Community Wildfire

Protection Plan

September 20, 2007

Prepared For

Southwestern Highway 115
Fire Protection District

By
Partners and Board Members of the
SW115 Fire Protection District
And
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Warning and Disclaimer: The degree of protection from wildfire hazards intended to be provided by this plan is considered reasonable for planning purposes, and is based on accepted forestry and fire science methodology. This plan is intended to aid the community in minimizing the dangers, costs and impacts from wildfire hazards. Fire is a natural force and historical part of the ecosystem. Therefore, unforeseen or unknown wildfire conditions or natural or man-made changes in conditions such as climate, vegetation, fire breaks, fuel materials, fire suppression or protections devices, and ignition sources may contribute to future damages to structures and land uses even though properly permitted within designated wildfire hazard areas.

South Western Highway 115 fire Protection District

Resolution 2007 – 1

A resolution adopting the Southwestern Highway 115 Community Wildfire Protection Plan and authorizing the implementation of the Plan.

Whereas the South West Highway 115 Fire Protection District Board is charged with protecting the citizens and the property within the Fire District from the ravages of fire;

And whereas; the Board has determined that developing a Community Wildfire Protection Plan will provide the District and the citizens of the District a roadmap to build from to enhance the safety of our citizens from Wildfire;

And whereas; the Southwestern Highway 115 fire Protection District Community Wildfire Protection Plan will be a living document to provide guidance to the District and the citizens of the District in building a safer place to reside in the future;

Now therefore let it be resolved; the Board of Directors of the South West Highway 115 Fire Protection District by this resolution has determined that it is in the best interest of the citizens of the District to adopt the South Western Highway 115 Community Wildfire Protection Plan.

Board Members:

Andy Anderson	Aye	opposed	Not Present
James Valaseck	Aye	opposed	Not Present
Polly Kerr	Aye	opposed	Not Present
Tom Byes	Aye	opposed	Not Present
Robert Weller	Aye	opposed	Not Present

Adopted this 13th day of September 2007,

Robert H. Weller CHAIRMAN

Polly Kerr, Secretary

INTRODUCTION AND ACKNOWLEDGEMENTS

The Southwestern Highway 115 Fire Protection District Community Wildfire Protection Plan (CWPP) is a broad plan focused on the protection of residents, structures and scenic environment of neighborhoods from catastrophic wildfires. The CWPP represents a collaboration of Colorado State Forest Services, SW115 Fire Protection District Board of Directors, local, state and federal agencies. The CWPP is intended as a *living document* and will be updated as wildfire mitigation and firefighting methodologies and support technologies change. This CWPP follows the guidelines set forth in the *Health Forest Restoration Act of 2003* and the *Colorado State Forest Service Minimum Standards for Community Wildfire Protection Plans* (See Appendix H).

ACKNOWLEDGEMENTS

Special thanks for support and materials for this Community Wildfire Protection Plan go to:

- SW115 Volunteer Fire Fighters
- SW115 Board
- Colorado State Forest Service
- Colorado State Parks
- The Nature Conservancy
- USDA Forest Service
- DI Bureau of Land Management
- Fort Carson Military Reservation
- El Paso County Environmental Services

Appreciation is also extended for information and support material to:

- Southern Rockies Conservation Alliance
- City of Colorado Springs Fire Department
- El Paso County Office of Emergency Management
- The many residents of the Fire Protection District who took time from their busy schedules to guide this document to its completion

EXECUTIVE SUMMARY

The Southwestern Highway 115 Fire Protection District (SW115 or the District) Community Wildfire Protection Plan (CWPP) is sponsored by the Southwestern Highway 115 Fire Department for the safety of life and protection of property in neighborhoods throughout the District and their immediate vicinity. Participating in the establishment of this CWPP was by a broad stakeholder group including Colorado State Forest Service (CSFS), Colorado State Parks (CSP), Bureau of Land Management (BLM, US Dept. of Interior), USDA Forest Service (USFS), Fort Carson Natural Resources Department (FC), El Paso County Department of Environmental Services (EPCO), Southern Rockies Conservation Alliance (SRCA, a non-governmental Organization or NGO), The Nature Conservancy (TNC, an NGO) and residents of the District. Development of this CWPP focused primarily on wildfire hazard identification, fuel mitigation and emergency response. The fuel mitigation focused on specific wildfire risk areas with heavy fuel densities and terrains that could be used for protection and wildfire prevention advantage, coupled with close attention to upholding ecological values. Wherever possible, other values such as wildlife habitat enhancement, forest health restoration, improved aesthetics and increased property values will be factored in.

The SW115 area is no stranger to wildfires and the need for wildfire prevention and protection. The proximity of the Iron Mountain Fire (2002, 1,800 acres), the Buffalo Creek Fire (1996, 11,000 acres), High Meadows Fire (2000, 12,000 acre) and the Hayman Fires (2002, 138,000 acres) emphasized the fact that wildfires "*can happen here*!" In 2006, the SW115 Fire Department Board of Directors (SW115BOD) recognized the importance of developing a program to address the wildfire risk to the community. It began by investigating funding sources for fuel treatments and development of a long range plan for wildfire protection. The SW115BOD has been guided by a committee of concerned residents of the neighborhoods that has formed a "Fire Mitigation Committee" to advise the Board of Directors. Some of the committee members have worked in the past with SW115 personnel to address the wildfire issue on properties within the District.

The SW115 includes a number of significant areas outside of their boundaries that could pose a potential wildfire fire threat to the communities. These areas termed in total as the Wildland Urban Interface (WUI) area consist of all lands bounded by US Highway 115 to the east, BLM and USFS lands to the west, Cheyenne Mountain State Park to the north and the Fire District boundary to the south. With this CWPP, care was taken to propose and provide mitigation within the District to provide fuel breaks to lower the risk of spreading wildfire and to protect residents from potential wildfire intrusion from the various risk sections of the adjoining WUI. Seven areas with varying degrees of mitigation needs were identified within the neighborhoods. Mitigation for these areas will be reviewed annually for scheduling with full completion to take from twelve to twenty years, depending on availability of funds from multiple sources.

Four primary strategies are employed to achieve mitigation: 1) Each neighborhood or community providing fuel mitigation treatment to HOA owned land and critical private parcels; 2) Encouragement and support of private land owners doing their own wildfire fuel mitigation and Firewise home safety practices; 3) Working with SW115 and other stakeholder agencies to require developers of stand-alone, undeveloped areas within zones surrounding the communities to mitigate land developments before building occurs, and to establish ongoing mitigation treatments for the future; and 4) support of on-going and future fuel treatment projects on federal, State and NGO properties.

This CWPP identifies the response, both from professional agencies and volunteer groups, that may be employed for wildfire protection or suppression when wildfires threaten areas within or outside the District. The El Paso County Sheriff's Office, in conjunction with SW115, has the primary responsibility for protecting life and property in the District in the event of a wildfire incident. If a wildfire event is beyond their resource capability, the District is party to a mutual aid

agreement for support from other El Paso, City of Colorado Springs and Fort Carson fire departments.

The SW115 CWPP also discusses direct communication and informational efforts to notify residents and keep them apprised of emergency wildfire situations directly affecting them. Communication and support of the general public is available and determined by different intensities of identified emergencies.

The implementation of this plan takes place over multiple years, limited for the most part by the available funding that can be directed to the various efforts within the plan. Risk priorities as well as development locations and densities will be reviewed annually and used in scheduling fuel mitigation events. Projects deemed to have the most significant wildfire prevention impact will be given priority.

This CWPP is a "*living*" document that will be evaluated and maintained annually as a responsibility of the SW115 Board of Directors and their Fire Mitigation Committees. Each individual project identified within this plan has a measured baseline; i.e., current condition description of it's "*before*" profile that will be used to evaluate the effectiveness of any fuel reduction project performed on it during the plan year. Consequently, this plan may be amended and edited annually to assure that it stays viable and achieves its original intent. Annual meetings should be held with stakeholder agencies to review the progress and effectiveness of this CWPP. A general public meeting should also be conducted annually to review the progress of the CWPP and receive public input.

GOALS, PLAN COMPONENTS & ON-GOING MAINTENANCE OF PLAN

Primary Purpose

The SW115 CWPP was developed for the safety of life and protection of property from wildfire emergencies within the boundaries of the District and the adjacent surrounding areas while upholding the ecological values of the community.

The plan was developed by a broad stakeholder group identified in the *Foreword* section of this document. The SW115 Wildfire Protection Plan addresses the areas of wildfire hazard mitigation and emergency response to the impact of widespread wildfires. The plan has three major focus areas: fuel mitigation, emergency response and the influencing and obtaining of private, state or federal grants to assist in carrying out prevention and fuel mitigation projects. In addition, the plan contains administrative detail for plan implementation and monitoring and also sets forth tactics for amending the plan on an on-going basis as circumstances and changing conditions may require.

Goals and Objectives of the Plan

Fuel Mitigation:

- To identify and categorize wildfire fuels and the prioritization of those fuels for mitigation across the landscape.
- Treat fuels in a manner consistent with restoring forest health and improving the currently altered wildlife habitat.

Emergency Response:

- To detail wildfire response, community preparedness and infrastructure protection.
- To outline professional and community volunteer communication linkages and response to widespread wildfire emergencies.
- To detail traffic egress/ingress for emergency residential evacuations and emergency equipment and professional services entry.
- To delineate community and public communication and information systems' usage for and during emergency events.

Private, State and Federal Grants:

- To influence where and how private, NGO, county, state and federal agencies implement fuel reduction by proposing alternative locations and methods for treatment on lands in the CWPP zones.
- To assist in the acquisition of private, local, state and federal funds for the District for wildfire hazard(s) mitigation and response related projects.

Administration and Plan Maintenance:

- Define implementation plans, schedules and implementation monitoring vehicle(s).
- Set forth on-going plan maintenance and plan updating strategies.

Plan Components

The SW115 CWPP provides four primary sections plus reference information. Geographical and ecological background along with forest management and wildfire history is detailed in Chapter 3. Chapters 4 and 5 cover, respectively, hazards assessment and the resources for addressing wildfires. Chapter 6 identifies communication and information support for the residents in and around the District in the event of a wildfire emergency. Finally, Chapter 7 is the implementation plan of the

Community Wildfire Protection Plan, detailing public education, fuel treatment - mitigation priority, timeline and funding methods, and support systems additions and funding.

A wide variety of conservation, property mitigation, vegetation and services reference material can be found in the appendices of this document.

Maintenance of the Plan

The overall goal of maintaining the SW115 CWPP is accomplished through annually monitoring plan accomplishments and effectiveness, and by adjusting the plan to account for current changes in wildfire hazard conditions, response capabilities, technologies and ancillary circumstances. The SW115 CWPP is meant to be a "*living document*" which is updated annually to assure currency in both wildfire prevention and planned response to wildfire situations both in District's wildland/urban interface areas and outside the neighborhoods.

Each year, at least three months prior to the Annual meeting of the District memberships, the boards may formally request its Wildfire Mitigation Committee to conduct a CWPP performance review to include both an overall plan evaluation of the CWPP for the past wildfire season as well as any proposed changes to the CWPP for the following year. This schedule may be adjusted to allow conformance with the District's budget cycle. The overall evaluation and recommended changes to the CWPP will be presented and addressed at the Annual membership meeting. Changes will be formally incorporated into the CWPP and furnished to all stakeholders by January of the following year. These changes should also be reflected in the District budgets and applicable grant requests for the following year.

Between the aforementioned Wildfire Mitigation Committee meeting and the formal updating of the CWPP each year, the District board or its representative(s) will meet with key stakeholders representing primary professional forest management, fire prevention and emergency services management to review proposed CWPP changes and updates. Once the District board and the key stakeholders are in agreement to the proposed changes and updates to the SW115 CWPP, those changes and updates will be available for public perusal and comment; either at a pre-announced public meeting or through the District website.

Formal CWPP evaluation will be done in conjunction with SW115FD personnel. A sample "Project Monitoring Worksheet" is attached as **Appendix D** and addresses the following issues:

1) *Implementation*: Will track the CWPP project(s) as laid-out for the year and assess the success level of execution;
2) *Execution of project:* What issues occurred that either aided or impeded the project?
3) *Maintenance Needs Monitoring*: Evaluates, determines and prioritizes areas that have been treated in the past, but are in need of maintenance treatments to maintain effectiveness as originally intended.

Lessons learned from monitoring and data collection will be useful for modifying project plans to better meet CWPP goals and objectives.

BACKGROUND AND HISTORY

Geographic and Ecological Location

The SW-115 Fire Protection District is a 20 square mile area located south of Colorado Springs and east of US Highway 115 leading to Canon City (see Figure 1, Vicinity Map). The District's northern boundary overlaps a small portion of Colorado Springs in the Cheyenne Mountain State Park. It has grown to a current population of approximately 1,200 homes (see Figure 2, Property).

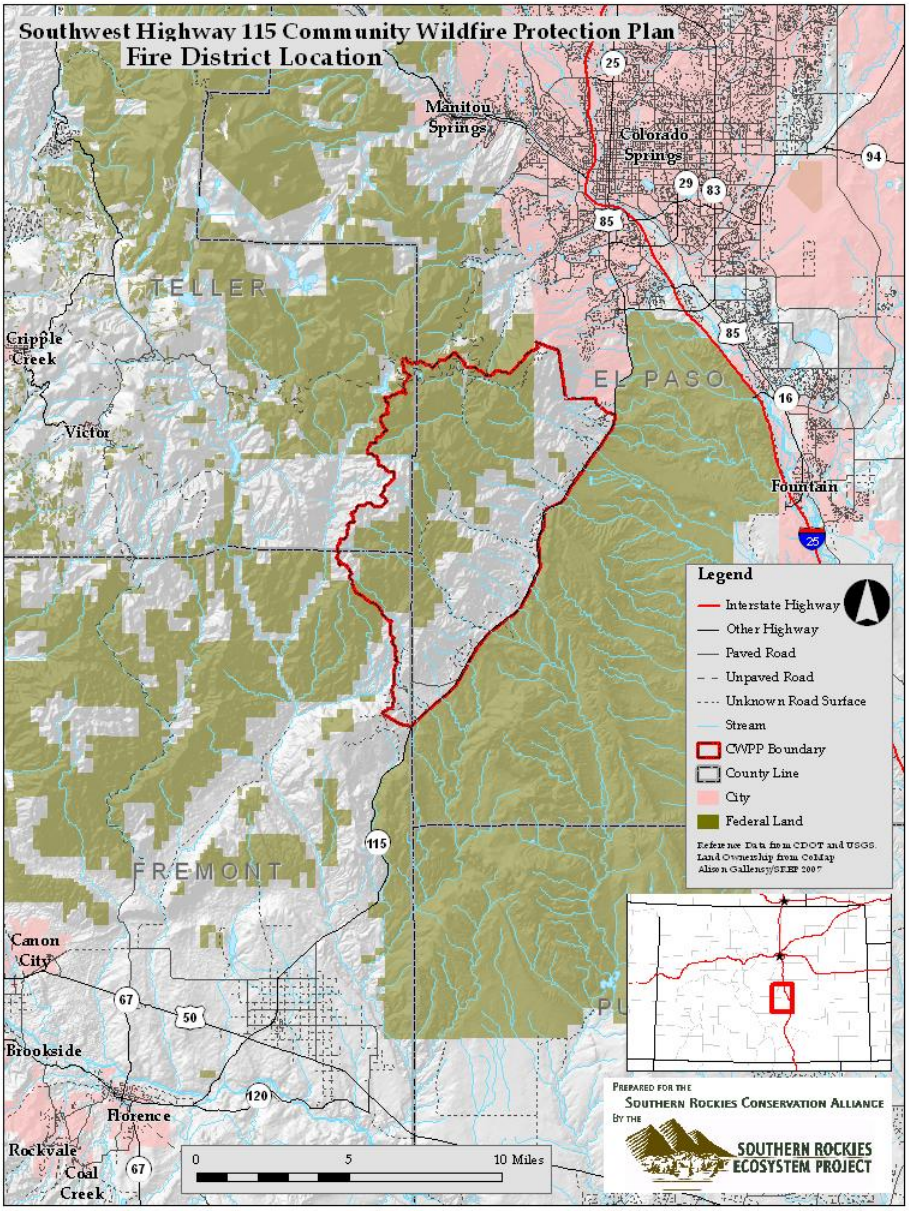


Figure 1. Vicinity Map

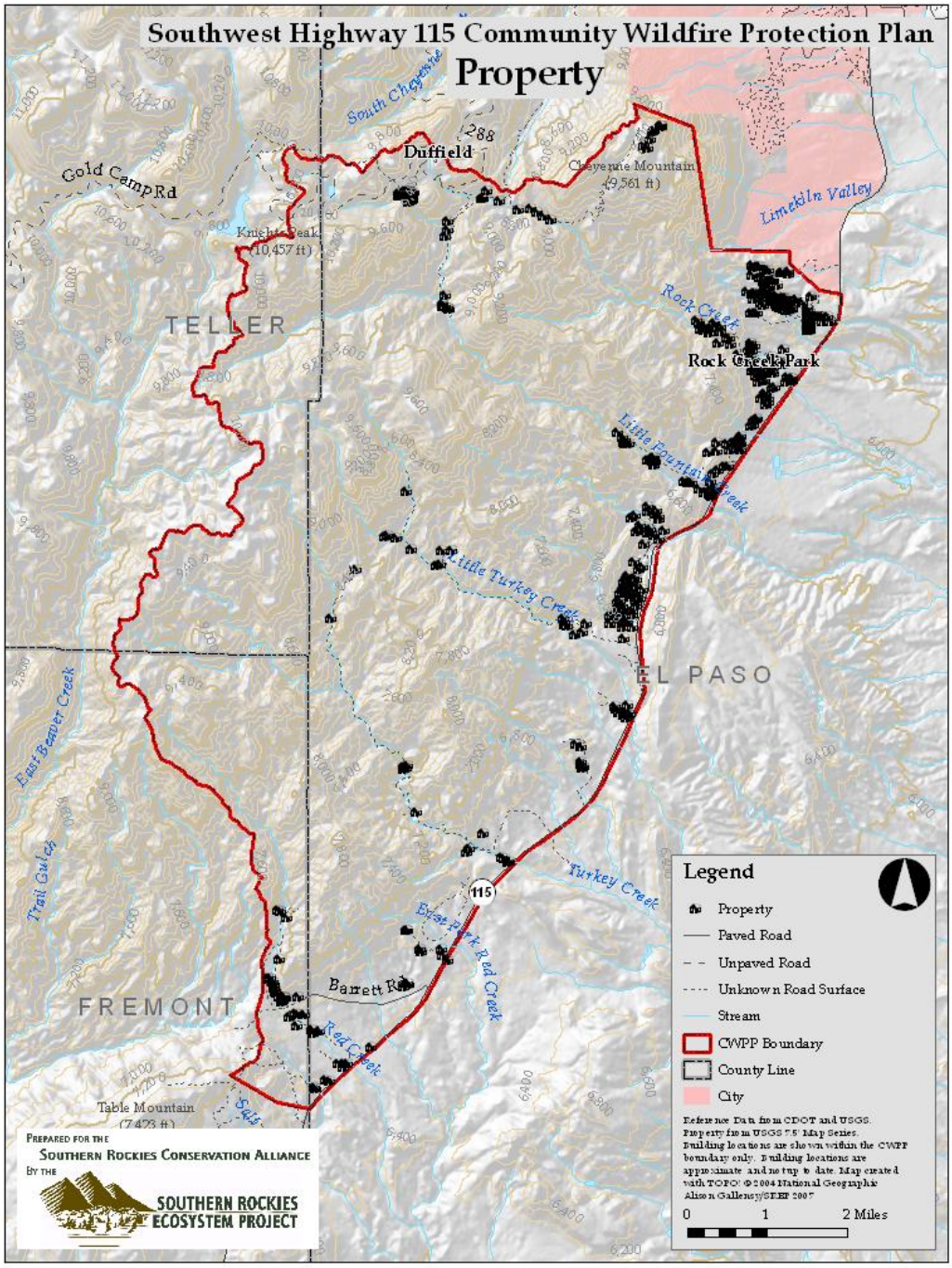


Figure 2, Property

The Fire Protection District (FPD) is rich in diversity and geology. Ecosystems vary from open rangelands in the low areas, transitioning through pinon-juniper stands up to ponderosa pine and Douglas-fir forests on its upper slopes. Gamble oak is the predominant shrub species found interspersed in all areas. This diversity also contributes to significant wildlife values (see Figure 3, Ecological Values).

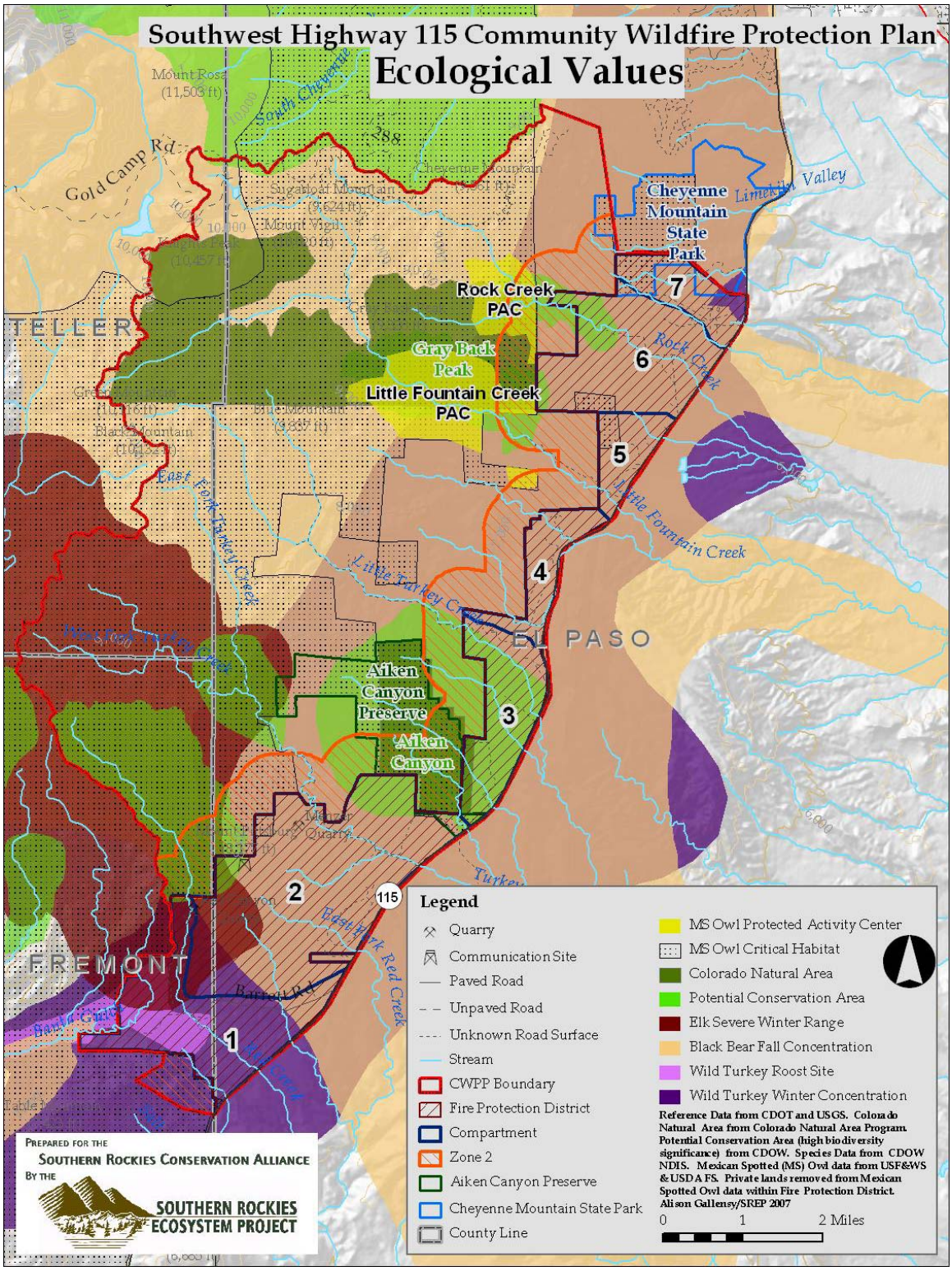


Figure 3, Ecological Values

Land ownership varies across the FPD. Federal lands predominate along the District's western boundary and are managed by Bureau of Land Management (BLM) and USDA Forest Service (USFS). The entire eastern boundary abuts Fort Carson, a US military installation controlled by

the Department of Defense. Portions of the District are controlled by the State of Colorado. Cheyenne Mountain State Park, at the District's north end, is managed by Colorado State Parks. A small State Land Board property is managed by The Nature Conservancy as part of the Aiken Canyon Preserve natural Area. Land ownerships are shown in Figure 4, Land Ownership.

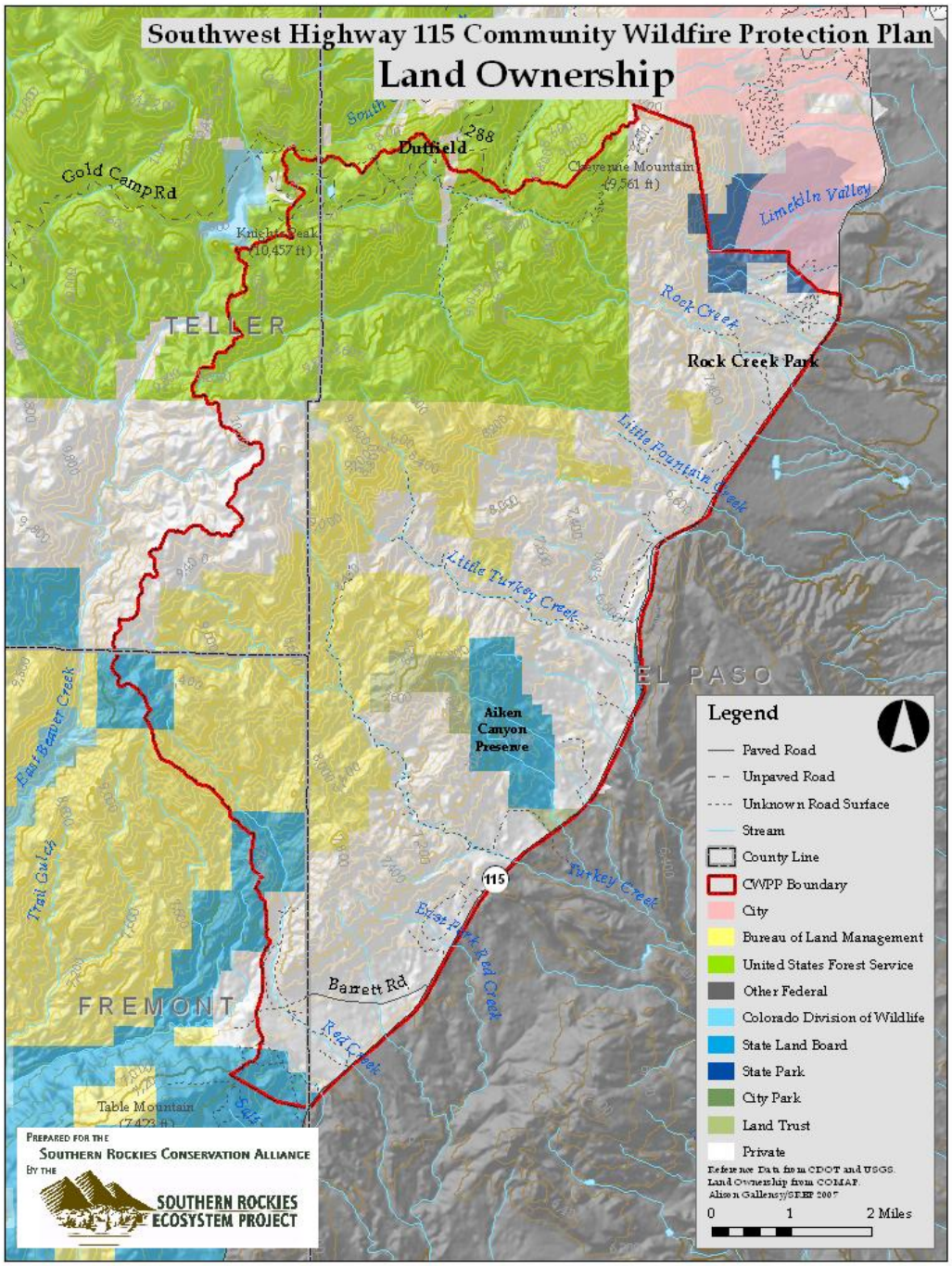


Figure 4, Land Ownership

History of the Fire Protection District

The District has a rich history. The area was used heavily for mining, timber harvesting and ranching. A number of historic structures are found within the District (see Figure 5, Historic Sites).

