High
Cost Estimate:	\$1000
Benefits (avoided losses)	Cost savings to individuals and agencies
Potential Funding:	Sheriff's Office operating budget
Schedule:	Ongoing

Jurisdiction:	San Miguel County
Mitigation Project Title:	Severe Weather Alert List for NWS
Issue/Background:	Currently, the NWS service responds to request for assistance on an 'as needed basis'. Prepare a list of severe weather events that would prompt dispatch to notify NWS forecasters in Grand Junction
Hazard Addressed:	All Hazards
Other Alternatives:	Not to develop this capability.
Responsible office:	Emergency Management, NWS, San Miguel County and TRUG Dispatch Centers
Priority:	Low
Cost Estimate:	\$0
Benefits (avoided losses)	Provide for better decision making for incident management.
Potential Funding:	Grant Funding
Schedule:	Dependent on Funding

Jurisdiction:	San Miguel County
Mitigation Project Title:	Target Notification Campaign
Issue/Background:	Continue to develop Target Notification System Campaign for both landline and mobile phone for floodplain occupants
Hazard Addressed:	All Hazards
Other Alternatives:	Not to develop the campaign and have the ability to effectively warn the public.
Responsible office:	Emergency Management
Priority:	High
Cost Estimate:	\$1000
Benefits (avoided losses)	The ability to warn the public effectively for al disasters is one of the basic functions of Emergency Management. Multiple tools should be used to get the word out effectively.
Potential Funding:	EM operating budget
Schedule:	Ongoing

Jurisdiction:	San Miguel County
Mitigation Project Title:	Test Warning System Capability
Issue/Background:	Improve and exercise county wide warning systems for hazards
Hazard Addressed:	All Hazards
Other Alternatives:	Not to test warning system
Responsible office:	Emergency Management
Priority:	High
Cost Estimate:	\$0.00
Benefits (avoided losses)	The ability to warn the public is one of the basic functions of Emergency Management.
Potential Funding:	EM operating budget
Schedule:	Ongoing

Jurisdiction:	San Miguel County
Mitigation Project Title:	
Issue/Background:	Work with water supply organizations to promote conservation and efficiency initiatives
Hazard Addressed:	Drought
Other Alternatives:	Not to educate
Responsible office:	Town of Telluride, Town of Norwood
Priority:	Variable: Low, high in drought season
Cost Estimate:	\$1000
Benefits (avoided losses)	Educated public
Potential Funding:	Water supply organization operating budget, grants
Schedule:	Ongoing as needed

Jurisdiction:	San Miguel County
Mitigation Project Title:	Recruit Weather Spotters
Issue/Background:	Recruit and train more volunteer weather spotters in the County with an emphasis on areas that aren't currently covered
Hazard Addressed:	Severe Weather, Extreme Winter Weather
Other Alternatives:	There are currently no weather spotters in the County.
Responsible office:	Emergency Management, National Weather Service
Priority:	Medium
Cost Estimate:	\$2000
Benefits (avoided losses)	The ability to warn the public effectively for all disasters is one of the basic functions of Emergency Management. Weather spotters play a key role to get 'eyes on the ground' for the National Weather service.
Potential Funding:	Grant Funding, EM and Weather Service Operating Budgets
Schedule:	Dependent on Funding

Jurisdiction:	San Miguel County
Mitigation Project Title:	Conduct Wildfire Education Workshops
Issue/Background:	Conduct public education workshops for training property owners to manage fuel on their own land to mitigate the impact of wildfire on their property
Hazard Addressed:	Wildfire
Other Alternatives:	Have the homeowner obtain information on their own through current resources (CSFS, county and fire department web sites)
Responsible office:	Local Fire Protection District, West Region Wildfire Council, CSFS, County EM
Priority:	Medium
Cost Estimate:	Unknown
Benefits (avoided losses)	Prevention or mitigation of home and resource loss
Potential Funding:	West Region Wildfire Council grants, current CSFS budgets
Schedule:	2011-2012

Jurisdiction:	San Miguel County
Mitigation Project Title:	Wildfire Public Education

Issue/Background:	Educate public on wildfire mitigation
Hazard Addressed:	Wildfire
Other Alternatives:	Not to educate
Responsible office:	EM, Fire Protection Districts
Priority:	High
Cost Estimate:	\$1000
Benefits (avoided losses)	Educated public, encourage mitigation on property thereby limiting the effects of wildfire within the county.
Potential Funding:	EM operating budget
Schedule:	Ongoing

TELLURIDE FIRE PROTECTION DISTRICT

Project Title	Wildfire Mitigation Fuels Reduction
Jurisdiction	TFPD
Issue/Background	The TFPD has many areas as identified in the County’s Community Wildfire Protection Plan that are high risk of wildfire. Completing mitigation actions in prescribed areas would reduce the severity of a wildfire if one were to occur
Hazard Addressed	Wildfire
Other Alternatives	Do nothing and experience overgrowth and increased severity during wildfire events
Responsible Office	TFPD
Cost Estimate	\$100,000,000
Benefits	Reduce ground fuels, reduce Wildland Urban Interface risks, mitigate wildfire severity, help prevent life loss and property damage or loss
Potential Funding	Grants, municipalities, CSFS, BLM
Schedule	10 years

Project Title	Install dry hydrants
Jurisdiction	TFPD
Issue/Background	Installing dry hydrants provides water resources and additional access points for firefighters during events
Hazard Addressed	Wildfire
Other Alternatives	None
Responsible Office	TFPD
Cost Estimate	\$8000 per site location
Benefits	Decrease tender shuttle time from water resource to fire incident therefore reducing property loss or damage, preventing economic loss and helping to prevent life loss
Potential Funding	Grants/ Budget for capital resources
Schedule	5 years

Project Title	Purchase a type II tender for Station 4
Jurisdiction	TFPD/ Town of Ophir
Issue/Background	Currently, station 4 does not have any tender equipment. Therefore, volunteer fire fighters must use equipment from Mountain Village fire station.
Hazard Addressed	Wildfire, All Hazard Response
Other Alternatives	Continue to use Mtn. Village stations equipment
Responsible Office	TFPD
Cost Estimate	\$156,000
Benefits	Increase the capability and resources for fighting fires and responding to emergency incidents. Improve capability to respond to non-hydrant areas, increase response time, and potentially help to avoid property damage or loss and loss of life.
Potential Funding	AFG grants, capital projects planning in the future, TFPD
Schedule	5 Years

Project Title	Assign additional personnel to Station 4
Jurisdiction	TFPD
Issue/Background	Currently, there are very few volunteer firefighters that reside in the town of Ophir or in the subdivisions in that area. Therefore, volunteers from Mountain Village often respond to Ophir incidents.
Hazard Addressed	All
Other Alternatives	None
Responsible Office	TFPD
Cost Estimate	\$5,000 per firefighter to place in position/ equipment
Benefits	Additional manpower for larger events, closer response time, provide life safety and protection measure, avoid life loss
Potential Funding	TFPD
Schedule	2 years

Project Title	Provide GIS map books in all TFPD vehicles/ apparatus
Jurisdiction	TFPD
Issue/Background	Map books provide vital area specific information for first responders. Currently, only some of the response vehicles have map books.
Hazard Addressed	All
Other Alternatives	Mobile data ports/ vehicle GPS but more costly
Responsible Office	SMSO, TFPD, GIS
Cost Estimate	Unknown
Benefits	Provide response with more detailed location information, address information etc. Reduce response time, increase life safety and property preservation.
Potential Funding	SMSO grants/ TFPD budget expense
Schedule	2 year

