

Baca Grande Volunteer Fire Department  
and Kundalini Fire Management

# Community Wildfire Protection Plan

for the Baca Grande subdivision and surrounding neighbors



July 2005

## Table of Contents

Introduction.....	3
Local Boundary Definition.....	3
Interface Boundary Definition.....	3
Wildfire Response Capability.....	3
Fuels Treatment Priorities.....	4
Public Education Initiatives.....	6
Annual Effectiveness Assessment.....	6
Signature.....	23
Attachment: (The Baca Grande Wildfire Assessment and Mitigation Plan, photos removed)...	8 - 22

## **Introduction**

This Community Wildfire Protection Plan comes from BGVFD and KFM jointly because our coverage areas intertwine and we also have a mutual aid agreement through the San Luis Valley Annual Operating Plan. This plan was developed over a period of years in working with our neighbors, both public and private. Our area is a designated Wildland Urban Interface “community at risk”.

Our community is almost surrounded by Federal lands including BLM, National Forest, and Fish and Wildlife Preserves. We are adjacent to the northern boundary of the Great Sand Dunes National Park and Preserve. We have excellent working relationships with each of these entities.

## **Local Boundary Definition : *Baca Grande subdivision and private neighboring lands to federal boundaries on all sides.***

This area includes BGVFD’s primary response area (appx. 14 square miles of the Baca Grande), Camper Village East to Casita Park along Road T and some other land here and there. This includes areas protected by Kundalini Fire Management. We of course respond to every fire where we are needed.

The Town of Crestone and lands in the Saguache County Fire Protection District aren’t in our jurisdiction.

## **Interface Boundary Definition**

Public land adjacent to or within 1 mile of private land or land owned by the Baca Grande Property owners Association.

## **Wildfire Response Capability**

We will continue working with the Saguache County Fire Safety group to develop Incident Command System rosters. (Office of Emergency Management, Sheriff’s office, U.S. Forest Service. BGVFD and NSFPD.)

## Volunteers

- The Baca Grande Fire Department has 27 volunteers who are on-call 24-7.
- The Town of Crestone has its own Volunteer Fire Department with 7 members and two trucks. The CVFD is part of the Northern Saguache Fire protection District.
- Kundalini Fire Management has 12 volunteers.

Many volunteers attend three fire academies in Colorado annually and some work as “cooperators” for the Forest Service during fire season to make some money and gain invaluable experience.

## Mutual Aid

We participate annually in the AOP for the San Luis valley and work closely with the Colorado State Forest Service District office in Alamosa. We are clear on the wildfire response *authorities* in our area. In case of fire, getting the right information out to the right entity is paramount since we are 85% surrounded by public lands.

### Equipment/ Fire Suppression Vehicles

We are well-equipped in a large part due to receiving federal grants over the years and we greatly appreciate the support.

#### KFM

Engine 164 Type 6x

#### BGVFD

Tender 2000 gallons

Attack 1 Type 6x mini pumper

CAFs truck – Type 3x

Chase Vehicle

Equipment truck

We plan to add a Type 6 engine in the next three years.

### Home and Structure Protection

Prevention: continue to include homeowners in mitigation grant opportunities through in-kind matching. Many have participated already.

### Water Delivery

Only a portion of this area has hydrants. We are budgeting for dry hydrants and fire wells over the next few years to develop alternate water sources.

### **Fuels Treatment Priorities**

#### **Non Federal Lands:**

Continue to implement our comprehensive “Wildfire Assessment and Mitigation Plan”. This was developed in 2002 by Forest Stewardship Concepts, Ltd. through a grant. The new plan was an improvement on our 1999 Wildfire Mitigation plan.

The components of the Wildfire Assessment and Mitigation Plan are:

Assessment including expected fire behavior, fuel models, existing control features, potential water sources, fuel breaks, road signs, fire roles in vegetative dynamics and fire effects

Mitigation Plan including individual property owner responsibilities, water sources, road signs, evacuation, fuel breaks, green belt management and prescribed burning

Appendices including fire plan map with safety zones, shaded fuel break design, dry hydrant specifications and selected plants fire effects information

In 2002 we completed a grant to GIS map all existing houses and note structures for relative wildfire hazard.

In 2004 the Baca Grande Fire Department spent over \$20,000 on mitigation of the highest-priority areas in the area mitigation plan. We limbed and thinned trees to about 50’ deep in most cases along our main evacuation routes and removed a grove of trees behind our stables that had died due to recent extreme drought in the area.