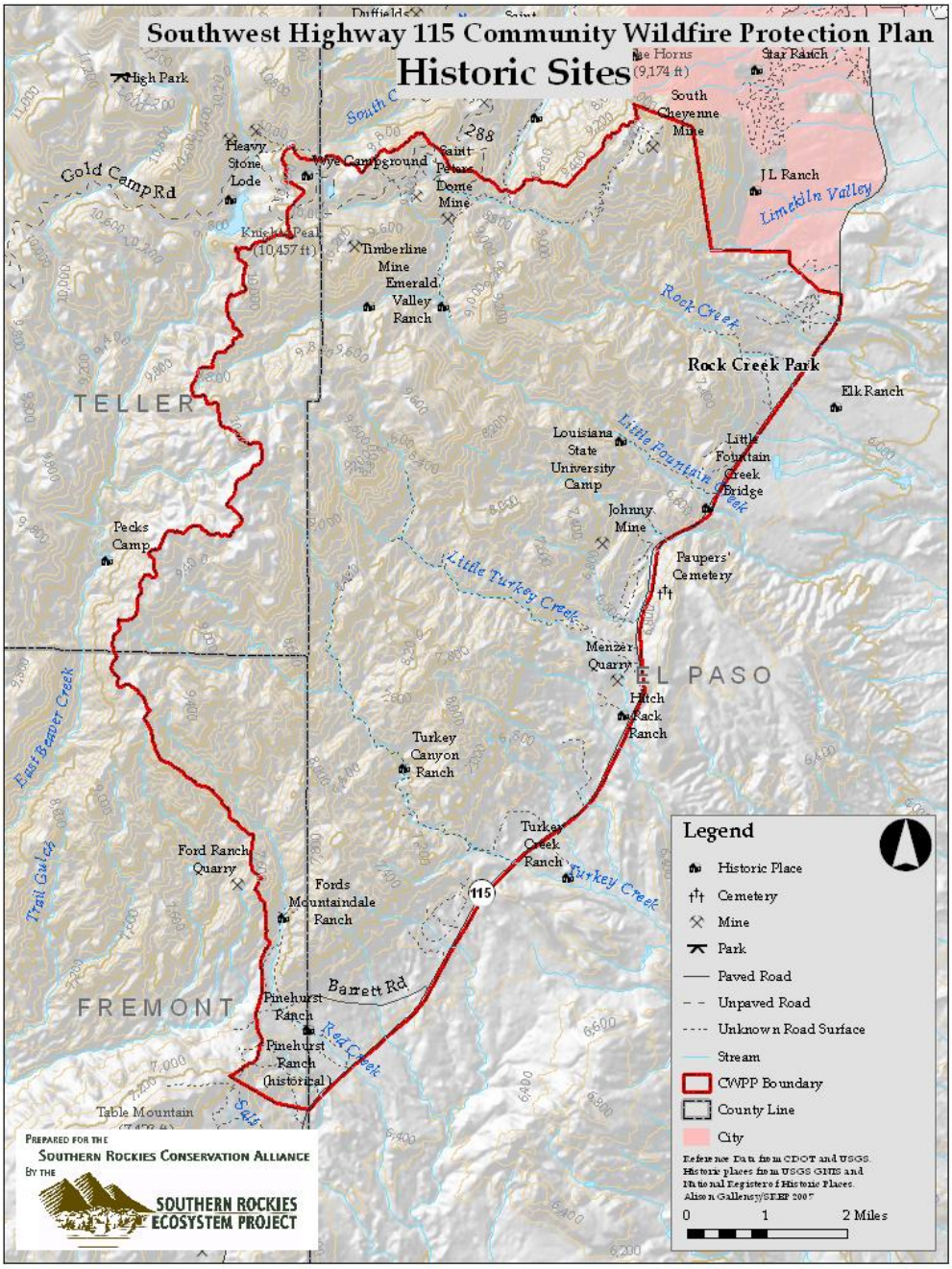


Figure 5, Historic Sites

The Southwest Highway 115 Fire Protection District (SW115) was established in the early 1990's to provide fire fighting capability to the area. The Fire District is managed by an elected board of directors that serves as the governing body for the community. The Fire Mitigation Committee was formed in early 2007 to assist the board of directors in making the community more fire resistant. A number of large, landscape scale fires have occurred in the surrounding area since 1996. The area is very prone to lightning caused fires.

Wildfire History

Over the past decade, the area has escaped major wildfires in its proximity: the Buffalo Creek Fire of 1996, the Iron Mountain Fire and the Hayman Fire of 2002. The Buffalo Creek Fire, a human caused fire, burned approximately 11,000 acres in the South Platte Watershed. The burn area was in extreme terrain and driven by down canyon winds. The 138,000 acre, human started Hayman Fire of 2002 had a significant impact on increasing awareness of wildfire impacts. Consequently, the Hayman Fire had and has left a lasting impression on the residents of the District.

Wildland Urban Interface (WUI) Impact Areas

With the high potential of ground lightning ignition, the Pike National Forest, BLM lands, State Parks and NGO (non-governmental organizations) lands abutting or within SW115 District present the greatest catastrophic wildfire threat to the District's residential areas. Much of the terrain in the District consists of very steep terrain that may significantly affect mitigation and suppression efforts in terms of cost and feasibility.

It should be remembered that wildfires can also spread from private property into the surrounding areas. Human caused ignitions have to potential to burn into the State, Federal and NGO lands.

The WUI for SW115 was set after meeting with local, state and federal fire officials. These are shown on Figure 6. WUI Zones. These units were set to aid state and federal agencies in targeting planning and funding for areas within one mile of wildland interface communities like SW115.

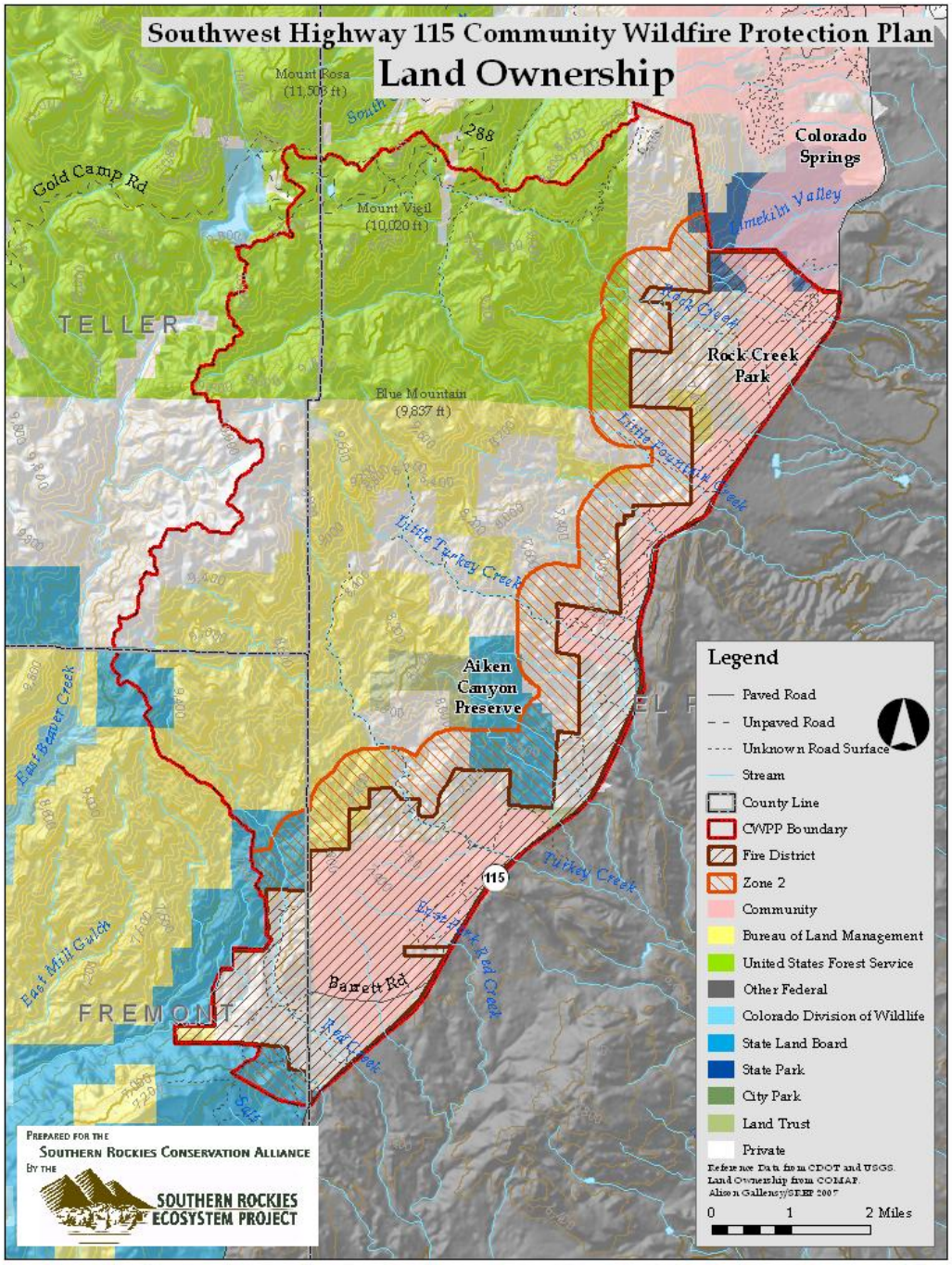


Figure 6. WUI Zones

Zone 1

Zone 1 is the SW115 Fire Protection District shown in Figure 7. It consists of the community and is approximately 20 square miles in size. The District is made up of subdivisions, ranch lands, NGO lands (The Nature Conservancy, Louisiana State Univ.), commercial operations (Mays Museum, RV parks, commercial buildings) and two quarries.

Homeowners and property owners have been encouraged to implement Firewise guidelines around all structures through educational efforts of the SW115, Colorado State Forest Service, USFS and BLM.

In some neighborhoods, removal of trees and vegetation is strictly controlled by Architectural Control Committees (ACC) under the Covenants, Conditions and Restrictions (CC&R's) and Design Guidelines. A procedure was developed as part of the CWPP process to allow individual property owners to mitigate their fire risks. This has been further codified by passage of Senate Bill SB-100 (see Appendix B, SB-100) that mandates all homeowner associations must allow fire mitigation. El Paso County recently passed subdivision regulations requiring a forest management plan on all forested tracts applying for subdivision status. More specific wildfire mitigation planning for Zone 1 is covered in Chapter 4.

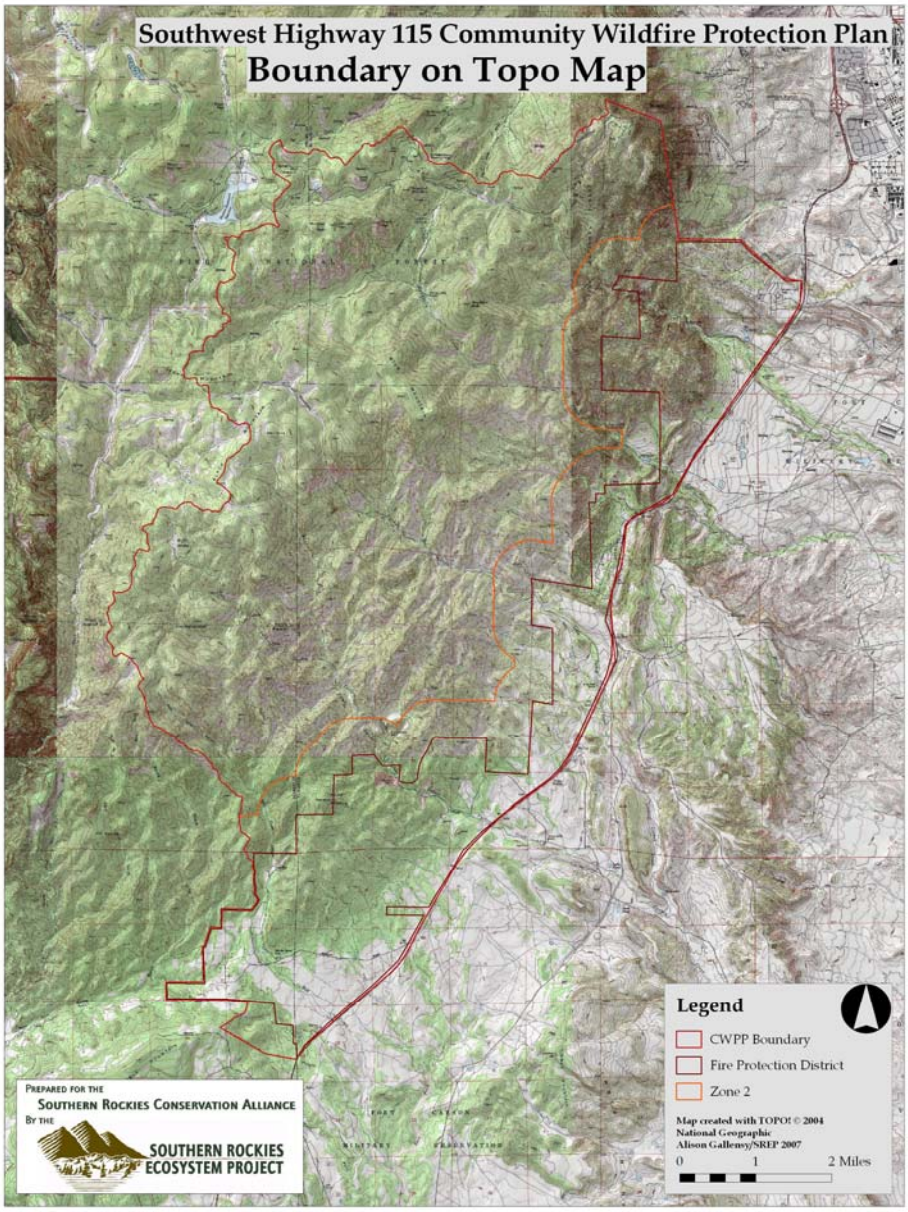


Figure 7, Zone 1 SW115 Boundary

Zone 2

Zone 2 is the adjoining Wildland Urban Interface. The major owners within this zone are Cheyenne Mountain State Park, BLM, Fort Carson Military Reservation and USDA Forest Service (Pike National Forest). This area covers all lands around the District. The western boundary of this zone was set utilizing planning areas outlined as highest priority under the Healthy Forest Restoration Act (HFRA). This is shown as an orange, cross-hatched area in Figure 6, WUI Zones.

Fuel treatments on State Park lands were scheduled to begin in late 2006, and will continue for the next several years. A Cheyenne Mountain State Park Fuels Treatment Plan area map is shown in Figure 8.

No fuel treatments are planned along the community boundary at this time. However, discussions are on-going with State Park and Colorado State Forest Service personnel to target these areas as a high priority in future years. In order for the SW115 to protect the community, negotiations should begin to allow private property owners to treat abutting State Park properties. A fire mitigation plan has been written for the Park, and the Park's mitigation plan is understood to be incorporated into this CWPP.

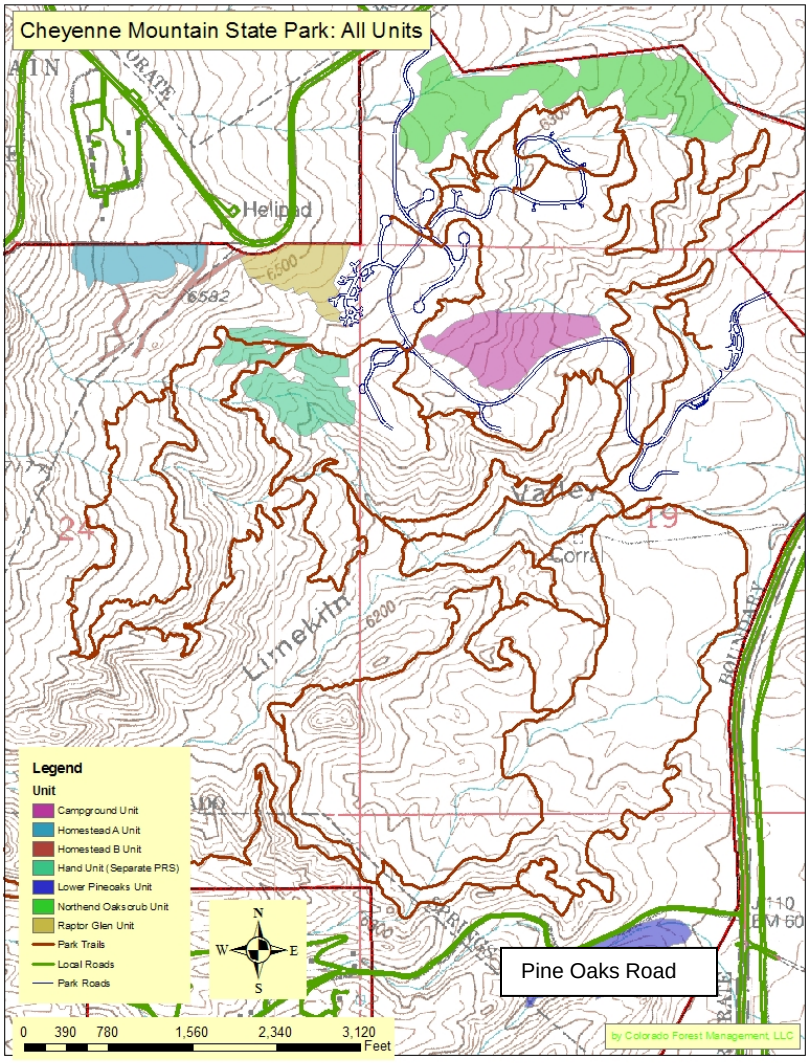


Figure 8, Cheyenne Mountain State Park Fuel Treatment Units

No USFS or BLM projects are planned for the near future. USFS portions of the area are currently under study as part of the Catamount NEPA Study Area. No actions are currently planned on BLM lands. BLM lands west of SW115 are currently in the Beaver Creek Wilderness Study Area. Any future projects in Zone 2, on Federal lands, will require private landowner participation for access.

Any treatments, implemented by SW115 or its residents on USFS property, may be able to operate under a "Good Neighbor" agreement, supervised by CSFS personnel and coordinated with Pikes Peak Ranger District Staff.

Zone 3

Zone 3 is the extended area in which watershed and landscape scale wildfires will pose a risk to the community. The limits of Zone 3 are shown as a heavy red line on Figure 7. A number of constraints were identified through the CWPP process that will hinder fuel treatments. Much of this zone is in Mexican Spotted Owl critical habitat or roadless areas. Terrain is also rugged and access limited. However, areas abutting residences and ranches should be treated as possible areas for "categorical exclusions" under HFRA.

The western boundary is generally the west line of peaks that define watersheds flowing to the south toward the Arkansas River, and east toward Fountain Creek in Fort Carson. As noted earlier, much of this area is already under study as portions of larger study areas. The Front Range Fuel Treatment Project has targeted the area for high priority treatment due to impacts to water quality in the Arkansas River Watershed. Unfortunately, a high percentage of lands within Zone 3 are inaccessible or inoperable for treatment.

WILDFIRE HAZARD ASSESSMENT

This section of the Community Wildfire and Protection Plan addresses the identification and the prioritization of fuel mitigation treatments for high risk wildfire hazards impacting SW115 Fire Protection District as well as a brief assessment of vegetation fuels currently within the proposed fuel treatment areas.

Vegetation Mapping

The vegetation types found in the District are shown in Figure 9.

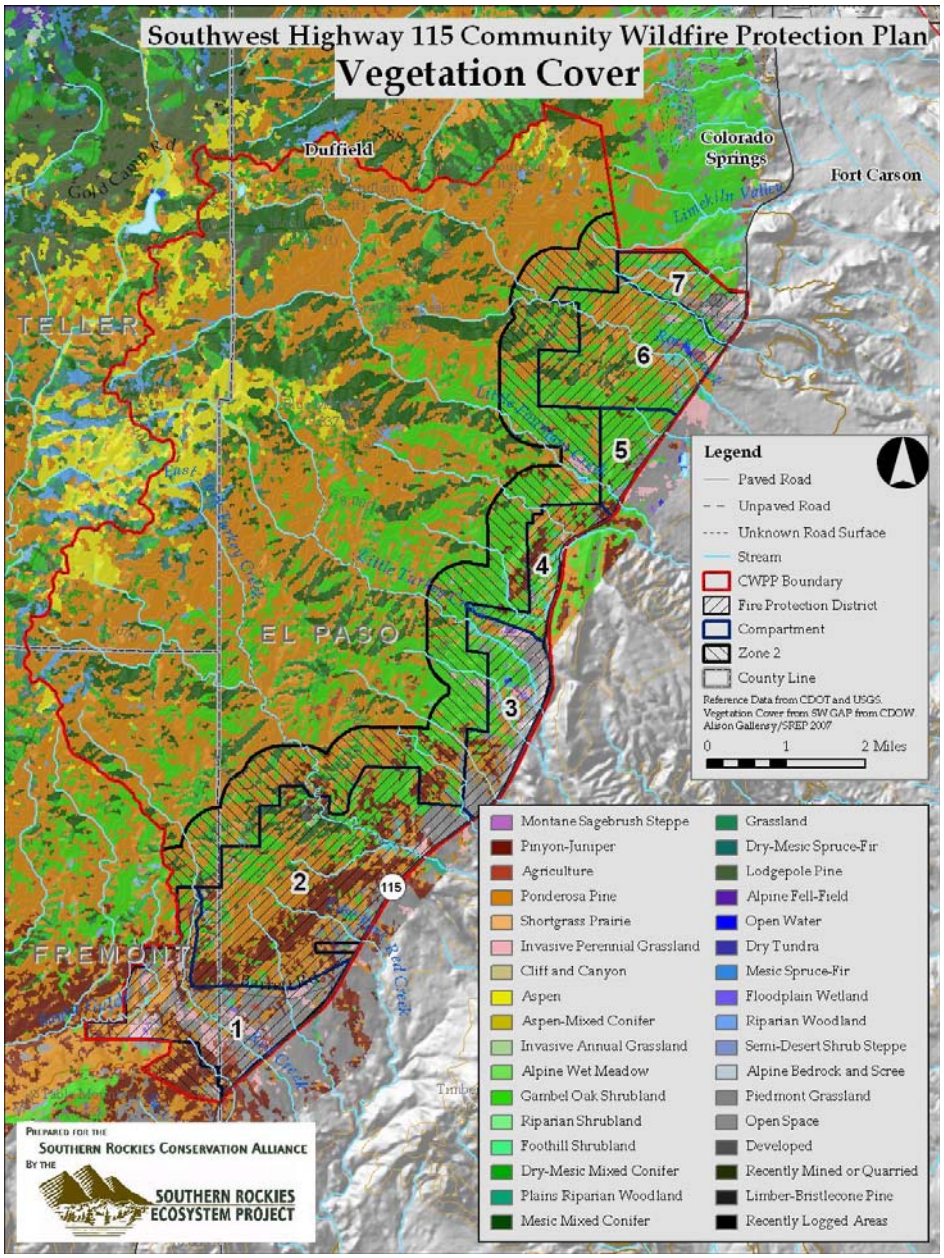


Figure 9 Vegetation Cover

Topography

Much of the District is rugged terrain. Topography has a major impact on fire behavior. General topography of the District is shown in Figure 10.

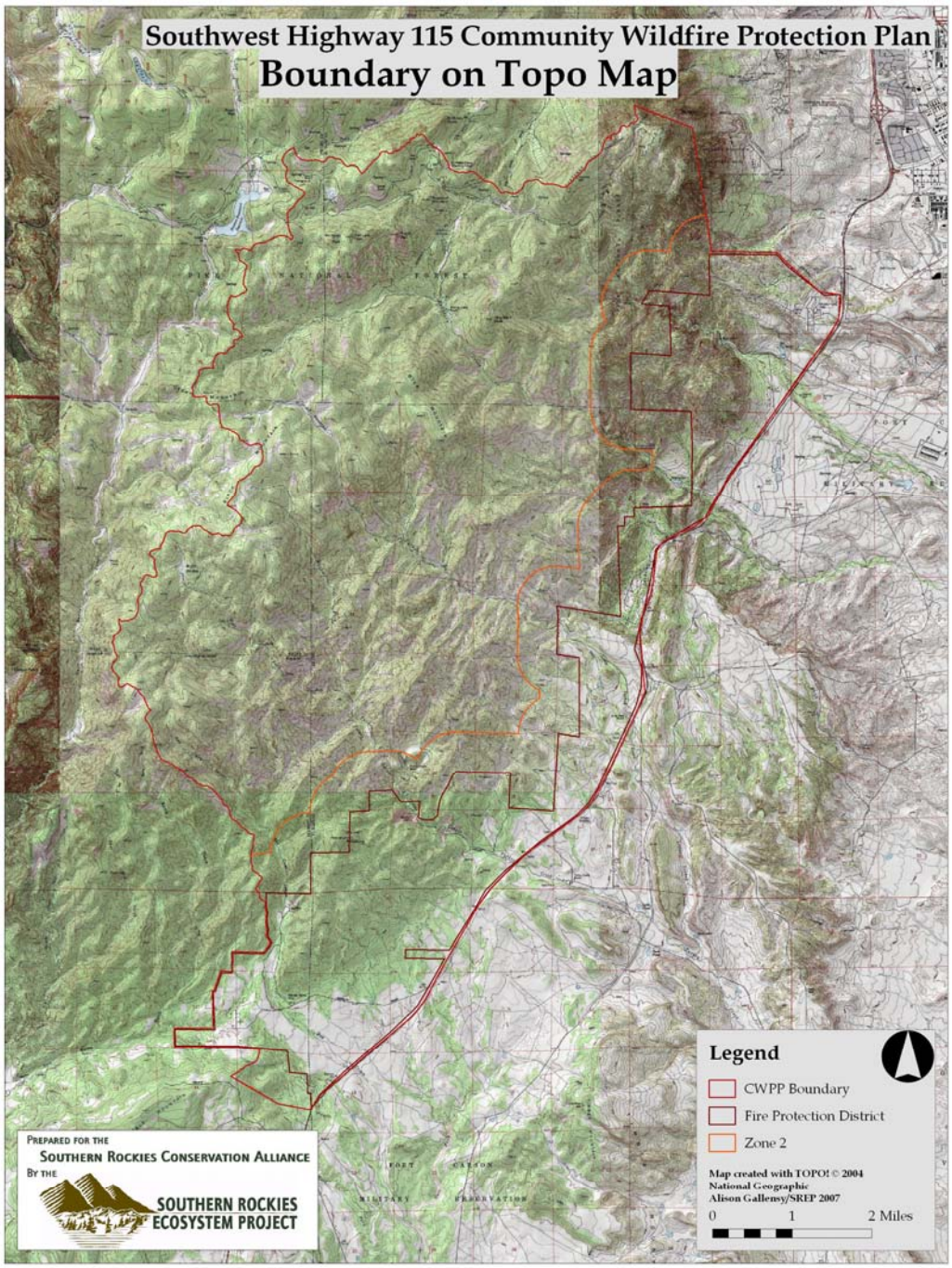


Figure 10, Topography

Slope and aspect will also affect fire behavior. Slopes are shown in Figure 11 and aspects in Figure 12.

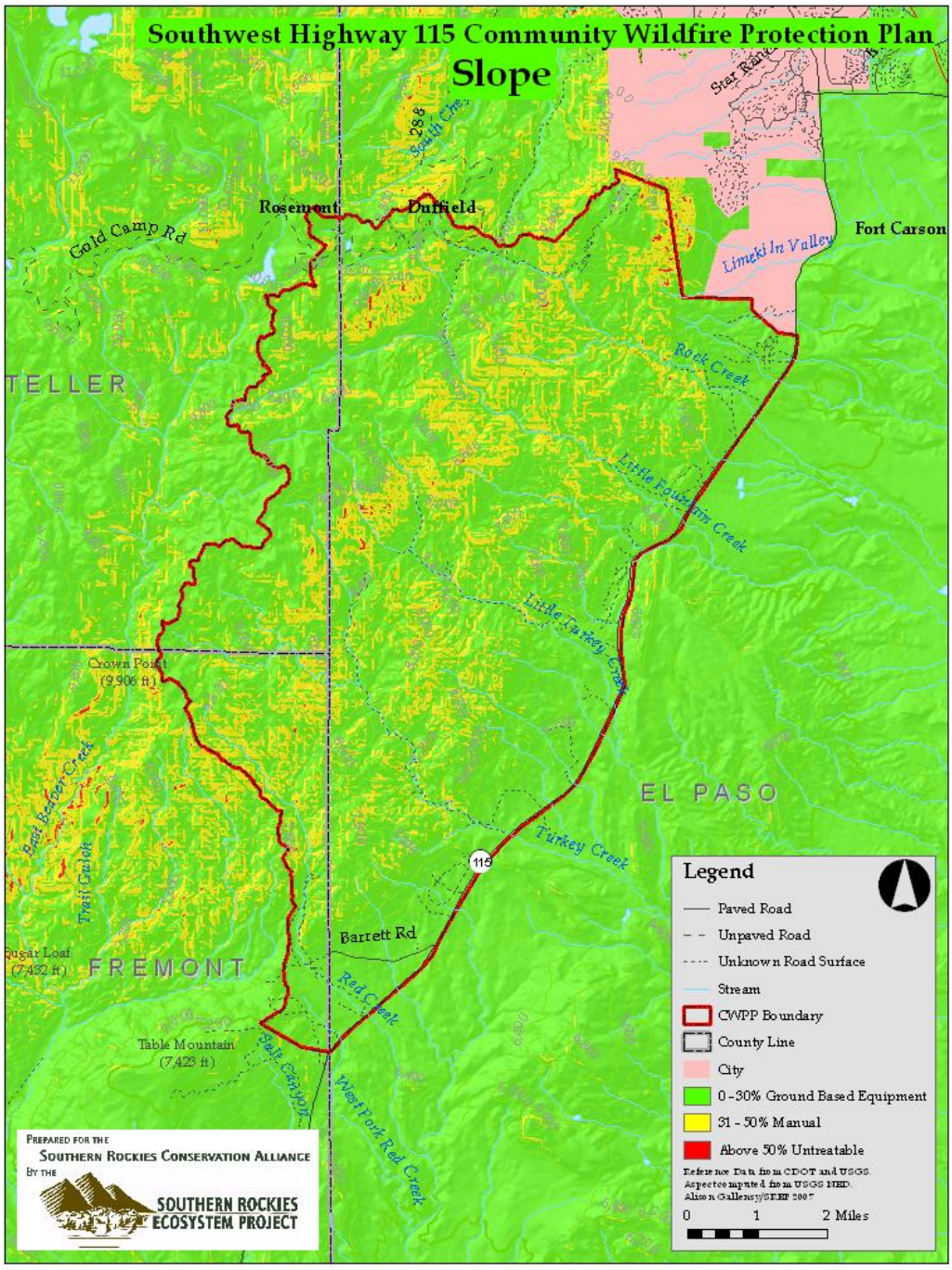


Figure 11, Slope Map of CWPP Area

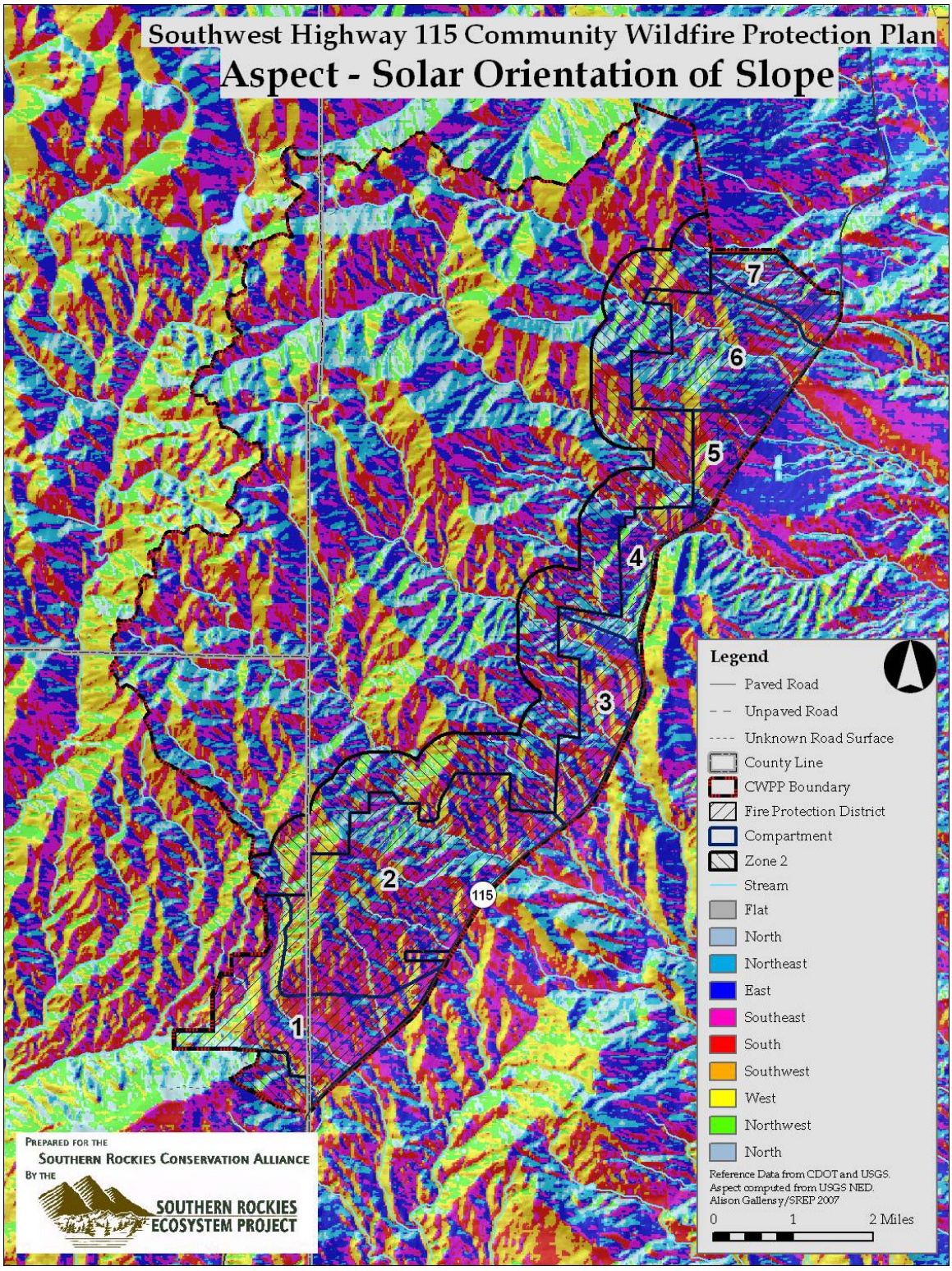


Figure 12, Aspect, Solar Orientation

Fuel Treatment Priorities

The following is a list of recommended priorities for fuel treatments within SW115:

1. Ingress/Egress Routes- Evacuation will be critical. Many roadways were found to be narrow and with significant fuel volumes along their routes.