Project Title	Acquire hose couplings that match regional jurisdictions for interoperability
Jurisdiction	TFPD
Issue/Background	It is important that surrounding jurisdiction work collaboratively to acquire equipment that is interoperable for multi agency event response.
Hazard Addressed	Any Hazard that requires multi agency fire department response
Other Alternatives	None
Responsible Office	TFPD other Fire Protection Districts
Cost Estimate	\$300
Benefits	Interoperability, increase mutual aid capabilities
Potential Funding	TFPD budget expense
Schedule	2012

Project Title	Increase rural fire delivery
Jurisdiction	TFPD
Issue/Background	In the TFPD, there are many homes or properties that require considerable response time from the district fire stations. District would like to improve their ISO rating.
Hazard Addressed	Wildfire or any hazard event that requires first responder involvement
Other Alternatives	Continue to have longer response time
Responsible Office	TFPD
Cost Estimate	Unknown-more research
Benefits	Increase protection and coverage for the district, protect property, improve life safety due to hazard incidents.
Potential Funding	AFG/ DOLA grants and Capital project funding
Schedule	Ongoing goal

Project Title	Continue existing apparatus replacement program
Jurisdiction	TFPD
Issue/Background	TFPD has some outdated equipment but has a replacement program/ schedule for acquiring new apparatus. Funding for continuation would ensure the district has up to date technology and equipment.
Hazard Addressed	Wildfire, transportation accidents, HAZMAT Spills, Human Health Hazards, any hazard event requiring fire department response
Other Alternatives	Buy used equipment, problems with reliability
Responsible Office	TFPD
Cost Estimate	\$1,200,000,000 over long term
Benefits	Increase capability and reliability with newer and more efficient equipment/ apparatus. Improve life safety and response efforts during hazard events
Potential Funding	AFG Grant, Capital Project planning
Schedule	Long term schedule

EGNAR SLICKROCK FIRE PROTECTION DISTRICT

Project Title	Add high visibility signage and implement speed reductions along hazardous transportation routes
Jurisdiction	ESRVFD
Issue/Background	Hwy 141 is a designated HAZMAT corridor that has heavy wildlife migration and hazardous winter driving conditions. These elements contribute to potential accidents and spills
Hazard Addressed	HAZMAT spills, transportation accidents
Other Alternatives	Do nothing
Responsible Office	CDOT and SMSO
Cost Estimate	Less than \$10K
Benefits (avoided losses)	Lessen the risk of contamination due to a spill and reduce the risk of accidents and injury or life loss
Potential Funding	CDOT and SMSO
Schedule	2012

Project Title	Update mapping for the district
Jurisdiction	ESRVFD
Issue/Background	The department needs to be updated and informed of new roads, road closures and decommissioned roads within the district to ensure timely emergency response
Hazard Addressed	All hazards requiring emergency response
Other Alternatives	Do nothing, rely on old maps
Responsible Office	USGS, SMSO, SMC, GIS
Cost Estimate	Unknown
Benefits (avoided losses)	Up to date information ensures that emergency response can find the incident location in a timely manner and don't waste critical time searching.
Potential Funding	SMC
Schedule	Summer/fall 2011

Project Title	Improved emergency communication to local residents through obtaining NOAA weather radios for residents
Jurisdiction	ESRVFD
Issue/Background	Necessity of early warning to residents of pending severe weather such as severe winter storms, lightning storms, high winds, fire, etc. ESRFD would distribute weather radios to remote residents who do not have other means of acquiring emergency information
Hazard Addressed	Wildfire, severe weather, extreme winter weather
Other Alternatives	Take no action and be unsure how informed residents are
Responsible Office	ESRVFD
Cost Estimate	\$2K
Benefits (avoided losses)	Allow residents to prepare for adverse weather conditions ahead of time. This would significantly reduce the potential impact that severe and extreme weather incidents and wildfire would have on residents because it would allow them to prepare for the event. Reduce life loss, injury and property loss or damage.
Potential Funding	Fundraising and grants
Schedule	Spring/ summer 2012

Project Title	Uniform signage for roads and addresses
Jurisdiction	ESRVFD
Issue/Background	There is inadequate signage for emergency response which creates confusion when emergency responders are dispatched to rural areas. Currently street addresses do not correspond with County-issued addresses
Hazard Addressed	Wildfire and any hazard event requiring emergency response
Other Alternatives	Take no action and continue to have misinformation between the district and the County
Responsible Office	ESRVFD
Cost Estimate	\$10K
Benefits (avoided losses)	Completing this project would ensure faster and more accurate emergency response times. Also help solidify information between the district and the County
Potential Funding	Department of Homeland Security
Schedule	Winter 2011

Project Title	Fire mitigation and fuels reduction on Public Lands
Jurisdiction	ESRVFD
Issue/Background	Areas in the WUI have extremely heavy fuel loads that need to be mitigated to reduce the severity of a wildfire
Hazard Addressed	Wildfire
Other Alternatives	Take no action and risk a high severity fire if one ignites in the area
Responsible Office	BLM/ Forest Service/ Private Land Owners
Cost Estimate	Unknown
Benefits (avoided losses)	Reduce the risk of extreme property loss and life loss due to a severe wildfire. Mitigating areas of land against wildfire is a proven way to reduce fire likelihood and severity
Potential Funding	BLM and FS fire mitigation funds and grants
Schedule	5 year

Project Title	Develop multiagency plan to deal with HAZMART spills
Jurisdiction	ESRVFD and surrounding jurisdictions
Issue/Background	HWY 141, Specifically Slickrock hill is a very likely place for a hazardous materials spill. It would be beneficial to plan for such an occurrence, relying on the surrounding agencies for response to HAZMAT events
Hazard Addressed	HAZMAT spills, transportation accidents
Other Alternatives	Take no action
Responsible Office	ESRVFD, Colorado State Patrol, SMSO, SMC
Cost Estimate	Little or no cost associated with drafting an plan
Benefits (avoided losses)	Planning for an incident allows for preparation and increases response time and containment. Plans can help to reduce property damage and life loss or injury.
Potential Funding	Grants, department training budget
Schedule	Spring 2011

Project Title	Improved radio coverage in area
Jurisdiction	ESRVFD
Issue/Background	There are many dead areas within the Egnar Slickrock Fire Protection District which prohibit communication in the event of an emergency. The need for additional communications towers is high
Hazard Addressed	All hazards requiring emergency response
Other Alternatives	None
Responsible Office	SMSO and ESRVFD
Cost Estimate	\$10-15,000
Benefits (avoided losses)	Clearer communication capabilities for emergency responders, enables dispatch to communicate during an incident.
Potential Funding	Department of Homeland Security. SMC
Schedule	10 years

Project Title	Pursue PPE for HAZMAT and continuing training or Department Personnel
Jurisdiction	ESRVFD
Issue/Background	There are no HAZMAT PPE or qualified personnel in the department at this time. The potential for the department to encounter a HAZMAT situation is extremely high. Response time form other departments qualified in this area is long and may result in life or property loss.
Hazard Addressed	HAZMAT Spills
Other Alternatives	None
Responsible Office	ESRVFD and SMC
Cost Estimate	\$250 per PPE plus additional training for personnel
Benefits (avoided losses)	Better equipped to provide life safety and life saving actions for the victims of a HAZMAT spill. Also properly protects department personnel
Potential Funding	Grants and department training budget.
Schedule	Summer 2011