The community has given many positive comments about the mitigation work that we have done recently. We make cut firewood available to residents and primarily hire local fire fighters for our mitigation work.

Many meetings between representatives of the fire department and a community mitigation oversight committee (Land Management Study Committee/ mitigation oversight) were held – in many cases discussing EACH proposed tree removal. Compromises were reached and a local standard is emerging for public areas and private lands outside of immediate “defensible space” concerns.

These local standards are:

- Thin crown covers to 40% or less, clumps of trees are ok within the 40%.
- Remove dead trees if there are many together, or if they pose a hazard of falling across a road, unless they house wildlife.
- Remove most dead wood on the ground greater than 3” in diameter.

The following proposed community guidelines need to be developed at the next mitigation meeting – scheduled for March 2006.

- Clear all ladder fuels within 100 feet of ponderosa pines. (Ask Jeff or Sid if they can find a reference for this that I can show my committee.)
- Develop a recommendation for the Forest Services proposed fire plan related to thinning or clear cutting in the National Forest to the East.

**On Federal Lands:**

Continue to participate in local fire management plans with F&W, Sand Dunes and the Forest Service. These entities own large pieces of land on our borders. They are both in the process of developing wild fire management plans. We have been included in these processes so far.

**Public Education Initiatives:**

We highly promote self-responsibility in all aspects of fire safety.

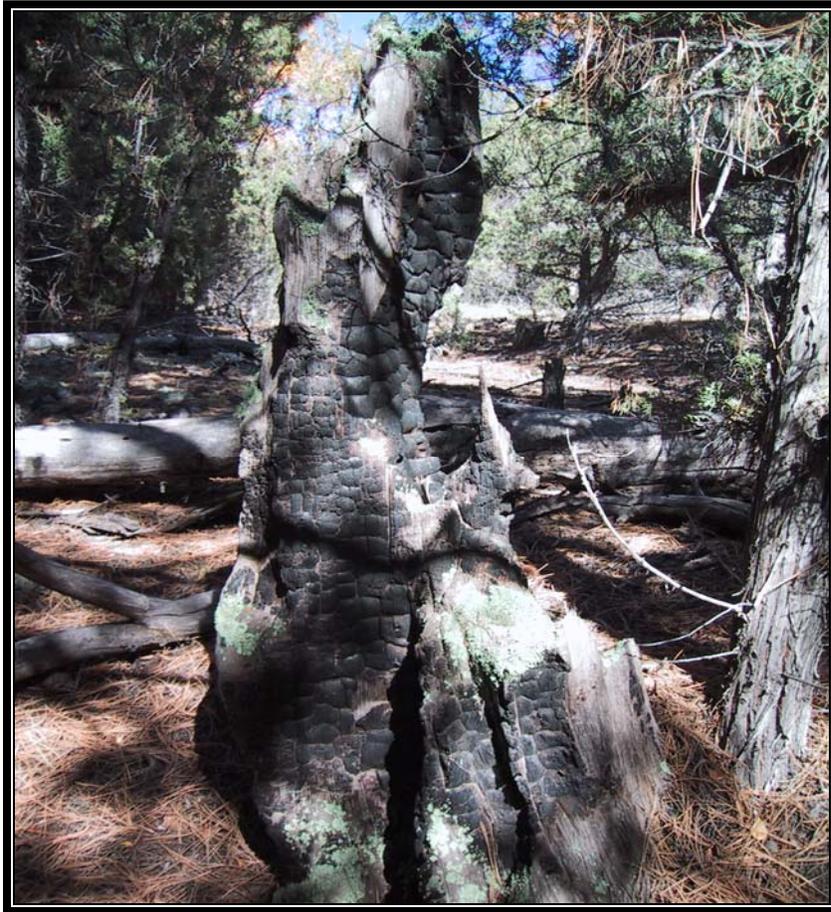
- In 2004 through a federal Assistance to Firefighters grant we were able to produce and a Fire Safety information brochure outlining fire danger, local outdoor burn site inspection process, fire safe building practices, creating defensible space and evacuation information. This was mailed to every household in the area. We worked with the nearby town of Crestone to include specific evacuation information for residents there also. The brochure is also distributed at all realty offices and in local restaurants.
- For several years the Baca Fire Department has published a fire safety column in the local monthly newspaper. (“The Smoke Column”).
- For a number of years we have held annual “Community Wildfire Training Day” at the fire department. We cover mitigation, fire extinguishers, response times, protective clothing and basic fire suppression.
- Continue the outdoor burn site inspection process. Annual site inspections (an excuse for a fire safety discussion) are required in the Baca Grande subdivision for anyone wanting to have an outdoor fire. Residents are required to call each fire in to dispatch to prevent false alarms.
- 2006 Develop grant funding to hire a part-time community educator to:
  1. Re-ignite our Firewise program
  2. Offer public discussion venues on restoring healthy forests and “how much mitigation is enough?”
  3. Offer home inspections and advice on defensible space