2. Individual structures- No amount of fuel treatments around residential areas will be effective if homes are not defensible. All residents are responsible for development of both defensible space and home ignition around their structures.

3. Potential Refuge Zones and Staging Areas- Evacuation may not always be possible. Zones of heavily treated fuels in close proximity to roadways should be created to allow either residents or fire fighters time to make sound decisions. In some communities, this can be as simple as regular mowing. In others, heavy fuel volumes should be treated along roadways or key intersections. These pre-determined zones may also allow for more orderly evacuation and ingress of fire fighting resources. Currently, the only area considered to be an adequate refuge zone is the Highway 115 right-of way.

4. Areas with heavy concentrations of homes- Residential areas, subdivisions and enclaves of homes will need to treat areas beyond a normal home ignition zone; especially in areas with heavy fuels. Treatment goal will be to reduce crown fire potential, lower fire intensity such that limited manpower and resources can protect higher numbers of homes. Fire should be considered as a tool for protecting communities.

5. Areas with lower concentrations of homes- Each residence will typically have sufficient area to complete both a defensible space and home ignition zone. The goal should be the same as Number 4 above and allow for fire use for protecting structures.

6. Rural areas/Ranches- Owners will need to complete defensible space and ignition zones around all structures, including barns and outbuildings. A backup water supply is recommended.

Negotiations should be undertaken with private land owners adjacent to road rights of way areas as well as private lands in general to build fuel breaks with widths as specified by the Colorado State Forest in its *Fuelbreak Guidelines for Forested Subdivisions* (See Appendix G).

"*Connection*" is a term for wildfire fuel treatments that used to describe fuel treatments that "*connect*" natural areas with light or no fuel content (e.g., rock ridges, riparian, etc.). These may also be fuel treatments that "*connect*" more widespread thinned areas that have already had potential wildfire fuels mitigated. "*Connection*" breaks recommended in areas of heavy home development/structures to assist in home area protection without destroying the environmental esthetics of the area. (See Appendix G, *Fuelbreak Guidelines for Forested Subdivisions*, for descriptions and rationale for building fuel breaks.)

For undeveloped areas within SW115, such as specific areas within dense, untreated forests, potential mitigation would cover a much broader expanse of land than the wildfire fuel treatments considered for protecting developed properties. An example of fuel treatments proposed by this plan is shown in Figure 13.

Figure 13, Sample fuel treatment done on USFS lands.

Compartments

This Community Wildfire Protection Plan divides SW115 into seven compartments. Within each compartment, "*connection*" fuel treatments should be prioritized by wildfire impact risk and assigned a label, identifying the compartment area, and the mitigation priority. The fire hazard class will use the five-classifications used by the Colorado State Forest Service (See Appendix C, *Fire Hazard Classes and Fuel Models*).

Compartments are recommended as a planning tool to lay out fuel treatments that can either contain fire or prevent spread to other compartments. Clusters of homes, key roads and topographic features were used for establishing all seven compartments.

Compartment 1

This area is the southern portion of SW115 and includes Barrett Road, August Subdivision, Mountaindale RV Park, and Sandy Creek Heights. The Red Canyon Quarry is within this compartment. Topography is more gentle and rolling. Fuels vary from open meadows to pinon and juniper stands mixed with gambel oak. Lower density ponderosa pine stands were noted on the west half of the compartment. Housing density is low with all properties able to create adequate home ignition zones. The highest priority within Compartment 1 is along all roadways.

Compartment 2

This area consists of the Pinons at Turkey Creek and Turkey Creek Ranch subdivisions. A water supply and hydrant system serves portions of the community. The Menzer Quarry falls within Compartment 2. Housing density is low with all properties able to create adequate home ignition zones. The highest priority within Compartment 2 is along all roadways.

The Henry Ride Heights area is an area of high concern. Roadways are narrow, steep and have heavy fuels along their entire routes. Evacuation will be difficult. Steep terrain and cost of fuel treatment will be serious challenges the area's CWPP team must address.

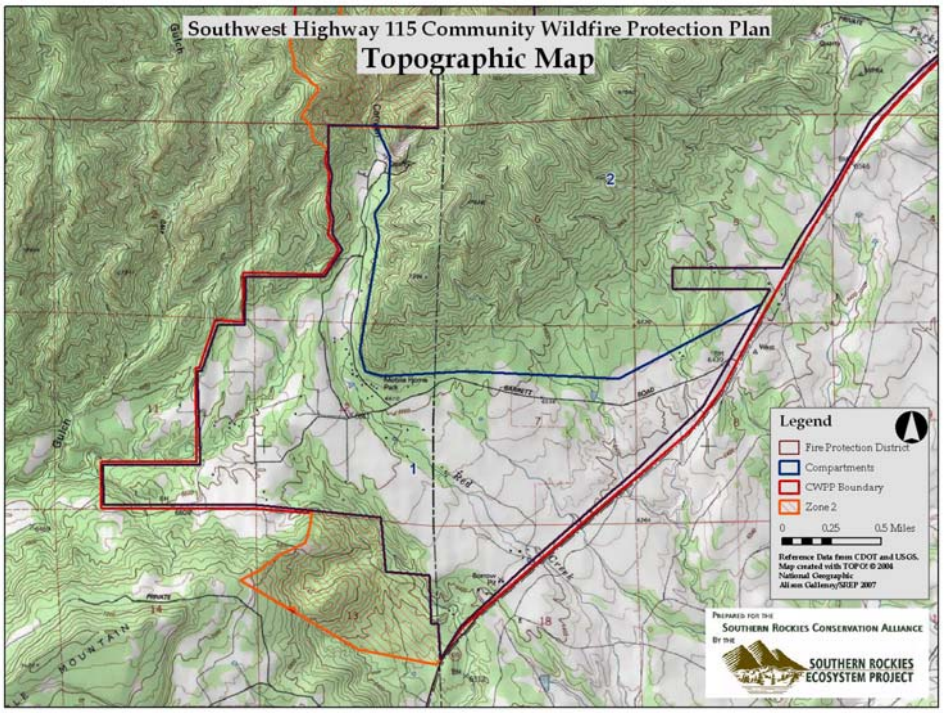


Figure 14, Compartment 1

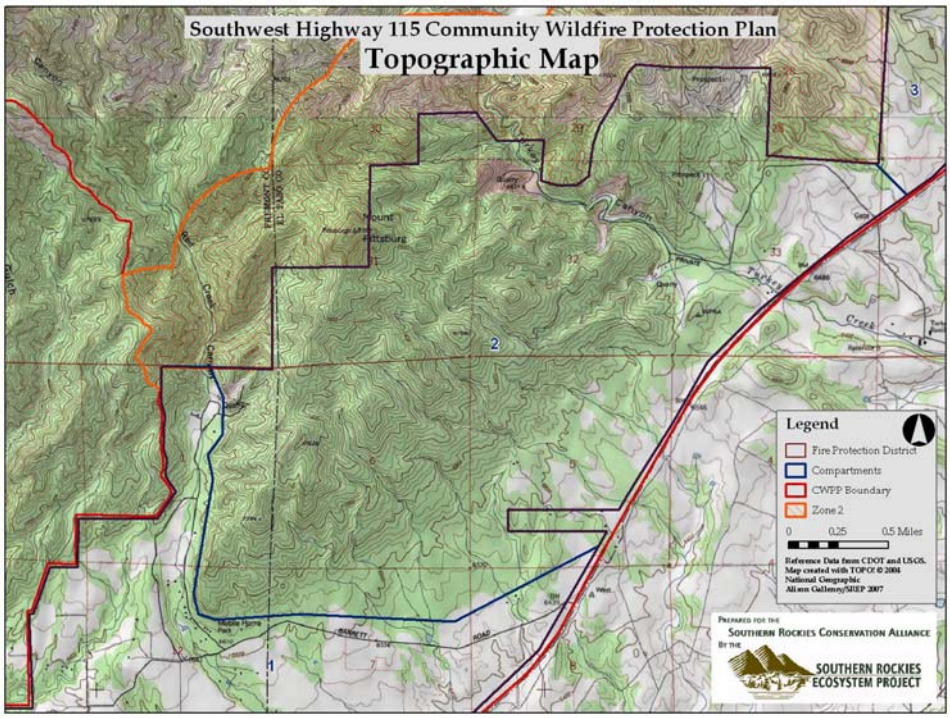


Figure 15, Compartment 2

Compartment 3

This area consists of primarily rural properties. Several small clusters of homes were noted. Fuels vary from open meadows to pinon and juniper stands mixed with gambel oak. Lower density ponderosa pine stands were noted on the west half of the compartment. Housing density is low with all properties able to create adequate home ignition zones. The highest priority within Compartment 1 is along all roadways.

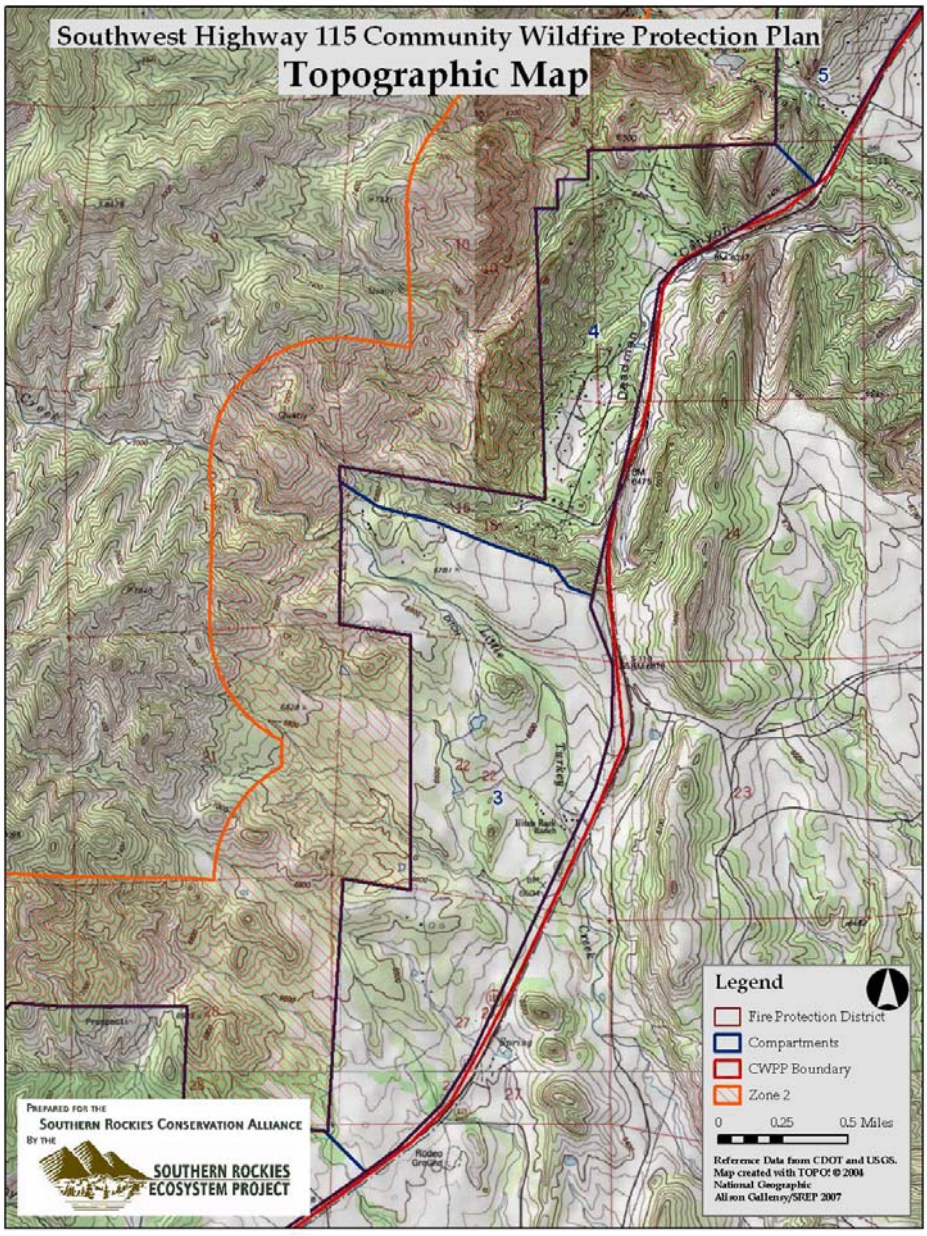


Figure 16, Compartments 3 & 4

Compartment 4

This area is best described as “Red Rock Valley.” Topography is rugged and steep around the community. Homes are of moderate density. However, each lot should have sufficient area to create independent home ignition zones. Roadways are the highest priority in this compartment. Gambel oak and ponderosa pine are the predominant fuels.

Compartment 5

This area is mostly small clusters of homes on several short roadways. Topography is rugged and steep around the community. Several commercial buildings are present along Hwy 115. The Sunny View RV Park is within Compartment 5. Gambel oak is heavy and continuous in areas.

Compartment 6

This area includes portions of “Old Canon City Road” and the May Museum. Density along Old Canon City Road is low and all properties able to provide adequate home ignition zones. The May Museum and residences beyond the museum are high density, developed areas. Fuel treatments will be required beyond residences and developed areas. The May Museum RV area should be considered for upgrading to a Staging Area/Refuge Zone. Topography varies from gentle slopes to rugged in the canyon areas. Gambel oak and ponderosa pine predominate. The Rock Creek Canyon Road and Old Canon City Road intersection should be upgraded as a staging area. All other roadways should also be treated.

Compartment 7

This area has high density housing. Small lots and the mobile home park will prevent installation of adequate defensible spaces. All areas should consider wide perimeter fuel treatments and regular mowing programs to reduce fire intensity. Overall, fuels are light, consisting of open fields and meadows. Gamble oak, pinon and juniper stands around housing clusters should also be thinned heavily. The Pine Oaks Road area is in heavy oak and pine. Close coordination with Cheyenne Mountain State Park can aid in reducing fire intensity along the roadway and northern boundary of the neighborhood.

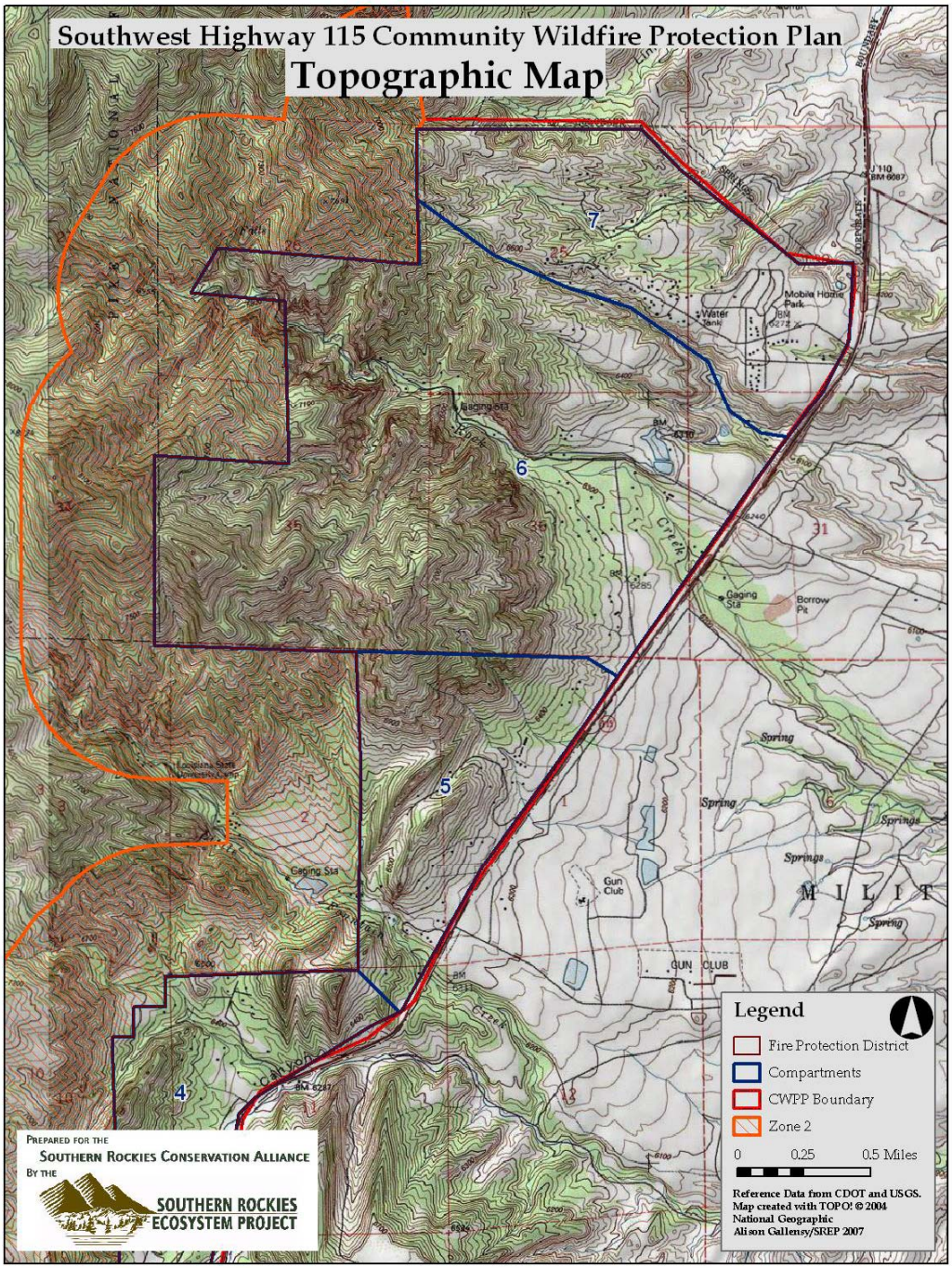


Figure 17, Compartments 5, 6 &7

Three Proposed Mitigation Strategies

The SW115 CWPP recommends three strategies for effecting fuel mitigation for proposed projects. The application of a specific strategy will have to be based upon the ownership and

developed or undeveloped aspects of the property proposed for mitigation. The basis of any strategies will be two-pronged: cost and legal.

Road Rights of Way
For properties on which El Paso County possesses rights of way or on properties directly owned by an HOA, mitigation work may be funded by El Paso County, SW115 and/or the HOA. This funding will either come from direct funding or through State or Federal grant monies applied for and received by SW115 or others.

Private Homeowner and Landowner Properties
SW115 neither has auspices nor declaration of use of private properties within its boundaries. Therefore, fuel mitigation on private properties, although highly encouraged by the Fire District, is the responsibility of the property owner. However, SW115 will provide information and services to assist property owners in their mitigation efforts. These information and services will consist of references, Firewise planning details and planning guides, occasional Firewise training classes, conduct of fuels projects as demonstration days on willing land owner sites, a possible mitigation slash disposal site or other disposal method (See Appendix E , *Firewise Household Tips, Property Mitigation and Protection*).

In private lands adjacent to a road right of way that has had fuel mitigation performed to form a fuel treatment, owners are encouraged to work with SW115 in "*feathering*" the mitigated fuelbreak into their private property to attain a wider fuel treatment as specified by Colorado State Forest Service (See Appendix C, *Fire Hazard Classes and Fuel Models*).

Undeveloped, Publicly-owned Properties
SW115 will work with NGOs, State and Federal agencies to treat lands adjacent to private land that pose a threat to structures and public safety. SW115 should strongly encourage the El Paso County Board of County Commissioners to enact ordinances to require property owners and land developers to *pre-mitigate* fuels on high risk wildfire properties to be developed. This *mitigation* is envisioned to be required prior to allowing the building of structures to proceed (See Chapter 8, *Implementation Plan*). There appears to be some degree of acceptance of developers to this community protection strategy since some developers have seen the marketability of treated properties. SW115 should assess potential in-fill areas that may be planned in these currently undeveloped but prime real estate areas (See Chapter 8, *Implementation*).

Type of Mitigation Used for Projects

The type of mitigation or method of fuel mitigation deemed appropriate for a specific area will be chosen when the area is assessed and base-lined prior to mitigation being performed. As indicated in Appendix G, *Fuelbreak Guidelines for Forested Subdivisions*, care will be closely given to assure environmental aesthetics of the immediate and surrounding area of mitigation projects.

Vegetation Analysis

Current analysis of the density and varieties of vegetation is an integral part of deciding when to schedule projects. Vegetation mapping can be kept simple and follow very simplified Colorado State Forest Service Fuel Mapping categories. It should be noted this "simple" system was developed years ago for use by planners and laypersons with little or no wildfire background. These should be augmented by USDA Forest Service **National Fire Danger Rating System (NFDRS) designations** (General Technical Report INT-39) or "Anderson's Aid to Determining Fuel Models for Estimating Fire Behavior."

The classifications used here are as follows:

- O- Low hazard or non-flammable areas. This includes bodies of water, road surfaces, well mowed greenbelts and golf course areas.
- X- Heavy Gambel oak (a.k.a. scrub oak, oak brush), mountain mahogany and other shrub species mixes. This fuel type is dominant in the east and south Compartments. (NFDRS Fuel Model B if untreated. Fuel Model F if treated.)
- A- Light fuels like natural prairie grasses with a mix of rabbit brush. This type predominates in the east Compartment. (NFDRS Fuel Model L. Areas with more than 1/3rd rabbit brushed cover should be Fuel Model T.)
- B- Medium fuels like those found along the riparian areas such as willows and other shrub mixes. (NFDRS Fuel Model E after leaf drop and Fuel Model R after trees have leafed out.)
- **C-** Heavy conifer tree areas found in most Compartments in the western portions of SW115. These tend to be predominantly ponderosa pine on south exposures, and Douglas-fir growing on north facing slopes. Some areas may contain a Douglas-fir and Ponderosa Pine mix, with occasional white fir. Pinon and juniper stands are also in this category. (NFDRS Fuel Model G if untreated. Treated stands, thinned and ladder fuels removed, could be considered as Fuel Model H.)

More exact fuel mapping should be done as individual projects are planned.

Scheduling

The scheduling for specific mitigation projects will be based on four factors and periodically reviewed by stakeholder agencies party to this Community Wildfire Protection Plan:

1) Hazard risk priority for the mitigation project;
2) Cost of the project and manner of funding to be used;
3) Environmental conditions required for mitigation; e.g., moisture levels, air quality management, etc.
4) Timing of "*tie-in*" projects impacting terrain identified for fuel reduction; e.g., development activity, and USFS/BLM/State Parks or adjacent private property projects.

The time schedule associated with imminent, planned fuel mitigation projects should be posted in the community affected. Written notification may also be used and take the form of announcements in newsletters, flyers, direct mailings or combinations of any of these mediums.

Emergency Egress

The SW115 Fire District has many areas where emergency ingress and egress will be difficult under emergency conditions. Narrow roadways, blind curves, steep grades and heavy fuels will place evacuating residents and incoming emergency personnel at risk. It is recommended SW115 prioritize transportation routes within the District for fuel treatments.

Multiple ingress and egress points are critical to public safety. Egress is needed for residents to evacuate and ingress required for emergency services. The need for multiple egress points in insuring adequate and timely evacuations has been shown in research studies by Professor Thomas Cova at the University of Utah. His team's research has shown that a minimum of four egress points are needed for most communities (*Public Safety in the Urban-Wildland Interface: Should Fire-prone Communities Have a Maximum Occupancy?* Thomas J. Cova, Natural Hazards Review, August, 2005). At present, most older housing enclaves have only one actual egress point as do some newer areas along spur roads off of steep ridgelines. It is also important to note that "bottlenecks" may occur within these communities if all traffic is directed to only one entrance.

A recent quote by Jack Cohen, Fire Scientist with the USDA Forest Service noted that, "Long evacuation routes are NO evacuation routes." (Personal quote made at the 2006 National Wildland/Urban Interface Fire Education Conference, 11-4-06, Denver, Co.)

It is recognized nationally, that most civilian fatalities occur during evacuations. This is also confirmed by studies of evacuation fatalities in Australia. Residents either become trapped by a fast moving fire, or wait too long to evacuate. It is recognized that if smoke and flames are already present, it may already be too late to evacuate. It can be expected that residents attempting to leave the community will clog existing roadways and impede access by emergency service providers.

Creating secondary access out of most communities may not be possible or practical. Therefore, it is critical that all roadways be heavily treated to reduce fuel volumes along major ingress/egress routes. It may be possible, in the interim, to create small staging areas that can allow for residents to remain temporarily when emergency services may be trying to enter the community.

Shelter In Place (SIP)

Limited access and sub-standard egress routes in heavy fuel areas may force homeowners to consider shelter-in-place ("SIP") as their only alternative during a major wildfire event. All residents should make plans to evacuate immediately when advised by emergency services personnel to do so. However, in the event homeowners are trapped and unable to escape, the home may be the next safest place to stay. Many fatalities occur during the process of evacuation; especially when homeowners wait too long to evacuate. Even when SIP conditions are met, evacuation orders from fire authorities should be followed. The decision to shelter in place should be made by the fire management team and not individual homeowners, and all orders from authorities should be followed.

It is important to understand that all the requirements for shelter in place must be met well in advance of a wildfire. It is not possible or safe to attempt to create stand alone conditions during a wildfire. To do so is unwise and compromises the safety of homeowners and firefighters. Furthermore creation of stand alone conditions requires a great deal of advance planning and coordination between the landowners, fire professionals and resource advisors.

This recommendation to shelter-in-place should only be followed by individuals who have taken precautionary measures prior to a wildfire event. These can be summarized as follows:

1. Has the structure been determined in advance to be “Stand Alone” by the local fire authority?
2. Is the fire management team aware that shelter in place conditions have been met, and are they aware that residents are being sheltered?
3. Are building materials fire resistant enough to prevent combustion from a flame front or firebrand storm?
4. Is the property defensible with minimal resources?
5. Can the property (ecosystem) actually benefit from fire, or suffer little harm?
6. Can fire be used by professionals in the defense of the property?
7. Are the adjacent properties treated as well?
8. Is the community treated to reduce fire intensity?
9. Have the surrounding areas, including public lands been treated to reduce fire intensity? Are watersheds feeding the community treated?
10. Are there adequate safety zones on the property?
11. Can safety zones within the community be accessed safely during a major fire event?
12. Are driveways and roadways safe for travel during a major event?
13. Are there multiple routes to the safety zone?
14. Has the property owner received formal fire training, and understand fire behavior? Does the owner have appropriate Personal Protective Equipment (PPE)?
15. Are backup fire prevention/suppression measures in place? In the event of power loss or public water system failure? Examples: Foams, generators, gels, fire retardant systems.
16. Is the person healthy and both physically and mentally fit?
17. Are sufficient supplies (food, water, medical supplies) on hand for at least a 72 hour period?

