

BLACKHAWK RANCH

Community Wildfire Protection Plan



Prepared by Forest Stewardship Concepts, Ltd. at the request of the Blackhawk Ranch Property Owners Association.

Signatory Page

The following people have reviewed and approved the Blackhawk Ranch Community Wildfire Plan. It is now ready for implementation.

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La Veta District, Colorado State Forest Service

Date

Jennifer Halstead, President, Board of Directors,
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Date

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- D** – Fire Triage Excel Spreadsheet
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- K** – Sample Specifications for Turnarounds

- *Appendices A, B, C, are Large size Maps and are available for download on the Forest Health Wildfire Mitigation Website at www.BHRforest.org. (these are large files at 4.8, 4.8, and 20.5 Mb respectively)
- † References like the maps are also available for download on the Forest Health Wildfire Mitigation Website at www.BHRforest.org.

This is being done to cut-down on copying and mailing costs.
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Tom.

I. COMMUNITY IDENTIFICATION & DESCRIPTION

The Blackhawk Ranch (BHR) community area is in Huerfano and Las Animas Counties, south of Walsenburg Colorado. It covers approximately 6,725 acres and ranges in elevation from 6,500 to 7,300 feet. Interstate Highway 25 provides primary access to the ranch. See the attached vicinity map for a comprehensive understanding of the ranch location.

BHR contains one hundred eighty five (185), 35 acre parcels, forty four (44) of which have structures on them. Approximately 3 or 4 new homes are being built each year. Thirty four (34) miles of reasonably good dirt and gravel roads provide year round access.

There is a very active property owner's association guiding many of the activities on the Ranch. Defensible space activities are evident. Evacuation planning has not been done.

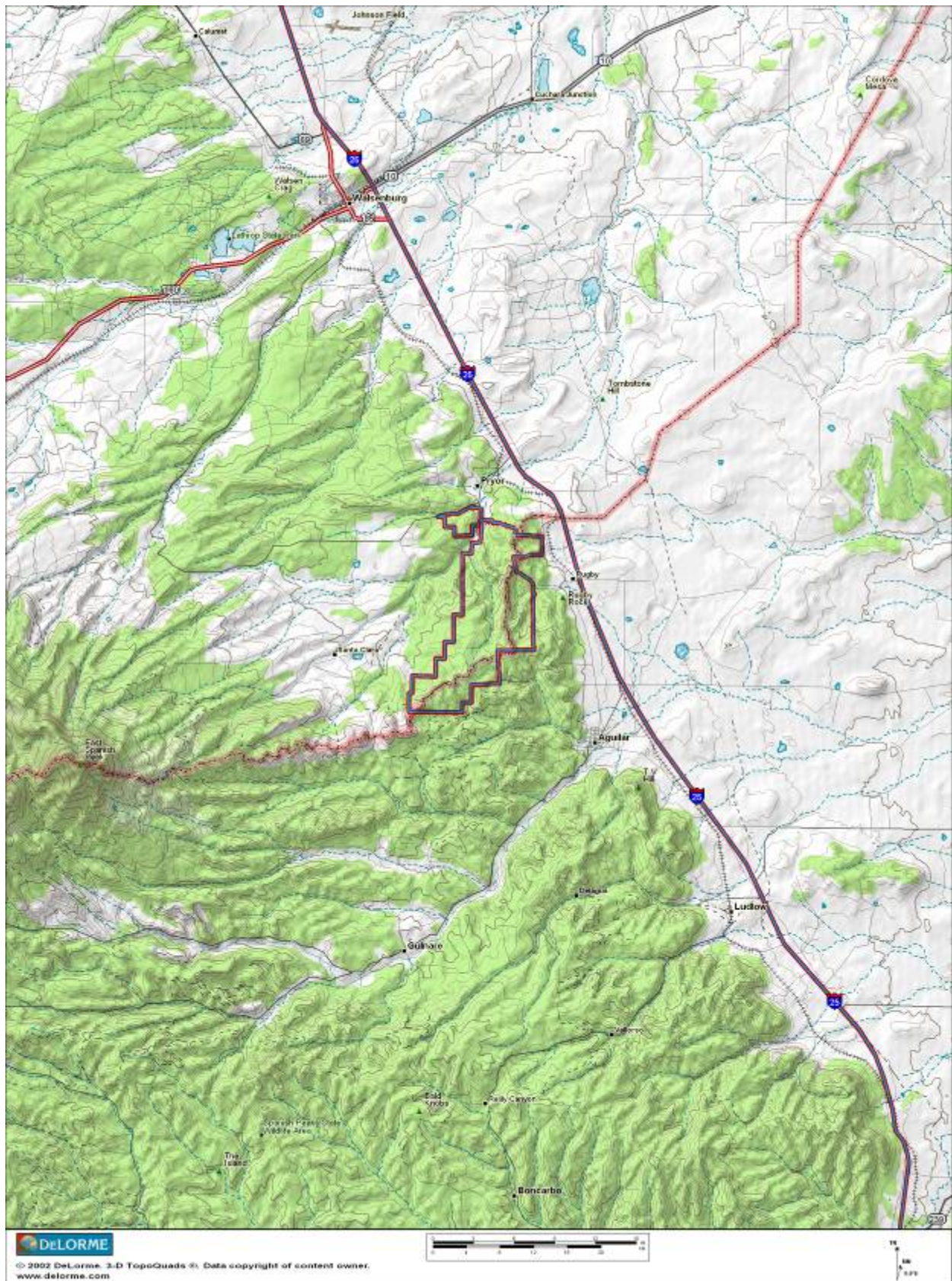
Previous fires in the area have created a vegetative tapestry of pinyon, juniper, and ponderosa pine in the overstory with a rich shrub understory composed of Gambel oak, New Mexican locust, mountain mahogany, skunk-bush and chokecherry. This vegetative blanket lays on a highly dissected series of ridges, draws and canyons. Slopes range from ten to fifty percent with an average approximating thirty percent.

Large wildfires are not unusual in the area. The Maricio Canyon Fire came perilously close to the ranch in 2006. It burned 4,500 acres. The Morley fire burned 300 acres on the Ranch in 1978 and was followed by Morley fires 2 & 3 in 1979 & 1980. The fire season of 2002 provided a serious wake up call to Colorado residents living in forested/wooded environs. The Crazy French (300 acres), Spring (33,000 acres) and James John (6,800 acres) fires were all in the Blackhawk Ranch vicinity. These fires increased Ranch residence awareness of the hazards of living in a wildland setting.

Initial attack for all wildland and structure fires on Blackhawk Ranch is provided by the Huerfano County Fire Protection District, Huerfano County Volunteer Fire Department.