**Annual Effectiveness Checklist:**

1. Are we mitigating annually to keep designated fuel breaks, roadway creek crossings and evacuation routes clear of debris and fuel hazards?
2. Are our neighbors mitigating annually to keep designated fuel breaks, roadway creek crossings and evacuation routes clear of debris and fuel hazards?
3. Have wildfire impacts changed this year for our watersheds, open spaces and wildlife habitat?
4. Are there any new structural mitigation priorities?
5. Are we continuing public fire safety education efforts: Smoke Column, Outdoor Burn Site inspection process for Baca Grande residents, Fire Safety brochure distribution?
6. Are we offering community fire education meetings with discussions on healthy forests and defensible space?
7. Did we update our emergency maps this year?
8. Can we make any improvements to water delivery systems?

# BACA GRANDE

## WILDFIRE ASSESSMENT & MITIGATION PLAN



**Forest Stewardship Concepts, Ltd**  
**Phone: 719-852-2690**  
**December 18, 2002**

## Table of Contents

<b>Introduction:</b>	<b>3</b>	
<b>Assessment:</b>	<b>4</b>	
<b>Expected Fire Behavior</b>	<b>4</b>	
<b>Fuel Models</b>	<b>5</b>	
<b>Existing Control Features</b>	<b>7</b>	
<b>Potential Water Sources</b>	<b>7</b>	
<b>Fuelbreaks</b>	<b>8</b>	
<b>Road Signs</b>	<b>8</b>	
<b>Fires Role In Vegetative Dynamics</b>	<b>9</b>	
<b>Fire Effects</b>	<b>9</b>	
<b>Mitigation Plan:</b>	<b>13</b>	
<b>Individual Property Owners Responsibilities</b>		<b>13</b>
<b>Water Sources</b>		<b>13</b>
<b>Road Signs</b>	<b>13</b>	
<b>Evacuation</b>	<b>14</b>	
<b>Fuelbreaks</b>	<b>14</b>	
<b>Green Belt Management</b>	<b>16</b>	
<b>Prescribed Burning</b>	<b>16</b>	
<b>Appendix:</b>		
<b>A - Map</b>		
<b>B - Baca Grande Tree Ages &amp; Fire Scars</b>		
<b>C - Shaded Fuelbreak Design</b>		
<b>D - Dry Hydrant Specifications</b>		
<b>E - Selected Plants Fire Effects Information</b>		

Introduction:

**Wildland fire has been a part of the Baca Grande environment for eons. It has shaped the terrain and vegetation in profound ways. Given the arid, windy weather and ever denser vegetation it is reasonable to expect wildfire to be a major perturbation in the future.**

**The Baca Grande Volunteer Fire Department (BGVFD) has recognized the potential for large destructive wildfires in their jurisdiction and has the most aggressive fire mitigation program in the San Luis Valley. Individual structures have been rated for their fire survivability and defendability. This assistance to homeowners in determining defensible space and wildfire mitigation needs has encouraged a gradual reduction of fire hazards on individual properties.**

**Overall community vulnerability to the vagaries of wildfire is high. Strategic thinking and preparation has caused the BGVFD to initiate fuelbreak thinning and dead woody fuel cleanup in several areas. This Wildland Fire Assessment and Mitigation Plan will document the BGVFDs plans to take the next steps in overall community fire safety.**

**It will guide actions to develop enhanced fire suppression capabilities and infrastructure. It provides detailed maps that facilitate communications with Baca Grande residents and other fire departments responding to requests for mutual aid. It documents standards for fuelbreak construction and dry hydrant installation. It also discusses vegetative dynamics in the Baca Grande with the hope that an in-depth understanding of same will improve the Property Owners Associations ability to articulate a clear vision of the desired future vegetative conditions.**

## ASSESSMENT

Expected Fire Behavior:

**Fire behavior predictions are based on the type of ground fuels on site, expected weather conditions, and slope. Table 1: Baca Grande Expected Fire Behavior describes some important fire behavior characteristics that can be expected in the subdivision. Critical ingredients influencing fire behavior include relative humidity, fine fuel moisture content, wind speed, slope, and fuel model.**