This list is not all-inclusive. It should be noted that individuals who take responsibility for their properties are still dependent on the actions of others. Fuel treatments for the surrounding area are totally dependent on the neighbors, surrounding community, and contiguous forested areas.

Shelter-in-place Structures as Fire Fighter Safety Zones
If sufficient numbers of homeowners within neighborhoods create easily defensible structures, then fire fighting resources can remain in place longer and with a higher degree of safety. Pre-designated “safe” homes can allow for fire frontal passage and deployment back into neighborhoods to check on structures and perform “mop-up” operations. Ideally, all homes are safety zones and fire fighters can focus on protecting natural resources.

It should be noted that no homes within the SW115 Fire District have been identified as either SIP or Safety Zones.

SERVICES, INFRASTRUCTURES, WILDLAND FIRE REPONSES

This section of the SW115 CWPP details professional and voluntary resources available to respond to emergencies associated with wildland fires impacting SW115 residents and structures. Professional responders are always the front line in addressing wildfire, rescue and medical emergencies.

Professional Wildland Fire Response Services

For wildland fire emergencies endangering residents, the first line of responders are SW115 FPD Volunteers. If SW115 FPD finds that the fire is beyond their capability to suppress, the Incident Commander on-scene will request additional assistance. Assistance will be available through Automatic Response and Mutual Aid agreements from both within and outside El Paso County. SW115 Fire Department will coordinate and administrate these services.

El Paso County Emergency Services

El Paso County Sheriff's Office, under the El Paso *County Office of Emergency Management* division, provides the umbrella incident management and agencies coordination structure to the response and recovery from a wildland fire event(s) endangering El Paso County. Every wildland fire emergency incident that occurs in El Paso County utilizes the *Incident Command System* (*ICS*) during response and recovery activities, employing multi-agency operational structures.

The Office of Emergency Management's mission is to ensure that local governments within El Paso County have the operational capability to survive a disaster, and to manage and conduct essential emergency functions. This capability of managing a survivable crisis includes the ability to direct, control, manage, and coordinate emergency operations within jurisdictions in cooperation with other local governments and liaison with the State and Federal government. To accomplish this, it maintains and develops a capability built on people (volunteers), communications equipment and plans.

Emergency Operations Center

An Emergency Operations Center (EOC) is one of the jurisdiction's specialized facilities to include personnel and equipment that is specifically designated for use in emergency situations. It is a public resource that serves as:

1. A command center with communications equipment.

2. An operations center for government officials, volunteers and special agencies.

3. An information center that analyzes and disseminates information.

The county office responsible for the EOC's operations is the Office of Emergency Management (OEM). This office develops exercises to test staff and communications to ensure the facility and its plans are functional.

Community Emergency Response Team

FEMA has established programs for training of local residents in dealing with multi-hazards. This program, CERT (Community Emergency Response Team), is recommended and can be set up and organized under SW115 and EPC-OEM. These voluntary groups are only used when

professional first responders cannot respond and then can only be activated by authorization of the Emergency Services Manager or the Chief of the local Fire Protection District.

El Paso Sheriff's Office Wildland Fire Crew (EPSOWF)

EPSOWF provides engine crews and Type II hand crews for all ranges of wildland fire suppression from initial attack to mop-up, prescribed burns, and urban interface protection. In addition to fire suppression activities, the crew provides public services in the form of training and education. EPSOWF is responsible for "red card" and wildland fire training activities for local fire departments throughout the county. They also assist the US Forest Service, BLM, CSFS, Department of Defense (DOD, Air Force, Army), and National Park Service.

Mutual Aid and Automatic Aid

In the event of a wildland fire, SW115 operates under a mutual aid agreement for providing equipment and personnel assistance, if able and available, among its fire fighting agencies (see Appendix I). The agreement encompasses fire departments from El Paso and Teller Counties, City of Colorado Springs and Fort Carson Fire Department. As resources begin to deplete and the situation is recognized to be one that could be disastrous, municipal and county officials will become involved. At that time, EPOEM shall confer and determine what special provisions need to be made or what special action needs to be taken. At this point, the need for the Emergency Operations Center (EOC) will be considered.

For wildland fire only, mutual aid from local government fire suppression resources can be requested through the Designated Dispatch Center from the on-scene Incident Commander. Requested fire suppression resources would be from entities within El Paso County or from Teller County. Out of county local government resources will be coordinated and placed by either the Incident Commander, Colorado State Forest Service Fire Duty Officer and/or County Office of Emergency Management.

The following is a list of commonly requested resources that are available through El Paso County Public Works (DOT) and other County resources:

MCP	Dump Trucks	Wildfire Cache	Transport	Sandbags
Dozers	Portalets	Trailers – Flat-	Vehicles	GIS Support
Graders	Event Tents	bed & Cargo	Portable	Barricades
Water Tenders	Radio Cache	Generators	Lighting	Feeding
Sheltering	Animal Rescue	Fuel Trucks	HazMat Trailer	Support
Support	Team	Snowmobiles	Message Signs	Cranes

El Paso County has four primary resource policies: 1) Firefighting operations will be coordinated by the fire district or city department within their jurisdiction; 2) Mutual Aid from other that El Paso County fire agencies will be activated by on-scene Incident Command as necessary and out of county resources will be activated by the OEM Division of El Paso County Sheriff's Office; 3) County Commissioners may request State assistance; and, 4) Local and State Civilian Fire Fighting Forces may be augmented by Federal Agencies.

SW115 Fire Protection District

SW115 Fire Protection District (SW115) is the first responder to a sighted or reported wildland fire threatening the environs surrounding and interior to the District. SW115 has two stations: Station 1 located at 15580 Cala Rojo Drive; Station 2 located on Pawnee Road. The overall equipment resources of SW115 are:

Equipment-

Type 1 Engine- 1
Type 3 Engine- 1
Type 6 Engine- 2

In the event SW115 FPD personnel and equipment resources become exhausted, first reinforcement mutual aid calls are Colorado Springs Fire Department, Fort Carson Fire Department and El Paso County Wildland Team. Automatic Aid and Mutual Aid Agreements are included in Appendix I.

SW115's established first thrust strategy for fighting wildland fires endangering the District is *direct suppression.* If suppression is not an option, then a defensive posture will be taken. Engines will be stationed at the most defensible structures first. Structure prep should include closing up structures, placing hose lines into use and removal of fuels around homes. Black lining (burning out) should be accomplished quickly and safely.

Emergency Medical Services

SW115 provides first response emergency medical services to the District. The list below is the breakdown of the SW115 emergency personnel resources and staff.

SW115 FPD Volunteer Fire Fighters (16) as of January 2007:

Water Resources

SW115 currently has emergency water supplies located throughout the District. There are three water districts within the SW115 District. Other supplies may be available if needed through the quarry operations or by use of small bodies of water close to the District. A map of water storage facilities will be added upon update of the CWPP.

Refuge Zones/Staging Areas

During emergency situations, it may be necessary for residents and emergency services providers to reach a safe place that is outside of the community. SW115, in conjunction with other wildfire authorities, recommends establishment of Refuge Zones outside the communities. These can be used as reasonably safe areas where little or no wildfire risk exists in close proximity to either natural (vegetation) or man-made (homes) fuels. These may serve two purposes. The first is as a refuge from any wildfire threat. The second is as staging areas to allow timely and orderly evacuation of residents. It should be noted that many of the civilian fatalities from wildfires are caused during evacuations in which residents become trapped and overrun by fire. Once residents are evacuated, these safety zones may be used by firefighters as staging areas for marshalling resources within the community.

All neighborhoods and communities should learn their quickest routes to US Highway 115. This will have to serve as the major refuge zone and staging area for residents. For these to be effective, signage/posting will be needed. An annual educational campaign should be established. Posting on these locations will be essential. Mail kiosks can also be used as posting places.

Internal Volunteer Services and Communications

SW115 does not currently support any volunteer and paid groups that can be used in communication support or augmentation of professional first-responders within neighborhoods in the event of a wildfire emergency. It is strongly recommended that the Board implement operating agreements with SW115 that allow for use of Homeowner Association (HOA) properties and facilities during emergency situations. A sample agreement is included in **Appendix F** .

The most frustrating issue for residents during wildfire events is a lack of information. Local media cannot always be relied on for timely and accurate information. Residents may be away from the community at the outbreak of an emergency and require information necessary to protect family members and pets still at home. Possible information sources are El Paso County web sites. The El Paso County Sheriff's Office (EPSO) may also have an emergency phone line set up to provide information.

The SW115 board and its managers should develop an emergency response plan for interaction with emergency services providers. This needs to be developed prior to emergencies and allow access for SW115 Board or designated representatives to the Incident Command Center or Outpost. In effect, this representative could provide accurate and timely information for distribution over existing community networks (web site, phone trees, and office staff).

Critical Utilities

In the event of a wildland fire that would impact the District, SW115 or EP-OEM Incident Command dispatcher would notify critical utilities for their support. Specifically, emergency involvement of utility support would focus on two areas: 1) Safety of the public and emergency response personnel and 2) Direct support of mitigating the emergency event.

Public and Emergency Response Personnel Safety

Beyond the direct emergency, event-damaged or event-threatened gas services and electrical distribution facilities can pose significant safety issues to the public and emergency response personnel. Direct intervention for disconnection, reconstruction or rerouting would be directed by:

Natural Gas Services:	*Aquila* Emergency Service Telephone Number: (800) 303-0357
Electrical Power Services:	*Intermountain Rural Electric Association* Emergency Service Telephone Number: (303) 688-3100

Direct Support

Direct support for water and communication resources in support of an emergency event would be directly provided or directed by:

Water:	*Water Districts:* *1)Rock Creek Water District* *2)Red Rock Water District* *3)Pinons Water District*
Wire-line Communications:	*Qwest Communications*: Emergency Service Telephone Number: (800) 573-1311 or

1-800-603-6000

Comcast
Emergency Service Telephone Number: (303) 930-2000

Any communication for support by utilities in an area impacted by an emergency wildfire event must be authorized by the on-scene Incident Command. Any work performed in an impacted area can be requested only by on-scene Incident Command through the Designated Dispatch Center.

Post-Fire Remediation

In the event a large wildland fire should burn significant acres above or in the community, SW115 will need to immediately direct efforts to reclaim or stabilize areas above homes. Burned areas will be prone to mud slides, debris flows or rock fall hazards. These can have an impact on surviving residences and the District road network. The de-nuding of slopes may release sediments and ash into existing drainage ways resulting in clogged culverts and overtopping of roadways by storm flows. If flows are heavy and concentrated enough, road surfaces can be washed away. An alert system similar to that used in the Hayman Fire Burn area may be required to warn residents of impending storms that have the potential to cause severe run-off. The SW115 FPD should be prepared to:

1. Immediately retain the services of an engineer or geologist to assess potential storm and debris flows after a wildfire of significant size.
2. Establish a stand-by contractor list of licensed and insured heavy equipment operators for clearing of roads, cleaning of culverts and construction of potential diversions or road repairs. This should be coordinated through El Paso DOT.
3. Hire a reclamation contractor to stabilize areas above homes and critical infrastructure with a combination of temporary and permanent erosion control measures. This should be coordinated through EP Environmental Services, Natural Resource Conservation Service (NRCS) and local soil conservation district.

Post-fire issues can linger on for many years after fire occurrence. The SW115 FPD should annually assess its risks and budget accordingly for remediation.

Insect and Disease Prevention and Control

The area contains stands of ponderosa pines that will be susceptible to Mountain Pine Beetle (MPB) infestation. Mountain Pine Beetle is active in the area, although the activity seems to be confined to individual trees or small pockets of trees at this writing. The threat of increased activity if always present, Vigilance will be necessary on the part of District residents to regularly inspect trees on private lots and greenbelt areas for any signs of infestation. Large groups of dead trees can contribute to fuel loading in the community and should be removed in a timely manner to prevent spread. No general, area wide preventive spraying program is recommended at this time for prevention of MPB. Should an outbreak occur in the area, homeowners should be advised to preventively spray mature pines.

Severe infections of Dwarf Mistletoe (DMT) have been found throughout the community. Mistletoe is a parasitic plant that infects pines, and results in the debilitation and slow death of the trees. Trees infected with the parasite can result in increased fire hazards. There are several strategies to control mistletoe infections, and advice from a professional forester should be sought if a landowner has mistletoe infected trees.

Spruce Budworm and Douglas-fir Tussock moth are now building to damaging levels in the Front Range Foothills. Spruce budworm damage was noted as heavy in some areas of the District. If

not controlled, trees will be weakened and susceptible to attack by bark beetles. This will also contribute to fuel loading.

Builders who remove trees for lot clearing and subsequent home construction should remove all lot clearing slash within six weeks of removal to prevent use of fresh slash by Ips Engraver Beetles (Ips) as brood wood. Ips generally attack trees weakened by lightning strikes, root damage during construction or transplanting. Ips activity is currently heavy just south of the District in Fremont County and the insects appear to be moving north. Regular bark applications of high value, stressed trees should be preventively sprayed until the stressing agent is eliminated. The most effective prevention for harmful insects is always a good program of forest management and thinning. Properly thinned trees will be less susceptible to insects, and thinned stands are more likely to survive a wildfire without serious damage.

Gambel oak is prone to periodic outbreaks of defoliating insects. These outbreaks tend to be cyclical and do not generally cause oak loss. Often time, by the time damage is noted, the insects have completed their life cycles and spraying is ineffective.

Weed Control

Virtually all areas of the District are infested with noxious weeds that are displacing native plants and degrading wildlife habitat. Noxious weeds can also contribute to wildfire spread. District residents should begin an annual control program of mowing and spraying. If spraying is not possible, biological control agents (typically host specific insects), should be introduced to lower the rate of spread.

Poison ivy may be found throughout drainage ways in open space areas. This plant will pose a hazard to firefighters during hand line construction. Smoke from burning poison ivy can also be toxic if inhaled or exposed to eyes. Control will be difficult when found growing intermixed with other native plants. A program to reduce and contain poison ivy is strongly recommended.

PUBLIC NOTIFICATION, COMMUNICATION AND SUPPORT

Communications to the general public are classified in two categories: 1) Warnings or emergency information broadcast to the public of specific hazards, such as single or multiple wildfires threatening the communities and 2) Informal informational services and event notifications under non-threatening conditions.

Warnings and Hazard Notification to the General Public

Warning notifications concerning a specific wildfire or wildfires directly threatening communities can be authorized only by SW115, EPOEM El Paso County Emergency Services Coordinator (EPOEM) or the El Paso County Sheriff. Such a warning can be issued in a variety or combination of methods and will generally contain *action* information for residents. An *action* information or direction may contain preparatory information for residents concerning potential or upcoming evacuation of the area. Or, it may be an immediate, "*act now*" request for evacuation due to a wildfire condition that is deemed to have imminent impact to the area. Authorization, *official* warnings may come from:

1) Emergency Preparedness Network (AKA: Reverse 911)

Services Communications and Support Systems

Non-threatening Conditions

Informational notifications of are done for public meetings, events and general services conduct or schedule information. Several mediums are used for general public informational notifications including Board of Director notices of meetings, general letter mailing, flyer posting and mailings.

Wildfire Condition

In the event of an actual wildfire impacting the community, updated residential wildfire event information should be posted periodically on County websites. Updated information is generally available on messages recorded and made available on event-established, dial-up telephone line(s) by the El Paso County Sheriff's Office. The telephone number(s) of phone line(s) for such use are established for each event, with the numbers announced to the public via printed or announced on public broadcast mediums. Periodic updates regarding emergency events are also generally broadcasted via AM radio, on the official emergency public broadcasted radio station for El Paso County.

IMPLEMENTATION PLAN

Chapter 8 provides a summary of actions of SW115 Community Wildfire Protection Plan. These actions are designed to address four broad subject areas to enhance residents' safety and diminish wildfire potential in SW115 Fire Protection District and its adjacent environs as identified in Chapter 4, Wildfire Hazard Assessment. The actions to be taken in the public education arena are intended to better prepare residents for helping themselves and nurturing their family's safety needs in times of crisis as well as providing them knowledge to reduce the structural ignition potential of their homes and those of their neighbors. The actions set forth in the Fuels Treatment category are both short term and long term. Based upon forestry and fire sciences, the Fuels Treatment actions address the mitigation of wildfire fuels in SW115 and adjacent private, BLM and United States Forest Service owned lands. The general periods identified for developing fuel treatments in these high wildfire risk areas is to be based upon both risk potential and funding availability. The priorities associated with these wildfire risk mitigation areas can be found in Chapter 4, *Wildfire Hazard Assessment*, and Appendix A, *Hazard Reduction Mitigation Projects*. The third area addressed by this implementation plan is the communication, support and information services used to provide added knowledge and information to be used in planning for wildfires as well as fighting them in the event one or more should occur in the community. The final broad focus area, Mitigated Areas Perpetuation, addresses maintaining fuel mitigated areas once the areas have had wildfire fuels initially reduced as well as on-going SW115 administrative actions associated with the Community Wildfire Protection Plan.

Public Education

The SW115 community has moderate residential turn-over and influx. Based upon average monthly real estate listings weighted against average home sale time period or "*life on market*," the community may experience up to 10% change to its profile of residents during the year. Many of these "*new*" residents of the community may not be initially familiar with living in a high wildfire risk area. The Public Education actions of this Community Wildfire Prevention Plan are planned to educate these newcomers as well as increase the knowledge of the current residential base in areas of family safety, Firewise strategies and construction, fuels mitigation actions, and landscaping materials that are more resistant to ignition than wood or other commonly used building and landscaping products.

- Topics for public education will vary depending on seasonal or wildfire risk conditions, input or requests from residents and the availability of qualified instructors or presenters. The public education topical areas include but are not limited to:
  - Structural construction materials or design considerations
  - Home safety and home fire warning and fire suppression equipment
  - Home risk self-assessment and structural wildfire risk reduction
  - Residential fuel reduction strategies
  - Landscaping for wildfire protection; xeriscaping
  - Living adjacent to wildlands
  - Home property fuel mitigation strategies and methods
  - Chainsaw safety and use

- Public Education programs will use professionally developed instruction collateral material developed from resources recognized for their experience and expertise including,
  - National Firewise Communities USA
  - American Planning Association
  - United States Forest Service
  - Colorado State Forest Service
  - Colorado State University Cooperative Extension
  - SW115 Fire Protection District

- El Paso County
- Private Consultants

- Upon publication of the 2007 Community Wildfire Protection Plan for SW115, the Wildfire Committee or Board will develop an annual schedule that is published and periodically recapped in the community newsletters. Also, see Appendix E, *Firewise Household Tips, Property Mitigation and Protection.*

- Coordinate volunteer firefighter training with other agencies and NGOs. Work with BLM, USFS, Fort Carson and The Nature Conservancy to provide fire experience for slash pile burning and prescribed fire.

- Involve the public in as many phases of planning as possible for all burning operations to teach the general publics that smoke in the air can be a good sign of fuel hazards being reduced. Also teach the economy of scale for fuel treatment costs utilizing fire as a management tool for both fuel reduction and ecosystem restoration. Good communication with SW115 on all agency or NGO burns should be done well in advance.

Although several public meetings have been held to inform and/or assess the opinions of the general public on *Firewise* and wildfire issues, the 2007 baseline for this implementation plan area is being considered zero. Annual performance assessment of public training will be based upon the public education training and informative session attendance as well as comments and reactions from the general public. For overall impact against the wildfire protection plan program, training session attendance should be totaled annually and expressed as a percentage of total residents. This percentage should be trended year after year for evaluation and public education course management purposes.

Fuels Treatment

Earlier in Hazard Assessment, Chapter 4, potential wildfire fuel treatment areas were identified in five groupings: 1) *Road Rights of Way and Safety Zones; 2)Federal Lands*; 3) *Private Homeowner and Landowner Properties;* 4) *Undeveloped, NGO Properties; and 5) Quarry Operations*. The implementation actions set forth in this Plan address each of these individual areas separately.

Road Rights of Way and Refuge/Staging Zones

Fuel Treatments along roadways provide quick, safe access for wildfire defensive positions and wildfire suppression; as such, they are necessarily linked with roads systems. Where possible, potential fuelbreaks proposed in this Plan have been connected with public and private roads and time-established trails within less developed areas. These potential fuel treatments will provide good access and defensive positions for firefighting equipment and support vehicles. In addition to creating defensive gaps of potential wildfire fuel and affording good access, potential fuel treatments are proposed in this plan to create "*compartments*" within SW115 that break up large tracts of dense fuel, thus limiting uncontrolled spread of wildfire. The planned fuel treatments and the "*compartments*" they enclose can be seen on the Compartment Map, Chapter 4, *Hazard Assessment.*

Adequately designed Refuge/Staging Zones can aid both resident and firefighters. These will need to be monitored throughout the growing season for potential wildfire risks. Once constructed, the primary need will be mowing and pruning of ladder fuels. Caution should be taken on large scale forest openings and their impact of soil erosion; especially on steep slopes.

Implementation Actions

- Mitigate existing and proposed road areas within the right of way associated with the road. Generally, in all established and planned roads within SW115, this action creates a fuel gap of 60-120 feet; i.e., 30-60 feet either side of the centerline of the road. Although Colorado State guidelines for fuelbreaks are generally 200 feet or greater, depending on fuel density and terrain slope, this Community Wildfire Protection Plan initially establishes a break of 60 feet since such can be addressed quickly within the road right of way, followed later by working with adjacent landowners to encourage widening the fuel treatments into fuelbreaks by encouraging "*feathering*" of the fuel treatments into their private land. The SW115 Board will:
  - Work with Colorado Department of Transportation (CDOT), El Paso County Department of Transportation (EPDOT), CSFS and El Paso County Environmental Services to assess and cooperate on joint fuel mitigation projects;
  - Review prioritization of fuel mitigation projects and schedule projects annually based upon funding and the identified risk priority of the projects;
  - Take action to establish a separate budgeting category (2008 and yearly beyond) to identify "*direct*" budgeted dollars to be directed at road right of way mitigation projects and mitigation projects associated with established and recognized trails and lands within SW115 Board jurisdiction;
  - Detail and file for particular Federal grants awarded annually for fuel mitigation and wildland fire protection support. Funding may be channeled through CSU/CSFS as "sub-awards";
  - Develop and update annually, a long-range (five to twelve year) schedule of wildfire fuel mitigation projects and post the schedule on the SW115 website (if developed) for public access.

State and Federal Properties

SW115 has the opportunity to use state and federally managed properties to demonstrate good property management and ecosystem restoration. Publicly managed areas away from main roadways and refuge/staging zones can either help or hinder individual homeowner actions. Where possible, state and federal properties should be treated to a higher level than that on private property; especially where no defensible space can be created by individuals due to lot size, terrain, differing or absentee ownerships, etc. On-going maintenance by outside contractors or in-house staff will be important to provide risk reduction for adjacent home sites.

Implementation Actions

The SW115 Board and Fire Department staff will need to work closely to insure that treatment projects allow for some level of privacy protection currently provided by the over-grown and declining gambel oak and conifer plant community. Visual sensitivity will be important. The Board will:

- Work with wildfire professionals to lay out treatment areas on state and federal properties by advising the neighborhood of all activities. Coordination with adjacent property owners will be necessary.
- The same items noted under Fuel treatments and Refuge/Staging Zones will apply.
- Work with wildlife professionals to aid in fuel treatments that will not affect potential threatened or endangered (T&E) species. Or the reverse: that T&E species regulations will not prohibit or deter homeowners fire mitigation efforts.

Private Homeowner and Landowner Properties

Wildfire fuel mitigation on private properties is the responsibility of the property owner. Having no authority over private lands, SW115 will provide information and services to encourage and assist property owners in their mitigation efforts. Land owners, adjacent to open space properties, will be

encouraged to work with the adjacent land managers in extending mitigated fuel treatments into their private property. Such potential action is deemed to benefit both NGO/State/Federal land managers and the individual landowner(s).

Implementation Actions

- SW115 Fire Protection District will work with private property owners within the boundaries of the District to support them in mitigation efforts by:
  - Providing resource and education help as indicated in the "*Public Education*" actions, above;
  - Continue to track "*in kind*" private fuel mitigation work on private property;
  - Fund certain support projects; e.g., periodic *slash* removal;
  - Develop alternative methods to fund the slash and yard waste disposal sites;
  - Formalize Design Review processes and Design Guideline modifications that allow for implementation of Defensible Spaces. These shall utilize the services of SW115 fire fighters and professional foresters. Note: The recent passage of Colorado State Statutes that must allow for homeowner defensible spaces shall be incorporated into any new guidelines.
  - Continue to encourage replacement of wood shake-shingle roofs by allowing as many materials as possible. Note: There is no prohibition on use of fiberglass composition roofing. Alternatives that maintain the aesthetic values currently established, while providing a "Class A" level of protection are critical.
  - Provide information distribution of wildfire planning or Firewise events or activities affecting the homeowner;
  - Provide volunteer notification and limited assistance of homeowners during an emergency event.
  - Recognize and adopt SB-100 wildfire mitigation language as part of the architectural control (ACC) process (see Appendix B, SB-100) so that no homeowner is prohibited from implementing mitigation efforts.
  - Notify owners/operators of telecommunication facilities in the District that fire protection efforts will be limited or impossible without pre-treatment/mitigation.
  - Assist owners with any Endangered Species regulations that may impede implementation of Firewise actions on private land. Actions that involve Federal funds may require cooperation with US Fish and Wildlife Service (USFWS). USFWS guidelines are attached as Appendix J. Colorado State Forest Service Defensible Space thinning criteria are attached as Appendix K.

Undeveloped, NGO Properties

Areas of undeveloped land exist throughout the District (See Chapter 4, *Hazard Assessment* and Appendix A, *Hazard Reduction Mitigation Projects*). These areas are heavily covered with dense, untreated timber and, in many situations, also present rough, dramatically sloping terrain. Consequently, these areas present huge fuel beds for wildfires and present SW115 with its most significant threats for wildfires. The undeveloped, and generally privately-owned, areas may require residents to take more aggressive action on their properties in order to address fuel reduction.

Implementation Actions

- SW115 Fire Protection District will work with private property owners of undeveloped and lands bordering on residential properties to assess and plan potential joint mitigation efforts. Concurrently, SW115 will pursue collaboration with El Paso County agencies and officials to assist and support efforts to reduce wildfire exposure by addressing undeveloped areas. Such actions will include efforts to:

- Assess timing of in-fill development in currently undeveloped areas and working with them, in conjunction with El Paso County, to effect guideline driven fuel mitigation on their targeted properties prior to structure construction;
- Encourage and stimulate El Paso County authorities to effect changes in ordinances and statutes to require developers to mitigate the areas being developed prior to any construction;
- Initiate further discussion with owners of large parcels, BLM and the United States Forest Service (with the Pike National forest to the west) to assess potential individual and joint wildfire mitigation efforts on common interest areas.

Quarry Operations

Two large quarry operations exist within the District. These are the Menzer Quarry and Red Canyon Quarry. Both areas can serve as safety zones given the large areas devoid of vegetation. The District should work with each quarry to identify potential hazards that may cause fire starts related to their operations. Both operations are privately owned and operate under state mining regulations and/or permits. Heavy equipment is typically used in quarrying operations and could potentially be used in fire fighting efforts. However, strict guidelines must be followed to allow use of any equipment.

It should be noted during the Hayman Fire of 2002, that local mines and quarries offered their equipment for use by federal agencies. The offers of assistance were denied for life/safety reasons. This created a public relations issue for land management agencies that cannot allow unapproved equipment or untrained operators to be used for wildland fire fighting. Heavy equipment usage for wildland firefighting requires highly specialized training to protect both the operator and fire fighters. Untrained operators can also cause significant natural resource damage and cleanup expenses.

Implementation Action

- Quarries should be contacted to determine if they are interested in obtaining proper certifications/inspections of equipment that could be used for fire suppression.
  - Develop an annual inspection program through BLM or USFS to inspect and certify equipment. Educating operators and managers about requirements could head off bad public relations in the future.
  - Develop a training program for equipment operators and monitor annual re-certifications. This may be administered through a federal agency, if appropriate.
  - Assist quarry operators in identifying any natural fuels around their operations that could be treated through their business plans to reduce risks from the operations as well as risks to their operations. An example will be loss of revenue when access is cut off during a major wildfire.
  - Identify fuel treatments along quarry access roads that can be treated as part of annual operating expenses. These could reduce potential fire spread from trucking accidents.
  - Insure that each operation has an adequate evacuation plan or Shelter-in-place plan.
  - Insure that SW115 Board and fire fighters are aware of inspections/certifications and training needs for heavy equipment usage.
  - Monitor reclamation efforts to insure that reclaimed areas do not contribute to fuel loading in the future. Example: Planting of dense conifer stands.

Communication, Support and Information Services

Communication, support and information services, both with professional firefighting- emergency services agencies and with the general public, is instrumental in nurturing wildfire preventive action as well as protection in the event of a wildfire emergency (See Chapter 7, *Public Notification, Communication and Support*). Actions designated below are targeted at raising public awareness,

providing preventive and protection/fire suppression support, and recognizing efforts that have and will be taken relative to wildfire fuel mitigation in and around Sw115.

Implementation Actions

- Implementation actions are recommended to:
  - Notify public of wildfire preventive actions being taken by using the SW115 newsletter, distributed flyers, direct mailing, or combinations of the aforementioned media.
  - Recognize implemented projects in the newsletter;
  - Identify, schedule and fund wildfire protection ancillary projects; e.g., Remote Automated Weather System (RAWS), improved communications, signage, etc.