A public meeting was held on June 27th, 2009 at the Huerfano County Community Center to discuss the scope and requirements of the CWPP with the POA membership. Approximately 85 properties were represented. Since that meeting, the BHR emergency management committee has met to review the draft Community Wildfire Protection Plan (CWPP). Additional Public meetings will be scheduled to incorporate changes suggested by the property owners, fire district representatives, Colorado State Forest Service (CSFS) personnel and Huerfano County Sheriffs Department.

Blackhawk Ranch Vicinity Map



II. COMMUNITY ASSESSMENT

The overall risk to the community from wildland fire is HIGH. This section will discuss the factors considered and contributing to the overall rating.

Fuel Hazards

Dense stands of conifer (ponderosa pine, pinyon pine, and juniper) and brush (Gambel oak, New Mexican locust, mountain mahogany, and chokecherry) cover the Ranch. Fuel ladders are abundant and will lift ground fire into the crowns of the overstory. There are only a few small meadows scattered throughout the Ranch.

All stands adjacent to structures with crown closures greater than forty percent are problematic. Continuous surface and crown fuel arrangement, both horizontal and vertical, render this area susceptible to torching, crown fire, and ignition by wind born embers, even under moderate weather conditions. The following Fire Hazard & Mitigation Map shows the severity of fire hazard for the Ranch with fully sixty eight percent (68%) rated as high fire hazard.

Local topography further aggravates fire behavior and control. Slopes range from ten to fifty percent with most hillsides ranging from twenty to thirty percent.

Fuel Models

Fuel models are a means of describing a wide variety of combustible conditions found in a wildland environment. Fuel size class, fuel loading in tons/acre, fuel bed depth, and fuel continuity across a landscape are all factors that are considered when assigning a fuel model to a specific tract of land. Since it is unrealistic to expect a few fuel model descriptions to represent the wide continuum of fuel beds found in the wild, fuel models are often combined by the percentage of an area they cover. Fire Behavior Fuel Models 101, 145, 8, & 9 (Scott & Burgan, 2005) provide the basic foundation for fire behavior calculations. Vegetative mixes of 145/8 and 145/9 are also found in various associations with one another. All but fuel model 8 have high rates of spread under relatively mild weather conditions. **Table 1: Fuel Models and Vegetative Types found on Blackhawk Ranch** concisely describes fuel models in the development.

Table 1: Fuel Models and Vegetative Types Found on Blackhawk Ranch

Fuel Model	Vegetation Type	Description	Acres	% of BHR
101	Grass	Short, sparse, dry climate grass	420	6
145	Gambles oak	High load, dry climate shrub 4-6 feet tall.	803	12
8	Piñon pine	Closed canopy stands with short-needle conifers or hardwoods that have leafed out support fire in the compact litter layer.	1,752	26
9	Ponderosa pine	Closed stands of long needled pine or hardwood stand with freshly fallen leaves	1,960	29
145/8	Oak & Piñon	A mix of oak and Piñon	1390	21
145/9	Oak & Ponderosa	A mix of oak & ponderosa	401	6

Here are a few representative photos of fuel models found on Blackhawk Ranch.



Fuel Model 101



Fuel Model 8



Fuel Model 9



Fuel Model 145



Fuel Model 145/9



Fuel Model 145/8

Table 2: Blackhawk Ranch Fire Behavior Prediction

Fuel model	Rate of Spread (miles/hr)	Flame length (feet)	1 hour fire size (acres)	1 hour Fire perimeter (miles)	Safety Zone Radius (feet)
101	0.26	2	16	0.6	35
145	1.1	17	238	2.5	94
8	0.05	2	0.4	0.11	23
9	0.21	4	9	0.5	66
145/8	0.79	13	132	1.88	76
145/9	0.84	14	152	2	82

Note: Shaded zones are well beyond hand crews and engine suppression threshold.

Fire behavior predictions are based on the average weather conditions for the month of June 2002 recorded at the Bosque (a.k.a. Cuchara) Remote Automated Weather Station (RAWS) #56203. This RAWS sits at 8,174 feet elevation and is reasonably close to BHR.

Spot fires will likely ignite up to a half mile from the flaming front. Crown fires are likely to spread at 0.84 miles per hour.

Chart 1: Flame Lengths on Blackhawk Ranch

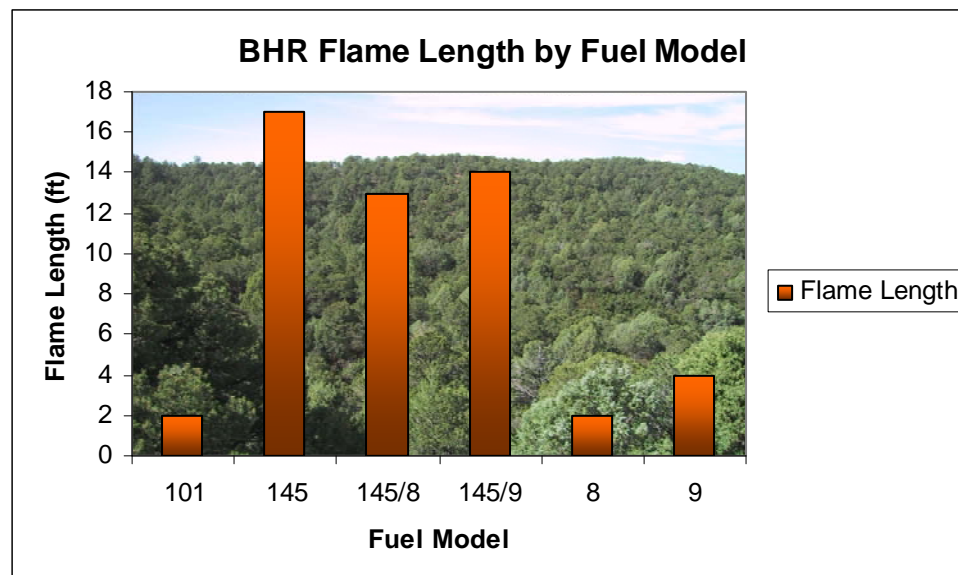


Table 3: Fire Hazard Based On Rate of Spread & Resistance to Control

Fuel Model	ROS	RTC	Hazard	% of Area
101	Moderate	Low	Moderate	6
145	High	High	High	12
8	Moderate	Moderate	Moderate	26
9	Moderate	High	High	29
145/8	High	High	High	21
145/9	High	High	High	6

NOTE: ROS = Rate of Spread & RTC = Resistance to Control

Risk of Ignition and Wildfire Occurrence

The robust vegetative mosaic found on the ranch is living testimony to fires role in ecosystem dynamics in the area. Most contemporary fires are lightning caused but human caused fires are expected to increase as more homes are built on the ranch.