NORWOOD FIRE PROTECTION DISTRICT

Project Title	Develop a system for testing warning siren systems
Jurisdiction	Norwood Fire Protection District
Issue/Background	There is a warning system in place but it has not been tested or used for many years
Hazard Addressed	All
Other Alternatives	None
Responsible Office	Town of Norwood/ NFPD
Cost Estimate	Unknown
Benefits (avoided losses)	Warning systems have proven to be very effective in getting information about a hazard or hazardous event out to the public. Since the capability exists, it would be beneficial to implement a testing system and to educate the public about what the warning sirens may be signaling
Potential Funding	FEMA, SMC
Schedule	2012

Project Title	Hire a full time Fire Chief, EMS Coordinator, Fire Fighter Coordinator and Paramedic for NFPD
Jurisdiction	Norwood Fire Protection District
Issue/Background	The town of Norwood and the population that the Norwood Fire Protection District serves is increasing quickly. Hiring full time paid positions would help provide structure and accountability for the District.
Hazard Addressed	Any hazard requiring response by the fire department
Other Alternatives	Continue to have unpaid volunteers
Responsible Office	Norwood Fire Protection District
Cost Estimate	200K/year for all positions
Benefits (avoided losses)	Having full time district employees improves efficiency
Potential Funding	Fire grants, SMC, FEMA
Schedule	2015

Project Title	Obtain land for Gurley Fire Station #4
Jurisdiction	Norwood Fire Protection District
Issue/Background	The Fire Protection district would like to have a fire house with equipment located near the Gurley Reservoir. The area has become a very popular place to live and there is great wildfire risk.
Hazard Addressed	Wildfire and any hazard requiring emergency response
Other Alternatives	None
Responsible Office	Norwood Fire Protection District
Cost Estimate	Depends on land and market value
Benefits (avoided losses)	Having a station and staffed volunteers would decrease normal response time to this area.
Potential Funding	SMC, Grants
Schedule	2015

APPENDIX B: PLANNING DOCUMENTS

STAKEHOLDER LETTER

STAKEHOLDER LETTER

The San Miguel County Office of Emergency Management is performing an update to the County All Hazard Mitigation Plan. The County's Hazard Mitigation Plan was compiled to assist in reducing and mitigating future losses from natural and man-made hazard events. The current plan profiles each hazard and outlines historical hazard events while analyzing the potential impacts to the people, property, infrastructure and critical facilities in San Miguel County.

As part of the plan update process, your special district, jurisdiction or agency is receiving this letter as an invitation to participate in this important planning process. In order to submit projects to be funded for FEMA Pre-Disaster Mitigation (PDM), Flood Mitigation Assistance (FMA), Hazard Mitigation Grant Program (HMGP) grants jurisdictions must participate in this planning process.

It is the intent of my office to ensure that the mitigation plan is developed in an open manner involving community stakeholders, that it is consistent with county, town and special district policies and is an accurate reflection of San Miguel County community values. What I'll need from your jurisdictional representative is to attend planning committee meetings, assist with plan development, provide information for risk assessment and capabilities assessment, provide feedback on drafts of all chapters, to develop, prioritize and adopt mitigations for their jurisdiction and finally to work with their jurisdiction to assign responsibility for funding implementing actions.

An open public involvement process is essential to the development of an effective plan. In turn, the San Miguel County planning process will include an opportunity for the public to comment on the plan during the drafting stage and prior to plan approval.

If your special district, jurisdiction or agency should like to participate in this important process, the next Mitigation Team meeting will be held October 7th, 10am at the Telluride Fire House. Please RSVP and send me an email at jenniferd@sanmiguelcounty.org or give me a call at the number listed below. Thank you in advance for your participation in this vital planning process.



Jennifer Dinsmore
Administrative Officer
970.7280.9546

ORIGINAL STAKEHOLDER MAILING LIST

First Name	Last Name	Agency
Scott	Stoddard	Army Corp of Engineers
Chris	Barth	Bureau of Land Management
Kyle	Lester	CDOT
Director	Local	CenturyLink
Jodi	Rist	Colorado State Forest Service
Clark	Bates	Colorado State Patrol
Karen	Ickes	Disaster Coordinator Center for Mental Health
Carrie	Andrew	District R2J Public Library No. 2
Gayel	Alexander	Dolores Conservation District
Todd	Parisi	Dolores County Emergency Manager
Ty	Gray	Dolores County RE No. 2 School District
Doug	Stowe	Dove Creek Conservation District
Ralph	Sublett	Egnar Slickrock Fire Protection District
Chris	Broady	Emergency Telephone Service Authority
Jim	Pringle	Grand Junction Weather Service
		Kinder Morgan
Jeanne	Buck	Lone Tree Cemetary District 1
Ike	Holland	Montrose County Emergency Manager
Chris	Hawkins	Mountain Village Housing Authority
Chris	Broady	Mountain Village Police Department
Greg	Sparks	Mountain Village Town Manager
		Norwood Chamber of Commerce
Linda	Soucie	Norwood Fire Protection District
Ed	Reinhardt	Norwood Marshals Office
Dave	Crews	Norwood R-2J School District
Patti	Grafmyer	Norwood Sanitation District
Alan	Stahly	Ouray County
Todd	Zunich	Patara Oil and Gas
	Planning Directory	Qwest
	Director	San Miguel Basin Conservation District
Lynn	Black	San Miguel County Administrator
Peggy	Kanter	San Miguel County Assessor
Steve	Zwick	San Miguel County Attorney
Gary	Hodges	San Miguel County Building Department
Peggy	Nerlin	San Miguel County Clerk
Bob	Dempsey	San Miguel County Coroner
Buckhorn	Geotech	San Miguel County Engineer

First Name	Last Name	Agency
David	Schneck	San Miguel County Environmental Health
Hensen	Yvette	San Miguel County Extension Office
Deanna	Burbridge	San Miguel County Fairgrounds
Heather	Widlund	San Miguel County GIS/IT
Ramona	Rummel	San Miguel County Housing Authority
Laura	Kyriakakis	San Miguel County Human Resources
Linda	Luther	San Miguel County Open Space
Marty	Rosenthal	Wilson Mesa at Telluride Metro District
Karen	Henderson	San Miguel County Planning
Mike	Rozycki	San Miguel County Planning/PIO
Donna	Clark	San Miguel County Pub. Lib. Dist. No. 1
Lynn	Black	San Miguel County Rec. District No. 1
Mike	Horner	San Miguel County Road and Bridge
Alan	Gerstle	San Miguel County Social Services
Ramona	Rummel	San Miguel County Solid Waste Disp. Dist.
Dave	Foley	San Miguel County Surveyor
Jan	Stout	San Miguel County Treasurer
Sheila	Grother	San Miguel County Weed Manager
Jennifer	Dinsmore	San Miguel Emergency Management
Ramona	Rummel	San Miguel Finance
Jim	Hubbs	San Miguel Power Association
Glen	Livengood	San Miguel Power Association
June	Nepsky	San Miguel Public Health Nurse
Shirley	Greve	San Miguel Regional Housing Authority
William	Masters	San Miguel Sheriff
Sky	Walters	San Miguel Undersheriff
Director		San Miguel Water Conservancy
Peter	Cooke	Source Gas
Jane	Maxson	Southwestern Water Conservation
John	Bennett	Telluride Fire Protection District
Director		Telluride Historical Museum
Nan	Dudek	Telluride Hospital District