Mitigated Areas Perpetuation

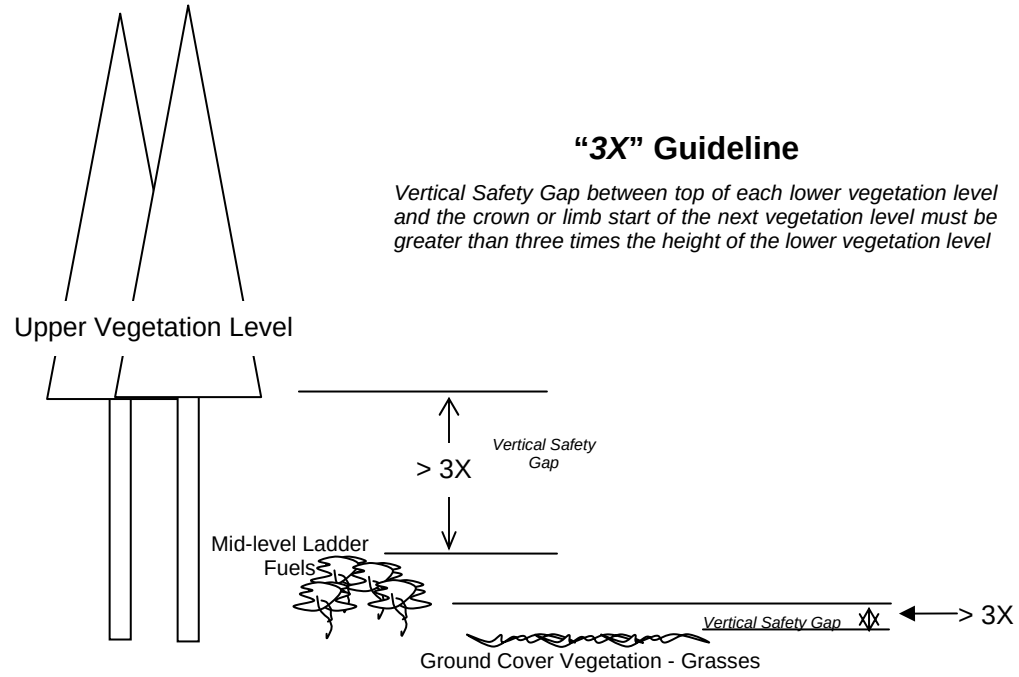
The focus of this broad section of the Implementation Plan is twofold: 1) to address the guidelines for assessing when to maintain fuel areas that have already had fuel reduction efforts applied and 2) to set forth a checklist of administrative actions that need to be followed by SW115.

Implementation Actions

- Existing wildfire fuel treatments and private land areas that have been mitigated need to be maintained to be effective. In order to evaluate effectively when maintenance of mitigated areas is needed, a forestry "*3X*" guideline, described below, exists. This guideline is applicable to both private and public property. To maintain mitigated areas, private property owners and the SW115 board should:
  - Assess mitigated property periodically and determine the relationship of the property's vegetation growth against the maintenance guideline for the mitigated property;
  - Apply trimming and cutting maintenance on the previously mitigated property if current vegetation growth falls below the "*3X*" guideline.

Previously Mitigated Property/Fuelbreak Maintenance
"*3X*" *Guideline*

Three layers or vertical levels of growth generally constitute vegetation in a mitigated area: 1) Grasses which constitute the bottom or lower level of growth; 2) Brush or small tree stock that comprise the mid-level, commonly referenced as the primary "*ladder fuel*" level' and, 3) Tree crowns, the upper or most vertical level of the mitigated area. The height of each respective level of vegetation is that level's "*X*." The gap between a lower vegetation level's top and the start of the crown (or bottom limb) level of the next level of vegetation is the safety gap. Whenever the gap level closes to less than three times the height of the next lower level of vegetation (i.e., less than "*3X*"), maintenance trimming needs to be effected to bring the mitigated area back within the safety guidelines (i.e., more than "*3X*").



- The SW115 Board will implement the following administrative actions:
  - Establish a separate SW115 budget category, which denotes funds for CWPP planned actions (For ledgering and future financial analysis, sub-categories should underpin the category to track expenditures for privately owned property, SW115 support functions and SW115 work with undeveloped parcels of privately owned land);
  - Detail a chronological schedule for filing for Federal grants applicable to mitigation and Firewise work as these may become available;
  - Budget specific SW115 funds for "*direct*" funded wildfire fuel mitigation on road/trail rights of way and any SW115 owned property;
  - Contact and begin discussion with private property owners for potential individual and joint wildfire mitigation efforts on common interest areas and conduct training on defensible space and home construction safety;
  - Fund wildfire prevention training for all SW115 residents;
  - Assess timing of and maintain a schedule of land development action in currently undeveloped areas;
  - Support communities to effect a second road for egress/ingress to all developed areas within the District;
  - Schedule appropriate, periodic general public updates of CWPP planned work;
  - Continue to identify and schedule wildfire protection ancillary projects; e.g., Remote Automated Weather System (RAWS), improved emergency communications, emergency and wildfire protection signage, etc.
  - Establish and maintain baseline information for proposed areas of mitigation;
  - Evaluate planned CWPP projects for effectiveness and amend CWPP annually to keep plan and actions current and appropriate for changing environmental and development conditions.

Insect and Disease Control

Forest insects and diseases (I&D) can contribute to wildfire potential by creating large bodies of dead and/or dying fuels. Drought periods will contribute to I&D loses. The following are several key pests

Dwarf Mistletoes
Some areas in the District are impacted by pine dwarf mistletoe and Douglas-fir dwarf mistletoe (DMT). It should be noted that "brooms" formed by dense DMT growths can contribute to wildfire spread and intensity. Heavy brooms found on trees along right-of-ways should be either pruned or entire trees removed. In many cases, trees are at an infection rating of 6 (scale of 1-6 with 6 as most severe). In areas with highly erodable soils, pruning may be necessary to maintain some form of forest cover. The following actions should be incorporated into future planning:

1. Identify all areas and types of infections.
2. Develop a strategy of DMT containment through buffer strips between infected and uninfected stands. Utilize any DMT buffers as fuel breaks.
3. Prune "brooms" along all roadways and/or remove rapidly declining trees close to roads.
4. Thin infected stands to improve individual tree health.

Mountain Pine Beetle
Mountain pine beetles (MPB) will begin to impact ponderosa stands within the next 5-10 years. Direct control of infested trees should be a requirement of all homeowners to reduce rate of spread. However, untreated USFS and adjacent private lands may still allow MPB to reach epidemic levels in the community. The following actions will be necessary:

1. Train all homeowners in MPB detection and control.
2. Establish an annual inspection program of all pine stands and locate infested trees by late fall.
3. Develop a plan for infested tree removal and treatment.
4. Recommend preventive spraying of high value pines on residential properties. All infested trees should be treated or removed by May 1 of each year.
5. Thin all pine stands to CSFS recommended levels for improved tree health and vigor.

Pinon Ips Engraver Beetles
The recent drought has caused pinon pine mortality in some areas of the District. This has contributed to fuel loading. Standing dead trees, especially in large groupings, should be removed. If drought conditions persist, more drastic control measures may be required. Homeowners should be encouraged to preventively spray high value trees.

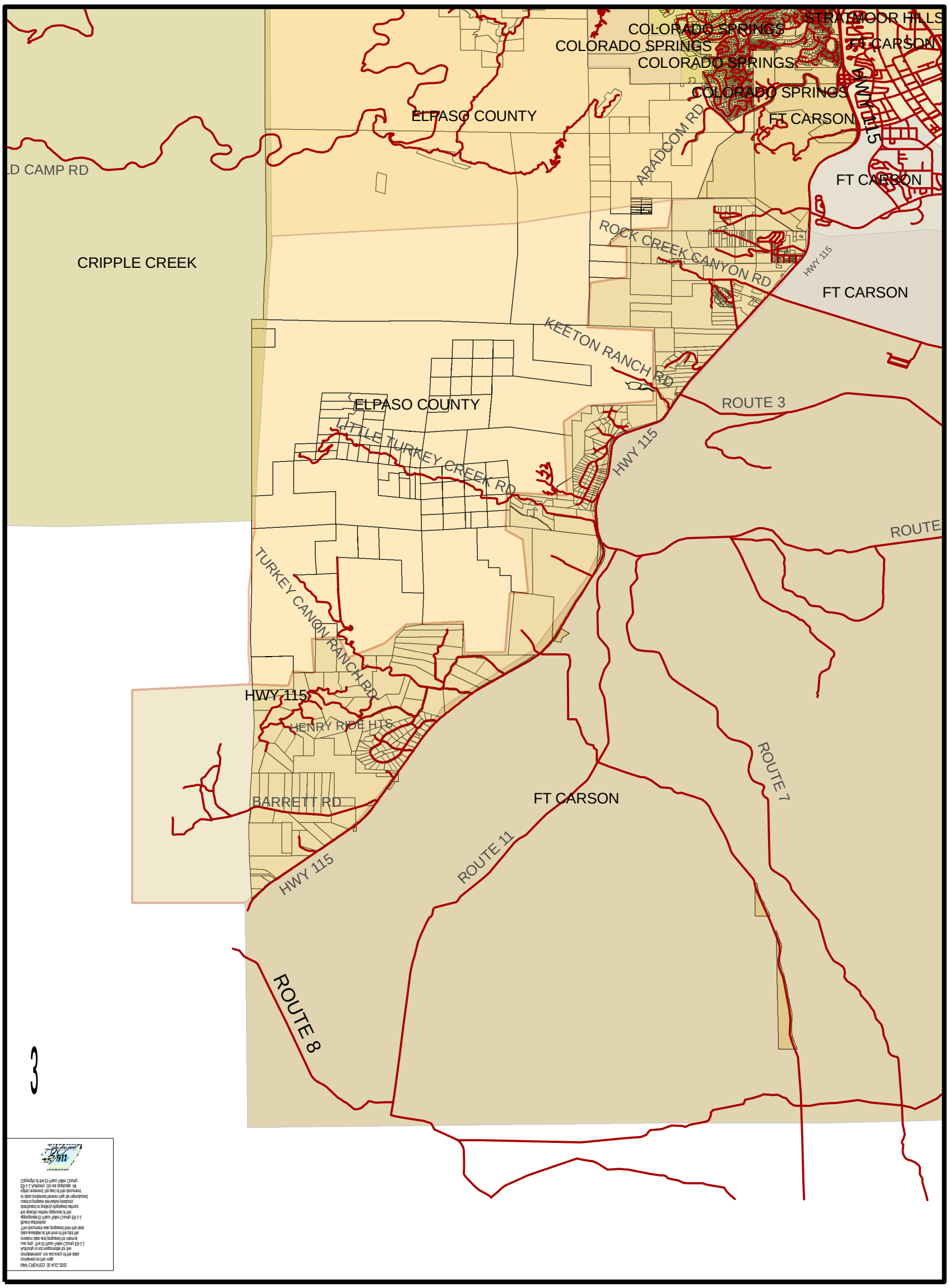
Other Forest Pests
Several other forest insects are present. Evidence of Spruce budworm defoliation on Douglas-firs was found to be heavy in some areas of the District (Turkey Creek Road to Menzer Quarry). If outbreaks occur in the future, high value trees should be treated to prevent losses that will contribute to additional fuel loading. Budworm defoliated trees will become more susceptible to attack by bark beetles. Budworm outbreaks are often controlled by climatic factors that allow for either epidemic or endemic conditions. The following actions may be necessary:

1. Monitor current infestations to determine need for direct control/spraying.
2. If infestation levels remain high, foliar applications of pesticides or biological control agents (Bt) may be required.
3. Thin all Douglas-fir stands to improve tree health and vigor. Increased distances between trees also allows for heavier predation by budworm predators.
4. Remove all dead trees as soon as possible to reduce fuel loading.
5. Contact CSFS foresters annually to stay abreast of infestation levels.

The insect pest currently being monitored in western Douglas County is Douglas-fir tussock moth. This pest can rapidly defoliate and kill Douglas-firs. Typically, infestations are at low levels and inconspicuous. However, climatic factors can allow for occasional outbreaks. No action is required at this time. SW115 should stay in contact with CSFS foresters to monitor for outbreaks in the area.

Appendix A

Compartments 1-7



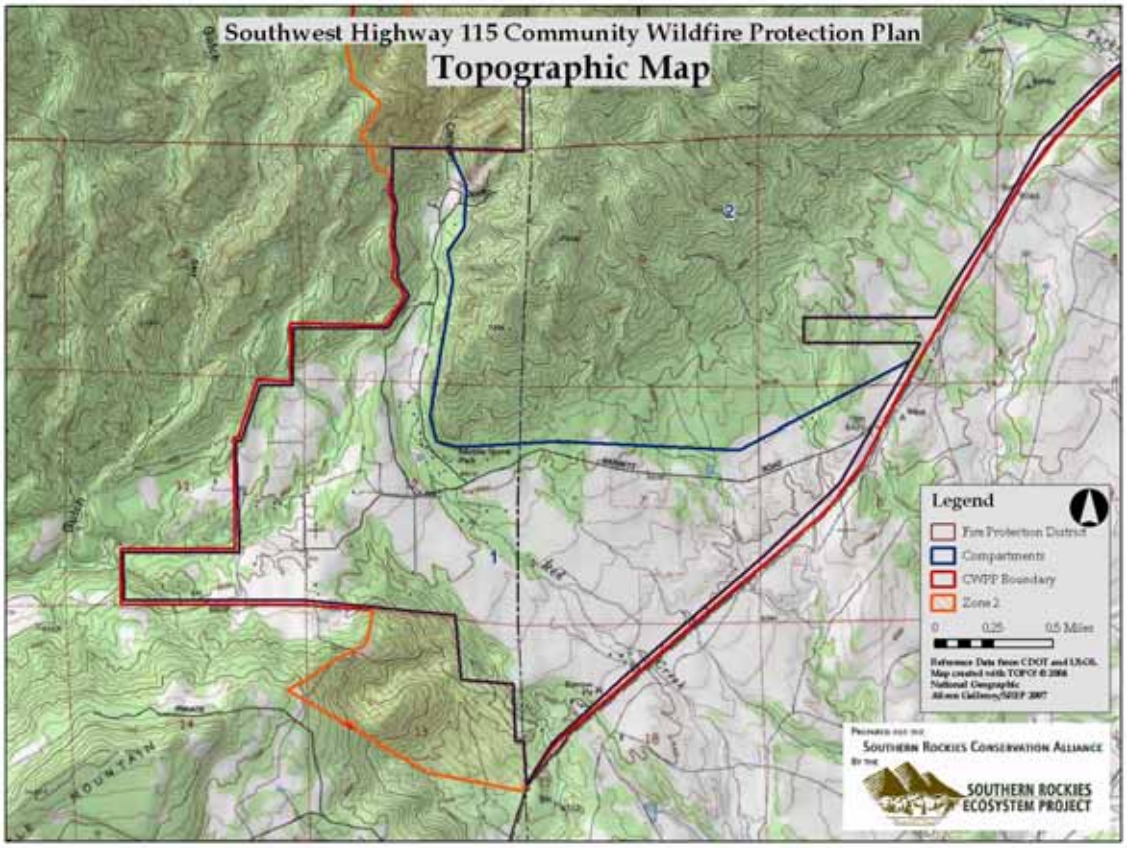
HWY 115 Response Area, with El Paso County Parcel Outlines

September 28, 2007

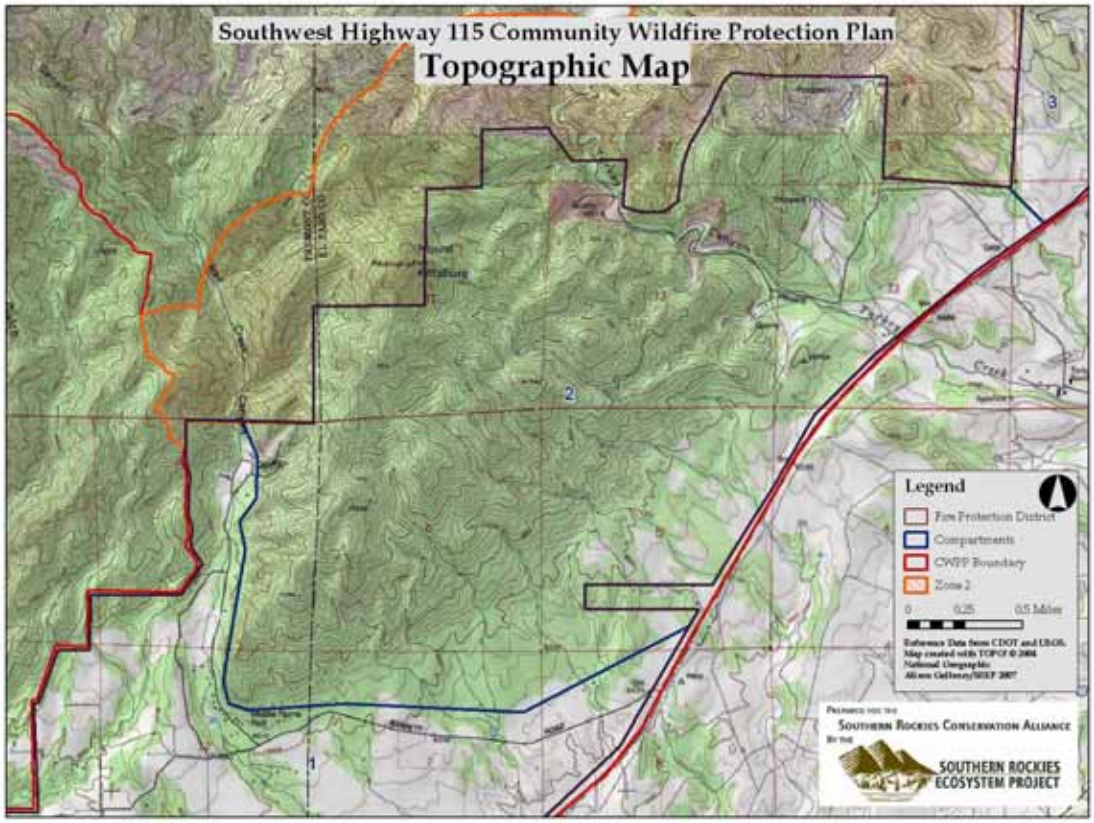
Compartments
SW 115 Fire Protection District

Roads/Subdivisions		Description
1	Barrett Road August Subdivision Sandy Creek Hts.	Access to Red Canyon Quarry with heavy truck traffic. Mountaindale RV Park included in compartment. Lower area primarily open meadows with pinon and juniper. Terrain mostly gentle(5-20%) slopes. Ponderosa pine with pinon/juniper mixed with gambel oak. Priority is mowing along all roadways and fuel treatment in west part.
2	Pinons at Turkey Creek Subdivision Turkey Creek Ranch Subdivision	Most roadways well maintained. Henry Ride Heights area has no evacuation route. Access to Menzer Quarry. Water supply in Pinons with hydrants. Lower area predominantly pinon and juniper with transition to ponderosa pine and Douglas-fir to the west. Oak understory present. Pinon ips beetle kill present.
3	Hitch Rack Ranch Wild Horse Road	Primarily ranch lands and scattered homes. Pinon/juniper transitions to ponderosa pine to west. No fuel treatments recommended for this compartment.
4	Red Rock Valley Calle del Fuente, Llanno Circle, Twilight Canyon, Roca Roja Circle, Calle Corvo, Paseo Corto, Valle Verde, La Loma Drive	Heavy fuels along most roadways. Water storage tank present with hydrants widely spaced. Some cul-de-sac turn-arounds too small for fire equipment. Area crossed with deep gullies and draws with heavy vegetation. Priority for treatment along all roadways.
5	Glenrock Drive, Keeton Ranch Road	Sunny View RV Park in compartment. One small auto shop. Homes in clusters on steep roads or with heavy fuels. Steep slopes above area. Several driveways connect to Hwy 115.
6	Old Canon City Road, Rock Creek Lane, Rock Creek Park Association, Rock Creek Canyon Road	Mays Museum present. Heavy fuels along roads in west portion. Rock Creek Canyon Road and Old Canon City Road should be considered a priority for potential staging area for evacuation. Water supply with widely spaced hydrants present.
7	Piute Rd., Cherokee Road, Comanche, Naha Casa Rd., Mesa Rd, Pawnee Rd, Pine Oaks Rd	Cheyenne Mountain Estates mobile home community with primarily grass fuels and open meadows. Hydrants and water supply available. Many roads too narrow for emergency equipment. Turn-arounds either inadequate or not available. Primary fuels in all areas is prairie grasses. Seasonal mowing recommended along all roadways.

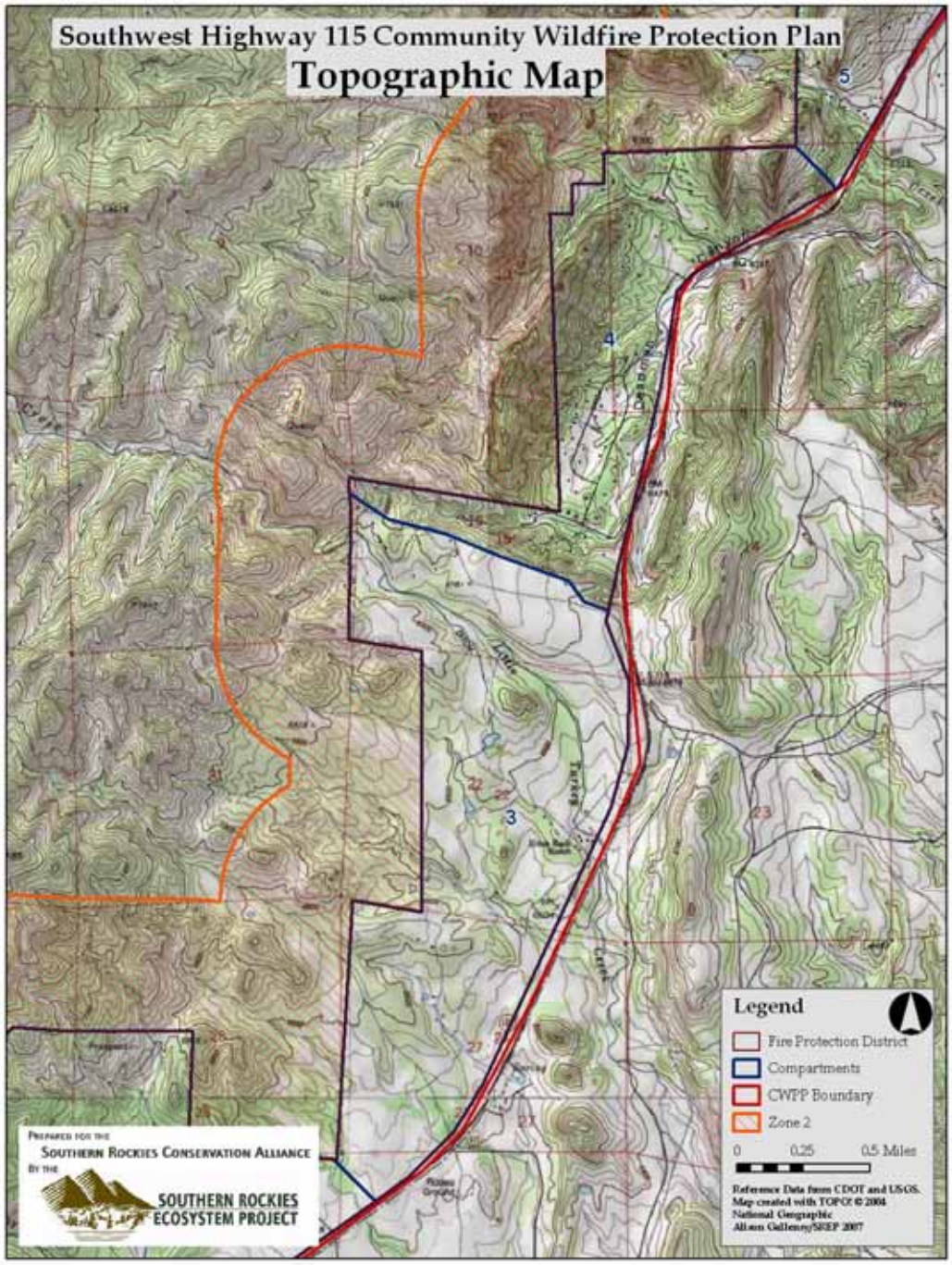
Compartment Maps



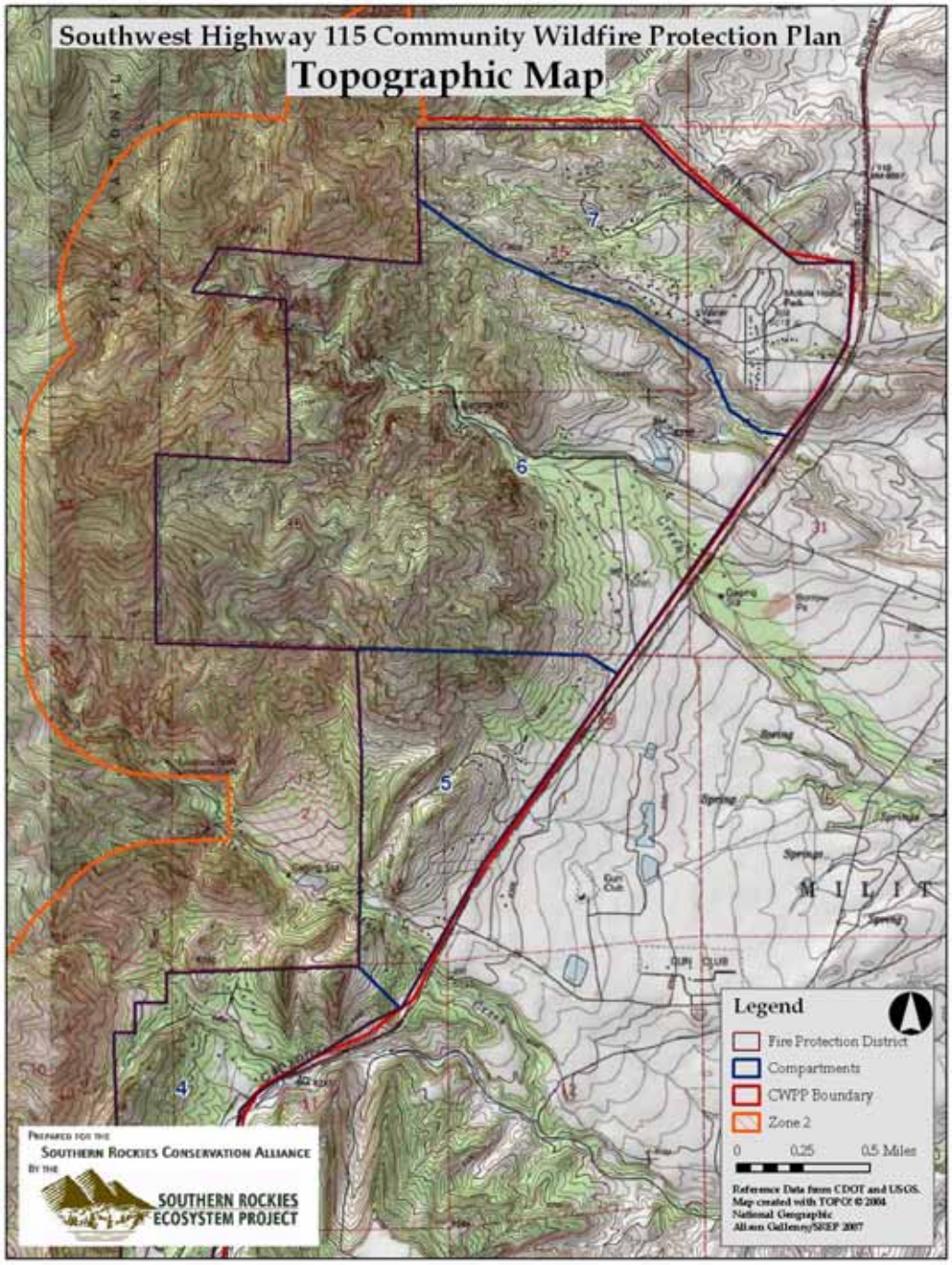
Compartment 1



Compartment 2



Compartments 3 and 4



Compartments 5, 6 and 7

Appendix B

Senate Bill SB-100
Wildfire Mitigation

The following is an excerpt from Colorado Revised Statute 38-33.3- 106.5, passed in 2005 by the Colorado State Legislature. It is also referred to as SB-100 governing Homeowner Associations and allowed resident activities. This Section (e) refers specifically to homeowner ability to perform fire mitigation when HOA rules may prohibit it.

SB-100 language

C.R.S 38-33.3-106.5 (a.k.a. SB-100) states*: " Not withstanding any provision in the declaration, bylaws, or rules and regulations of the association to the contrary, an association shall not prohibit any of the following:*

(e) The removal by a unit owner of trees, shrubs, or other vegetation to create defensible space around a dwelling for fire mitigation purposes, so long as such removal complies with a written defensible space plan created for the property by the Colorado State Forest Service, an individual or company certified by a local government entity to create such a plan, or the fire chief, fire marshal, or fire protection district within whose jurisdiction the unit is located, and is no more extensive than necessary to comply with the plan. The plan shall be registered with the association before the commencement of work. The association may require changes to the plan if the association obtains the consent of the person, official or agency that originally created the plan. The work shall comply with applicable association standards regarding slash removal, stump height, revegetation, and contractor requirements."