The Mauricio Canyon fire of 2006 started from burn piles and covered 4,500 acres during a strong wind event in January. It burned five homes and provides BHR a serious reminder of the kind of wildfire possible year long in the vicinity.

2002 was a very active wildfire year. Three major blazes burned over forty thousand acres in the BHR vicinity.

The Morley fire of 1978, burned three hundred (300) acres on the Santa Fe Trail Ranch southeast of Trinidad.

Low fuel moistures and low relative humidity are common in the area, as are periods of high winds. When dry and windy conditions coincide the stage is set for large, troublesome wildfires.

Fires originating in or near the community are the most immediate concern, but fires starting well beyond the boundaries of the planning area can have profound effects upon the Ranch. Rapid rates of spread and long distance spotting (starting of new fire by wind blown embers) are the norms for fires in the vicinity. The Spring Fire of 2002 started in New Mexico and made an eleven mile run toward Colorado in just one afternoon. Table 2 provides insight into potential fire behavior on a bad day at Blackhawk Ranch.

Community Values at Risk & Hazard Assessment

Values:

Forty four (44) of the one hundred eighty five (185), or 24%, of the tracts on the Ranch have structures on them. The structures range from substantial permanent residences to tuff sheds, travel trailers and metal sheds. Approximately three to four (3 to 4) new homes are being built each year. Forty one percent (41%) of the structures are occupied year long.

Ranch owners place a high premium on their natural surroundings and the visual quality of the landscape. Vast expanses of heavily burned, charred forest are objectionable whether structures burn or not. If the view is seriously eroded much of the intrinsic value of the home will also be lost.

A large, intense fire will also compromise watershed values and cause sediment and turbidity issues along ephemeral streams. Most of the ponds on the ranch which are impounded by earthen dams would be filled with sediment, compromising wildlife and livestock watering opportunities.

Access:

Thirty four (34) miles of gravel and dirt roads provide reasonably good access to the Ranch. Without an accurate map or detailed instructions it could be very difficult for first responders to find a specific address even though virtually every intersection is signed. There are approximately thirty five (35) named roads within BHR. Many driveways do not have structures at their terminus.

Addresses are in serious disarray. There are several different numbering systems in use. With a confusing address system the stage is set for first responders to be slow in reaching any emergency on the Ranch.

Road grades often exceed 15 percent (15%) on the main arterials in the community. Driveways can be as much as eighteen percent (18%). Dead end roads do not have "No Outlet" signs at the junction with the main road. Turnarounds and cul-de-sacs at the end of the roads are inadequate for large structure fire equipment.

Risk:

Three kinds of risk are associated with wildland fire. The first concern is the risk to people trying to evacuate under less than optimal conditions. Second is the risk to firefighters attempting to protect property. Third is the risk to the property from wildfire. The concept of defensible space addresses both the second and third facets of risk under one umbrella.

Defensible space is an area around the structures where fuels and vegetation are treated, cleared or reduced to slow the spread of wildfire towards the structure and lower the intensity of the fire as it passes the developed area. It also reduces the chances of structure fire moving from a building to surrounding vegetation. Defensible space provides room for firefighters to do their jobs. A house is likely to withstand a wildfire if vegetation is managed to reduce a fire's intensity. Structure design and construction also influence its survivability when a wildfire passes through the neighborhood. Removing flammable materials such as fire wood, lumber and gasoline from the decks and base of structures will pay big dividends when the ember storm hits the home.

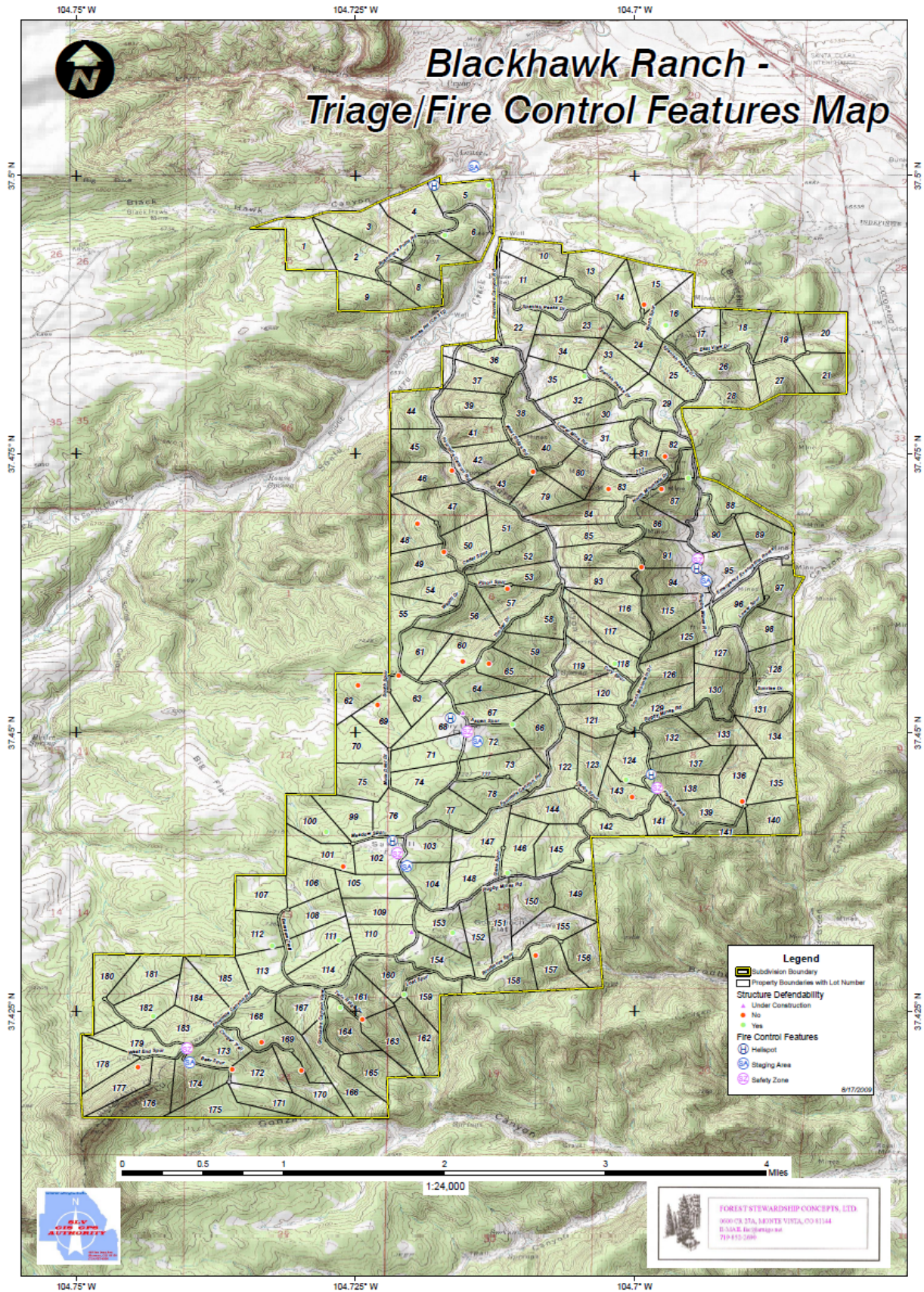
The concept of defensible space assumes that there will be sufficient wildfire personnel and equipment to actively protect each threatened structure. This assumption is accurate when only one or two structures are imperiled. When numerous structures are threatened there aren't enough firefighting resources available in Huerfano and Las Animas counties to protect them all.