First Name2	Last Name3	Agency2
Shirley	Greeves	Telluride Housing Authority
Jim	Kolar	Telluride Marshal
Eric	Adolfi	Telluride Medical Center
Sam	Samuelson	Telluride Planning and Building Department Director
Stan	Berryman	Telluride Public Works Office
Mary	Rubadeau	Telluride R-1 School District
Richard	Nuttal	Telluride Regional Airport Authority
Greg	Clifton	Telluride Town Manager
Greg	Sparks	Town of Mountain Village
Patti	Grafmyer	Town of Norwood
Randy	Barnes	Town of Ophir
Joe	Lawton	Town of Ophir Mayor
Mike Kimball		Town of Sawpit
Mike	Kimball	Town of Sawpit Road and Bridge
Michelle	Haynes	Town of Telluride
Steve	Sullivan	Tristate
	Director	Uncompahgre Medical Center
	Director	USFS Dolores
	Director	USFS Norwood
	Director	USFS Uncompahgre



NEWS RELEASE

Public invited to learn about countywide Hazard Mitigation Planning and Encouraged to Comment on Draft Plan

(San Miguel County, Colo.) - The San Miguel County Office of Emergency Management will present and give details on the County’s planning process for updating its All Hazard Mitigation Plan (AHMP) during public meetings both in Telluride on January 13th at the County Commissioner’s meeting room from 4:30-6:00pm and Norwood at the Lone Cone Building on Tuesday January 18th from 4:00-5:30pm. The County is also seeking public input on a draft of the plan.

Residents, elected officials, emergency responders and other interested stakeholders are encouraged to attend. The purpose of the meeting is to present and discuss the County’s approach to hazard mitigation planning. The San Miguel County All Hazard Planning Group has been working to steer the process and consists of representatives from County departments, incorporated municipalities, special districts and fire districts. The initial draft of the San Miguel County All Hazard Mitigation Plan identifies and profiles the natural and manmade hazards to which the county is vulnerable, assesses the vulnerability of the more significant hazards (e.g., flood and wildfire), and includes goals and actions intended to mitigate the effects of these hazards.

The AHMP has been prepared to better protect people and property within San Miguel County from the effects of hazard events such as natural and manmade disasters and is a result of a collaborative planning process that has been underway since June of this year to update the County’s currently adopted plan. The AHMP identifies hazards that could affect the county and their potential impacts and outlines what steps can be taken now to reduce future impacts. The plan will allow the County to be eligible for mitigation grant funds from FEMA and potentially lower flood insurance rates for residents.

The draft plan can be accessed on the County website: www.sanmiguelcounty.org/plans. Hard copies can be referenced at the following locations:

<p>Wilkinson Public Library 100 W. Pacific Telluride, Colorado 970-728-6613</p>	<p>Norwood Public Library 1110 Lucerne Norwood, Colorado 970-327-4833</p>
<p>County Commissioners Office 333 W. Colorado Ave Telluride, Colorado 970-728-3844</p>	<p>County Finance Office 1120 Summit Street Norwood, Colorado 970-327-4885</p>

Comments on the draft are welcome as are questions regarding the planning process if you are unable to attend the meeting. The public comment period is from January 12th through the 26th.



NEWS RELEASE

Public Invited to Review Draft All Hazard Mitigation Plan

(San Miguel County, Colo.) - The San Miguel County Office of Emergency Management will present and give details on the County’s draft All Hazard Mitigation Plan (AHMP) during a public meeting to be held at the County Commissioner’s meeting room from 4:30-6:00pm. The public is invited to review the draft plan and comment and/or suggest changes to the plan.

Since September of 2010, the San Miguel County All Hazard Planning Group (AHPG) has been working to update the plan from its original inception in 2005. The AHPG consists of representatives from county departments, incorporated municipalities, special districts and fire districts. The San Miguel County All Hazard Mitigation Plan identifies and profiles the natural and manmade hazards to which the county is vulnerable, assesses the vulnerability of the more significant hazards (e.g., flood, severe weather and wildfire), and includes goals and actions intended to mitigate the effects of these hazards.

This plan is also developed to allow San Miguel County and its participating jurisdictions to be eligible for certain federal disaster assistance, specifically, the Federal Emergency Management Agency’s (FEMA) Hazard Mitigation Grant Program (HMGP) and Pre-Disaster Mitigation program, as well as earning credits for the National Flood Insurance Program’s Community Rating System. This hazard mitigation plan documents the multi-jurisdictional, multi-hazard mitigation planning process, which is intended to meet the requirements of the Federal Disaster Act of 2000.

If any member of the public is unable to attend on March 16th, the draft plan continues to be able to be accessed on the County website: www.sanmiguelcounty.org/plans.

<p>County Commissioners Office 333 W. Colorado Ave Telluride, Colorado 970-728-3844</p>	<p>County Finance Office 1120 Summit Street Norwood, Colorado 970-327-4885</p>
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For more information, contact Jennifer Dinsmore at the San Miguel Office of Emergency Management, 970-728-9546 or jenniferd@sanmiguelcounty.org.

STAKEHOLDER MEETING ATTENDANCE

NAME	Agency	October Meeting	November Meeting	January Meeting
Aldis Strautins	NWS		X	
Bill Masters	SMSO	X		
Brien Gardner	Source Gas	X		
Chad Root	TOMV	X		
Chris Barth	MIFMU	X		
Chris Broady	MVPD	X		X
Dan Wilson	Telluride Library	X		X
Daniel C. Pauley	TMO	X	X	
Dave Bangert	TOMV	X		X
Dave Schneck	SMC DPHE	X	X	
Deanna Butterbaugh	CDEM	X		
Emil Sante	TFPD EMS	X		
Eric Adolphi	TMC	X		
Glen Livengood	SMPA	X		
Heather Widlund	SMC GIS		X	X
James Kolar	TMO		X	X
Jennifer Dinsmore	SMSO	X	X	X
Jim Hubbs	SMPA	X		
Jim Pringle	NWS	X	X	
John Bennett	TFPD	X	X	X
Judy Shutza	USFS	X		
June Nepksy	SMC DPHE			X
Karen Guglielmone	TOT	X		X
Karen Henderson	SMC Planning	X	X	X
Lilia Colter	SMC	X	X	X
Linda Luther-Broderick	SMC Open Space	X	X	
Marilyn Gally	CDEM	X		
Mike Horner	SMC R&B	X	X	X
Mike Kimball	Sawpit		X	
Mike Tater	CDOT	X		
Patti Grafmyer	Norwood	X	X	
Peter Cooke	Source Gas	X	X	
Ralph Sublett	EFPD	X		X
Ramona Rummel	SMC Finance	X		
Randy Barnes	Ophir		X	X
Rodney Forsythe	Source Gas		X	
Steve Denney	CDEM	X		