Table 1: BACA GRANDE EXPECTED FIRE BEHAVIOR

Fire Behavior indicator	Fuel Model - 1	FM 2	FM 8	FM 9	FM 10
RATE OF SPREAD (MILES/HR.)	3	1	.05	.24	.2
FIRELINE INTENSITY (BTU/FT/SECOND)	402	706	13	127	7
AVERAGE FLAME LENGTH (FT)	7	9	1.5	4	7
SPOTTING DISTANCE (MILES)	.1	.1	.2	.2	.2
AREA (ACRES) AFTER ONE HOUR	1620	181	.4	10	7
PERIMETER (MILES)	6.9	2.3	.11	.54	.47
HAZARD CLASS	LOW	SEVERE	LOW	MOD.	MOD.

**Some explanation will help interpret this table:**

***Fuel Models* are the foundation for fire behavior calculations. They describe a variety of fuel bed loading in tons per acre by size class. Fire behavior prediction is both an art and science and is based on straight forward calculations and plenty of good judgment influenced by years of fire behavior observations. See the next page for photos of the various fuel models found in the Baca Grande development.**

**Fuel model 1 is grass less than one foot tall.**

**Fuel Model 2 is trees with a grass understory.**

**Fuel Model 8 is short-needled conifers with compact litter layer.**

**Fuel Model 9 is longleaf pine needles and hardwood litter.**

**Fuel Model 10 is forested with moderate – high fuel loading.**

***Rate of Spread* is the forward speed the fire will travel with sustained winds and a uniform fuel bed. It is normally expressed in chains (66 feet) per hour. It is converted to miles/hour to enhance understanding.**

***Fireline Intensity* is an expression of the energy released by the flaming front. It is measured by the number of British thermal units (BTUs) per foot per second. It provides an indicator of how difficult the fire will be to control.**

***Average flame length*** is an observable indicator of fireline intensity. When flame lengths exceed three feet it is difficult to work in close proximity to the fire. When flame lengths exceed eight feet the only feasible suppression methods involve heavy equipment and or good wide control features such as double lane roads, rivers or significant changes in the fuel type.

***Spotting Distance*** describes how far, in miles, ahead of the fire burning embers are likely to fall and ignite additional fires.

***Area*** is simply an estimate of the fires size in acres after one hour.

***Perimeter*** is the outside dimension of the fire. To control a fire we must be able to build fireline faster than it grows. Alternatively we may use roads, trails and natural barriers as control features when they are available.

***Hazard Class*** is an adjective rating taken from CSFS Fire Behavior, Vegetation Characterizing Fire Hazard Classes form. It is shown in Appendix 10, page 40 of the BGVFD Wildfire Response Plan.

As the title implies it is based upon expected fire behavior and vegetation.

## FUEL MODELS

Two of the five fuel models found within the Baca Grande development have the potential to have fires in them that are well over 100 acres in the first hour. These predictions are conservative and do not include high wind events prevalent during spring afternoons.

Flame lengths over three feet preclude direct attack by hand crews. Four of the fuel models exceed the three foot criteria. Control efforts on those fires will require backing away from the flaming front and taking advantage of pre-existing barriers or line constructed by the firefighters.

Spotting of ¼ mile require firefighters to be especially vigilant to the possibility that the fire has jumped their planned control feature and is burning behind their backs.

A fire starting at the intersection of Camino Del Rey and Camino Real during average worst conditions is expected to be to Easy Way in less than twenty minutes and be at Spanish Creek within an hour. Spotting will accelerate the rate of spread in the denser Pinyon forest. The fire would reach Willow Creek within two hours of ignition.

Can evacuations be organized and executed in that time frame? Are residents ready to move that fast? This scenario is entirely plausible during a moderately windy day.

Existing Control Features:

Control features are areas devoid of burnable vegetation. They include; roads, trails, creeks, rockslides, and cliffs. Control features effectiveness depends upon their location, width, cleanliness and accessibility. Control features that are perpendicular to the wind provide good chance of stopping fires forward spread. Any fireline can be breached by aerial spotting.

The Baca Grande has over one hundred miles of road that are the first line of defense once a fire has built up a head of steam. The effectiveness of a road as a fireline can be compromised if there is a lot of flammable material immediately adjacent to the road. Rabbit brush is prevalent along the roadways in the Grants. Roads located on a slope are also not as effective as roads on level ground. Using mid slope roads for control of aggressive fires is often a losing proposition.