Survivable space around a structure is the key to assuring that a home is still standing after a major wildfire. A structure is survivable **IF** it can withstand being overrun by a high intensity wildfire without any on site intervention by wildfire personnel. It requires close attention to structure design, construction, and its relationship to combustible natural and anthropogenic materials.

Triage:

Structure triage was conducted on each lot with buildings on it. Triage is a concise decision making process that is used if/when a wildfire threatens multiple structures simultaneously. See Appendix H: Structure Triage for a brief description of the triage process. The following observations are gleaned from the site visits.

- ✓ 17% of the structures were defensible. That leaves eighty three percent (83%) of the structures within the Ranch as non-defensible. This “*defendability*” rating is a summary of all the factors listed below.
 - 79% of the lots had adequate space to turn fire control apparatus around.
 - A safety zone was immediately available at 16% of the structures.
 - 81% of the driveways were in good enough condition to be considered escape routes for firefighting resources.
 - One of the most serious problems observed during triage was houses sitting on the edge of a steep slope with heavy fuels below the structure.



It is important to understand the role of triage in this community wildfire protection plan. It is a quick, inexpensive way to determine overall community wildfire risk and helps to identify areas to focus improvement efforts. Its utility during an actual wildfire depends upon the nature of the wildfire. When only one structure is threatened, firefighting resources are usually assigned to protect that single structure, unless it is a death trap and totally undefendable.

During a large wildfire scenario, when more structures are threatened than there are firefighting resources to protect them, this triage work will help the Incident Commander assign scarce resources to the places where they have the best chance for success.

Maps developed for this Community Wildfire Protection Plan identify structure location and defendability. The CWPP is an ever evolving document and will be revised on a regular basis to reflect new information about structure defendability and other important fire control features on the Ranch.

Evacuation:

Section 700 Emergency Management of the BHR Policies and Procedures Manual speaks to preparations needed to facilitate evacuations of the Ranch. It is relatively broad and lacks specifics on notifying Ranch occupants of the need to for evacuation.

There are several potential evacuation routes out of the Ranch. The main entrance road is the best alternative for threats from the south. A locked gate near the old Rugby mine site provides a second escape route, which leads out to County Road 53.7 between Exit 41 on I-25 and Aguilar, Colorado. Use of this exit has been negotiated with the Taylor Ranch as an emergency exit only.

A primitive road originating at the intersection of Brodmore Spur and Lost Spur provides an opportunity for residents in that area to exit the Ranch if a threat comes from the north. There is a locked gate on the Ranch boundary that will have to be opened. The condition of this route is unknown as of 8/8/09. It drops into Gonzales Canyon and out to County Road _____. Written permission to use this route in an emergency is needed.

See Section III for a few additional thoughts to facilitate timely evacuation in a wildfire setting.

Local Preparedness and Protection Capability

Huerfano County Fire Protection District (HCFPD), Huerfano County Volunteer Fire Department (FDID 05520 has a cadre of about 19 firefighters dispatched via Huerfano County Emergency Dispatch at (719)738-1044) or Huerfano Fire

Department (719)738-1877 or (911). Of the 19 firefighters, 8 are wildland qualified.

Equipment located at Huerfano County Fire Department Includes:

1 ea Type 1 interface/structure engine (full size pumper)
2 ea Type 6 brush engine (1 ton brush truck)
2 ea 2250 gallon tenders (2 ton chassis)
1 ea 1000 gallon heavy brush engine (6 X 6 military vehicle)
1 ea 700 gallon heavy brush engine (6 X 6 military vehicle)

LaVeta Fire Department (719)742-3656 is the first back up for Huerfano County Fire Department. The chief is Dave Detray (719)989-0295. Staged at this station are the following:

And Spanish Peaks – Boncarbo Fire Department (719)941-4107 or through Trinidad Dispatch (719)846-4441. The chief is Mike Zanolini (719)941-4345.

HCFD is at best 30 to 40 minutes from the BHR entrance and as much as 15 to 20 minutes to the scene depending on the location on the BHR and road conditions.

Additional reinforcements from HCFPD and additional equipment and manpower from nearby departments (, Stonewall, , Spanish Peaks and Trinidad) that have mutual aid agreements with HCFPD are at least an hour out with availability dependent upon workload at the time of the request."

Water Supply:

Very little water is available for wildfire suppression on the Blackhawk Ranch. Some residents currently have their own wells or haul water. Many have cisterns to supplement their water needs.

There are also several seasonal ponds on the Ranch that are adjacent to roads. These ponds are shallow, often dry, and can not be relied upon for wildfire suppression purposes.

Grazing:

BHR is a working ranch with a cattle grazing lease. The grazing cattle help to keep the grasses and other fine fuels from accumulating in the open areas of the Ranch. Without the cattle to keep these fine fuels under control a significant effort will be required to periodically keep the grasses and other fine fuels mowed throughout the growing season.

III. COMMUNITY MITIGATION PLAN

Survivable Space:

Effective survivable space is the landowners' most reliable means of providing wildfire protection for their structures. This is especially true on the Blackhawk Ranch. Complex terrain, heavy fuels, and landownership patterns on the Ranch make landscape level fuel modification very difficult. This plan suggests a few shaded fuelbreaks along strategic ridges and roads but ***the key to individual structure survival is Survivable Space and good "Fire Wise" practices.*** Visit www.firewise.org for a wide range of information on survivable space.