Ted Mueller	NFPD			X
Tom Dickson	EFPD	X	X	X
Trisha VanHeltebrake	SMC DPHE	X		

MEETING SIGN-UP SHEETS

31/27/2011 08:23 9702495718 MONROSE USDA CENTER PAGE 02/02

	Name	Agency	Phone	Email	Agency Website
1	Deanna Butcherbaugh	CDERM	(720)852-7197	deanna.butcherbaugh@state.co.us	
2	Eric Adolph	TMC	970-708-1010	eric@tvmcd.org	www.tvmcd.org
3	Daniel C. Paulley	TMO	970-728-8444	dpauley@telluride-co.gov	
4	Tomsonor Sunkol	SMA	970-327-4885	tomsonor@sanmiguelcounty.co	www.sanmiguelcounty.co
5	Julia Friedrich	CDERM	970-309-5469	lucy@sanmiguelcounty.co	www.sanmiguelcounty.co
6	Karen Coughlin	Town of Telluride	970-329-1015	karen@telluride-co.gov	www.telluride-co.gov
7	Karen Henderson	SMA	970-728-3083	karen@sanmiguelcounty.co	www.sanmiguelcounty.co
8	Dave Schneck	SMA	970-728-0447	daves@sanmiguelcounty.co	www.colorado.gov
9	Marilyn Gally	CDERM	720-526-6694	marilyn.gally@state.co.us	www.state.co.us
10	Mike Talar	CDERM	970-749-2385	Michael.Talar@state.co.us	CDERM.gov
11	Steve Deaney	CDERM	770-298-7300	steve.deaney@state.co.us	CDERM
12	Ann Wilson	Wilkeson Library	970-728-4519 x36	awilson@wilkesonlibrary.org	Telluride Library
13	Bill Masters	SMCSO	970-728-7948	SMCSO@tellurideco.gov	www.sanmiguelcounty.co
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All Hazard Planning Meeting October 7, 2010

30/9/2010

All Hazard Plan Update Meeting

All Hazard Plan Update Meeting

	Name	Agency	Phone	Email	Agency Website
1	Vin Hillis	San Miguel Area	727-1586	VHillis@SMCA.com	San Miguel Area Assn
2	Glen Livergood	S.M. RA	209-5593	Glen@SMRA.com	San Miguel River Assn
3	TRISHA WILKINSON	COMMUNITY HEALTH	729-1499	trishaw@kellyride.com	SMHC
4	MIKE ABERNETHY	SMC	327-4835	MIKEH@SANMIGUELCOUNTY.ORG	SMCA
5	RODOLPH SUBLETH	ESPERANZA V.F.D.	679-3115		
6	Tom Dickson	ESPERANZA R.V.F.D.	671-2552	dickson@esperanza.org	esperanza.org
7	Shelby Sandoz	FPD	970-729-0191	esullivan@esperanza.org	esperanza.org
8	Chris Brandy	NY PD	970-729-3497	chris@ny.village.org	ny.village.org
9	John Beuhert	TPPD	970-729-2411	john.beuhert@tppd.org	tppd.org
10	David Rook	Town of Mt. Village	970-729-3453	drook@mtvillage.org	Town of Mt. Village
11	Dave Basser	TONV	970-417-1789	dbasser@townofmtvillage.org	Town of Mt. Village
12	Patricia Sandoz	Nonprofit	970-4888	psandoz@townofmtvillage.org	Town of Mt. Village
13	JOY SCURRA	USDA Forest Service	527-4241	jscurra@fs.fed.us	fs.fed.us
14	DIM PRINGLE	NATL. WEATHER SERVICE	970-483-7007 x726	dim.pringle@noaa.gov	noaa.gov
15	CHRIS BASTA	MEMU	970-240-5317	christopher_basta@memu.org	memu.org
16	Brian Gardner	Source Gas	970-865-2751	brian.gardner@sourcegas.com	sourcegas.com
17			ext 809		
18	Peter Cooke	Source Gas	970-596-2181	Peter.Cooke@sourcegas.com	sourcegas.com
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All Hazard Planning Meeting October 7, 2010

10/4/2010

Nov 10th Meeting

All Hazard Plan Update Meeting

	Name	Agency	Phone	Email
1	John Bennett	Teluroctre HST	970-728-3801	john.t.bennett@montrose.net
2	Tom Dickson	ESNA V.F.D.	970-394-4863	Dickson@esna.vfd.com
3	Phil Griesmer	Boxwood	970-327-5188	philgriesmer@boxwood.net
4	Pete M. Coates	Source Gas	970-556-2181	Pete.Coates@sourcegas.com
5	Rolney Easley	Source Gas	970-216-1509	rolney.easley@sourcegas.com
6	Randy Barnes	Town of Ophir	970-728-4943	admin@town-ophir.co.gov
7	Tim Pringle	Natl. Weather Service	970-243-7007 x726	james.pringle@noaa.gov
8	Ad's Straifins	"	970-243-7007	ad.straifins@noaa.gov
9	Karin Henderson	S.M.C.	970-718-3085	karenh@sanmiguelcounty.org
10	Dave Schaeck	S.M.C. EMT/Health	970-728-0447	dave.s@sanmiguelcounty.org
11	Michael Kraball	S.M.C. Fire Department	970-729-3678	micke@sanmiguelcounty.org
12	Linda Luther-Brockick	S.M.C. OSIP	970-349-5469	linda@sanmiguelcounty.org
13	Heather Widlund	S.M.C. GIS	970-349-5470	heather@sanmiguelcounty.org
14	James Keger	Teluroctre PD	970-728-3818	jkeger@teluroctre.co.gov
15	Daniel C. Dauley	Teluroctre PD	970-728-3818	dndauley@teluroctre.co.gov
16	Vilia Rottger			
17	Donifer Dinsmore			
18	Chris Braddy			
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11/10/2010

2 hrs

All Hazard Plan Update Meeting

	Name	Agency	Phone	Email
1	SPENCER WOOD	TELMARCS PD	970 709 5805	spencer@telmarcs-co.gov
2	Heather Midland	San Miguel City	3609-5170	hmidland@sanmiguelcounty.org
3	Yasen Craiguel Mont	Telluride Public Works	970 729 2190	kmont@telluride-co.gov
4	David Wilson	Wilkinsville town	7284519x36	dwilson@teluridecleremy.org
5	MIKE ALCERIZ	SAN MIGUEL CITY	327-4835	MIKEH@SANMIGUELCLEREMY.ORG
6	CHAS BROADY	Mountain View R.D.	970-285-9381	cbroady@mvvillage.org
7	RANDY BRAMES	Opvir	728 4943	rdbrames@town-opvir.co.gov
8	Dave Bangerter	TPMV	417-1784	dbangerter@tpmvillage.org
9	JOHN BENNETT	TELLURIDE FPD	729-2411	john.tel@teluridefpd.com
10	TOM DICKSON	EGGAR V. FD	394-4863	dickson@teluridefpd.com
11	RALPH SUBBETT	EGGAR SR. FPD	970 627-3115	rsubbett@teluridefpd.com
12	THOMAS NEPSKY	San Miguel County Health & Env	728-4289	tnepsky@sanmiguelcounty.org
13	KAREN HENCLYSON	SAN MIGUEL COUNTY	970-728-3083	karenh@sanmiguelcounty.org
14	Red McVeller	Revere Fire	327-4880	rmcvel@reverecleremy.org
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APPENDIX C: PLAN ADOPTION

Requirement §201.6(c)(5):

[The local hazard mitigation plan shall include] documentation that the plan has been formally adopted by the governing body of the jurisdiction requesting approval of the plan (e.g., City Council, county commissioner, Tribal Council).

Formal plan adoption is a required part of the planning process and demonstrates San Miguel County's commitment to fulfilling the mitigation goals and objectives outlined in the Plan. In addition to fulfilling the requirements of the Disaster Mitigation Act of 2000, the adoption of the All Hazard Mitigation Plan by all incorporated jurisdictions establishes it as a policy that defines the actions agencies should take to comply with or implement the plan.

PLAN ADOPTION PROCESS

1. Submit to State of Colorado, Department of Emergency Management, Mitigation Division
2. Obtain "Approval Pending Adoption" status from FEMA.
3. County Emergency Management Coordinator will facilitate plan adoption through a resolution 'template' created for each incorporated jurisdiction to meet plan requirements and demonstrate commitment to protect county residents and property from the effects of hazards.

Placeholder for adoption by ordinance or public hearing for:

San Miguel County
Town of Mountain Village
Town of Norwood
Town of Ophir
Town of Sawpit
Town of Telluride

ADOPTION TEMPLATE

RESOLUTION # _____

FOR ADOPTION OF PRE-HAZARD MITIGATION PLAN

San Miguel County, Colorado

Whereas, the _____ Board/Council of _____, San Miguel County, Colorado, recognizes the threat that natural hazards pose to people and property within our community; and

Whereas, undertaking hazard mitigation actions will reduce the potential for harm to people and property from future hazard occurrences; and

Whereas, an adopted All Hazard Mitigation Plan is required as a condition of future funding for mitigation projects under multiple FEMA pre- and post-disaster mitigation grant programs; and

Whereas, the _____ Board/Town Council of _____ fully participated in the mitigation planning process to prepare this All Hazard Mitigation Plan; and

Whereas, the Colorado State Emergency Management Division and Federal Emergency Management Agency, Region VIII officials have reviewed the All Hazard Mitigation Plan and approved it contingent upon this official adoption of the participating governments and entities;

Now, therefore, be it resolved, that the _____ Board/Town Council of _____ hereby adopts the San Miguel County All Hazard Mitigation Plan as an official plan; and

Be it further resolved, that the San Miguel County Emergency Management Coordinator will submit this Adoption Resolution to the Colorado State Emergency Management Division and Federal Emergency Management Agency, Region VIII to enable the San Miguel County All Hazard Mitigation Plan's final approval.

APPENDIX D: CWPP PRIORITIZED MITIGATION ACTIONS

EGNAR/SLICKROCK FIRE PROTECTION DISTRICT

CRP Grasses

- **Priority Level Very High:** Work with the Colorado Department of Transportation (C-DOT) to promote the highest degree of Right of Way (ROW) maintenance that their budget allows.
- **Priority Level High:** Work with the Central Egnar/Slickrock area of San Miguel Soil and Water Conservation District to obtain grants to treat noxious weeds and create fuel breaks within and adjacent to highway right-of- ways.
- **Priority Level Moderate:** Task an individual with locating and mapping the CRP grass parcels. This will help to identify those areas of elevated fire behavior potential which could serve to boost the initial attack response.

Individual Communities

Spud Patch - Hazard Rating: Very High

- The Spud Patch Rim Top Fuelbreak is designed to protect the community of Spud Patch from fire starting below in the steep canyon areas to the north or east
- Mitigation work on County Road K8 is intended to provide safe ingress and egress during a wildfire event

Areas of Special Interest

Communication and Dispatch Towers

- **Priority Level High:** Create defensible space around each tower complex. Ensure that fuels treatments extend to an adequate distance around buildings to protect combustibles from direct flame contact and excessive radiant heat. Remove fuels around propane tanks and create a non combustible ground cover around tanks (10 feet of gravel, etc.)
For the dispatch tower, improve access road and thin along road to facilitate structure protection. Establish and maintain backup power for the tower (**Figure 1**).

Sutherland/Ebberts Construction

- **Priority Level Moderate:** Provide a wildfire safety brochure for all workers and new hires. Place brochures in common area or lunch room.
- **Priority Level Low:** Gas wells on north side of the district were identified by the FD as an area of concern. Well pad size and vegetation coverage can vary significantly. A discussion with the local management company to address wildfire issues may be the best way to determine if any hazards exist.

NORWOOD FIRE PROTECTION DISTRICT

Water Supply

- **Priority Level High:** Ensure that hydrants are operational. Redvale hydrants should be tested annually and the results of these tests should be provided to the Fire District. Hydrants need to remain obstruction-free, well identified, and visible.
- **Priority Level High:** All available water sources should be marked by GPS and posted on a map for incoming suppression resources. This should be updated as needed to maintain an up-to-date list.

Public Education and Fire Prevention

- **Priority Level High:** Implement fire prevention, fire preparedness, and defensible space and hazard reduction recommendations for each community.
- **Priority Level High:** Obtain “Smokey Bear” signs for use along major highways to inform the public of the current fire danger and to promote fire prevention. Ensure that fire danger messages are kept up to date to maintain credibility and effectiveness.
 - 145 and Sanborn Park Road @ the River
 - Signage at forest service boundary (Beef Trail Road and 44ZN road) near Miramonte
 - Provide content for CDOT temporary signs during periods of high fire danger and elevated event traffic. CDOT contact is Montrose CSP Dispatch at 970-349-4392
- **Priority Level High:** Consider adopting local fire ordinances to control open burning during periods of high fire danger. Develop partnerships between fire districts, County Sheriff, Colorado and Utah State Forestry and local law enforcement.
- **Priority Level High:** Find funding to support a full-time paid Fire Chief for the Norwood Fire Protection District.

Individual Communities

Deer Mesa – Hazard Rating: Extreme

- A fuel break is recommended for this community on the north side (**Map 2**). Significant fire history and historic frequent lightning in the area warrant protection from the federal land. Fuels treatments in the communities of Mailbox and Deer Mesa are intended to link already existing treatments. By adding the additional areas to be treated, the risk of fire coming from the canyons along the north west of both communities would be decreased. Many of the treatments occur directly along the road for operability and to provide safe ingress and egress.
- Individual water cistern of a minimum 2,000 gallons should be made available at each ranch or home. Manufactured systems that utilize foam and water should be encouraged if the capability is an equivalent to water alone.
- Add 100,000 gallon tank with wet tap recommended at the top of 4400 Road.
- A parcel level analysis and pre-attack plan should be completed for this community.

FITTS Subdivision – Hazard Rating: Very High

- Thin the heavily vegetated arroyos throughout the community

Beaver Pines – Hazard Rating: Very High

- The concentration of homes in the Beaver Pines community is very sparse, but many are located in the vicinity of the CR 46X fuel treatment. This area of road is imperative to protect for egress if a fire were to start in the canyon below to the east

TELLURIDE FIRE PROTECTION DISTRICT**Water Supply**

- **Priority Level High:** Ensure that hydrants are operational. Test hydrants annually, and guarantee that they are obstruction free and visible.
- **Priority Level High:** Support and facilitate the installation of draft hydrants and cisterns as described in the community recommendations to follow.

Individual Communities**Lower Valley Communities****Brown Ranch – Hazard Rating: Very High**

- Fuel treatments along High Bluff Drive, CR X48, Brown Ranch Road, and HW 62 not only provide for safe travel, but are also intended to decrease fire behavior. Steep canyons and drainages would allow fire to quickly run uphill. These fuelbreaks will diminish fire intensity, while allowing for safe evacuation (**Map 4**). [HW 62: 1380 feet, CR X49: 3500 feet, High Bluff Drive: 1200 feet, Brown Ranch Road: 2250 feet, Brown Mesa Road: 6300 feet]
- Establish a community water supply.
- Install a draft hydrant on the Z 60 Road pond.

Specie Mesa – Hazard Rating: High

- Two fuel breaks are recommended for this community, one on the South side along Peninsula Drive and County Road M44 and one on the north side of the community. The south Specie Mesa fuel treatment runs along Peninsula Drive and CR M44. This area sits on top of a mesa, so fire could spread uphill on either side. As a result, it is important that this treatment be completed to slow the rate of spread and allow for safer driving conditions.
- The north Specie Mesa fuel treatment runs along the rim of the canyon that is along the west side of the Specie Mesa community and encircles it on the north and south ends. This treatment will serve to decrease flame lengths and reduce the rate of spread, thus allowing for suppression activities and additional time to evacuate if necessary

Iron/Mackenzie Springs – Hazard Rating: High

- Establish a community water supply through the installation of a draft hydrant on Mackenzie Springs Drive
- Install a draft hydrant on the Z 60 Road pond.

Lower Valley – Hazard Rating: High

- Ensure that all bridges are evaluated and placarded for bridge load limits.
- Standardize both street and home addressing.

Upper Valley Communities**Lawson Hill – Hazard Rating: Very High**

- Within the Lawson Hill community, extended/linked defensible space along Society Drive and Elkhorn Court will serve as barrier to fire spread into the community. Because of the higher density residences in the area, defensible space that links homes works as a larger fuelbreak and decreases the risk of spread from home to home (**Map 7**).
[7 acres]
- The fuel treatments within the community and along HW 145 add additional protection to the structures in the community, as well as the Lower Mountain Village community to the south. The Lawson Hill Fuel Treatment 1 is located along the hill slope to reduce fire intensity from fire below.

Trout Lake – Hazard Rating: High

- Mixed Conifer stands should be surveyed for beetle infestation and any infected trees removed. This should be done annually before summer.

Upper Mountain Village – Hazard Rating: High

- Upgrade and establish three evacuation routes in Mountain Valley. Upper Benchmark to Ridge Road in the Ski Ranches, Wilson Peak Drive to Touchdown Drive, and from Adams Ranch Road to Hwy 145 (**Map 8**).
- Mixed Conifer stands should be thinned and limbed to defensible space standards.
- Mixed Conifer stands should be surveyed for beetle infestation and any infected trees removed. This should be done annually before summer.
- All cedar shake roofs should be replaced by Class A roofing materials.
- Linked defensible space is recommended for all homes.

Two Rivers Subdivision – Hazard Rating: Moderate

- Linked defensible space within the Two Rivers community is the most effective measure to prevent home losses from wildfire. This is especially important for homes along the outer perimeter adjacent to the forest

Telluride/Hillside – Hazard Rating: Moderate

- Make certain all fire hydrants are visible, maintained and operable.
- During times of high to extreme fire danger – utilize mobile CDOT signage along Hwy 145 to heighten awareness.

Lower Mountain Village – Hazard Rating: Moderate

- A modified fuelbreak should be implemented along the northeast portion of the community near Country Club Drive (**Map 10**).
 - **Section 1**

This area is comprised of Telski open space sections OS-3M, OS-3N, OS-3Z, and OSP-118 totaling 40 acres. A rough estimate of \$3000/acre works out to a total cost of \$120,000 for Section 1.

- **Section 2**

This area is Telski open space section OS-FF5 and is 32 acres. Rough cost for the prescription is \$100,000.

- **Section 3**

This area is Telski open space sections OSP-22R1 and OSP-21R and will cover 30 acres. Rough cost for the prescription is \$100,000.

- **Section 4**

This area is primarily private property bordered by Telski open space section OSP-49. No estimate has been made due to the area being private property.

- Mixed Conifer stands should be surveyed for beetle infestation and any infected trees removed. This should be done annually before summer.

Annual Work Plan: 2011-2013

EGNAR/SLICKROCK FIRE PROTECTION DISTRICT

CRP Grasses

- **Priority Level Very High:** Encourage individual landowners to mow fuels near homes and along roadways and fence lines during times of high fire danger. CRP sections will need to follow the guidelines as detailed in **Appendix B**.
- **Priority Level High:** Encourage state and local Farm Service Agency offices to provide CRP program oversight to ensure appropriate management practices are followed and to create cost-share programs that encourage landowners to treat fuels and reduce fire hazard near communities and values at risk.

Individual Communities

Spud Patch - Hazard Rating: Very High

- Install a minimum 30,000 gallon cistern in a safe area, strategically located in the community, to augment tender shuttle water supply.

Egnar Agricultural Area – Hazard Rating: Moderate

- Add one or two large cisterns (30,000 gallons or greater) for fire suppression use

NORWOOD FIRE PROTECTION DISTRICT

Water Supply

- **Priority Level High:** A secondary means of retrieving water from the storage tanks in the event of a power outage should be considered. Some communities currently have a couple of different means. No matter the means, it is recommended that all elevated water tanks be able to flow water without the electric pumping system.
 - Piping allowing the water to flow freely via gravity pressure from the tanks.
 - Piping connections that allow the fire apparatus to “pull” the water out via a drafting operation.

Individual Communities

FITTS Subdivision – Hazard Rating: **Very High**

- Evaluate the two track road to determine if it could be used as a second means of egress or access. Road improvement and signage should be considered as well.

Beaver Pines – Hazard Rating: **Very High**

- Two 2,500 gallon cisterns are slated for installation. These installations should be a priority before the community starts to build out.

Mountain View – Hazard Rating: **Moderate**

- Thin, limb and trim along access route to provide for safer road access and reduce fire behavior (**Map 11**).
[4150 feet]

Norwood Agricultural Areas – Hazard Rating: **Low**

- Work with the Colorado Department of Transportation (C-DOT) to promote the highest degree of Right of Way (ROW) maintenance that their budget allows.
- Encourage individual landowners to mow fuels near homes and along roadways and fence lines during times of high fire danger adjacent to CRP sections and fallow fields.
- Consider “wet tapping” the water tanks to install a Fire Department Connection for fire suppression use.
- Review and implement the open burning recommendations in **Appendix B**.
- A “No Outlet” sign should identify all dead-end streets.

TELLURIDE FIRE PROTECTION DISTRICT

Individual Communities

Lower Valley Communities

Brown Ranch – Hazard Rating: Very High

- Strategically locate a large cistern (30,000 – 50,000 gallons) to augment the draft hydrant and water tenders.
- Ensure that the large pasture area is grazed.
- For areas that are not grazed, ensure that Brown Ranch Road and High Bluff Road maintain a minimum of 20 feet of mowed grass and thinned trees and or brush on either side of the road.

Specie Mesa – Hazard Rating: High

- Roadside brushing on Peninsula Drive should be conducted to improve visibility and safety, since this is the community's only access and egress.
- Improve access to one of the ponds in Laughing Dog, and install a draft hydrant to facilitate drafting.
- A centrally located 30,000 gallon cistern is recommended to help establish a water supply in the Peninsula area.

Iron/Mackenzie Springs – Hazard Rating: High

- Gambel Oak should be thinned from the understory of the ponderosa.
- Dead and down material should be removed from Aspen stands.
- Strategically locate a large cistern (30,000 – 50,000 gallons) to augment the draft hydrant and water tenders.

Lower Valley – Hazard Rating: High

- Install draft hydrants in all historic draft sites along the river and sign appropriately.
- During times of extreme fire danger, use CDOT mobile electronic bulletin boards in conjunction with public events to increase public awareness along the Hwy. 145 Corridor.