Potential Water Sources:

There are numerous fire hydrants on the Baca Grande that are being maintained at a higher level than in the past. If the electrical supply is disturbed during a large wildfire, the electrical supply under the most critical burning conditions, the Baca Grande. Dry hydrants provide a preplanned location to draw water out of streams, ponds or lakes. They are relatively simple to install and are inexpensive.

Photo 6: Vegetation overlapping the upper road limits its effectiveness as a fire control feature.

Road crossings on Willow, Spanish and Cottonwood Creeks are good places for dry hydrants. These three creeks have enough flow, even in drought years, to supply a large fire fighting effort.

Fuelbreaks:

Fuelbreaks provide firefighters a safer place to make a stand during high burning conditions. They are characterized by lower tree densities and less ground fuels. Tree crown cover of less than 20% is ideal. This orientation allows them to be most effective for fire equipment along fuelbreaks is handy but not ideal in the pinyon forests on the Baca Grande. There are also a couple roads that can be improved to enhance their function as fuelbreaks.

BGVFD has been doing some thinning along Willow Creek to eventually make it a fuelbreak. This and other greenbelts have been considered the best chance to develop fuelbreaks without impacting numerous landowners. There is some controversy about the role of, and desired future conditions in the greenbelts. A review of aerial photography of the Baca Grande during field reconnaissance identified several locations that may serve as fuelbreaks without much further intervention. Canopy coverage in these areas appears to be light enough to bring fire down to the ground.

These existing breaks in fuel continuity are not all located along greenbelts. A few go across private parcels. Agreements will be needed to assure that they are maintained in an open forest status in the future.

Road Signs:

With 100 miles of road and a myriad of intersections it is often difficult to determine your location in the Baca Grande. Road signs are sporadically available. While local first responders may know here the “Old Smith Place” is it is certain that mutual aid forces coming in from another community will struggle to find a direct route to an incident.

Fires Role in Vegetative Dynamics:

Fire Ecologist, Kathryn Alington, studied the fire history of fourteen drainages in the Sagre de Cristo Mountains for her doctoral dissertation. She found that the upper drainages experience a stand replacing fire on an average of every 184 years. About twenty percent of the drainage burns during one of these episodes. In 1751 Rito Alto Creek burned in a stand replacing fire. 1850 saw fires throughout the entire mountain range. A fire in 1882 threatened Crestone for two weeks. It stopped at south Crestone Creek.

Fire scars gathered during this assessment show fires more frequent fire activity in the foothills of the Baca Grande development. The two Rocky Mtn. junipers sampled show a fire frequency of about thirty-eight years. While two good samples do not a study make. It does provide anecdotal evidence of fires past influence on vegetation. See Appendix B: Tree Ages & Fire Scars for more detailed information.

Prior to European settlement, naturally occurring wildfires played a significant role in shaping the vegetation on the Baca Grande. Fire maintained a rich vegetative mosaic well suited to the arid conditions. As domestic livestock use increased in the 1800s wildfires had less fuel to burn and covered ever-smaller areas.

Many early settlers understood the value of an occasional fire and ignited fires to enhance rangeland productivity. There was substantial controversy within scientific, academic, and agricultural communities over fires appropriate place in the west. A series of large wildfires across the continent in the early 1900s effectively swung the debate and fostered a policy of controlling all wildfires on public land. Wildfires came to be considered a hostile intrusion on the landscape with no redeeming value.

Still, those most familiar with the land argued that there was a place for fire in the natural scheme of things and that controlling all wildfires was ill advised. Time has proven them right. Attempts to exclude fire from the western landscape have had dramatic and unintended consequences.

Riparian areas have dwindled as evapo-transpiration from larger woody vegetation has increased and made the West more arid. Once abundant desirable forage is losing ground. Wildfires are now burning hotter and are more difficult to control. High intensity fires during the dry part of the year further erode the desirable plant base.

At long last there is a general acknowledgement that fire does play an important role in ecosystem dynamics and long term wildland vitality. Identifying fires place and capitalizing on its benefits depends upon vegetative management objectives for a given tract of land. Plants respond differently to fire. Some plants are sensitive to burning and cannot tolerate its presence. Others flourish and in fact depend upon fire to create their favored environment.

Fire Effects:

Most if not all of the plant species we wish to sponsor are dependent upon fire in one form or another. Plant responses vary with fire severity, season of burn, ecological condition at the time of the burn. Understanding how the vegetation on the Baca Grande respond to fire is a key consideration in how to sponsor desired future vegetations. Tables 2-4 summarize fire effects on important plants on the Baca Grande.