During periods of high to extreme fire danger a wildfire will rapidly exceed the suppression capability of the local fire suppression forces. **Table 2: Blackhawk Ranch Fire Behavior Prediction** displays the difficult position firefighters will face on a dry, windy day. Hand crews are effective when flame lengths are less than four (4) feet. On a bad day only thirty two percent (32%) of the Ranch is expected to have fire of this intensity. The remaining sixty eight percent (68%) of the area will experience flame lengths from four (4) to seventeen (17) feet. The size of a fire within the first hour is also expected to grow beyond local initial attack capability over seventy four percent (74%) of the ranch.

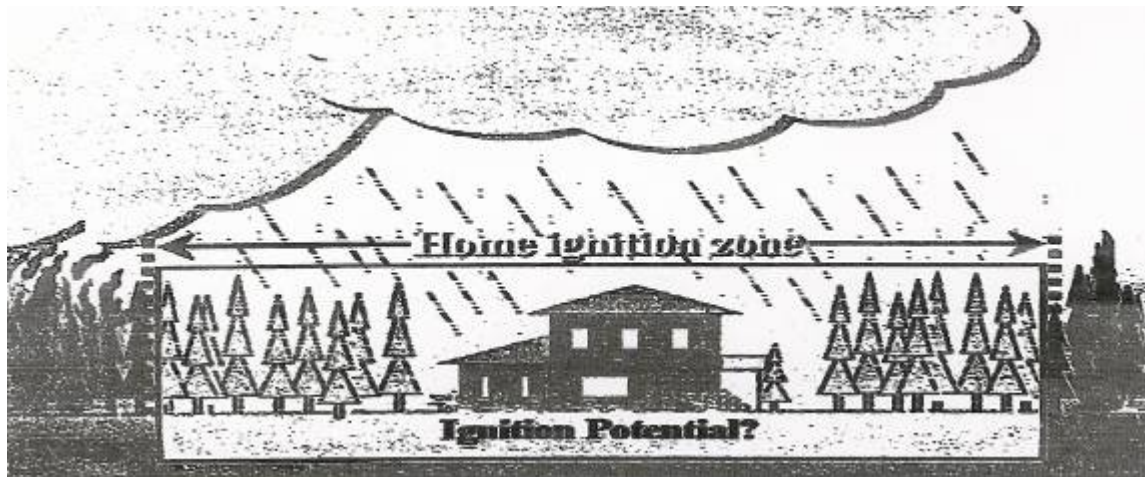
Homeowners should not expect much protection intervention if/when a large fire burns on or through the Ranch. The harsh realities of triage and coordinating attack with mutual aid forces will consume local fire forces for several hours.

Fire Wise rated survivable space is the key to structures surviving on their own. Do it now and keep it maintained.

In many cases, sizeable effort has been spent developing defensible space around quality homes perched on the edge of a steep slope with heavy vegetation below the structure. Unfortunately the trajectory of the flames will intersect the structure, exposing it to direct contact with flames. During site visits for triage, several landowners acknowledged the paradox they have created with the location of their home.

The POA will encourage people to set new homes back from the edge of steep, brushy slopes using the guidelines provided in "Creating Wildfire Defensible Space Zones, Circular #6.302 (Dennis, 2003)

Home Ignition Zone



A home with its immediate surroundings (about 100-150 feet from the structure) is the home ignition zone.

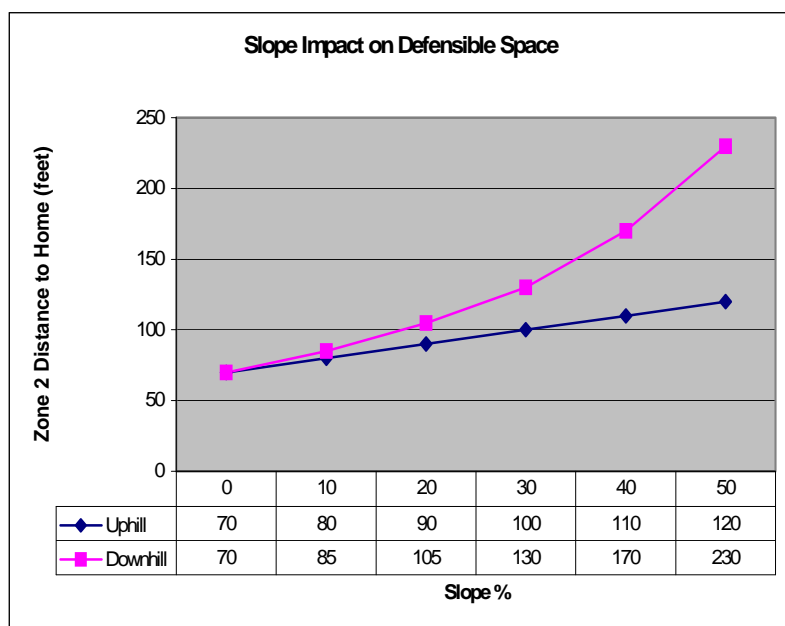
Recent research into the cause for loss of homes during wildfires indicates that home ignitability, rather than wildland fuels, is the principal cause of home losses during wildland/urban interface fires. Key items are flammable roofing materials (e.g. cedar shingles) and the presence of burnable vegetation (e.g. ornamental trees, shrubs, wood piles, and pine needle accumulation) immediately adjacent to homes (Cohen, 1999).

The home ignition zone includes a home and its immediate surroundings within 100 to 150 feet of the structure. Fuel conditions within this zone, to a large degree, will determine whether a home will survive a wildfire. High intensity fire behavior beyond the home ignition zone does not transfer enough energy directly from its flames to ignite a wooden structure. The fuels surrounding a home within the home ignition zone principally determine the potential for directly igniting the home. Firebrands lofted from extreme wildfires must directly ignite on a structure to be an effective ignition source. If firebrand ignitions occur in the fuels surrounding a home, then those fuels determine the home's ignition potential. Thus, regardless from how far firebrands travel a home's exterior materials and design principally and fuels in the home ignition zone determine its ignition potential from firebrands.

The primary and ultimate responsibility for home wildfire protection lies with private homeowners, not public land management agencies (or taxpayers). It is critical that special attention be given to removing fuels in the home ignition zone as well as preparing a defensible space around structures to improve their chances of surviving a wildfire. This includes insuring that there are no combustible materials like concentrations of pine needles, dry grass, hay or

straw, firewood, deck furniture, open windows, open vents, household trash, flammable materials such as gasoline, diesel or paint thinners, paper boxes, and fabrics near the structure or in the home ignition zone for fire brands to land on. In the past few years research has found that a significant number of homes destroyed in wildfires burned as the result of the presence of combustible materials within the home improvement zone. Some homes burned as long as 8 hours after the fire front passed.

Chart 3: Slope Impact on Defensible Space



This chart indicates how far thinning needs to be done above and below a structure based on the slope it is on or adjacent to. It is also a good source to determine how far back from a slope to set a new structure

State Tax Incentives for Wildfire Hazard Mitigation:

House Bill 1110 created a five (5) year program from 2009 to 2014 that allows landowners to deduct the actual costs of their wildfire mitigation, up to \$2,500 from their state income tax. The program allows each landowner to get credit for fifty percent (50%) of the cost of wildfire mitigation up to a total of \$2,500. To get the full credit the total mitigation costs must be \$5,000 or greater. The work

must be done in accord with an existing Community Wildfire Protection Plan to qualify.

Colorado State Forest Service will be administering the program and verifying the actual work completed. This is a good incentive for individual landowners to improve survivable space around their structures. They can get their personal labor recognized at decent hourly rates.

Education and Information:

The BHR Emergency Management Committee was formed in January of 2006 in response to the Muaricio Canyon Fire. The Mission of the Committee is to actively promote mitigation of fire hazards and advance ecologically sound forest management practices by heightening awareness, fostering education, and mobilizing property owners to support goals and objectives which will promote a safer and healthier forest environment.

The committee has provided the following educational events since committee formation:

Firewise Presentation and Healthy Forest discussion at Annual Meeting of POA membership (July 8, 2006)

Fire Mitigation Discussion and circulation of Firewise Videos. Call for volunteer road cleanup to reduce fire hazards. (August 4, 2007)

Fire Mitigation Discussion lead by Ken Helm for POA members at Annual Meeting (June 28, 2008)

Detailed Discussion of 911 addressing plan and development of CWPP. Presentation of CWPP concepts by Jim Webb of FSC and Dave Skogberg of Forest Health Concepts. (June 27, 2009)

Further Education Events of this type are planned to increase property owner awareness of FireWise Practices.

Fuel Hazard Reduction:

Individual owners have done varying degrees of wildfire mitigation work around their structures and along their driveways. Much more work is needed to mitigate wildfire hazards within the Blackhawk Ranch.



This photo shows thinning along a driveway. Thinning along roads and driveways has several benefits. It provides for safer egress during evacuation. It provides a more effective place for firefighters to make a stand. It allows sun to hit the road so snow melts faster and road dries faster.

Many roads on BHR run along ridges and provide marginal opportunities to make a stand against an aggressive fast moving fire. Their utility as fire control features can be improved substantially by thinning both sides of the road. Road rights of ways (ROW) extend thirty (30) feet each side of the center line. A sixty (60) foot wide break is a start towards an adequate change in fuel continuity but is not sufficient to provide the kind of safety needed in the heavy fuels found on the Ranch. Thinning to get a three hundred (300) foot wide break will require negotiations with many landowners. It is critical that the fuelbreaks be continuous. Without wide spread individual landowner cooperation, creating effective fuelbreaks is not feasible.

Large piles of road construction slash compromise the efficacy of roadways as fire control features. These piles should be disposed of soon. The most practical way to treat them is to burn them in place. This can best be accomplished in the winter with significant snow on the ground.



Table 4: Blackhawk Ranch Potential Shaded Fuelbreaks and the Recommended Fuel Treatment Map

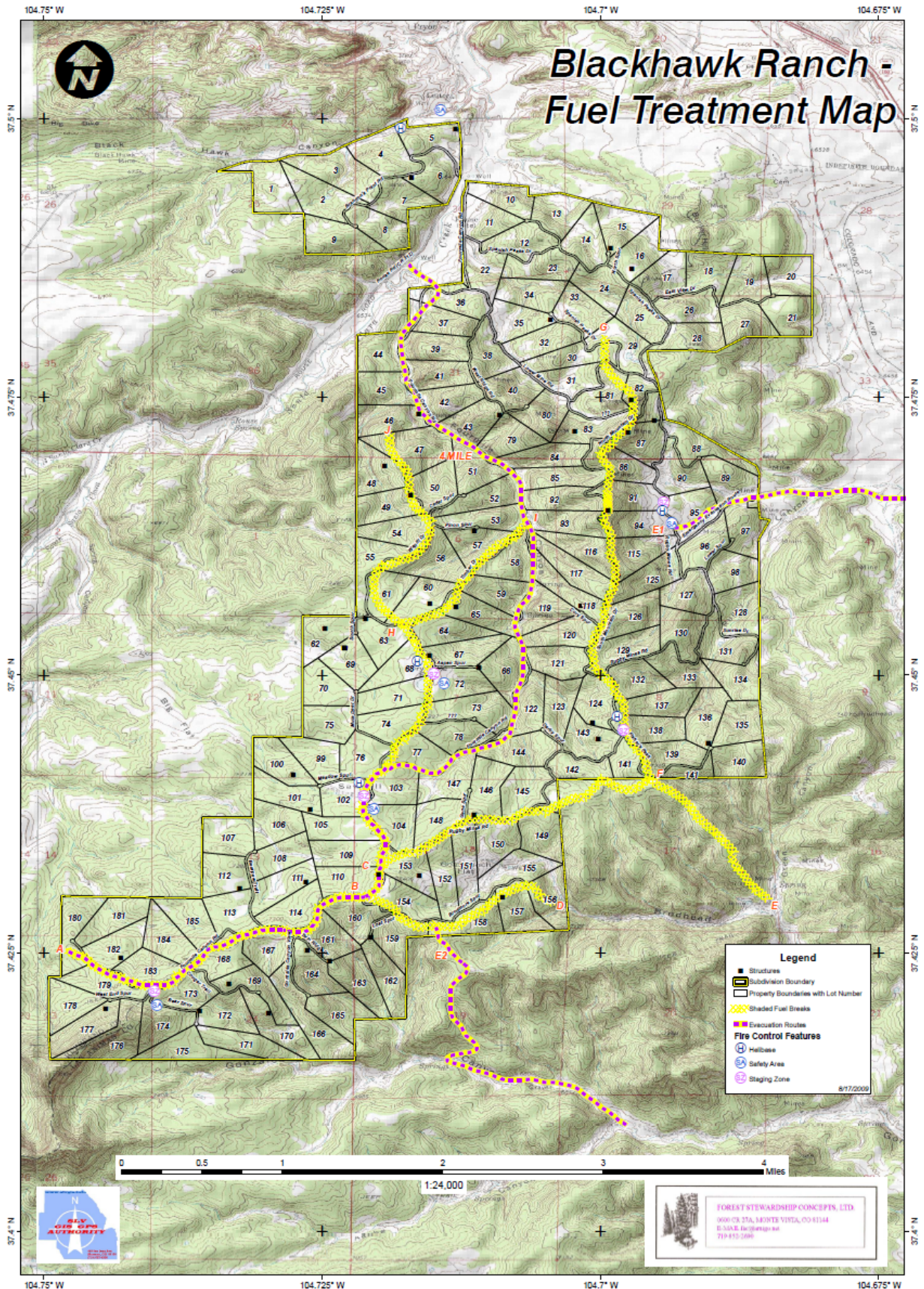
provides the detail for the recommended fuel treatments.