Appendix C

Fire Hazard Classes
And
Fuel Models

Appendix C
Fire Hazard Classes and Fuel Models

Fire Behavior Vegetation Characterizing Fire Hazard Classes*

HAZARD CLASS	EXPECTED FIRE BEHAVIOR	VEGETATION (FUELS)
0	None	None (Open water, bare rock, cultivated fields etc.)
X Severe Hazard (Brush)	Flames 5-20' high, of brief duration; high spread rates, at least 40 acres/hr; humans can not safely pass through flames but can occupy burned area within about 15 minutes; short range spotting from blowing embers common.	Dense to moderately dense flammable vegetation <= 10' high, including Gamble Oak, Big Sagebrush, conifer reproduction; abundant litter and/or herbaceous fuel, scattered conifer stand may be present.
A Low Hazard	Flames <= 5' high, higher flare-ups rare; duration of highest flames brief; fire spread slow to fast, 1-40 acres/hr; humans can usually run through flames without serious injury and can occupy just-burned areas; spotting generally rare short range.	Grass, weeds, brush <= 1' high, dead wood in contact with ground; open conifer stand may be present; includes aspen, cottonwood, willow, grasslands, brush other than oak, sage or ceanothus.
B Moderate Hazard	Intermittent flare-ups occurring up to many feet above tree tops; short and medium range spotting common; behavior between flare-ups as in Class-A; passing through fire front sometimes possible but chancy; parts of burned area can be occupied within half hour.	Medium density conifer stands; surface fuel mainly herbage and litter; some patches of reproduction and dead wood; becomes Class-C if slash is present.
C Severe Hazard (Trees)	Flareups higher than tree tops frequent to continuous; spread rates of up to several hundred acres per hour possible; fire front impassable; spotting several hundred yards common, possibly up to 1 mile or more; just burned areas untenable for >= an hour.	Dense conifer stands with any surface fuel; medium density stands with Class-X fuels or much dead wood from blowdown. Insect activity, or logging.

0 Hazard = No Hazard or Limited Hazard
X Hazard = Severe Wildfire Hazard (Brush)
A Hazard = Low Wildfire Hazard for Grass, Timber and Brush
B Hazard = Moderate Wildfire Hazard for Grass, Timer Brush
C Hazard = Severe Wildfire Hazard (Trees)

* Courtesy of the *Colorado State Forest Service*

National Fire Danger Rating Fuel Models

Each weather station can have up to four fuel models that represent the vegetation in the area of the station. A total of twenty fuel models are available to choose from. It is unlikely that more than two or three models will be appropriate for any one station.

Fuel Model	Description
A	Represents grasslands vegetated by annual grasses and forbs. Some brush or trees may be present but occupy a small portion of the area. [Cheatgrass]
L	Represents grasslands vegetated by perennial grasses and forbs. Species are coarser and amounts heavier than those in fuel model A. Some shrubs and trees may be present but occupy a small portion of the area. [Fescue, Wheatgrass]
S	Represents alpine tundra or deep layer of lichens and moss. Some grasses and low shrubs may be present. Fires are low intensity, but difficult to extinguish.
C	Represents open pine stands. Perennial grasses, needle litter and branch wood significantly contribute to the fuel loading. [Longleaf, Ponderosa, and Sugar Pine]
T	Represents shrubs that burn easily and are not dense enough to shade out grasses and other herbaceous plants. The shrubs must occupy at least one-third of the site. [Sagebrush]
N	Represents the sawgrass prairies of south Florida.
B	Represents mature, dense brush 6 feet or more in height. Much of the aerial fuel is dead. Foliage burns readily. Fires are typically intense and fast spreading. [Chaparral]
O	Represents dense, brush-like fuels of the Southeast. Most of the aerial fuel is live. Typically over 6 feet tall. Burns actively except during growing season. [Pocosin]
F	Represents mature oakbrush stands.
Q	Represents Alaskan black spruce. Forest floor is a deep layer of moss and lichens. Also contains some needle litter and branch wood, with nonflammable shrubs.
D	Represents the palmetto-gallberry understory, pine overstory association of the southeast coastal plains. Has a high moisture of extinction. [Southern Rough]
H	Represents healthy stands of short-needled conifers with sparse undergrowth and a thin layer of ground fuels. [White Pine, Spruces, Firs, Larchs]
R	Represents hardwood areas after canopies leaf out in the spring. An "off-season" substitute for fuel model E. Best during the summer in all hardwood and mixed conifer-hardwood stands where more than half of the overstory is deciduous.
U	Represents closed stands of western long-needle pines. Ground fuels

	are primarily litter and small branch wood. [Jeffery, Sugar, and Red Pines of the Lake States]
P	Represents closed stands of southern long-needle pines. A thick layer of lightly compacted needle litter is the primary fuel. High moisture of extinction. [Loblolly Pine]
E	Represents hardwood and mixed conifer-hardwood stands after leaf fall. Fuel is primarily loose hardwood leaf litter. [Oak and Hickory]
G	Represents dense conifer stands where there is a heavy accumulation of litter and downed woody material. Typically overmature and suffering insect and disease damage. Undergrowth is variable and restricted to openings. [Spruce-Fir, Lodgepole Pine]
K	Represents light slash from thinnings and partial cuts in conifer stands. Slash is typically scattered under an open canopy. Applies to hardwood slash and southern pine clearcuts where the fuel loading is relatively light.
J	Represents medium slash from clearcuts and heavily thinned conifer stands. Needles are still attached to branches. Material is typically less than 6" diameter.
I	Represents heavy slash loading from conifer clearcuts. Needles are still attached to the branches.

Common Terms - National Fire Danger Rating System (NFDRS)

Ignition Component **(IC)** - Related to the probability of a firebrand producing a fire that will require suppression action. It is mainly a function of the 1 hour time lag (fine fuels) fuel moisture content and the temperature of the receptive fine fuels. IC has no units. A percentage of probability from 1-100.

Spread Component **(SC)** - A rating of the forward rate of spread of a head fire. It integrates the effect of wind, slope, and fuel bed and fuel particle properties. The daily variations are caused by the changes in the wind and moisture contents of the live fuels and the dead fuel timelag classes of 1, 10, and 100 hr.

Energy Release Component **(ERC)** - Based upon the estimated potential available energy released per unit area in the flaming zone of a fire. It is dependent upon the same fuel characteristics as the spread component (SC). The day to day variations of the ERC are caused by changes in the moisture contents of the various fuel classes, including the 1000 hour time lag class. ERC is derived from predictions of the rate of heat release per unit area during flaming combustion and the duration of the burning. Expressed in BTU's per square foot.

Burning Index **(BI)** - A measure of fire intensity. BI combines the Spread Component and Energy Release Component to relate to the contribution of fire behavior to the effort of containing a fire. BI has no units, but in general it is 10 times the flame length of a fire.

Fire Load Index **(FL)** - A rating of the maximum effort required to contain all probable fires occurring within a rating area during the rating period. It is the cumulative index of the NFDRS. It is designed to combine the projections of fire occurrence and behavior into a single number that

can be related to the total fire suppression job. The meaning of FL has been left to the user. By itself, it does not tell the user much about the nature of the fire management problem. One needs to examine the individual components and indices that are the basis for the FL. It ranges over a scale of 1-100 and has no units.

Staffing Level **(SL)** - A component of the NFDRS relating to the level of fire management staffing. Staffing levels are from 1-5 with 1 being the lowest and 5 the highest.

Adjective Rating **(R)** - A public information component of the NFDRS specific to the rating of fire danger. Adjective ratings are: low(L), moderate(M), high(H), very high(V) and extreme(E).

Keetch-Byram Drought Index **(KBDI)** - A number between 0-800 representing the amount of moisture in the top 8 inches of soil. Zero is saturated, 800 is maximum drought stress. It is calculated from recent precipitation measurements in relation to the average annual precipitation. It is important to note that the KBDI is customized for each geographic area and that often the scale shows less of a range in variation.

Fire Danger Rating - A fire management system that integrates the effects of selected fire danger factors into one or more qualitative or numerical indices of current protection needs.

Haines Index - A national fire-weather index based on the stability and moisture content of the lower atmosphere and their direct relationship to the growth of large fires. The index is from 1-6 with 1 being the lowest potential for large plume-doominated fires, while 6 is the highest potential for plume-dominated fires.

Lightning Activity Level **(LAL)** - A numerical rating from the lowest of 1 to the highest of 6, keyed to the start of thunderstorms and the frequency and character of cloud-to-ground lighting forecasted or observed on a rating area during a rating period.

National Fire Danger Rating System **(NFDRS)** - A multiple index system developed to provide information about current and predicted fire danger conditions.

Remote Automated Weather Station **(RAWS)** - A special remote fire weather observation station which takes timed measurements of the various weather factors used to calculate fire danger and behavior. These stations usually transmit data via satellite telemetry to the National Interagency Fire Center for distribution to fire managers nation-wide.

Appendix D

Evaluation and Monitoring

Sample Form

SW115 Evaluation and Monitoring Form
Community Wildfire Protection Plan
Evaluation and Monitoring

Evaluator: _____

Date:_____

Treatment Area: _____

Description/Location: _____

Implemenation Monitoring:
Was the project treatment area part of the CWPP? YES _____ NO _____

What is the project treatment area's assigned priority (1-4)? _____

What resources are being protected by this project?
- Transportation Routes? _____
- Refuge Zones? _____
- Homes? _____
- Neighborhood? _____
- Community Infrastructure? _____

Was the project completed as scheduled? YES _____ NO_____
What problems were encountered? _____
_____
_____

Baseline Monitoring
Have "before" and "after" photos been taken? YES ____ NO _____
By whom? _____

Effectiveness Monitoring

Was the prescription met for:	Yes	No
Fuel Treatment		
Habitat Restoration		
Aesthetics		
Privacy/screening		
Forest Health		

Resprouting/regrowth was: Excellent _____ Good _____ Fair ____ Poor ____ Not present _____
Did erosion occur? Yes ____ No_____
Invasion by noxious weeds? Yes ____ No_____
Was sufficient moisture available for plant growth?

Validation Monitoring
What is the variance from the estimated cost (amount over or under budget)? _____
Was the site accessible as anticipated? Yes ____ No_____
Was the prescription accurate in terms of treatment method? Yes ____ No _____
Are contractors available to provide competative bids? Yes _____ No _____

Trend Monitoring
Have costs increased over past years? Yes ____ No____ By what percentage (up or down)? _____
How did the weather pattern/moisture levels affect the treatment areas? _____
_____
_____
Have any wildfires occurred in or near the treatment areas? Yes ____ No_____
Has community perception of fuel treatments changed? Positive? _____ Negative? _____
How quickly did wildlife return to the areas? Immediately _____ Slowly _____ Never _____

Other comments:

_____
_____
_____
_____

Appendix E

Firewise Household Tips
And
Property Mitigation and Protection

Appendix E
Firewise Household Tips, Property Mitigation and Protection

HOUSEHOLD TIPS

1. Keep a clearing of at least 30 feet around your house for fire fighting equipment.
2. Space the trees you plant carefully.
3. Remove "ladder fuels". They link the grasses and the tree tops.
4. Create "fuel break" - - - driveways, gravel walkways, or lawns.
5. Maintain your irrigation system regularly.
6. Prune tree limbs so the lowest is between 6' - 10' from the ground.
7. Remove leaf clutter from your roof and yard.
8. Mow regularly.
9. Remove dead or overhanging branches.
10. Store firewood away from your house.
11. Refuel garden equipment carefully.
12. Maintain garden equipment regularly.
13. If you smoke, use your ashtray.
14. Store and use flammable liquids properly.
15. Dispose of cuttings and debris promptly, according to local regulations.
16. Observe local regulations regarding vegetative clearances and fire safety equipment requirements.
17. Check your generator and/or hose to be sure it is in good repair.
18. Don't keep combustible materials under decks or elevated porches.
19. Make trellises of non-flammable metal.
20. Have at least two ground-level doors as safety exits.
21. Keep at least two means of escape (either a door/window) in each room.
22. Mark your driveway and access roads clearly.
23. Keep ample turnaround space near your house for fire equipment.
24. Prevent sparks from entering your house by covering vents with wire mesh no larger than 1/8".
25. When possible, use construction materials that are fire-resistant or non-combustible.

The following Construction and Landscaping information was reproduced from information produced by Firewise Communities™, www.firewise.org, 1 Batterymarch Park, Quincy, MA 02269.

Firewise Construction

To create your Firewise structure, remember that the primary goals are fuel and exposure reductions.

- Use construction materials that are fire-resistant or noncombustible whenever possible.
- Consider using materials such as Class-A asphalt shingles, slate or clay tile, metal, or cement and concrete products for roof construction.
- Construct a fire-resistant sub-roof for added protection.
- Use fire resistant materials such as stucco or masonry for exterior walls. These products are much better than vinyl which can soften and melt.
- Consider both size and materials for windows; smaller panes hold up better in their frames than larger ones; double pane glass and tempered glass are more effective than single pane glass; plastic skylights can melt.
- Prevent sparks from entering your home through vents, by covering exterior attic and under floor vents with wire mesh no larger than 1/8 of an inch.
- Keep your gutters, eaves and roof clear of leaves and other debris.

- Clear dead wood and dense vegetation within at least 30 feet from your house, and move firewood away from your house or attachments like fences or decks.

Any structure attached to the house, such as decks, porches, fences and sheds should be considered part of the house. These structures can act as fuses or fuel bridges, particularly if constructed from flammable materials. Therefore, consider the following:

- If you wish to attach an all-wood fence to your home, use masonry or metal as a protective barrier between the fence and house.
- Use non-flammable metal when constructing a trellis and over with high-moisture, fire-resistant vegetation.
- Prevent combustible materials and debris from accumulating beneath patio deck or elevated porches; screen underneath or box in areas below the deck or porch with wire mesh no larger than 1/8 of an inch.

To create a landscape that will make your home less vulnerable to wildfire, the primary goal is fuel reduction. Think of the area around your home in zones. Zone 1 is closest to the structure, Zone 4 is the farthest away.

- Zone 1 This well-irrigated area encircles the structure for at least 30 feet on all sides, providing space for fire suppression equipment in the event of an emergency. Plants should be limited to carefully spaced fire resistant tree and shrub species.
- Zone 2 Fire resistant plant materials should be used here. Plants should be low-growing, and the irrigation system should extend into this section.
- Zone 3 Place low-growing plants and well spaced trees in this area, remembering to keep the volume of vegetation (fuel) low.
- Zone 4 This furthest zone from the structure is a natural area. Thin selectively here and remove highly flammable vegetation.

Also remember to:

- Carefully space the trees you plant.
- Take out the “ladder fuels” – vegetation that serves as a link between grass and tree tops. These fuels can carry fire from vegetation to a structure or from a structure to vegetation.
- When maintaining a landscape:
- Keep trees and shrubs pruned. Prune all trees six to 10 feet from the ground.
- Water and maintain your lawn regularly.
- Mow dry grass and weeds..
- Dispose of cuttings and debris promptly.
- Landscape with less-flammable plants: Contact your local state forester, county extension office or landscape specialist for plant information.

For more information visit these helpful websites:

- USDA Forest Service, www.fs.fed.us
- US Dept of the Interior: www.doi,gov/bureau.html
- National Assoc of State Foresters: www.stateforesters.org
- National Fire Protection Assoc: www.nfpa.org
- US Fire Administration: www.usfa.fema.gov
- Federal Emergency Management Agency: www.fema.gov
- Firewise Communities: www.firewise.org

- Colorado State Forest Service: www.colostate.edu/depts/CSFS

Free public information brochures:

Free brochures on home preparation for wildfire and emergency conditions are also available at the Phillip S Miller Library in Castle Rock.

- *Emergency Preparedness Guide*, published by Douglas County
- *It Could Happen to You!, How to Protect Your Home!*, USDA Forest Service
- *Wildfire Are You Prepared*, American Red Cross, Federal Emergency Management Agency and United States Fire Administration

Appendix F

Permission for Homeowners Association Property Use During a Declared Emergency

Permission For Property Use During A Declared Emergency

During a El Paso County emergency incident impacting SW115, use of Home Owners Association (HOA) or Water District property by professional emergency personnel may be required for emergency or fire fighting activities. Emergency uses would include any or all of the following activities: mechanical fuel mitigation, firing of vegetation, fire fighting staging activities, emergency materials and supplies storage, surface water access and usage, establishment of a temporary heliport, or other usage appropriate to resolving the emergency situation at hand. For an emergency impacting and requiring HOA or Water District land use for fighting or resolving the emergency, the HOA or Water District boards have pre-approved and granted property use permission to the emergency event incident commander.

The property use permission document should be signed by the HOA or Water District board members. This draft is included in this Community Wildfire Protection Plan as a recommended annual update to the CWPP. The pre-approval/property emergency-use authorization will be updated annually at the time of the annual Community Wildfire Protection Plan review and update. The aforementioned, signed emergency property-use authorization document will be provided for filing with the El Paso County Emergency Services Director, Colorado State Forest Service (Woodland Park District), and the SW115 Fire Protection District Chief.

DECLARED-EMERGENCY USAGE PERMISSION
For
_____ Home Owners Association or Water District

This document authorizes emergency resolution use of _____ Home Owners Association (___HOA) property in the event of a El Paso County emergency event impacting the community of _____ or its surrounding area. This authorization is granted to the incident commander of the emergency for usage by professional emergency agencies and their personnel.

HOA or Water DistrictProperty Description or Designation Usage Authorized:

Section 1: (This area will list the legal descriptions of all _____HOA-owned or Water District land parcels, if available)

Approved Emergency Usage Activities Authorized:

1. Fuel Mitigation
2. Firing
3. Staging, Storage and/or Emergency Management Activities
4. On-Site Water Usage
5. Ancillary use as deemed appropriate by the Incident Commander or the El Paso County Emergency Services Director

This document is duly signed and grants permission for the above described use of ___ HOA or Water District owned property during an emergency by firefighting and emergency personnel under the command of the emergency incident commander.

Signed this ___ day of _____, _____ by _____HOA or Water District Board of Directors:
(number) (month) (year)

_____ _____ _____
President Vice President Secretary

_____ _____
Treasurer Assistant Secretary

Appendix G

Fuel Break Guidelines
For
Forested Subdivisions

Fuelbreak Guidelines for Forested Subdivisions & Communities

By

Frank C. Dennis

Colorado State Forest Service

Knowledge to Go Places

This publication was developed for use by foresters, planners, developers, homeowners' associations and others. Implementation of these measures cannot *guarantee* safety from all wildfires, but will greatly increase the probability of containing them at more manageable levels.

Inadequate fire planning can result in loss of life or property and costly suppression activities.

Colorado's forested lands are experiencing severe impacts from continuing population increases and peoples' desire to escape urban pressures. Subdivisions and developments are opening new areas for homesite construction at an alarming rate, especially along the Front Range and around recreational areas such as Dillon, Vail, and Steamboat Springs.

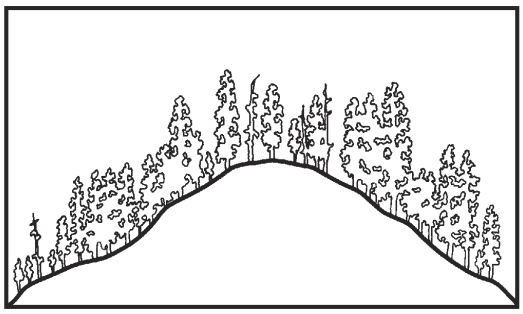
But with development inevitably comes a higher risk of wildfire as well as an ever-increasing potential for loss of life and property. Methods of fire suppression, pre-suppression needs, and homeowner and fire crew safety must all be considered in the planning and review of new developments as well as for the "retrofitting" of existing, older subdivisions.

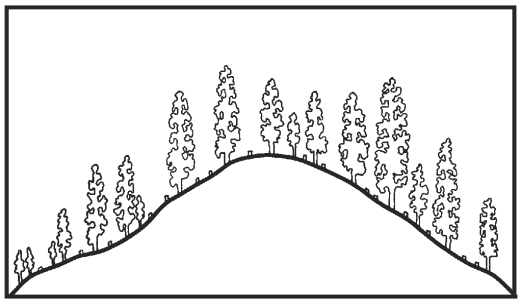
Fuelbreaks should be considered in fire management planning for subdivisions and developments; however, the following are guidelines **only**. They should be customized to local areas by professional foresters experienced in Rocky Mountain wildfire behavior and suppression tactics.

Fuelbreak vs Firebreak

Although the term fuelbreak is widely used in Colorado, it is often confused with firebreak. The two are entirely separate, and aesthetically different, forms of forest fuel modification and treatment.

• A firebreak is strip of land, 20 to 30 feet wide (or more), in which all vegetation is removed down to bare, mineral soil each year prior to fire season.





Above, cross section of mixed conifer stand before fuelbreak modification. Below, after modification.

• A fuelbreak (or shaded fuelbreak) is an easily accessible strip of land of varying width (depending on fuel and terrain), in which fuel density is reduced, thus improving fire control opportunities. The stand is thinned, and remaining trees are pruned to remove ladder fuels. Brush, heavy ground fuels, snags, and dead trees are disposed of and an open, park-like appearance is established.

The following is a discussion of the uses, limitations, and specifications of fuelbreaks in wildfire control and fuels management.

Fuelbreak Limitations

Fuelbreaks provide quick access for wildfire suppression. Control activities can be conducted more safely due to low fuel volumes. Strategically located, they break up large, continuous tracts of dense timber, thus limiting uncontrolled spread of wildfire.

Fuelbreaks can aid firefighters greatly by slowing fire spread under normal burning conditions. However, under extreme conditions, even the best fuelbreaks stand little chance of arresting a large

Before and after photos of a forest stand thinned to reduce fuel loads.

fire, regardless of firefighting efforts. Such fires, in a phenomenon called "spotting," can drop firebrands 1/8-mile or more ahead of the main fire, causing very rapid fire spread. These types of large fires may continue until there is a major change in weather conditions, topography, or fuel type.

It is critical to understand: A fuelbreak is the line of defense. The area (including any homes and developments) between it and the fire may remain vulnerable.

In spite of these somewhat gloomy limitations, fuelbreaks have proven themselves effective in Colorado. During the 1980 Crystal Lakes Subdivision Fire near Fort Collins, crown fires were stopped in areas with fuelbreak thinnings, while other areas of dense lodgepole pine burned completely. A fire at O'Fallon Park in Jefferson County was successfully stopped and controlled at a fuelbreak. The Buffalo Creek Fire in Jefferson County (1996) and the High Meadow Fire in Park and Jefferson Counties (2000) slowed dramatically wherever intense forest thinnings had been completed. During the 2002 Hayman Fire, Denver Water's entire complex of offices, shops and caretakers' homes at Cheesman Reservoir were saved by a fuelbreak with no firefighting intervention by a fuelbreak.

Burned area near Cheesman Reservoir as a result of the Hayman Fire. Note the unburned green trees in the middle right of the photo, a treated fuelbreak.

The Need For A Fuelbreak

Several factors determine the need for fuelbreaks in forested subdivisions, including: (1) potential problem indicators; (2) wildfire hazard areas; (3) slope; (4) topography; (5) crowning potential; and (6) ignition sources.

Potential Problem Indicator

The table below explains potential problem indicators for various hazards and characteristics common to Colorado's forest types. All major forest types, except aspen, indicate a high potential for wildfire hazard.

Fuel Type	Characteristics			Hazards			
	Aesthetics	Wildlife	Soil	**Wildfire**	Avalanche	Flood	Climate
Aspen	2	3	3	**2**	4	3	2
Douglas-fir	2	2	3	**5**	2	2	3
Greasewood-Saltbrush	4	2	2	**2**	1	3	3
Limber-Bristlecone Pine	3	2	4	**3**	4	2	5
Lodgepole Pine	2	2	3	**5**	4	2	4
Meadow	5	4	4	**2**	3	4	3
Mixed Conifer	2	1	1	**5**	3	1	3
Mountain Grassland	5	3	4	**3**	3	2	4
Mountain Shrub	3	5	4	**4**	2	2	3
Piñon-Juniper	2	3	4	**4**	2	3	2
Ponderosa Pine	2	3	1	**5**	2	2	3
Sagebrush	4	4	3	**3**	3	2	3
Spruce-Fir	2	3	3	**4**	5	**3**	4

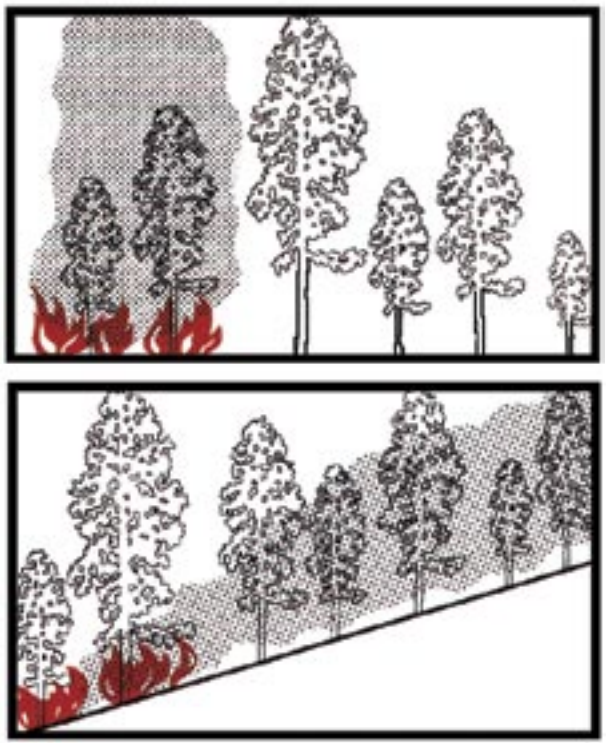
Legend: 5 – Problem may be crucial; 4 – Problem very likely;
3 – Exercise caution; 2 – Problem usually limited;
1 – No rating possible

Wildfire Hazard Maps

The Colorado State Forest Service (CSFS), numerous counties and some National Forests have completed wildfire hazard mapping for many areas within Colorado, particularly along the Front Range. These maps typically consider areas with 30 percent or greater slope; hazardous fuel types; and hazardous topographic features such as fire chimneys. Wildfire Hazard Ratings may be depicted in several ways. Whatever system is used, areas rated moderate or higher should be considered for fuel modification work.

Slope

Rate of fire spread increases as the slope of the land increases. Fuels are preheated by the rising smoke column or they may even come into contact with the flames themselves.



Fire effects, flat vs steep terrain. Note preheating of fuels on steep ground from passage of smoke column.

At 30 percent slope, rate of fire spread doubles compared to rates at level ground, drastically reducing firefighting effectiveness. **Areas near 30 percent or greater slopes are critical and must be reviewed carefully.**

Topography

Certain topographic features influence fire spread and should be evaluated. Included are fire chimneys, saddles, and V-shaped canyons. They are usually recognized by reviewing standard U.S.G.S. quad maps.

• Chimneys are densely vegetated drainages on slopes greater than 30 percent. Wind, as well as air pre-heated by a fire, tends to funnel up these drainages, rapidly spreading fire upslope.

• Saddles are low points along a main ridge or between two high points. Like chimneys, they also funnel winds to create a natural fire path during a fire's uphill run. Saddles act as corridors to spread fire into adjacent valleys or drainages.

Chimney.

Saddle.

• Narrow, V-shaped valleys or canyons can ignite easily due to heat radiating from one side to the other. For example, a fire burning on one side of a narrow valley dries and preheats fuels on the opposite side until the fire "flashes over." The natural effect of slope on fire then takes over and fire spreads rapidly up drainage and uphill along both sides of the valley.

Flashover in V-shaped valley.

Crowning Potential

An on-site visit is required to accurately assess crowning potential. A key, below, helps determine this rating. Fuel modification is usually unnecessary if an area has a rating of 3 or less.

Crowning Potential Key

	Rating
A. Foliage present, trees living or dead — B	
B. Foliage living — C	
C. Leaves deciduous or, if evergreen, usually soft, pliant, and moist; never oily, waxy, or resinous.	0
CC. Leaves evergreen, not as above — D	
D. Foliage resinous, waxy, or oily — E	
E. Foliage dense — F	
F. Ladder fuels plentiful — G	
G. Crown closure > 75 percent	9
GG. Crown closure < 75 percent	7
FF. Ladder fuels sparse or absent — H	
H. Crown closure > 75 percent	7
HH. Crown closure < 75 percent	5
EE. Foliage open — I	
I. Ladder fuel plentiful	4
II. Ladder fuel sparse or absent	2
DD. Foliage not resinous, waxy, or oily — J	
J. Foliage dense — K	
K. Ladder fuels plentiful — L	
L. Crown closure > 75 percent	7
LL. Crown closure < 75 percent	4
KK. Ladder fuels sparse or absent — M	
M. Crown closure > 75 percent	5
MM. Crown closure < 75 percent	3
JJ. Foliage open — N	
N. Ladder fuels plentiful	3
NN. Ladder fuels sparse or absent	1
BB. Foliage dead	0

The majority of dead trees within the fuelbreak should be removed. Occasionally, large, dead trees (14 inches or larger in diameter at 4 1/2 feet above ground level) may be retained as wildlife trees. If retained, all ladder fuels must be cleared from around the tree's trunk.

Ignition Sources

Possible ignition sources, which may threaten planned or existing developments, must be investigated thoroughly. Included are other developments and homes, major roads, recreation sites, railroads, and other possible sources. These might be distant from the proposed development, yet still able to channel fire into the area due to slope, continuous fuels, or other topographic features.

Fuelbreak Locations

In fire suppression, an effective fire line is connected, or "anchored," to natural or artificial fire barriers. Such anchor points might be rivers, creeks, large rock outcrops, wet meadows, or a less flammable timber type such as aspen. Similarly, properly designed and constructed fuelbreaks take advantage of these same barriers to eliminate "fuel bridges." (Fire often escapes control because of fuel bridges that carry the fire across control lines.)

Since fuelbreaks should normally provide quick, safer access to defensive positions, they are necessarily linked with road systems. Connected with county-specified roads within subdivisions, they provide good access and defensive positions for firefighting equipment and support vehicles. Cut-and fill slopes of roads are an integral part of a fuelbreak as they add to the effective width of modified fuels.

Fuelbreaks without an associated road system, such as those located along strategic ridge lines, are still useful in fire suppression. Here, they are often strengthened and held using aerial retardant drops until fire crews can walk in or be ferried in by helicopter.

Preferably, fuelbreaks are located along ridge tops to help arrest fires at the end of their runs. However, due to homesite locations and resource values, they can also be effective when established at the base of slopes. Mid-slope fuelbreaks are least desirable, but under certain circumstances and with modifications, these too, may be valuable.

Fuelbreaks are located so that the area under management is broken into small, manageable units. Thus, when a wildfire reaches modified fuels, defensive action is more easily taken, helping to keep the fire small. For example, a plan for a subdivision might recommend that fuelbreaks break up continuous forest fuels into units of 10 acres or less. This is an excellent plan, especially if defensible space thinnings are completed around homes and structures, and thinning for forest management and forest health are combined with the fuelbreak.

When located along ridge tops, continuous length as well as width are critical elements. Extensive long-range planning is essential in positioning these types of fuelbreaks.

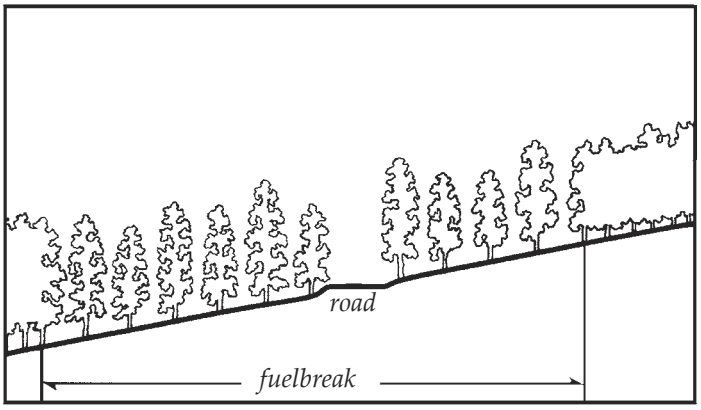
Aesthetics

Improperly planned fuelbreaks can adversely impact an area's aesthetic qualities. Careful construction is necessary when combining mid-slope fuelbreaks with roads involving excessive cut-and-fill.

These photos, far- and near- views of the same site, illustrate that forest can be thinned without impacting aesthetics.

Care must also be taken in areas that are not thinned throughout for fuel hazard reduction. In such cases the fuelbreak visually sticks out like a "sore thumb" due to contrasting thinned and unthinned portions of the forest. (Especially noticeable are those portions of the fuelbreak above road cuts).

These guidelines are designed to minimize aesthetic impacts. However, some situations may require extensive thinning and, thus, result in a major visual change to an area. Additional thinning beyond the fuelbreak may be necessary to create an irregular edge and to "feather," or blend, the fuelbreak thinning into the unthinned portions of the forest. Any thinning beyond the fuelbreak improves its effectiveness and is highly recommended.



Cross-section of a typical fuelbreak built in conjunction with a road.

Constructing the Fuelbreak

Fuelbreak Width and Slope Adjustments

Note: Since road systems are so important to fuelbreak construction, the following measurements are from the toe of the fill for downslope distances, and above the edge of the cut for uphill distances.

The minimum recommended fuelbreak width is approximately 300 feet for level ground. Since fire activity intensifies as slope increases, the overall fuelbreak width must also increase. However, to minimize aesthetic impacts and to maximize fire crew safety, the majority of the increases should be made at the bottom of the fuelbreak, below the road cut.

Widths are also increased when severe topographic conditions are encountered. Guidelines for fuelbreak widths on slopes are given below:

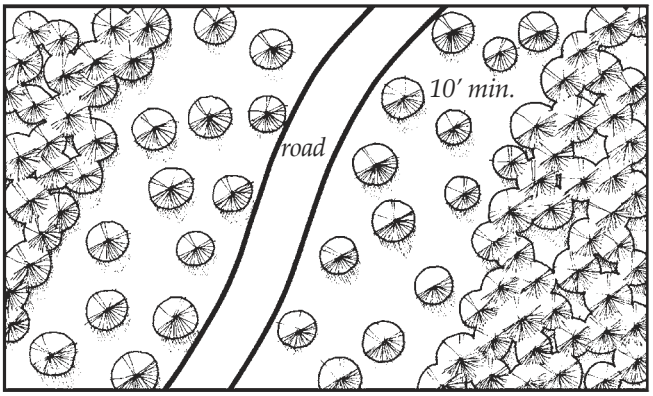
Fuelbreak Width/Slope

Percent Slope (%)	Minimum Uphill Distance (ft)	Minimum Downhill Distance (ft)	Total Width of Modified fuels (ft)*
0	150	150	300
10	140	165	303
20	130	180	310
30	120	195	315
40	110	210	320
50	100	225	325
60	100	240	340

*As slope increases, total distance for cut-and-fill for road construction rapidly increases, improving fuelbreak effective width.

Stand Densities

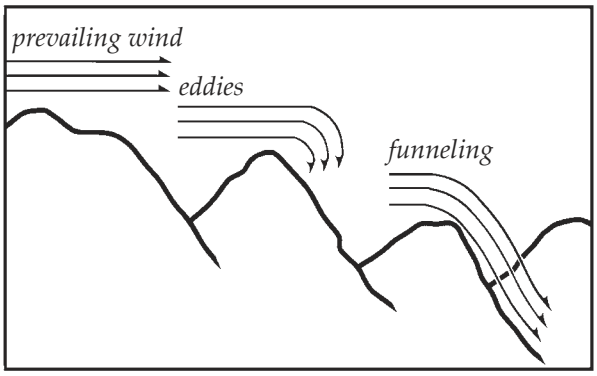
Crown separation is a more critical factor for fuelbreaks than a fixed tree density level. A *minimum* 10-foot spacing between the edges of tree crowns is recommended on level ground. As slope increases, crown spacing should also increase. However, small, isolated groups of trees may be retained for visual diversity. Increase crown spacing around any groups of trees left for aesthetic reasons and to reduce fire intensities and torching potential.



Plan view of fuelbreak showing minimum distance between tree crowns.

In technical terms, a fuelbreak thinning is classified as a heavy "sanitation and improvement cut, from below." Within fuelbreaks, trees that are suppressed, diseased, deformed, damaged, or of low vigor are removed along with all ladder fuels. Remaining trees are the largest, healthiest, most wind-firm trees from the dominant and co-dominant species of the stand.

Because such a thinning is quite heavy for an initial entry into a stand, prevailing winds, eddy effects, and wind funneling must be carefully evaluated to minimize the possibility of windthrow. It may be necessary to develop the fuelbreak over several years to allow the timber stand to "firm-up" — this especially applies to lodgepole pine and Engelmann spruce stands.



Topography affects wind behavior – an important consideration during fuelbreak construction.

Area-wide forest thinnings are recommended for any subdivisions. Such thinning is not as severe as a fuelbreak thinning, but generally should be completed to fuelbreak specifications along the roads (as outlined on page 6.) In addition, "defensible space thinnings" are highly recommended around all structures (see CSU Coop. Extension Fact sheet 6.302, *Creating Wildfire-Defensible Zones*).

Debris Removal

Limbs and branches left from thinning (slash) can add significant volumes of fuel to the forest floor, especially in lodgepole pine, mixed-conifer, or spruce/fir timber types. These materials can accumulate and serve as ladder fuels, or can become "jackpots," increasing the difficulty of defending the fuelbreak during a wildfire. **Slash decomposes very slowly in Colorado and proper disposal is essential.** Proper treatment reduces fire hazard, improves access for humans and livestock, encourages establishment of grasses and other vegetation, and improves aesthetics.

Three treatment methods are commonly used. These are lopping-and-scattering, piling and burning, and chipping. Mulching of small trees and slash using equipment similar to Hydro-axes or Timbcos equipped with mulching heads are becoming a popular method of treatment. Size, amount, and location of slash dictates the method used, in addition to cost and the final desired appearance. The method chosen will also depend on how soon an effective fuelbreak is needed prior to construction in new developments.

Lop and scatter: slash should be no deeper than 12'' above ground surface.

Chipping is the most desirable, but also the most expensive method of slash disposal.

Piled slash can be burned but only during certain conditions, such as after a snowfall.

Fuelbreak Maintenance

Following initial thinning, trees continue to grow (usually at a faster rate). The increased light on the forest floor encourages heavy grass and brush growth where, in many cases, where little grew before. The site disturbance and exposed mineral soil created during fuelbreak development is a perfect seed bed for new trees that, in turn, create new ladder fuels. Thus, in the absence of maintenance, fuelbreak effectiveness will decrease over time.

Fuelbreak maintenance is essential. Ingrowth, shown above, will minimize the effectiveness of this fuelbreak within a few years.

Fuelbreak maintenance problems are most often the result of time and neglect. Misplaced records, lack of follow-up and funding, and apathy caused by a lack of fire events are some of the major obstacles. In addition, the responsibility for fuelbreak maintenance projects is often unclear. For example, control of a fuelbreak completed by a developer passes to a homeowner's association, usually with limited funds and authority to maintain fuelbreaks.

If fuelbreak maintenance is not planned and completed as scheduled, consider carefully whether the fuelbreak should be constructed. An un-maintained fuelbreak may lead to a false sense of security among residents and fire suppression personnel.

Conclusion

An image of well-designed communities for Colorado includes:

• Forested subdivisions where the total forest cover is well-managed through carefully planned, designed, and maintained thinnings. This contributes to reduced wildfire hazards and a much healthier forest — one that is more resistant to insects and disease.

• A system of roads and driveways with their associated fuelbreaks that break up the continuity of the forest cover and fuels. These help keep fires small, while also providing safer locations from which to mount fire suppression activities. In addition to allowing fire personnel in, they will allow residents to evacuate if necessary.

• Individual homes that all have defensible space around them, making them much easier to defend and protect from wildfire, while also protecting the surrounding forest from structure fires.

Creation of such communities is entirely feasible if recognition of the fire risks, a spirit of cooperation, an attitude of shared responsibility, and the political will exists.

Colorado's mountains comprise diverse slopes, fuel types, aspects, and topographic features. This variety makes it impossible to develop general fuelbreak prescriptions for all locations. ***The previous recommendations are guidelines only.*** *A professional forester with fire suppression expertise should be consulted to "customize" fuelbreaks for particular areas.*

Appendix H

Appendix H
Colorado State Forest Service Minimum Standards For Community Wildfire Protection Plans (CWPP)

Appendix H
Colorado State Forest Service
Minimum Standards for Community Wildfire Protection Plans (CWPP)

1. **Participants**
   - The core planning team must include local government, local fire authority, local CSFS representative and representatives of relevant federal land management agencies.
   - Planning activities that involve assessing community risks and values, identifying community protection priorities, or establishing fuels treatment project areas and methods MUST involve diverse representation from interested non-governmental stakeholders.

2. **Plan Components**
   - Community Wildfire Protection Plans must included the following components:
     - o A definition of the community's wildland-urban interface (WUI), preferably outlined on a map with an accompany narrative.
     - o A discussion of the community's *preparedness* to respond to wildland fire.
     - o A community risk analysis that considers, at a minimum, fuel hazards, risk of wildfire occurrence and community values to be protected – both in the immediate vicinity and in the surrounding zone where potential fire spread poses a realistic threat.
     - o Identification of fuels treatment priorities, including locations on the grounds and preferred methods of treatment.
     - o Recommendations regarding ways to reduce structural ignitability.
     - o An implementation plan.

3. **Level of Specificity**
   - A CWPP may be developed for any level of "community," from a homeowner's association or mountain town to a county or metropolitan city.
   - Information contained in the plan should be at a level of specificity appropriate to the size of the community being addressed. For example, data used to develop a community risk analysis or identify fuels treatment priorities for a small town would need to be at a finer scale than that used for a county.
   - County level plans can be used as an umbrella for plans in smaller communities, but should not be considered a substitute. A county plan will not provide the detail needed for project level planning.

4. **Adapting Existing Plans and Combining Related Plans**
   - If a community has an existing plan that already meets the majority of the CWPP criteria, it is preferable to work with the community to adapt that plan to meet the remainder of the criteria. However, plan adaptations must be collaborative as described in (1) above and include stakeholder representation. This is particularly important if the adaptation involves establishing fuels treatment priorities.
   - Communities are encouraged to combine CWPPs with related documents such as FEMA All-Hazard Mitigation Plans where appropriate.

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* Minimum standards are to be used in combination with the nation publication titled, "Preparing a Community Wildfire Protection Plan: A Guide for Wildland Urban Interface Communities." Maximum flexibility should be sought in meeting individual community needs.

November 18, 2004

Appendix I

Mutual and Automatic Aid Response Agreements with Fire Departments Outside of Southwestern Highway 115 Boundaries

INTERGOVERNMENTAL AGREEMENT
FOR MUTUAL AID
BETWEEN FIRE PROTECTION DISTRICTS

THIS AGREEMENT, effective this 15th day of January, 2000

Is made between the following agencies and validated by signature:

Black Forest Fire and Rescue District, Broadmoor Fire Protection District, Calhan Fire Protection District, Cascade Fire Protection District, Cimarron Hills Fire Protection District, City of Colorado Springs Fire Department, Cripple Creek Emergency Services, Fire Department, City of Fountain Fire Department, City of Manitou Springs Fire Department, Divide Fire Protection District, Wescott Fire Protection District, Edison Volunteer Fire Department, Ellicott Fire Protection District, El Paso County Sheriff's Office, Falcon Fire Protection District, Green Mountain Falls Fire Protection District, Hanover Fire Protection District, Mountain Communities FPD, Northeast Teller County Fire Protection District, Palmer Lake Fire Department, Peyton Fire Protection District, Security Fire Protection District, Southwestern Highway 115 Fire Protection District, Stratmoor Hills Fire Protection District, Tri-Lakes Fire Protection District, Tri-County Fire Protection District, Woodmen Valley Fire Protection District, Woodmoor/Monument Fire Protection District, Ft Carson Fire Department.

WITNESSETH:

WHEREAS, This Intergovernmental Agreement is authorized by Title 29, Article 1, Part 201, Colorado Revised Statutes; and,

WHEREAS, It is in the best interest of the inhabitants of the agencies jurisdictions that a mutual aid agreement provide for assistance to an agency during emergencies:

NOW, THEREFORE, IT IS MUTUALLY AGREED by and between each of the agencies as follows:

A. DEFINITIONS. As used on this agreement, "Requesting Agency" means an Agency to this Agreement, which requests assistance from the other Agency to this Agreement; and "Responding Agency" means any Agency to this Agreement, which receives a request for assistance from a Requesting Agency.

B. ASSISTANCE

1. In the event that a fire, or other emergency which requires the use of firefighting personnel or equipment, occurs within the jurisdiction served by

an Agency, such Agency may request assistance from the other Agency to this Agreement for firefighting personnel and/or equipment.

2. Upon a request for assistance in accordance with Section B.1. hereof, a Responding Agency shall, at the direction of the Responding Agency's Fire Chief or authorized representative, render such assistance as such Responding Agency may deem available for such assistance.

3. Any dispatch of equipment and/or personnel pursuant to this Agreement is subject to the following conditions:

   a. Any request for aid hereunder shall include a statement of the amount and type of equipment and/or personnel requested and shall specify the location to which the equipment and/or personnel are to be dispatched, but the amount and type of equipment/or the number of personnel to be furnished shall be determined by the Fire Chief or authorized representative of the Responding Agency.

   b. The Responding Agency shall report to the Incident Commander of the Requesting Agency at the location to which the equipment and/or personnel is dispatched and shall be subject to the orders of such Incident Commander.

   c. A Responding Agency shall be released by the Requesting Agency, (1) when the services of the Responding Agency are no longer required as determined by the Incident Commander, or (2) when the Responding Agency is needed within the area for which it normally provides emergency services as determined by the Responding Agency.

   d. Each Agency hereby authorizes the other Agency to transmit on its fire and medical radio frequency (s) for the purpose of efficiency in executing the mutual aid as determined by the Incident Commander.

4. If the Fire Chief or authorized representative of the Responding Agency determines that no assistance shall be rendered, then such Fire Chief or authorized representative shall immediately notify the Fire Chief or authorized representative of the Requesting Agency of such decision.

5. Each Agency shall, at all times, be responsible for its own costs incurred in the performance of this Agreement and shall not receive any reimbursement from any other Agency to this Agreement.

C. GENERAL TERMS

1. Each Agency waives all claims against each other Agency for compensation for any loss, damage, personal injury or death occurring as a consequence of the performance of this Agreement.

2. The governing bodies of each of the Agencies do, by entering into this Agreement, give to their respective Fire Chiefs, the authority to meet from time to time to implement this Agreement and to administer this Agreement. This Agreement may only be amended in writing, by unanimous consent of the governing bodies of the Agencies or their representatives designated in writing. Each Agency to this Agreement shall maintain a copy of this Agreement at the office of its Fire Chief.

3. This Agreement does not and shall not be deemed to confer upon or grant to any non-Agency party any right of fire protection, emergency medical response or right to claim damages, to bring any lawsuit, action or other proceedings against any Agency to this Agreement because of any breech of this Agreement or because of any term, covenant, condition or agreement contained herein.

4. The term of this Agreement shall commence on the effective date indicated hereinafter and shall remain in effect until this Agreement is other wise terminated or amended.

5. Any Agency to this Agreement may terminate its participation in this Agreement, with or without cause, upon thirty (30) days written notice delivered to the Fire Chief of each of the other Agencies.

6. This written Agreement constitutes the whole Agreement between the Agencies hereto and there are not inducements, promises, terms, conditions or obligations made or entered into by the Agencies other than those set out herein.

7. This Agreement shall be binding upon the respective Agencies hereto and their successors and assigns, and this Agreement, and the rights and duties contained herein, shall not be assigned or delegated by any Agency without prior written consent of all the other Agencies to this Agreement.

IN WITNESS WHEREOF, the Agencies hereto, through their respective authorized representatives, have executed this Intergovernmental Agreement for Mutual Aid Between Fire Districts as indicated herein below:

_____ Date 2-28, 2000
Black Forest Fire and Rescue District

_____ Date 5-14, 2000
Broadmoor Fire Protection District

_____ Date _____, 2000
Calhan Fire Protection District

_____ Date 05/14/00, 2000
Cascade Fire Protection District

_____ Date 2-28-, 2000
Cimarron Hills Fire Protection District

_____ Date ~~05~~ 05/14/00, ~~2000~~
City of Colorado Springs Fire Department

_____ Date 2-28-, 2000
Cripple Creek Emergency Services

_____ Date 8/14/00, 2000
City of Fountain Fire Department

_____ Date 02-07-01, 2000
City of Manitou Springs Fire Department

_____ Date 8-3-00, 2000
Wescott Fire Protection District

_____ Date 8-30, 2000
Edison Volunteer Fire Department

Mountain Communities Fire Protection District — Date: 3/27 2000

Ellicott Fire Protection District — Date 3-27-00, 2000

Falcon Fire Protection District — Date 7-24-00, 2000

Green Mountain Falls Fire Protection District — Date 2-28, 2000

Hanover Fire Protection District — Date 2-28, 2000

Northeast Teller County Fire Protection District — Date 2-28, 2000

Palmer Lake Fire Department — Date March 27, 2000

Peyton Fire Protection District — Date 5-17-, 2000

Security Fire Protection District — Date Aug 17, 2000

Southwestern Highway 115 Fire Protection District — Date March 26, 2000

Stratmoor Hills Fire Protection District — Date July 24, 2000

Tri-Lakes Fire Protection District — Date 10/5, 2000

Tri-County Fire Protection District — Date 3-24, 2000

Woodman Valley Volunteer Fire Department — Date 3-28, 2000

Woodmoor/Monument Fire Protection District — Date 2/28/, 2000

AUTOMATIC RESPONSE AND MUTUAL AID AGREEMENT

THIS AGREEMENT dated for reference this 1st day of February, 1998, is made by and between the CITY OF COLORADO SPRINGS (hereinafter referred to as the "City"), and the Southwest Highway 115 Fire District (hereinafter referred to as the "District").

1. Purpose: This Agreement applies to automatic response and mutual aid between the City and the District to secure for each the benefits of automatic response and mutual aid in the protection of life and property from fire, and other emergencies.

2. Authority: Section 29-1-203, C.R.S. authorizes the City and the District to cooperate with one another to provide automatic/mutual aid and assistance in the event of a fire or other emergency that endangers life or property.

3. Mutual Aid Defined: Mutual aid is two-way assistance by fire departments of two or more jurisdictions which is freely given under prearranged plans or contracts on the basis that each will aid the other in time of emergency, if they are able to provide the resources at that time, and also provides for joint or cooperative response to alarms near mutual boundaries.

4. Automatic Response:

(a) The City and the District agree to both automatically respond to provide aid and assistance in the event of a fire other emergency that endangers life and/or property that is reported to them as occurring within the following El Paso County, Colorado as set forth in this Paragraph 4.

(b) Automatic Response is defined as a reciprocal mutual aid and response between fire departments which is prearranged and is included in the participating department's standard operating procedures to provide immediate, automatic response between said departments whereby the closest available units will respond to an incident. The system provides quicker response to incidents and expands familiar and available resources in an emergency.

(c) Automatic Response Areas under this Agreement are identified as the area included in the District, and the area of the City assigned for coverage to the City's Fire Station number 16. The District and City Fire Station 16 each have one pumper truck. The intent of this agreement is that when the District or Station number 16 receives an alarm, both the City Station 16 pumper unit and the District's pumper unit will respond, resulting in the two pumper units responding to the City or District alarm. However, in the event of a declared disaster emergency, the Parties may respond to any area within the jurisdiction of the District or the City.

(d) These above described areas in El Paso County, Colorado, shall be referred to as "the Automatic Response Areas". The City and the District agree to establish administrative procedures within their respective organizations which instruct their personnel to report to the scene of all fires and other emergencies that endanger life and or property and which are reported to them as occurring within the Automatic Response Areas.

5. Command: The officer-in-charge of the responding party shall report to the requesting party's officer-in-charge at the location to which the equipment is dispatched and shall be under the direction and control of the requesting party's officer-in-charge. Except, in the event that the responding party is the first party on the scene, then the officer-in-charge of the responding party will be in command until an officer-in-charge of the requesting party in whose jurisdiction the incident has occurred has arrived on the scene. In addition, the equipment and personnel that are provided by the responding party shall be and remain under the immediate command and control of the responding party's officer-in-charge. The incident command system will be utilized for all incidents.

6. Compensation: Except as otherwise stated in this Agreement, neither party to this Agreement shall be required to pay any compensation to the other party or the other party's personnel for any services rendered hereunder. Nothing in this agreement shall be construed to place the personnel of any Party under the control or employment of another Party. Each Party remains responsible for all pay, entitlement, employment decisions, and worker's compensation liabilities, for its own personnel. Nothing in this agreement is intended to create or grant to any third party or person any right or claim for damages or the right to bring or maintain any action at law, nor does any Party waive its immunities at law, including immunity granted under the Colorado Governmental Immunity Act.

7. Effect of Agreement: This Agreement is not intended to, nor should it be construed to, affect or extend the legal responsibilities of either of the parties hereto; or create or modify any pre-existing legal obligations, if any. This Agreement shall not be construed as or deemed to be an agreement for the benefit of any third party or parties, and no third party or parties shall have any right of action hereunder for any cause whatsoever.

8. No Third Party Beneficiary: It is expressly understood and agreed that enforcement of the terms and conditions of this Agreement, and all rights of action relating to such enforcement, shall be strictly reserved to the Parties hereto, and nothing contained in this Agreement shall give or allow any such claim or right of action by any other or third person or entity on such Agreement. It is the express intention of the Parties hereto that any person or entity, other than the Parties to this Agreement, receiving services or benefits under this Agreement shall be deemed to be incidental beneficiaries only.

9. Benefits: If any firefighter or other personnel of the City is injured, disabled, or dies as a result of performing services under this Agreement within the boundaries of the District, that person shall be covered by the City benefits which he or she would otherwise be entitled to receive if the injury, disability, or death had occurred within the boundaries of the City. If any firefighter or other

personnel of the District is injured, disabled, or dies as a result of performing services under this Agreement within the boundaries of the City, that person shall be covered by the District benefits which he or she would otherwise be entitled to receive if the injury, disability, or death had occurred within the boundaries of the District.

10. Claims Waiver: The parties hereto waive any and all claims against each other for compensation for any performance, loss, damage, personal injury or death as a consequence of this Agreement. However, the City and the District may apply for reimbursements or other funds provided under Federal Emergency Management Agency disaster reimbursement funding provisions or other federal and state disaster funding or reimbursement provisions.

11. Term: This Agreement shall be effective as of the date and year first above written and shall continue in effect indefinitely. Either party to this Agreement may terminate this Agreement at any time by serving ninety (90) days prior written notice to the other party of such termination.

12. Governing Law: This Agreement is subject to and shall be interpreted under Federal Law and the law of the State of Colorado, and the Charter, City Code, Ordinances, Rules and Regulations of the City of Colorado Springs, Colorado, a Colorado home rule city. Court jurisdiction shall exclusively be in the District Court for El Paso County, Colorado.

13. Assignment: This Agreement shall be not assigned by either of the Parties hereto without the prior written consent of the other Party.

14. Relationship of Parties. The parties hereto enter into this Agreement as separate and independent governmental entities and each shall maintain such status throughout the term of this Agreement.

15. Headings: Headings used in this Agreement are for convenience of reference and shall not control or affect the meaning or interpretation of any provision of this Agreement.

16. Appropriation of Funds: The performance of the parties under the Agreement is expressly subject to the appropriation and availability of funds for that purpose.

17. Severability and Local Concern: It is understood and agreed by the Parties hereto that if any part, term, or provision of this Agreement is by the courts held to be illegal or in conflict with any law of the State of Colorado, the validity of the remaining portions or provisions shall not be affected, and the rights and obligations of the Parties shall be construed and enforced as if the Agreement did not contain the particular part, term, or provision held to be invalid. Further, the parties agree and acknowledge that the activities contained in this Agreement are matters of local concern only, and that the Parties have mutually joined together for the performance of the matters of local concern, and that nothing in this agreement shall or be construed as making any of the local concerns covered herein matters of statewide concern.

18. Entire Agreement: This Agreement, together with all exhibits attached hereto, constitutes the entire agreement between the parties hereto, and all other representations or statements heretofore made, verbal or written, are merged herein, and this Agreement may be amended only in writing, and executed by duly authorized representatives of the parties hereto.

19. Binding Effect. This Agreement shall be binding upon and inure to the benefit of the parties hereto and their respective successors and assigns.

IN WITNESS WHEREOF, the parties hereto have executed this Agreement as of the dates written below.

FOR THE CITY OF COLORADO SPRINGS:

_____ this 15th day of April, 1998.
Manuel Navarro
Fire Chief, Colorado Springs Fire Department

FOR THE SOUTHWEST HIGHWAY 115 FIRE DISTRICT:

_____ this 15th day of April, 1998.
Larry R. Lasha
Chief, Southwest Highway 115 Fire District

RESOLUTION NO. 39-98

A RESOLUTION APPROVING AN INTERGOVERNMENTAL AGREEMENT FOR AUTOMATIC RESPONSE AND MUTUAL AID BETWEEN SOUTHWEST HIGHWAY 115 FIRE PROTECTION DISTRICT AND THE CITY OF COLORADO SPRINGS

BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF COLORADO SPRINGS.

Section 1. The City Council finds and determines that cooperation and mutual assistance between regional fire services protects the public health, safety and welfare, and is in the City's best interest. The City Council hereby approves Agreement for Automatic Response and Mutual Aid which is attached to and included in this Resolution as Exhibit "A", providing for automatic and mutual aid between the parties for fire or other emergency which endangers life or property.

Section 2. The City's Fire Chief is hereby authorized to execute and administer this Agreement.

Dated at Colorado Springs, Colorado this 24 day of February, 1998.

Mayor

ATTEST:

City Clerk

robert97/366/rm

ITEM NO. 2-B-10

AGREEMENT FOR AUTOMATIC RESPONSE and MUTUAL AID

FIRST AMENDMENT

"First Amendment of Automatic Response and Mutual Aid Agreement between the **CITY OF COLORADO SPRINGS AND SOUTHWEST HIGHWAY 115 FIRE DISTRICT** dated February 1, 1998.

The Parties to the above referenced Agreement hereby amend the agreement as follows:

1. TERM: The term of the agreement is hereby extended from the ***16th day of April 1999*** and ***shall continue in effect indefinitely.*** Either party to this Agreement may terminate the Agreement and this extension at any time by serving ninety (90) days prior written notice of termination on the other party.
2. All other terms and conditions of the Agreement remain in full force and effect.

3. This Amendment is deemed to be effective as the 16th day of April, 1999.

FOR THE CITY OF COLORADO SPRINGS

_____ this 15th day of December, 1999.

Manuel Navarro, Fire Chief

FOR SOUTHWEST HIGHWAY 115 FIRE PROTECTION DISTRICT

_____ this 15TH day of DECEMBER, 1999.

Robert F. Weller, Fire Chief

APPROVED AS TO FORM
Robert J. Mock
SENIOR ATTORNEY
CITY OF COLORADO SPRINGS

DEPARTMENT OF THE ARMY
INSTALLATION MANAGEMENT AGENCY
HEADQUARTERS, UNITED STATES ARMY GARRISON, FORT CARSON
6101 WETZEL AVE., RM 240
FORT CARSON, CO 80913-4143

REPLY TO
ATTENTION OF

MUTUAL FIREFIGHTING ASSISTANCE/AUTOMATIC RESPONSE AGREEMENT BETWEEN THE FORT CARSON GARRISON COMMANDER AND SOUTHWEST HIGHWAY 115 FIRE PROTECTION DISTRICT

SUBJECT: Mutual Aid Agreement

1. THIS AGREEMENT made and entered into this _____ day of _____, 20__ by and between Southwest Highway 115 Fire Protection District (hereinafter referred to as the "District") and the Garrison Commander, Fort Carson, Colorado.

2. WITNESSETH:

a. WHEREAS, each of the parties hereto maintains equipment and personnel for the suppression of fires within its own jurisdiction and areas.

b. WHEREAS, the parties hereto desire to augment the fire protection available in their various establishments, districts, agencies, and municipalities in the event of large fires or conflagrations.

c. WHEREAS, it is the policy of the Army and of the municipalities or other districts and of their governing bodies to conclude such agreements wherever practical.

d. WHEREAS, it is mutually deemed sound, desirable, practicable, and beneficial for the parties to this agreement to render assistance to one another in accordance with these terms.

3. THEREFORE, BE IT AGREED THAT FOR Mutual Firefighting Assistance: Whenever it is deemed advisable for the senior officer of a fire department (actually present at any fire) to request mutual firefighting assistance under the terms of this agreement, he is authorized to do so. The senior officer of the fire department receiving the request shall forthwith take the following actions:

a. Immediately determine if apparatus and personnel can be spared in response to the call.

b. Determine what apparatus and personnel might most effectively be dispatched.

c. Determine the exact mission to be assigned in accordance with detailed plans and procedures of operation drawn in accordance with this agreement by the technical heads of the fire department involved.

receiving the call, with complete instructions as to the mission, in accordance with the terms of this agreement.

4. The rendering of mutual firefighting assistance under the terms of this agreement shall not be mandatory, but the party receiving the request for assistance should immediately inform the requesting department if, for any reason, assistance cannot be rendered.

5. Each party to this agreement waives all claims against the other party or parties for compensation for any loss, damage, personnel injury, or death occurring in consequence of the performance of this agreement. In addition, the requesting department shall identify and hold the other party or parties harmless against third-party claims arising out of their assistance to the requesting department. All services performed under the agreement should be rendered without reimbursement of either party or parties.

6. The technical head of the fire department requesting the service should assume full charge of the operation, provided that the apparatus, personnel, and equipment of the agency rendering assistance shall be under the immediate supervision of and shall be the immediate responsibility of the senior officer of the fire department rendering assistance. If the technical head of the fire department requesting assistance specifically requests senior officer of a fire department furnishing assistance to assume command, he shall not, by relinquishing command, be relieved of his responsibility for the operation. In the event of a crash or aircraft owned or operated by the United States or military aircraft of any foreign nation within the area for which the department normally provides fire protection, the Chief of the Fort Carson Fire Department, or his representative, may assume full command on his arrival at the scene of the crash.

7. The chief fire officers and personnel of the fire departments of both parties to this agreement are invited and encouraged, on a reciprocal basis, to frequently visit each other's activities for guided familiarization tours consistent with local security requirements and, as feasible, to jointly conduct pre-fire planning inspections and drills.

8. The technical heads of the fire departments of both parties to this agreement are authorized and directed to meet and draft any detailed plans and procedures to effectively implement this agreement. Such plans and procedures of operations shall become effective upon ratification by the signatory parties.

9. Personnel of the responding organization, when requested the Wildland or Prescribed Fire Operations, shall present to the officer in charge an Incident Qualifications Card, "Red Card", showing current National Wildlife Coordinating Group (NWCG), qualifications and corresponding fitness level for positions to be held on the incident.

10. This agreement shall become effective upon the date hereof and shall remain in full force and effect until canceled by mutual agreement of the parties hereto or by written notice by one party to the other party, giving thirty (30) days notice of said cancellation.

11. IN WITNESS WHEREOF, the parties hereto have executed this agreement on the day and year first above written.

MICHAEL RESTY, JR.
Colonel, U.S. Army
Garrison Commander

CLAUDE WOODS
Chief, Southwest Highway 115
Protection District

Appendix J

US Fish and Wildlife Service

Endangered Species Program and How It Works

And

Critical Habitat- What Is It?

U.S. Fish & Wildlife Service

Our Endangered Species Program and How It Works With Landowners

The Endangered Species Program conserves endangered and threatened species and the ecosystems upon which they depend. As of May 2003, there were 1,263 U.S. species listed as endangered or threatened, 249 candidate species and 36 species proposed for listing. Conserving endangered and threatened species is necessary to preserve our natural heritage for future generations and to maintain our quality of life. Conserving ecosystems benefits all users of ecosystem resources and is essential to maintaining our nation's long term economic prosperity.

Our Program's priorities are:

¦ Preventing extinction.

¦ Recovering species that are listed.

¦ Making listing species unnecessary.

¦ Providing quality customer service to Federal, State, and local governments and private individuals to assist them in conserving endangered species while meeting their social and economic objectives.

Endangered Species Program Elements

¦ Through the **Candidate Conservation** program, the Service, in partnership with public agencies, private organizations, and landowners, works to reduce the threats to declining species, and thus avoid listing. By acting early before a species becomes imperiled, the Service can reduce the costs of recovery and maintain land use flexibility for landowners.

¦ Through the **Listing** program, the Service follows Federal rulemaking procedures and specific ESA requirements to determine whether to list a species. A formal peer review process and an opportunity for public comment ensure that the Service obtains the best available scientific information to support its decisions. *Endangered species are defined by the Endangered Species Act (ESA) as those species that are in danger of extinction throughout all or a significant portion of their range. Threatened species are those species that are likely to become endangered within the foreseeable future.* When necessary, essential species habitat is protected through a critical habitat soon after listing. Once listed, the species is afforded the full range of protections available under the ESA. These protections include prohibitions on killing, harming or otherwise taking a species as well as restrictions on import/export to prevent trade-related declines.

¦ Through the **Consultation** program, the Service works with private landowners and other non-Federal entities to develop Habitat Conservation Plans that authorize the incidental take of listed species. The HCP process allows private economic development to proceed while promoting listed species conservation. Also through this program, the Service works with other Federal agencies to ensure that their activities and the activities they authorize are compatible with species needs.

¦ Through the **Recovery** program, the Service develops partnerships with Federal, State, and local agencies, tribes, researchers, conservation organizations, businesses, landowners, and individuals to conserve listed species. Recovery efforts include a wide range of management actions, such as controlled propagation and habitat

protection and restoration, that reduce threats or otherwise benefit populations so they will stabilize and ultimately increase. A species is considered for delisting once it recovers to the point where it no longer needs the ESA's special protections.

Assistance to Landowners

According to a 1993 study by the Association for Biodiversity Information and The Nature Conservancy, half of listed species have at least 80% of their habitat on private lands. Because of listed species' dependence on private lands, private landowner participation in endangered species conservation is critical to successful species recovery. Several programs provide mechanisms for increased cooperation with private landowners, tribes, State and local governments, industry, and agricultural interests:

¦ The **Safe Harbor Policy** encourages voluntary management for listed species to promote recovery on non-Federal lands by giving assurances to the landowners that no additional future regulatory restrictions will be imposed.

¦ The **Candidate Conservation Agreements with Assurances Policy** provides incentives for non-Federal property owners to conserve candidate species, thus potentially making listing unnecessary.

¦ **Habitat Conservation Planning** allows private landowners to develop land supporting listed species provided they undertake conservation measures. The **No Surprises Policy** assures participating landowners that they will incur no additional mitigation requirements beyond those they agreed to in their Habitat Conservation Plans, even if circumstances change.

Incentive and Grants Programs

¦ The **Private Stewardship Program ($9.9M)** provides grants and other assistance on a competitive basis to individuals and groups engaged in local, private, and voluntary conservation efforts that benefit federally listed, proposed, or candidate species, or other at-risk-species. A diverse panel of representatives from State and Federal government, conservation organizations, agriculture and development interests, and the science community assess applications and make recommendations to the Secretary of the Interior, who awards the grants.

¦ The **Cooperative Endangered Species Conservation Fund** (section 6 of the ESA) provides funding ($80.5M) to States and Territories to participate in a wide array of conservation projects on non-Federal lands for candidate, proposed and listed species. States and Territories must contribute 25% of the estimated program costs of approved projects, or 10% when two or more States or Territories implement a joint project. A State or Territory must enter into a cooperative agreement with the Service to receive grants. Most States and Territories have entered into these agreements for both plant and animal species. For FY 2003, funding will be available to implement conservation projects for listed and species at risk (*Conservation Grants* $7.5M); integrating habitat conservation into local land use planning through development of Habitat Conservation Plans (*Habitat Conservation Planning Assistance Grants* $6.6M); furthering species conservation through acquisition of land and easements associated with approved Habitat Conservation Plans (*HCP Land Acquisition Grants* $51.1M); and acquiring lands essential to the recovery of listed species (*Recovery Land Acquisition Grants* $12.7M).

Looking Ahead

By building strong partnerships and initiating early and collaborative conservation efforts, the Service can best achieve the purpose of the Endangered Species Act to conserve endangered and threatened species and the ecosystems upon which they depend.

Contact Us

Want more information on a particular endangered species or to enter into a partnership with us? Please contact the Regional Office which handles the State(s) in which you are interested.

Washington D.C. Office

Appendix J

Endangered Species
4401 N. Fairfax Drive, Room 420
Arlington, VA 22203
http://endangered.fws.gov
Chief, Division of Conservation and Classification: Christine Nolin, 703/358 2171
Chief, Division of Consultation, HCPs, Recovery, and State Grants: Patrick Leonard, 703/358 2171
Chief, Division of Partnerships and Outreach: Claire Cassel, 703/358 2390

Region Six — Mountain Prairie
134 Union Boulevard
Lakewood CO 80228
http://mountain-prairie.fws.gov
Division of Ecological Services:
Jill Parker, 303/236 7400 Ext. 242

U. S. Fish and Wildlife Service
Endangered Species Program
4401 N. Fairfax Drive, Room 420
Arlington, VA 22203
703/358 2390
http://endangered.fws.gov
May 2003

U.S. Fish & Wildlife Service

Critical Habitat

What is it?

When a species is proposed for listing as endangered or threatened under the Endangered Species Act (Act), we must consider whether there are areas of habitat we believe are essential to the species' conservation. Those areas may be proposed for designation as "critical habitat." The determination and designation of critical habitat is one of the most controversial and confusing aspects of the Act. Here are answers to some of the most frequently asked questions about critical habitat.

What is critical habitat?

Critical habitat is a term defined and used in the Act. It is a specific geographic area(s) that contains features essential for the conservation of a threatened or endangered species and that may require special management and protection. Critical habitat may include an area that is not currently occupied by the species but that will be needed for its recovery. An area is designated as "critical habitat" after we publish a proposed Federal regulation in the *Federal Register* and then we receive and consider public comments on the proposal. The final boundaries of the critical habitat area are also published in the *Federal Register*.

What is the purpose of designating critical habitat?

Federal agencies are required to consult with us on actions they carry out, fund, or authorize to ensure that their actions will not destroy or adversely modify critical habitat. In this way, a critical habitat designation protects areas that are necessary for the conservation of the species.

A critical habitat designation has no effect on situations where a Federal agency is not involved—for example, a landowner undertaking a project on private land that involves no Federal funding or permit.

Do listed species in critical habitat areas receive more protection?

An area designated as critical habitat is not a refuge or sanctuary for the species. Listed species and their habitat are protected by the Act whether or not they are in an area designated as critical habitat. To understand the additional protection that critical habitat provides to an area, it is first necessary to understand the protection afforded to any endangered or threatened species, even if critical habitat is not designated for it.

The Act forbids the import, export, or interstate or foreign sale of endangered and threatened animals and plants without a special permit. It also makes "take" illegal -- forbidding the killing, harming, harassing, pursuing, or removing the species from the wild.

The Act requires that Federal agencies conduct their activities in such a way as to conserve species.

The Act also requires that Federal agencies must consult with us to conserve listed species on their lands and to ensure that any activity they fund, authorize, or carry out will not jeopardize the survival of a threatened or endangered species. This is known as consultation.

In consultation for those species with critical habitat, Federal agencies must also ensure that their activities do not adversely modify critical habitat to the point that it will no longer aid in the species' recovery. In many cases, this level of protection is similar to that already provided to species by the "jeopardy standard." However, areas that are currently unoccupied by the species, but which are needed for the species' recovery, are protected by the prohibition against adverse modification of critical habitat.

Must Federal agencies consult with us outside critical habitat areas?

Yes, even when there is no critical habitat designation, Federal agencies must consult with us to ensure any action they carry out, fund, or authorize is not likely to jeopardize the continued existence of a listed species.

What is the impact of a critical habitat designation on economic development?

Most activities that require a Federal agency to consult with us can proceed. If modification of the project is necessary, it is likely that those changes would have been needed anyway, in order to avoid jeopardy. However, in areas where the species is not currently present, there may be some project modifications that would not have occurred without the critical habitat designation.

How do we determine what areas to designate as critical habitat?

Biologists consider physical and biological features needed for life processes and successful reproduction of the species. These include:

- space for individual and population growth and for normal behavior;
- cover or shelter;
- food, water, air, light, minerals, or other nutritional or physiological requirements;
- sites for breeding and rearing offspring; and
- habitats that are protected from disturbances or are representative of the historic geographical and ecological distributions of a species.

The areas shown on critical habitat maps are often large. Are all the areas within the mapped boundaries considered critical habitat?

No. Our rules normally exclude by text developed areas such as buildings, roads, airports, parking lots, piers, and other such facilities. Additionally, projects will only require consultation if they affect areas that contain the primary constituent elements required by the species. Primary constituent elements are those physical and biological features of a landscape that a species needs to survive and reproduce.

Why are large areas shown on critical habitat maps if the entire area is not actually considered critical habitat?

In such cases, precisely mapping critical habitat boundaries is impractical or impossible, because the legal descriptions for these precise boundaries would be too unwieldy.

Does the Act require an economic analysis as part of designating critical habitat?

Yes. We must take into account the economic impact, as well as any other benefits or impacts, of specifying any particular area as critical habitat. We may exclude any area from critical habitat if we determine that the benefits of excluding it outweigh the benefits of specifying the area as part of critical habitat, unless we determine that the failure to designate the area as critical habitat will result in the extinction of the species.

Does an economic analysis have any effect on the decision to list a species as threatened or endangered?

No, under the Act, a decision to list a species is made solely on the basis of scientific data and analysis.

Myths & Realities

If critical habitat is designated, does that mean no further development can occur?

No. A critical habitat designation does not necessarily restrict further development. It is a reminder to Federal agencies that they must make special efforts to protect the important characteristics of these areas.

Does a critical habitat designation affect all activities that occur within the designated area?

No. Only activities that involve a Federal permit, license, or funding, *and* are likely to destroy or adversely modify the area of critical habitat will be affected. If this is the case, we will work with the Federal agency and, where appropriate, private or other landowners to amend their project to allow it to proceed without adversely affecting the critical habitat. Thus, most Federal projects are likely to go forward, but some will be modified to minimize harm to critical habitat.

How many species have critical habitat designations?

As of December 1, 2005, critical habitat has been designated for 471 of the 1,272 U.S. species listed as threatened or endangered.

Why haven't we designated critical habitat

Appendix J

for more species?

After a Congressional moratorium on listing new species ended in 1996, we faced a huge backlog of species needing to be proposed for listing as threatened or endangered. For this reason, we have assigned a relatively low priority to designating critical habitat because we believe that a more effective use of our limited staff and funding has been to place imperiled species on the List of Endangered and Threatened Species. Additionally, the critical habitat designation usually affords little extra protection to most species, and in some cases it can result in harm to the species. This harm may be due to negative public sentiment to the designation, to inaccuracies in the initial area designated, and to the fact that there is often a misconception among other Federal agencies that if an area is outside of the designated critical habitat area, then it is of no value to the species.

U.S. Fish & Wildlife Service
Endangered Species Program
703/358-2105
http://www.fws.gov/endangered/
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Appendix K

US Fish and Wildlife Service and Colorado State Forest Service

Guidelines for Developing Defensible Spaces Around Residences and other Non-federal Structures in Colorado

Attachment 1.

USFWS AND CSFS Guidelines for Developing Defensible Spaces Around Residences and Other Non-federal Structures in Colorado (June 1 through December 31, 2002 only)

Introduction

There is a growing concern over the potential for the occurrence of fire in the wildland-urban interface of Colorado. In response, the U.S. Fish and Wildlife Service (USFWS) and the Colorado State Forest Service (CSFS) have jointly developed guidelines for the creation of defensible spaces around non-federal structures while also addressing the issue of federally-listed species or their habitat. These USFWS defensible space guidelines (USFWS guidelines) provide a means for the landowner to develop a defensible space while complying with the Endangered Species Act of 1973, as amended (16 U.S.C 1531 et. seq.)(ESA). These USFWS guidelines are in effect only through December 31, 2002.

The CSFS has implemented defensible space guidelines for several years. In collaboration with CSFS, the USFWS has adopted these guidelines with additional modifications for the protection of federally-listed species and their habitats. The USFWS and CSFS have signed a Memorandum of Understanding (June 2002) that recognizes the need for private homeowners to be able to create defensible spaces around their homes. If a federally-listed species or its habitat may be within an area to be treated for defensible space, the USFWS guidelines can be followed and the landowner will be considered to be in compliance with ESA, but for only the activities described in the guidelines and only during the listed time period.

If a landowner is uncertain whether or not a federally-listed species or its habitat may be present on his or her property, the USFWS recommends that the landowner follow the USFWS guidelines. Furthermore, if a landowner (with property that may have federally-listed species) is interested in conducting activities that are beyond the scope of the USFWS guidelines (i.e., landowner wants to create a larger defensible space than is described in the USFWS guidelines), then the landowner should contact the USFWS. (See Section 3 of this document for a discussion of federally-listed species of concern and their general habitat requirements).

These USFWS guidelines, as with the CSFS guidelines, are not intended to fire-proof a structure but are designed to slow the spread of fire towards a building, and will also increase a firefighter's ability to fight a fire. Development of a defensible space will also slow the spread of a structure fire from the structure to the surrounding wildland. These USFWS guidelines are to be used only for the purpose of developing defensible spaces around privately-owned structures that are used primarily as housing for humans or animals. The USFWS guidelines do not apply to temporary structures, fences, etc. Furthermore, the USFWS guidelines only apply to non-federal structures; structures on federal lands are addressed through different means in ESA. All other federal, state, and local laws shall be in effect and will remain unchanged by the MOU and USFWS guidelines.

This document contains three sections: A) CSFS standard defensible space thinning guidelines, B) additional defensible space guidelines as specified by the USFWS, and C) federally-listed species of concern and a brief discussion of their habitats. It is understood that many properties do not contain federally listed threatened or endangered species, or their habitat. However, following these guidelines allows important defensible space work to proceed while maintaining compliance with the ESA.

The USFWS believes that these USFWS-modified guidelines will allow for the development of defensible space around private buildings while also providing suitable measures to protect federally-listed species that may occur in the vicinity of such structures. These USFWS guidelines are in effect only through December 31, 2002. The USFWS and CSFS plan to develop a Habitat Conservation Plan that will provide a future, more permanent means to address the issues of defensible space for private homeowners and federally-listed species. If you have questions on these guidelines, please contact the Colorado State Forest Service at (970) 491-6303, or the Colorado Field Office of the U.S. Fish and Wildlife Service at (303) 275-2370 .

A. CSFS Defensible Space Thinning Standards

The measure of fuel hazard refers to its ***continuity***, both horizontal (across the ground) and vertical (from the ground up into the vegetation crown) continuity. Fuels with a high degree of both vertical and horizontal continuity are the most hazardous, particularly when they occur on slopes. Heavier fuels (brush and trees) are more hazardous (i.e. produce a more intense fire) than light fuels such as grass. Mitigation of wildfire fuel hazards focuses on breaking up the continuity of fuels, both horizontally and vertically. Additional distance between fuels is required on slopes.

STANDARDS
for wildland fire fuel mitigation

Tree: a woody perennial, usually having one dominant vertical trunk and a height greater than 15 feet at maturity.

Spacing Requirements: spacing between trees must be a **minimum** of **10 feet** between the edges of the crowns. This does not apply to mature stands of aspen trees where the recommendations for removal of ladder fuels (listed below) have been complied with. However, in areas of aspen regeneration (young trees) the spacing guidelines will be followed.

Brush and Shrubs: woody plants, smaller than trees, often formed by a number of vertical or semi-upright branches arising close to the ground. Brush is smaller than shrubs and can be either woody or herbaceous vegetation.

Spacing Requirements: Spacing between clumps of brush and/or shrubs must be a minimum of 2½ times (2½X) the height of the vegetation. Maximum diameter of clumps will be 2 times (2X) the height of the vegetation. All measurements are made from the edges of vegetation crowns.

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

Certain brush species such as Gambel, serviceberry, and snowberry will resprout vigorously, following cutting. Applying herbicide to stumps will be necessary for these species, in order to effectively reduce the long term fire hazard. Within Gambel oak stands, all deadwood should be removed from the residual oak and branches should be pruned 3 feet from the ground. Oaks should be removed from within the dripline of residual trees and should be a minimum of 10 feet from residual trees. Within oak clumps, a 3-to-5 foot spacing should be present between dominant stems. Continuous stands of oaks should be thinned to develop clumps using the brush and shrub guidelines within the defensible space zones.

Ladder Fuels: vegetative materials with vertical continuity that allows fire to burn from ground level up into the branches and crowns of trees. Potentially very hazardous, but easy to mitigate. No ladder fuels can be allowed under tree canopies. In all other areas, prune all branches of shrubs (or trees) up to a height of 10 feet above ground (or one-half [½] the height, whichever is least). The pruned material must be chipped on or removed from the site.

Grasses: Keep grass mowed to less than 6 inches.

Slope Adjustment Factors distance from structure for fuel modification:

Minimum distance from a structure for brush, shrub, and tree fuel modification is **70 feet *on level ground.*** Where only grasses exist *and no additional vegetative landscaping* is planned, minimum distance is 30 feet. Otherwise follow the slope adjustment **table 1.** below. On slopes *downhill* from the house, defensible space thinning must be completed following the distances in the table below. Uphill and side distance remains 70 feet unless your lot slopes in multiple directions.

Table 1

1% to 20% slope =
100' for brush/shrubs with 3x height separation distance
100' for trees with 10-foot crown separation distance
30' for grass; grass mowed to 6 inches

21% to 40% slope =
150' for brush/shrubs with 4x height separation distance
150' for trees with a 20-foot crown separation distance
50' for grass; grass mowed to 6 inches

>40% slope =
200' for brush/shrubs with 6x height separation distance
200' for trees with a 30-foot crown separation distance
75' for grass; grass mowed to 6 inches

B. Additional USFWS Guidelines

The USFWS has adopted the CSFS guidelines and has made some modifications to provide additional protection to federally-listed species and their habitats. It is understood that many properties do not contain federally listed threatened or endangered species, or their habitat. However, following these guidelines allows important defensible space work to proceed while maintaining compliance with the ESA.

The USFWS is concerned with minimizing disturbances in areas with federally-listed species and their habitats and has, therefore, modified the CSFS vegetation spacing requirements, as shown in Table 2. The USFWS modifications include a restriction on the size of the defensible space that should not be exceeded (see Table 2). The USFWS modifications also include a restriction on the vegetation separation distance that should not be exceed as well. As a general practice, surface disturbances must be avoided in order to avoid the potential for soil erosion and for sedimentation to occur in streams.

Table 2. USFWS Modified Defensible Space Distance and Vegetation Spacing Requirements.

Slope of Property	USFWS Defensible Space Distance* and Vegetation Treatment Guidelines**
1% to 20% slope	100' for brush/shrubs with 3x to 4x height separation distance 100' for trees with 10-foot to 20-foot crown separation distance 30' for grass; grass mowed to 6 inches
21% to 40% slope	150' for brush/shrubs with 4x to 5x height separation distance 150' for trees with 20-foot to 30-foot crown separation distance 50' for grass; grass mowed to 6 inches
>40% slope	200' for brush/shrubs with 6x to 7x height separation distance 200' for trees with 30-foot to 40 foot crown separation distance 75' for grass; grass mowed to 6 inches

*** Defensible space distances presented here are considered to be Maximum Allowable Distances under the USFWS guidelines.**
**** Bold text indicates USFWS modifications from the CSFS standard guidelines.**

For example, in an area where federally-listed species may be present, the defensible space distance for a home built on a 25% slope should exactly 150 feet on the downhill side of the home. The distance between tree crowns within this defensible space should be at least 20 feet apart but no more than 30 feet. If the shrubs are 3-feet high, then the spacing between the shrubs should be at least 12 feet apart but no more than 15 feet apart.

In the same scenario but at a location where federally-listed species are not believed to be present, the defensible space distance for a home built on a 25% slope should be at least 150 feet on the downhill side of the home. The distance between tree crowns within this defensible space should be at least 20 feet. If the shrubs are 3-feet high, then the spacing between the shrubs should be at least 12 feet apart.

Southwestern Willow Flycatcher Habitat - In areas where the flycatcher may occur (based on county and presence of suitable riparian habitat), USFWS has an additional requirement that the size of the clump of bushes or shrubs be at least 30 feet in length by 30 feet in width. This requirement is for the purpose of retaining clumps of vegetation that will be large enough to support a flycatcher. Spacing requirements for between the patches is provided in Table 2. If a clump(s) of flycatcher habitat is retained within the normal defensible space area per these guidelines, an expanded area of defensible space thinning work is permitted outside the limited distance to allow effective defensible space to be created. The additional area should not exceed the size of the retained clumps of habitat.

Canada Lynx Habitat - In locations above 8,000 feet elevation and slopes greater the 40%, in lynx habitat counties,

defensible space fuels work can be conducted to a distance of 120 feet without additional consideration. If, however, an effective defensible space cannot be established without working beyond the 120 foot guidelines, the homeowner should contact the USFWS.

Ladder Fuels: Use existing CSFS guidelines.

Brush and Shrubs: USFWS guidelines allow for mechanical treatments only and do not cover the application of herbicide.

Grasses: Keep grass mowed to 6 inches. Grasses should be mowed, rather than clearing the ground surface, in order to minimize the disturbance of roots and to provide for conditions that allow the vegetation to recover. Other than defining a maximum allowable distance for defensible space in grasses (see Table 2), the USFWS guidelines do not modify the CSFS standard guidelines. There are no USFWS guideline restrictions on vegetation height for watered lawns.

C. Federally-Listed Species of Concern

The following text briefly describes the habitat characteristics of federally-listed species that may be affected by the development of defensible space around privately-owned residences/occupied structures in Colorado. Also provided are the Colorado counties in which these species may occur:

Preble's Meadow Jumping Mouse - The Preble's meadow jumping mouse (Preble's) inhabits areas with dense, herbaceous riparian (streamside) or wetland vegetation along the Front Range plains and foothills of Colorado below 7600 feet. Preble's habitat is considered to also include the 100-year floodplain plus 300 feet on both sides of the floodplain, or, in the absence of the 100-year floodplain, Preble's habitat is considered to include the riparian area of the stream plus a 300 foot buffer on both sides of the stream. Counties include: Adams, Arapahoe, Boulder, Denver, Douglas, Elbert, El Paso, Jefferson, Larimer, Morgan, Pueblo, and Weld.

Canada Lynx - The lynx occurs in mesic (moist) coniferous forests that have cold, snowy winters and provide a prey base of snowshoe hare. In Colorado, the primary vegetation that contributes to lynx habitat is lodgepole pine, subalpine fire, and Engelmann spruce with an elevation range of 8,000 to 11,500 feet. Counties include: Alamosa, Archuleta, Boulder, Chaffee, Clear Creek, Conejos, Costilla, Custer, Delta, Dolores, Eagle, Fremont, Garfield, Gilpin, Grand, Gunnison, Hinsdale, Huerfano, Jackson, Jefferson, Lake, La Plata, Larimer, Las Animas, Mesa, Mineral, Moffat, Montezuma, Montrose, Ouray, Park, Pitkin, Pueblo, Rio Blanco, Rio Grande, Routt, Saguache, San Juan, San Miguel, and Summit.

Greenback Cutthroat Trout - The greenback cutthroat trout is found in isolated headwaters of mountain streams of the South Platte and Arkansas River drainages. It occurs in clear, cold and well-oxygenated streams with gravelly to rocky substrate and abundant riparian vegetation. Counties include: Boulder, Clear Creek, Custer, Douglas, El Paso, Huerfano, Lake, Larimer, Park, and Pueblo.

Southwestern Willow Flycatcher - The southwestern willow flycatcher (flycatcher) breeds in southwestern Colorado in dense riparian tree and shrub communities associated with rivers, swamps, and other wetlands. Common tree and shrub species include willows, boxelder, tamarisk, and Russian olive. Minimum vegetation patch size is 30 feet long by 30 feet wide by 5 feet high; vegetation patches smaller than this size are considered too small to support a flycatcher. Counties include: Alamosa, Archuleta, Conejos, Costilla, Delta, Dolores, Garfield, Gunnison, La Plata, Mesa, Montezuma, Montrose, Ouray, Rio Grande, Saquache, and San Miguel.

Pawnee Montane Skipper - The Pawnee montane skipper (skipper) has a very restricted range. It occurs only in a narrow band along the Upper South Platte River drainage in an area approximately 23 miles long by 5 miles wide. Skippers occur in dry, open ponderosa pine woodlands on outcroppings of Pikes Peak granite with a sparse understory

vegetation at an elevation of 6,000 to 7,500 feet. Blue grama grass, the only known larval food plant, and prairie gayfeather, the primary adult nectar plant, are the two necessary components of the ground cover. Counties include: Douglas, Jefferson, Park, and Teller.

Mexican Spotted Owl - The Mexican spotted owl inhabits mountainous areas with steep, rocky canyons with dense, mature forests of mixed-conifer. Most nests occur on cliff ledges or in caves in steep-walled canyons. During winter in Colorado, some owls move downslope to more open canyons that contain pinyon-juniper vegetation. Counties include: Adams, Alamosa, Arapahoe, Archuleta, Boulder, Chaffee, Clear Creek, Conejos, Costilla, Custer, Dolores, Douglas, El Paso, Fremont, Garfield, Gilpin, Huerfano, Jefferson, La Plata, Larimer, Las Animas, Moffat, Montezuma, Montrose, Park, Pitkin, Pueblo, Rio Grande, Saguache, San Miguel, Summit, Teller, and Weld.