**Table 5: Fire Effects on Important Wildlife Species** is the rest of the story. Wildlife and vegetation are inextricably linked. One influences the other in a constant saga of cause and effect.

The Fire Effects Information System (FEIS) web site was used as the source of information for Tables 2-6. Appendix C contains the individual species write-ups gleaned from this database. The tables are necessarily cryptic. Some further explanation of the terms used will be helpful.

Fire Effects Terminology:

**Fire Tolerance** - A plants ability to coexist with fire in its environment.

**Favors** - Plants flourish and depend on fire as a part of their environment.

**Tolerant** - Plants are adapted to fire and do not diminish in its presence.

**Intolerant** - Plants are set back by fire and will diminish in its presence.

**Mildly Intolerant** - Plants can withstand fire under certain circumstances.

**Issues** - include notes on special considerations for using fire as a management tool for this species.

**Best Timing** is the most favorable time to burn to sponsor this plant.

In depth understanding of fire effects will allow us to manage vegetation to enhance the conditions favorable to the species we wish sponsor.

Plant responses vary with fire severity, season of burn, ecological condition at the time of the burn, and management activities before and after burning.

Table 2:  
Fire Effects on Important Grass Species on the Baca Grande

NAME	FIRE TOLERANCE	IMPORTANCE	ISSUES	BEST TIMING
Blue grama	<b>Tolerant</b>	<b>High</b>	<b>Soil Moisture</b>	<b>Spring/Fall</b>
Bluebunch Wheatgrass	<b>Favored</b>	<b>High</b>	<b>Soil Moisture</b>	<b>While Dormant</b>
Columbia needlegrass	<b>Mildly Intolerant</b>	<b>High</b>		<b>Fall/Spring</b>
Needle & Thread	<b>Mildly Intolerant</b>	<b>High</b>	<b>Avoid Summer</b>	<b>Fall</b>
Idaho fescue	<b>Mildly Intolerant</b>	<b>High</b>	<b>Soil Moisture</b>	<b>Spring/Fall</b>
Indian ricegrass	<b>Tolerant</b>	<b>High</b>		
Kentucky bluegrass	<b>Tolerant</b>	<b>High</b>		<b>Early Spring/Fall</b>

Squirreltail	<b>Tolerant</b>	<b>High</b>		
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Table 3:  
Fire Effects on Important Shrub Species

Name	Fire Tolerance	Importance	Issues
Birchleaf Mtn. Mahogany	<b>Favors</b>	<b>High</b>	<b>None</b>
Chokecherry	<b>Favors</b>	<b>High</b>	<b>None</b>
Rubber Rabbitbrush	<b>Favors</b>	<b>Medium</b>	<b>None</b>
Skunkbush	<b>Favors</b>	<b>Medium</b>	<b>None</b>
Snowberry	<b>Favors</b>	<b>Medium</b>	<b>None</b>
Utah Serviceberry	<b>Tolerant</b>	<b>High</b>	<b>Soil Moisture</b>
Wax Currant	<b>Mildly Intolerant</b>	<b>Medium</b>	<b>None</b>
Wild Rose	<b>Tolerant</b>	<b>Medium</b>	<b>Fire Intensity</b>

Table 4:  
Fire Effects on Important Tree Species

NAME	FIRE TOLERANCE	IMPORTANCE	ISSUES
<b>Aspen</b>	<b>Dependent</b>	<b>High</b>	<b>Herbivory after burn</b>
Douglas-fir	<b>Tolerant</b>	<b>High</b>	<b>Intolerant @ Small Size</b>
Pinyon Pine	<b>Intolerant</b>	<b>Moderate</b>	<b>High Intensity Fires</b>
Ponderosa Pine	<b>Tolerant</b>	<b>High</b>	<b>Fire Intensity</b>
Rocky Mtn Juniper	<b>Intolerant</b>	<b>Moderate</b>	<b>None</b>
Narrowleaf Cottonwood	<b>Intolerant</b>	<b>High</b>	<b>None</b>

Baca Grande Volunteer Fire Department  
and Kundalini Fire Management  
Community Wildfire Protection Plan  
July 2005