Table 4: Blackhawk Ranch Potential Shaded Fuelbreaks

Fuelbreak Name	Length (miles)	Acres	Estimated cost (\$)	Priority
West End Spur – Fourmile Canyon- Brodmore Spur. Segments A-B-D	3	120	\$72,000	1
Fourmile – Rugby Mines. Segments B-C-F	1.8	72	43,200	2

Wapiti Segments C-H-J	3.1	125	75,000	3
South Mtn – North Mtn. Segments F-G	3.2	128	76,800	4
Fourmile Evacuation Route. 50ft each side of road	4	48	28,800	5
E-1 Evacuation Route. 50ft each side of road	1.6	19.2	11,520	6
E-2 Evacuation Route. 50ft each side of road	2.15	25.8	15,400	7
Timber Drive. Segments H-I	0.92	36.8	22,080	8
Total	19.77	574.8	\$344,800.00	-

This is an extremely ambitious shaded fuelbreak program and will be complex to negotiate across the multitude of ownerships involved. With the exception of the Fourmile Canyon Road, it improves fire control opportunities along strategic ridges and begins to break up the hazardous fuel continuity on the Ranch. Fourmile Canyon Road is located in a draw formed by Fourmile Creek. Valley



bottoms are not as effective as ridges for large wildfire control. It is, however, the main evacuation route for the Ranch.

An alternative would be to work within the sixty (60) foot total right of way along the roads. The roads listed above could be thinned within the ROW for approximately \$28,700. This will provide a good place for fire personnel to burn out or backfire as needed, but this approach does not afford much protection during more volatile fire conditions.



This is a good example of how a shaded fuelbreak should look. A crown fire will come to ground in this type of area. Shaded fuelbreaks are by definition zones with trees present and can be pleasing to the eye. They are not clear cut demilitarized sacrifice zones.

Fuelbreak Maintenance:

Gambles oak and New Mexican locust are abundant understory species on the Ranch. They also sprout vigorously after they are cut. Keeping them under control following thinning will be a task. Two methods are effective to keep them in check. Mowing is effective but has to be done on an annual basis. Herbicide treatment is also effective but may be objectionable to some landowners. See **Appendix E: Defensible Space Maintenance & Gambel Oak** for a further discussion on herbicide control of Gambel oak.

It will be wise to have a maintenance strategy in mind prior to fuelbreak construction.

Treatment Costs:

Treatment costs for defensible space and shaded fuelbreak work are highly variable depending on the amount of thinning and slash disposal to be done and the relative care involved in doing the work. Hand crews working next to structures and chipping the slash will cost from \$1,000 to \$2,000 per acre. Mechanical thinning with a hydro-ax type machine will normally cost from \$400 to \$700 per acre depending on tree density, slope and rockiness.

Wildfire Suppression Infrastructure:

Turnarounds:

Space is lacking, to turn around fire equipment, at the end of most dead end roads. In fact in most cases the terminus is even tight for a full sized pickup truck. Accommodations for turning vehicles around near the end of the road are critical for fire suppression purposes. In some cases there is little room to construct turnarounds at the end of the roads so locating a turnaround as near the end as possible is the only option. See **Appendix K – Sample Specifications for Turnarounds** for ideas on which design may fit the topography and purpose on an individual basis.

There are 26 cul de sacs on the Ranch. At least 23 need to be improved to 90 foot radius or a pistol turnaround. It will cost approximately \$10,000 / cul-de-sac or \$230,000 to bring them up to an acceptable standard.

“No Outlet” signs are also important during wildfire operations all twenty six need to be signed at a cost of \$150.00 each for a total of \$3,900.

Fire Control Features/Triage Maps:

The maps developed for this Community Wildfire Protection Plan provide invaluable information for wildland fire fighting. Reinforcements and mutual aid folks will struggle with the road layout and fire suppression opportunities. Communications can be enhanced by providing high quality maps that show important features.

BHR POA Emergency Services Committee will provide a set of laminated maps and orthophotos to dispatchers, first responders, the Sheriff’s department and Colorado State Forest Service. They will also have a few reserved to distribute during the inevitable emergency.

Uniform Street Addresses:

Universal, visible, street addresses are absolutely imperative for first responder effectiveness. Huerfano & Las Animas County should work together to adopt a uniform address system for the ranch. The POA will facilitate implementation of a standardized approach to addressing driveways.

Improving Water Supply for Wildfire Purposes: Ephemeral ponds and sporadic cisterns are providing what meager water there is on BHR. Additional sources are needed to support initial and extended wildfire operations. Here are a few options to consider:

1. Require cisterns on every developed lot. They should be 1,500 to 2,000 gallon tanks that are easy to draft from.

2. Place large cisterns at each of the safety zones and fill them via a watershed type apron. Eighteen inches (18") of annual precipitation will fill a 20,000 gallon tank with a catchment apron 45' x45'.
3. Develop the windmill well found on lot 74 using a solar pump and install a large enclosed tank for storage. Once the tank is full any overflow can be used for livestock watering. The well head has a date of 1954 on it. Water rights need to be researched to make sure the well can be used for wildfire purposes.
4. Drill a couple high yield (1,000 gpm.) wells. Locating an aquifer capable of supplying this flow is problematic on BHR. Water rights will also have to be acquired for these wells.

Utilizing Pond Water for Wildfires:

Several ponds on the Ranch are adjacent to good roads. Getting fire equipment close enough to draft and fill the tanks may be problematic due to elevation and drafting capability of individual pieces of equipment. The most reliable method to fill tanks is with mechanical high volume or high pressure pumps. The most flexible system to transfer pond water to fire trucks is the "Floto-Pump". This light weight pump can be carried by one person and is simple to operate. You merely connect a hose to the pump, place it in the pond and start it. The pump floats on the pond and primes itself. The pump can also be placed in a large folding tank to provide high pressure water while an engine shuttles water from the closest source.