Upper Valley Communities

Trout Lake – Hazard Rating: High

- The historic railroad water fill tank should be inspected and mitigated.
- Install a dry hydrant connection at Trout Lake and develop access for emergency equipment.
- Provide fire safety information at the entrance / parking area on the lake. Provide fire safety information with all special use permits (weddings, etc.).

Upper Mountain Village – Hazard Rating: High

- Aspen stands should be thinned in order to reduce fire intensity and improve the health of the stand.
- Provide rental and property management companies with fire safety brochures that can be distributed and made available to guests in the summer months.
- Post fire danger for the day at the gate house entrance. This information will need to be kept current.

Telluride/Hillside – Hazard Rating: Moderate

- Provide fire safety information at the trailhead / parking area on the east side of the large open space. (Hwy 145 at the Conoco).

Illium Valley/Ames – Hazard Rating: Moderate

- Inspect transfer station and mitigate with defensible space if necessary.
- Install draft hydrants along the river and develop access for emergency equipment.
- Install a fire department connection to the private water tank above community.

Lower Mountain Village – Hazard Rating: Moderate

- Aspen stands should be thinned in order to reduce fire intensity and improve the health of the stand.
- Provide rental and property management companies with fire safety brochures that can be distributed and made available to guests in the summer months.
- Post fire danger for the day at the gate house entrance. This information will need to be kept current.

Aldasoro – Hazard Rating: Low

- Aspen stands should be thinned to reduce fire intensity and improve the health of the stand.
- Provide rental and property management companies with fire safety brochures that can be distributed and made available to guests in the summer months.

Ophir – Hazard Rating: Low

- Post fire awareness signs at the parking areas for climbers and other recreational users.

Annual Work Plan: 2014 and beyond

NORWOOD FIRE PROTECTION DISTRICT

Water Supply

- **Priority Level High:** Expand current hydrant network to include all areas of the water district.
- **Priority Level High:** Upgrade existing infrastructure throughout the district for standardized hydrant water delivery throughout the district.
- **Priority Level High:** Create new year-round water storage resources in the district such as ponds, cisterns and tanks.

Individual Communities

FITTS Subdivision – Hazard Rating: Very High

- A large municipal water tank “Fitts Water Tank” is located north of the community. Access to this water supply should be provided to the Fire Department via a fire department connection. A “wet tap” with FDC and vehicle access is recommended. Charlene Lane has expressed interest in housing the tank.

Mailbox – Hazard Rating: Moderate

- A fuel break is recommended for this community on the north side (9368’).
- The treatment area on the north side was specifically designed for wildlife habitat improvement. Connecting the treatment areas with additional thinning may not coincide with the habitat improvement plan. Contact: Kevin Joseph, Fire Management Officer, Dolores Public Lands. 29211 Hwy 184 Dolores, CO 81323 (970) 882-6836 office (970) 799-1176 cell. A parcel level analysis and pre-attack plan should be completed for this community.
- Draft hydrant locations should be found along the creek and in any permanent water supply found within the community.
- Individual water cistern of a minimum 2,000 gallons should be made available at each ranch or home. Manufactured systems that utilize foam and water should be encouraged if the capability is an equivalent to water alone.

Beaver Pines – Hazard Rating: Very High

- Improving the road from Gurley Lake Dam to Beaver Pines Loop provides an additional evacuation route for the community of Gurley Ranch
- An additional draft hydrant should be added to Gurley Lake. Continuous access should be provided to the hydrant so uninterrupted flow is maintained (**Map 12**).

Miramonte Ranch – Hazard Rating: High

- Support the installation of a draft hydrant at Gurley Lake Dam (**Map 12**).

Gurley Lake Ranch – Hazard Rating: Moderate

- At least one draft hydrant should be installed at the dam on the North side of the lake (**Map 12**).
- Engineer and improve the loop road and the bridge at the dam to provide continuous apparatus flow to the draft hydrant.
- A road connecting the dam road and hydrant to Beaver Pines should be supported by this community. This will also provide a secondary means of egress for the community.

Areas of Special Interest

Elder Salvage Yard – Priority Level: Moderate

- A fuel break surrounding the operation is recommended. Although fuels reduction with annual maintenance will provide significant protection to both the operations and the surround lands, a permanent fuel break (dozer line to mineral soil or graveled line) would require little or no annual maintenance and provide long-term protection (**Map 13**).

TELLURIDE FIRE PROTECTION DISTRICT

Individual Communities

Lower Valley Communities

Iron/Mackenzie Springs – Hazard Rating: High

- Ensure that the large pasture area is grazed.
- For areas that are not grazed, ensure that Brown Ranch Road and High Bluff Road maintain a minimum of 20 feet of mowed grass and thinned trees and or brush on either side of the road.

Upper Valley Communities

Lower Mountain Village – Hazard Rating: Moderate

GOLF COURSES

- Along cart and foot trails mow grass and weeds to a low height. This should be a minimum of 6 feet from the edge of the trail where possible.
- All buildings and improvements adjacent to wildland fuels should follow defensible space recommendations.
- During times of high fire danger, a “no smoking” policy should be enacted and enforced when on the course.
- Wildfire educational materials and fire danger signage should be available and posted at the clubhouse. The fire danger for the day should be displayed; this information will need to be kept current.

APPENDIX E: INFORMATION SOURCES

1. **Amec Earth and Environmental, 2005 SMC All Hazards Mitigation Plan**
2. **Buys, Christian J, Historic Telluride 1998**
3. **Colorado Department of Emergency Management**
4. **Colorado Department of Public Health and Environment - www.cdphe.com**
5. **Colorado Department of Transportation**
6. **Colorado Division of Local Affairs- <http://dolo.colorado.gov>**
7. **Debris and Flood Control Plan for Cornet Creek Telluride, Colorado. Dibble and Associates August 1983**
8. **Egnar/Slick Rock Fire Protection District**
9. **Federal Emergency Management Agency- www.fema.gov/**
10. **Ferrick, Michael G. and Murphey, Dennis M. Investigation of River Ice Processes on the San Miguel River, 1999.**
11. **Flood Insurance Study, San Miguel County, Colorado 1978**
12. **High Plains Regional Climatic Center- www.hprcc.unl.edu/**
13. **Institute of Arctic and Alpine Research-University of Colorado**
14. **National Climatic Data Center- www.ncdc.noaa.gov/**
15. **NOAA in correlation with National Weather Service and NOAA Storm Prediction Center- www.noaa.gov/**
16. **Norwood Fire Protection District- www.norwoodfiredistrict.org**
17. **San Miguel County- www.sanmiguelcounty.org**
18. **State of Colorado Natural Hazards Mitigation Plan 2004- www.dola.state.co.us/dem/mitigation/plan.../2008_plan.htm**
19. **Sheldus Database**
20. **Telluride Fire Protection District- www.telluridefire.com**
21. **Town of Telluride- www.telluride-co.gov/**
22. **Town of Norwood- www.town.norwood.co.us/**
23. **Town of Mountain Village- www.mountain-village.co.us/**
24. **Town of Ophir- www.town-ophir.co.gov/**
25. **Town of Sawpit**
26. **US Census Bureau -www.census.gov/**
27. **U.S Drought Monitor- <http://drought.unl.edu/dm>**
28. **Westminster Natural Hazards Mitigation Plan 2010**