Table 5:  
Fire Effects on Important Wildlife

NAME	FIRE EFFECTS	WHY	BURN PATTERN	BURN SIZE
Antelope	<b>Beneficial</b>	<b>Improved Forage</b>	<b>Mosaic</b>	<b>&lt; 1,000 acres</b>
Black Bear	<b>Beneficial</b>	<b>Improved Forage</b>		N/A
Coyote	<b>Beneficial</b>	<b>Easier Hunting Larger Prey Base</b>	<b>Mosaic</b>	N/A
Elk	<b>Beneficial</b>			<b>9 acres</b>
Mule Deer	<b>Beneficial</b>	<b>Forage Diversity</b>	<b>Mosaic</b>	<b>.25 miles Wide</b>

**Appendix E: Fire Effects on Important Species Baca Grande Subdivision has in-depth discussions for all the species in Tables 2,3,4 &5.**

Baca Grande Volunteer Fire Department  
and Kundalini Fire Management  
Community Wildfire Protection Plan  
July 2005

MITIGATION PLAN

Individual Property Owners Responsibility: First Priority

**Individual structure fire survivability starts at its foundation and radiates out from the structure. Effective defensible space is the single most important factor in determining the outcome when a wildfire burns through inhabited areas. There is no replacement for individual homeowners redeeming their responsibilities to themselves and the community.**

**Mitigation actions described below will improve the BGVFDs ability to limit the size of wildfires threatening the development. This reduction in size potential will have a subsequent influence on numbers of structures endangered during any single wildfire event.**

Road Signing: Second Priority

**Road signs are a little recognized ingredient for rapid emergency response. Baca Grande has relatively small, low contrast, sporadically occurring signage. It is time to start an initiative to install signs at each intersection in the development. The POA should also consider replacing the existing signs with more readable, reflective signs throughout the Baca Grande.**

Water Sources: Third Priority

**Fire hydrants are abundant in the Baca Grande. They rely upon electrical pumps and gravity for their water supply. If electrical service is interrupted during a wildfire the water supply would be limited to the amount of water remaining in the large storage tanks.**

**Dry hydrants are a good, inexpensive, backup to the existing network of normal fire hydrants.**

**Three dry hydrant locations have been selected to compliment the current municipal hydrants.**

- 1. Willow Creek at Badger Road**
- 2. Spanish Creek and Camino Baca Grande**
- 3. Cottonwood Creek and Camino Baca Grande**

**See Appendix D: Dry Hydrant Specifications for design, and installation information**

**Photo 9: Dry hydrant site on Cottonwood Creek and Camino Baca Grande.**

Baca Grande Volunteer Fire Department  
and Kundalini Fire Management  
Community Wildfire Protection Plan  
July 2005

Evacuation: Fourth Priority

**Getting people out of the Baca Grande in the event of a wildfire will be problematic. As the development roads flow into Camino Baca Grande traffic will be substantial. Notifying people in this large development will also be a challenge. When winds are high and conditions dry, there is very little time to implement an evacuation. The POA needs to determine how they intend to assure the safety of Baca Grande residents. The BGVFD has an evacuation plan that will work under relatively mild fire conditions. Further discussion of this issue is warranted.**

**Saguache County Sheriffs Department will be responsible for actual execution of the plan but probably has not given much thought to how to do it.**

Fuelbreaks: Fifth Priority

**A system of fuelbreaks is planned that will take advantage of preexisting, less dense, forested areas. They are shown on the map in the appendix. Actions needed to make them fully functional fuelbreaks are described by segment below in Table 6.**

Table 6:  
Baca Grande Fuelbreak Development

SEGMENT	DESCRIPTION
A-B	<b>2.1 miles along Palomino Way needs to have each side of the road thinned, pruned and dead woody debris removed 100 feet on each side of the road. 51 Acres</b>
B-C	<b>1.4 miles along Camino Baca Grande needs to have each side of the road thinned, pruned and dead woody debris removed 100 feet on each side of the road. 34 Acres</b>
C-D	<b>1.8 miles along Camino Baca Grande &amp; the Old Railroad road needs to have each side of the road thinned, pruned and dead woody debris removed 100 feet on each side of the road. 43 Acres</b>
D-E	<b>2.0 miles follows an open ridge with a primitive road down it. It is within the Cottonwood Creek green belt most of the way. The trees are well spaced at this time. Maintain the open appearance on at least a 300 foot wide corridor into the future. 73 Acres</b>
F-CD	<b>.76 miles follows a narrow green belt. The trees are well spaced at this time. Maintain the open appearance on at least a 300 foot wide corridor into the future. 28 Acres</b>
G-BC	<b>0.8 miles on both private and green belt lands. The trees are well spaced at this time. Maintain the open appearance on at least a 300 foot wide corridor into the future. 29 Acres</b>
H-AB	<b>1 mile that follows Badger road across Willow Creek and then follows a grassy opening to Palomino Way. Finish thinning and debris cleanup along Badger road. 5 Acres of actual work. Remainder is grassland.</b>
I-AB	<b>1 mile that follows narrow greenbelts and crosses some private land. Some thinning and pruning will be needed along this alignment. Make this corridor 300 feet wide also. 36 Acres.</b>
J	<b>.15 miles of forested area that crosses Wagon Wheel Road. Thin and prune 100 feet each side. 4 Acres</b>