Evacuation Planning:

One factor to consider and perhaps address directly in the Evacuation Plan is the amount of time it will take to fully implement in comparison to the expected fire behavior described in **Table 2: Blackhawk Ranch Fire Behavior Prediction**. Fire spread rates of two to almost three miles per hour and spotting distances of close to a half a mile mean that evacuations should probably be implemented when any fire is moving toward the Ranch and is within six or seven miles of the boundary.

Just making sure everyone is notified will be a daunting task given the thirty four (34) miles of road and forty four (44) structures scattered throughout the 6,725 acre BHR. This situation can be further complicated with off-site property owners visiting their land.

With an increasing number of residents and changing distribution of population on the Ranch it may be prudent to re-evaluate the designation of the emergency areas keeping in mind the common evacuation routes for each area. Another factor to consider is the formalization of back-up plans when key individuals in the area calling trees are unavailable.

An evacuation simulation exercise would be an eye-opener for Ranch residents and should be scheduled for next spring. This test run will give everyone involved a better sense of the task at hand.



This photo shows the path for the evacuation route to Gonzales Canyon.

Evacuation Option:

There are several good safety zones on BHR. Perhaps having BHR occupants go to these areas will be a better solution than utilizing problematic evacuation routes that may be washed out or have some other serious issue. Designating these safety zones as the evacuation route alternative will provide the BHR POA positive control of the Ranches occupants.

Strategic Recommendations:

The Blackhawk Ranch Forest Health/Wildfire Mitigation Committee is composed entirely of volunteers who are dedicated but over committed and there is no full time focus in pre-planning, hazard detection, follow up, communications, coordination, and/or implementation of improvements. *The community does not have a mechanism for administering multiple demands, setting priorities, and insuring representation that benefits the community as a whole. If this is not true please change or delete text.*

In order to strengthen the ability for BHR to implement the Community Wildfire Protection Plan we shall seek funds to employ a coordinator or project manager to ensure implementation of the Plan, including the required overall leadership, management, and activity coordination. In addition the position would be responsible for such items as overseeing management of defensible spaces in the community and generation of grants for the implementation of the Community Wildfire Protection Plan with the Colorado State Forest Service.

Table 5: Implementation Items Priority & Cost

Mitigation Action	Priority	estimated Cost (\$s)
Implement Universal Street Addressing System	1	1,500
Defensible Space Around All Structures (\$5,000/lot)	2	
Laminated Triage Maps (20 sets)	3	1,080
Develop reliable water supply for wildfire operations	4	100,000
Install 26 “No Outlet” signs on dead end roads	5	3,900
Buy 1 Waterous Floto Pumps to access pond water	6	3,400
Negotiate and document rights to use evacuation routes	7	1,000
Develop an Evacuation Plan	8	1,000
Evacuation Simulation	9	1,000
Prioritize & Construct Turnarounds on Dead End Roads (~23)	10	230,000
West End Spur – Fourmile Canyon- Brodmore Spur Shaded fuelbreak. Segments A-B-D	11	72,000
Fourmile – Rugby Mines Shaded fuelbreak. Segments B-C-F	12	43,200
Wapiti Shaded Fuelbreak. Segments C-H-J	13	75,000
South Mtn – North Mtn Shaded fuelbreak. Segments F-G	14	76,800
Fourmile Evacuation Route Shaded fuelbreak. 50 feet each side of road	15	28,800
E-1 Evacuation Route Shaded fuelbreak. 50 feet each side of road	16	11,520
E-2 Evacuation Route Shaded fuelbreak. 50 feet each side of road	17	15,400
Timber Drive Shaded fuelbreak. Segments H-I	18	22,080
Fuel Break Maintenance	19	0
Total		\$686,180

IV. IMPLEMENTATION & MONITORING

Implementation:

Table 5: Implementation Items Priority & Cost lists all the mitigation actions/projects identified in this CWPP. There are also an estimated thirty six (36) homes that need to have their defensible space improved so that they are defensible.

Table 6: Action Plan for Completing the Blackhawk Ranch CWPP, identifies the responsibilities and tasks necessary to accomplish the job at hand. The priorities and responsibilities have been negotiated and agreed to by the POA and the various named individuals.

Monitoring:

Plans do not complete themselves. Monitoring progress is a crucial part of seeing any plan through to completion. Given the values at risk at BHR it will be important to take a pulse on accomplishments on an annual basis. We expect

more homes to become defensible and maps will have to be revised to reflect the work that has been accomplished. The POA will revisit the CWPP and associated accomplishments each fall and will get new maps printed as accomplishments warrant.

- Through the Colorado State Forest Service seek funds for the purpose of hiring and possibly cost- sharing a coordinator (implementation manager) who, among other things, would do the following:
 - Provide the leadership needed to implement this plan.
 - Establish a prevention attitude in the community for wildfire.

Strengthen public understanding, acceptance and participation in FPPFD operations and improvement projects.

Insure follow up to commitments by the community or within the community and on behalf of the FPPFD goals.

Facilitate the organization of an ongoing cooperative management team consisting of members from the BHR POA Board of Director, FPPFD Board of directors and Las animas County officials. This group will act as an advisory board to represent the community as a whole. This entity would do the following:

- Set priorities, develop and administer fund raising activities, interact with and coordinate with County, coordinate with State and Federal agencies on behalf of the community as a whole, and insure follow up on all operations and or activities.

Table 6: Action Plan for Completing the Blackhawk Ranch CWPP

Mitigation Action	Target Date	Assigned to	Completed ✓
Implement Universal Street Addressing System			
Defensible Space Around All Structures (\$5,000/lot)			
Laminated Triage Maps (20 sets)			
Develop reliable water supply for wildfire operations			
Install 26 “No Outlet” signs on dead end roads			
Buy 1 Waterous Floto Pumps to access pond water			
Negotiate and document rights to use evacuation routes			
Develop an Evacuation Plan			
Evacuation Simulation			
Prioritize & Construct Turnarounds on Dead End Roads (~23)			
West End Spur – Fourmile Canyon- Brodmere Spur Shaded fuelbreak. Segments A-B-D			
Fourmile – Rugby Mines Shaded fuelbreak. Segments B-C-F			
Wapiti Shaded Fuelbreak. Segments C-H-J			
South Mtn – North Mtn Shaded fuelbreak. Segments F-G			
Fourmile Evacuation Route Shaded fuelbreak. 50 feet each side of road			
E-1 Evacuation Route Shaded fuelbreak. 50 feet each side of road			
E-2 Evacuation Route Shaded fuelbreak. 50 feet each side of road			
Timber Drive Shaded fuelbreak. Segments H-I			
Fuel Break Maintenance			

Tom: This table needs to be completed by you and your team.