Baca Grande Volunteer Fire Department  
and Kundalini Fire Management  
Community Wildfire Protection Plan  
July 2005

**This plan calls for eleven miles of fuelbreaks. The types of treatments and estimated costs are shown in Table 8: Fuelbreak Treatments, Acreage and Estimated Costs. See Appendix D: Shaded Fuelbreak Design for more specifics on fuelbreaks.**

Table 8:  
Fuelbreak Treatments, Acreage and Estimated Costs

SEGMENT	ACRES	COST (\$)	TREATMENT	PRIORITY
A-B	51	15,300	Thin, prune & remove woody debris	1
B-C	34	17,000	Thin, prune & remove woody debris	2
C-D	43	21,500	Thin, prune & remove woody debris	8
D-E	73	14,600	Prune a few low limbs and remove slash	6
F-CD	28	5,600	Prune a few low limbs and remove slash	7
G-BC	29	2,900	Prune a few low limbs and remove slash	3
H-AB	5	1,500	Thin, prune & remove woody debris	4
I-AB	36	10,800	Thin, prune & remove woody debris	5
J	4	1,200	Thin, prune & remove woody debris	9
Total	303	\$90,400	-	

**Mowing the Rabbit brush along some of the roads in the grasslands will also enhance their utility as fire control features during drought periods.**

**Thinning is the removal of smaller diameter trees to reduce the amount of crown cover on the area. Pruning is the removal of the lower limbs on large trees to reduce the continuity of fuel leading into the crowns.**

Baca Grande Volunteer Fire Department  
and Kundalini Fire Management  
Community Wildfire Protection Plan  
July 2005

Green Belt Management:

**Management goals and objectives for the Baca Grande green belts are currently under discussion. The Volunteer Fire Department initially thought the green belts offered the least controversial areas to develop needed fuelbreaks for wildland fire protection purposes. As thinning evolved on the first of these fuelbreaks along Willow Creek, controversy has grown over whether it is an appropriate treatment of the green belts. Until the Property Owners Association (POA) reaches agreement on the management of the green belts it is inappropriate for the VFD to continue to consider them as potential future fuelbreaks.**

**Fortunately there are other options for fuelbreak activity. The maps show the location of relatively low density forested areas within the Baca Grande that can be used in the event of a serious wildland fire.**

**Unfortunately the debate about appropriate activities in the green belts seems to be taking place in a vacuum devoid of any consideration of vegetative dynamics and the considerable threat from the next inevitable wildfire. The riparian green belts have an abundance of dead and down woody fuel that will support a hot fire. The vegetative mixture in the riparian areas has migrated away from its natural state. Trees and brush are much denser than pre European conditions. Rocky Mountain juniper is more abundant while Narrowleaf cottonwood and Ponderosa pine are fading from the scene.**

**Fire has been excluded from the vegetative development equation for the last one hundred years. Without the periodic cleansing, from relatively low intensity fire, these riparian areas have become artificially overgrown. Fires will burn hotter and have more dramatic impacts. The POA should include fire in the green belt discussion. Without some thinning and fuel cleanup the green belts are extremely vulnerable.**

Prescribed Burning:

**This fire mitigation plan does not rely on prescribed burning. Pinyon pine, the predominant tree species on the Baca Grande, does not tolerate fire very well. There may be an opportunity to use prescribed fire for greenbelt management IF the desired future condition identified by the POA includes enhancing Ponderosa pine regeneration. At this point it is premature to focus on prescribed burning as a tool for managing the greenbelts.**

Baca Grande Volunteer Fire Department  
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Community Wildfire Protection Plan  
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Peter May, Chief  
Baca Grande Volunteer Fire Department

Date:

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Frederick Dunets, Chief Administrative Officer  
Kundalini Fire Management

Date:

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Maggie Mesenger, General Manager  
Baca Grande Property Owner's Association

Date:

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Mike Norris, Sheriff  
Saguache County Sheriff's Office

Date:

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Jeff Burns, District Forester  
Colorado State Forest Service

Date: