

YOUR
Community Wildfire Protection
Implementation Plan

Soda Creek

Evergreen Fire Protection District
Jefferson County, CO

FINAL: 9-14-2018

“Effective wildfire mitigation can be accomplished through a variety of methods including reducing hazardous fuels, managing vegetation, creating defensible space around individual homes and subdivisions, utilizing fire-resistant building materials, enhancing emergency preparedness and response capabilities, upgrading current infrastructure, and developing programs that foster community awareness and neighborhood activism. Once implemented, these actions will significantly reduce the risk of loss due to wildfire to an individual home, and...to an entire community.” Evergreen Community Wildfire Protection Plan



THIS PAGE INTENTIONALLY LEFT BLANK

CWPIP Certification

The Soda Creek Area Community Wildfire Protection Implementation Plan (CWPIP) was developed in accordance with the guidelines set forth by the Healthy Forests Restoration Act (2003) and the Colorado State Forest Service's Minimum Standards for Community Wildfire Protection Plans (CWPP) (Revised 2010).

This Plan is under the umbrella of the Evergreen Fire Protection District CWPP. It provides analysis and mitigation recommendations for the Soda Creek area. The plan:

- Was collaboratively developed – residents, interested parties, local government and stakeholders. State and Federal and local agencies managing land in the area were consulted as appropriate;
- Identifies and prioritizes areas for hazardous fuels reduction treatments and recommends the types and methods of treatment to reduce the wildfire threat to values at risk in the area;
- Presents measures to reduce the ignitability of structures throughout the plan area.

The following entities mutually agree with the contents of this Community Wildfire Protection Implementation Plan: SEE PAGE 56 FOR SIGNATURES

Team Leader: Tandy Jones (For the Team)

Date

Chief: Evergreen Fire Protection District

Date

Assistance and Consultation

John Chapman; Plan Facilitator for Evergreen Fire Protection District

Paul Amundson; Wildland Coordinator, Evergreen Fire Protection District

THIS PAGE INTENTIONALLY LEFT BLANK

TABLE OF CONTENTS

Executive Summary.....	P7
Section 1: Community Wildfire Protection Planning.....	P9
Section 2: The Soda Creek; Community Risk Analysis.....	P11
Section 3: Wildland Fire Response Infrastructure and Capabilities.....	P19
Section 4: Implementation Actions & Recommendations.....	P20
4.1 Mitigation techniques to be applied.	
4.2 Fuels mitigation Projects	
Section 5: Plan Implementation and Follow up	P33
Section 6: Appendices.....	P35

THIS PAGE INENTIONALLY LEFT BLANK

EXECUTIVE SUMMARY

This is the Community Wildfire Protection Implementation Plan (CWPIP) for the Soda Creek (SC). It is under the umbrella of the Community Wildfire Protection Plan (CWPP) for the Evergreen Fire Protection District (EFPD), and was formulated by a team of Soda Creek area residents with advice and assistance from the Evergreen Fire Protection District.

The CWPIP details priority mitigation actions selected by the team based on general recommendations made in the Evergreen CWPP. These actions are to reduce the impact of wildfire on the neighborhoods and individual residences. As appropriate, State, Federal and local land managing agencies were involved. **Both the Evergreen CWPP analysis and the Jefferson County CWPP gave Soda Creek a fire danger rating of “High”.**

Specific sections:

Section 1: Community Wildfire Protection Planning;

Section 2: The Soda Creek area & Community Risk Analysis;

Section 3: Wildland Fire Response Infrastructure and Capabilities;

Section 4: Implementation Actions & Recommendations (Mitigation techniques to be applied and priority Fuels mitigation Projects;

Section 5: Plan Implementation and Follow up;

Section 6: Appendices (containing the state forest service guide on creation of Defensible Space and a section with links to important information).

Sections 1, 2, and 4 are important for background and for specific recommended mitigation actions to be carried out by the community working with Evergreen Fire Rescue.

Specific priority recommendations for community mitigation efforts supported by the Evergreen Fire Protection District are the heart of the plan as they call for specific actions: See P24.

Recommended Treatment Priority 1: Work with officials and neighborhoods to facilitate creation of Defensible Space

Personal defensible space is critical to area protection. The team recommends collaboration between itself, the Evergreen & Elk Creek FPDs, HOAs and neighborhood/community events to educate residents and promote their efforts to create Defensible Space on residential lands within the plan area.

Recommended Treatment Priority 2: Mitigation along area roadways

The team evaluated the recommendations, and conducted a drive around to identify roads in need of mitigation. This would include shaded fuel breaks along forested primary, secondary, and designated emergency access roads.

The following road parcels are recommended for priority treatment:

- 1. Woodland Drive; from Snyder Gulch east**
- 2. Meadow Mountain Rd from west to east**
- 3. Soda Creek Road from Woodland Drive to Deep Forest Road**
- 4. Humphrey Drive**

5. Deep Forest Road from west to southeast
6. Snyder Gulch Road

Recommended Priority 3: Availability of Emergency Evacuation Routes

The team seeks to assure availability of routes for evacuation in event of wildfire emergencies.

- **The team coordinates with Evergreen FPD, and Jefferson County Sheriff's Office to provide current and incoming residents with the EFPD information brochure on existing evacuation route recommendations' sheet for Unit 2 (Soda Creek/Fox Ridge) & Unit 4, showing potential evacuation routes. If additional route(s) are added work with EFPD to see the brochure is revised.**
- **In initial study the team feels that with existing roadways in the area the emergency evacuation routes recommended in the Evergreen FPD CWPP would be difficult to establish due to private property, and may not be needed. If the team and Evergreen Fire Rescue later determine a need the team will work to carry out the recommendation(s).**
 - *The recommendation in the Evergreen CWPP...Unit 2, "Develop and maintain emergency access from Meadow to Old Squaw Pass."*
 - *In Unit 4 it is recommended to "...Develop and maintain emergency access between Ruby Ranch and Humphrey."*

Recommended Priority 4: The team recommends fuel break thinning in a property along the north side of Squaw Pass Road which is under a scenic easement. The easement is reviewed by Jefferson County Open Space to assure it retains the terms and conditions required to retain easement status. However, any action taken on the land would require permission by the property owner.

Section 1: COMMUNITY WILDFIRE PROTECTION PLANNING`

This Soda Creek Area Community Wildfire Protection Implementation Plan (CWPIP) is a plan for all residents of the community. It has been developed by your neighbors with advice and assistance from the Evergreen Fire Protection District (EFPD).

It provides an assessment of wildfire risks and hazards and outlines specific mitigation recommendations designed to make the community a safer place to live, work and play. It will enable us to live with fire as a natural part of the landscape ecosystem.

Much of the land involved is private land. It is extremely important for land owners to create Defensible Space on their land. A land owner does not have to clear cut their property to achieve defensible space, but without collaborative, neighborhood action the damage to homes or other buildings can be significant.

Once the CWPIP is finalized and adopted, it is the responsibility of the community...*that's US*, to move forward and implement the action items in collaboration with the EFPD. It is a living document to be used on a continuing basis... *THIS IS OUR PROCESS, NOT A SHELF DOCUMENT!!*

The Team – Local residents and agencies involved in developing this plan:

- Residents of the Soda Creek & Fox Ridge area
 - Tandy & Peter Jones, Steve Brummer, Clayton Chessman, Julie Ann Courim, Anne Hardt, Bob Hiseler and Peter Jones
- Paul Amundson: Evergreen Fire/Rescue Wildland Coordinator
- John Chapman; Team Facilitator

There is no legal requirement for residents to implement the recommendations in this CWPIP. This is also the case for CWPPs. **Treatments on private land may require compliance with county land use codes, building codes, and local covenants.** Treatments on public lands are carried out by appropriate agencies and may be subject to federal, state, and county policies and procedures such as National Environmental Policy Act (NEPA).

The Challenge

Decades of aggressive fire suppression in fire-dependent ecosystems, coupled with persistent drought, disease and insect infestation created a threat which demanded national attention and substantial resources. **In the Healthy Forest Restoration Act (HFRA) of 2003, Congress directed communities in the Wildland/Urban Interface (WUI) to prepare *Community Wildfire Protection Plans* (CWPPs).**

Soda Creek (SC) is located within Evergreen Fire Protection District. The CWPIP is under the umbrella of the Evergreen Fire Protection District CWPP. The complete Evergreen CWPP is on the Colorado State Forest Service website at: <http://csfs.colostate.edu/> and the “wildfire mitigation” link.

Inclusion of the Soda Creek area in the EFPD CWPP enables residents to qualify for the CO state tax advantage for defensible space work on their individual properties (see Appendix D).

Section 2: THE SODA CREEK AREA & COMMUNITY RISK ANALYSIS

2.1 The Plan Area: Topography and Vegetation

The CWPIP area (See following map) encompasses the Soda Creek area as identified in the EFPD CWPP. The area is north of Squaw Pass Road and bordered on the north by I-70, (WUI Unit 2 in the maps in the EFPD CWPP, Appendix A). It is between 7500 and 8000 feet in elevation and is in the Foothills Life Zone and the beginnings of the Montane Zone. The neighborhood areas contain approximately 214 residences. A portion of WUI Unit 4 is also included in the plan area. There is also a small area on the north side of I-70 in the area which is not in an Evergreen CWPP WUI but is in the Soda Creek HOA.

The Evergreen FPD CWPP describes the Unit 2 (Soda Creek) areas' vegetation:

“50% light, 30% medium, 20% heavy; vegetation type is controlled largely by slope aspect with grass, brush and open Ponderosa pine stands (FBFM 1, 2, 4, & 9) predominant on south and southeast facing slopes; heavier stands of Lodgepole pine and Douglas-fir...on most north facing slopes; significant Lodgepole pine stands observed along Snyder Gulch, meadow Mountain, and Fox Ridge.”

The plan area also includes a western portion of Unit 4, also a part of Soda Creek HOA.

The Evergreen FPD CWPP describes vegetation for this area which is similar to Unit 2:

“30% light, 60% medium, 10% heavy; slope aspect controls vegetation type with grass, brush and open Ponderosa pine stands (FBFM 1, 2, 4, & 9) predominant on south facing slopes; dense Ponderosa pine with some mix of Douglas-fir (10% - 20%) (FBFM 8, 9, & 10) dominate most north, east, and west slopes of the area; Lodgepole pine is mostly absent.”

“**Fire** is very important for the montane forests. Over time, the forests can be taken over by dense forests of pine trees. Branches and needles fall to the forest floor and pile up into dry, crispy fire hazards. Smaller forest fires help clear the forests of old dying trees and clear the forest floor for new plants to grow. If we prevent all forest fires, all the dry dead trees, branches, and needles get even thicker. When a fire starts, it can quickly become an enormous super-hot firestorm like the Hayman Fire in 2002. Usually fire is helpful for the next generation of seeds to grow...”

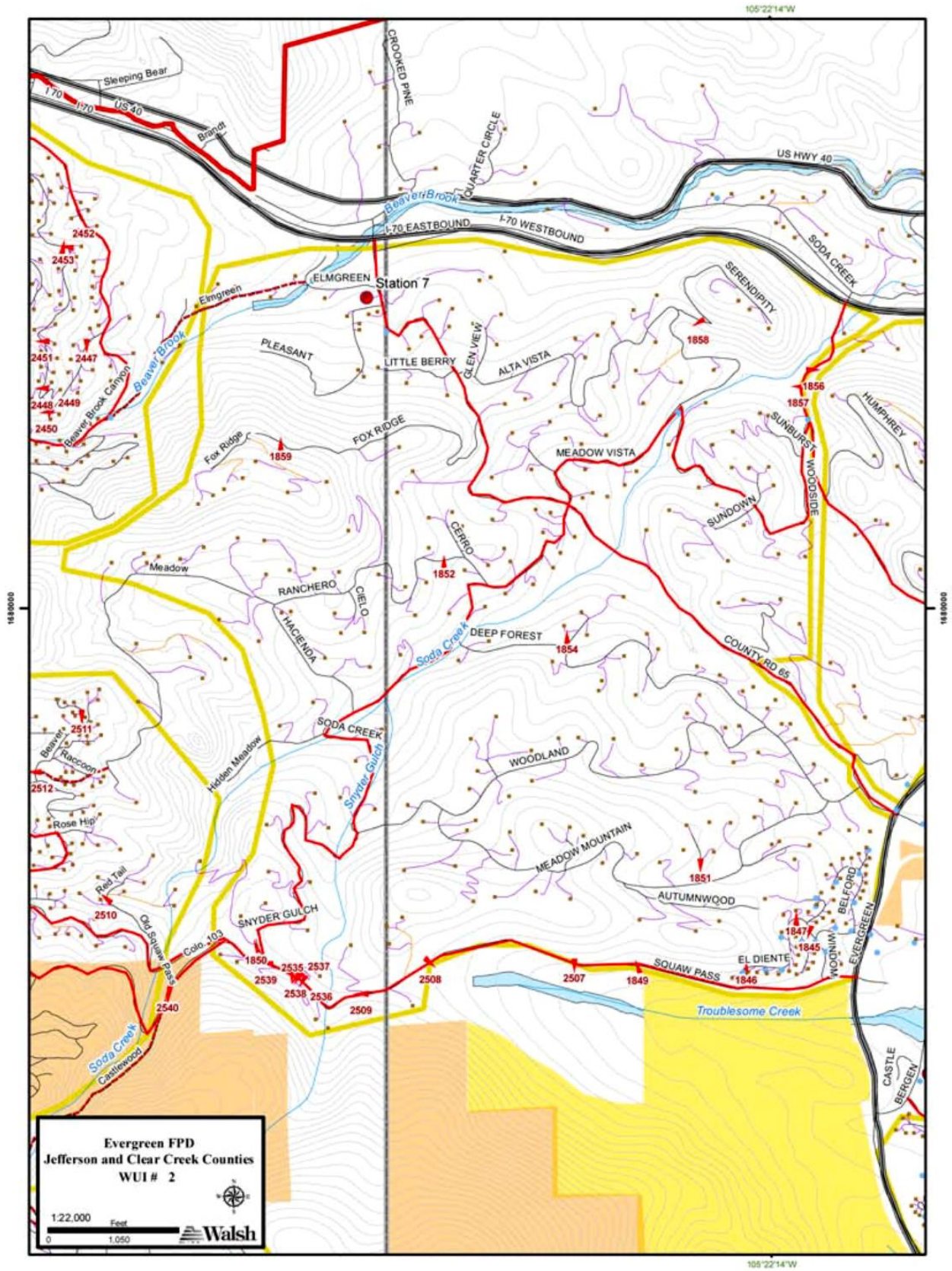


Figure 1: Soda Creek CWPIP area boundary; Unit 2 in Evergreen FPD CWPP

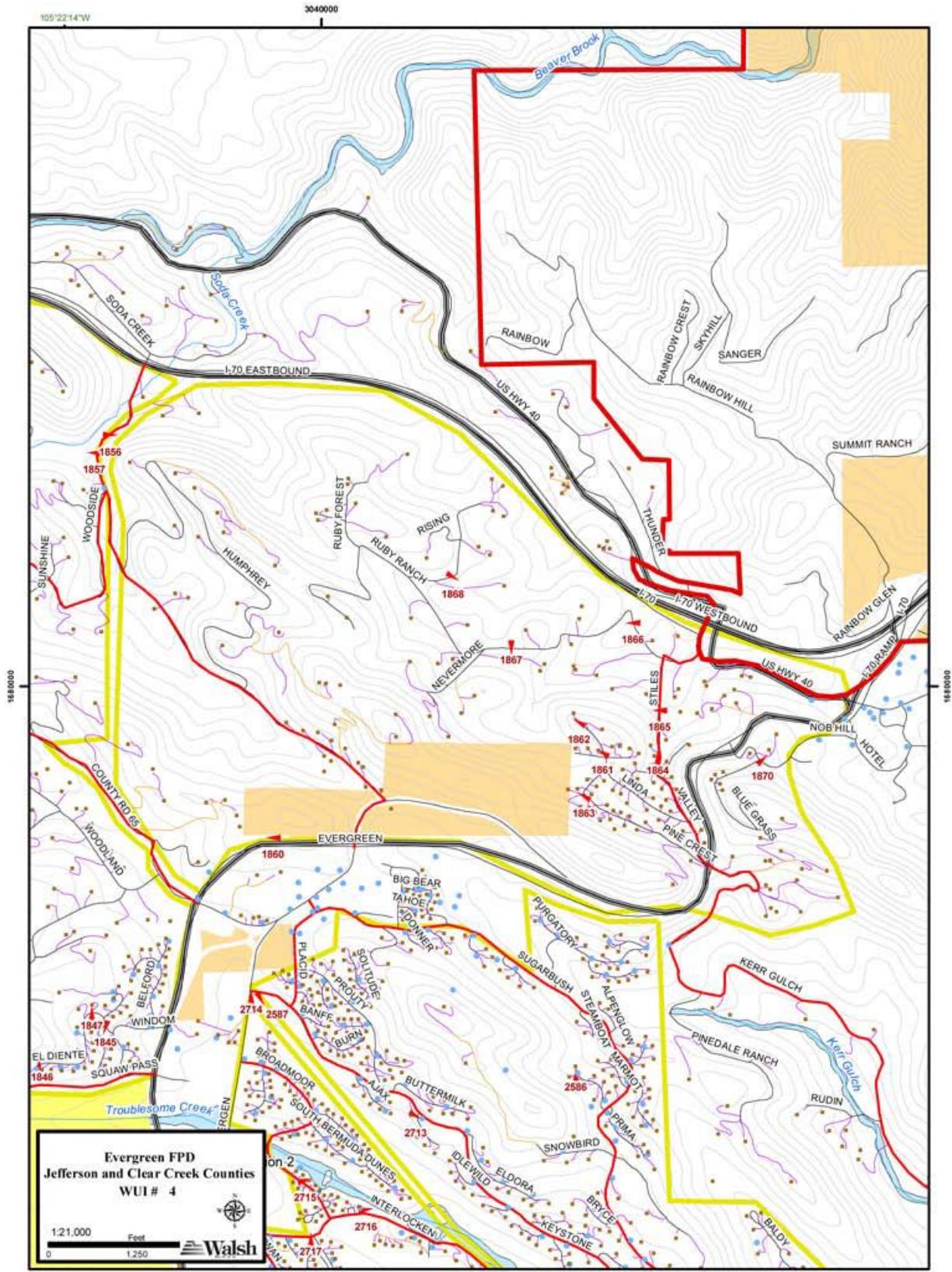


Figure 2: Unit 4 of Evergreen CWPP (western portion in CWPIP area)

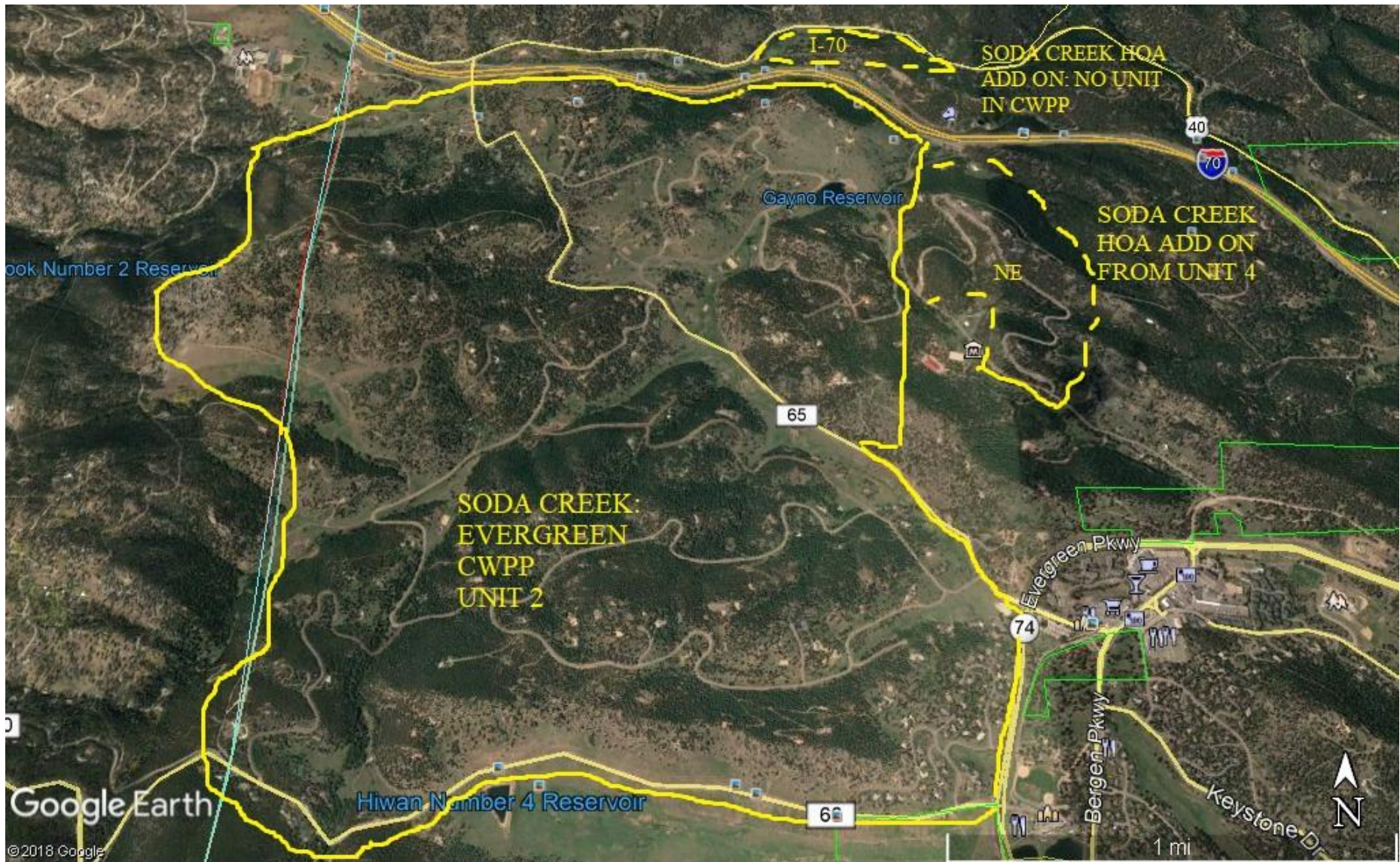


Figure 3: Soda Creek CWPIP area; Includes additional I-70 & NE areas with HOA from other areas outside WUI Unit 2 of Evergreen CWPP

2.2 Neighborhoods and Hazard Assessments

Community Risk Analysis

The Core Logic *“Wildfire Hazard Risk Report (Residential Wildfire Exposure Estimates for the Western United States-2015)”* rated the WUI areas of the Evergreen FPD first in the listing with a “Very High” rating for hazard, risk, and potential property loss.

Following are physical descriptions and fire hazard assessments for the Soda Creek area CWPIP. These descriptions are from the Community Assessment Surveys in the Jefferson County CWPP and the Evergreen FPD CWPP. Those plans should be referred to for overall area hazard analysis and fire history. **The EFPD CWPP fire hazard rating for the Soda Creek area neighborhoods is “High”.**

Values at Risk

The Evergreen CWPP listed the following as area Values at Risk for the entire district.

The EFPD is characterized by dense suburban development within a forested setting.

Resources at risk include the following:

- Homes
- Businesses Local economy
- Municipal water supply
- Community infrastructure
- Wildlife and aquatic habitat
- Watersheds
- Water quality
- Air quality
- Natural vegetation communities
- View shed
- Historic structures

- **Life & Property:** Protection of life is first in consideration by residents and emergency services. Protection of property, both personal and business, is the second most important concern.
- **Water Supply Infrastructure**
- **Roadways and Transportation:** Soda Creek is accessed via Bergen Parkway and County Road 65. Few roadways within the area are not maintained by the county.
- **Wildlife:** The area has important mountain wildlife species needing adequate habitat and protection.

The following pages contain the neighborhood hazard ratings and recommendations developed in the Evergreen FPD CWPP, and the Community Hazard Map from the Jefferson County CWPP.

Wildfire Fire Risk and Hazard Severity Form NFPA 1144	
Soda Creek, Fox Ridge	
<i>WUI 2 Hazard Rating</i> HIGH	
Means of Access	
Ingress and egress	3
2 or more roads in & out	0
One road in & out	1
Road Width	
>24 ft	0
>20 ft < 24 ft	2
<20 ft	4
All-Season Road Condition	
Surfaced Road, grade <5%	0
Surfaced Road, grade >5%	2
Non-surfaced Road, grade <5%	2
Non-surfaced Road, grade >5%	5
Other than all seasons	1
Fire Service Access	
<300 ft w/in turnaround	0
>300 ft w/in turnaround	2
<300 ft w/in turnaround	4
>300 ft w/in turnaround	5
Street Signs (predominant)	
Present - reflective	0
Not present	5
Vegetation (fire behavior fuel models)	
Characteristics predominantly within 300 ft	
Light - 1, 2, 9	5
Medium - 5, 6, 7, 8, 9	10
Heavy - 4, 10	20
Struct - 11, 12, 13	25
Defensible Space - vegetation treatments around structure	
>100 ft around structure	1
>70 ft < 100 ft around structure	3
>30 ft < 70 ft around structure	10
<30 ft around structure	25
Topography Within 300 ft of Structures	
Slope	
<5%	1
10% to 20%	4
21% to 40%	7
41% to 60%	8
>61%	10
Additional Rating Factors (rate all that apply)	
Additional factors	
Topographic features that reduce traffic of fire behavior (0-5)	4
Areas with a history of high fire occurrence - ignition potential (0-5)	4
Severe fire weather potential (0-5)	4
Separation of adjacent structures contributing to fire spread (0-5)	2
Roofing Assembly	
Roofing	
Class A	0
Class B	3
Class C	15
Unrated	25
Building construction	
Materials (predominant)	
Non-combustible siding, eaves and deck	0
Non-combustible siding, eaves and combustible deck	5
Combustible siding and deck	15
Building setback relative to slope of 30% or more	
>30 ft to slope	1
<30 ft to slope	5
Available Fire Protection	
Water source availability	
Hydrant 500 gpm < 1000 ft apart	0
Hydrant 250 gpm < 1000 ft apart	1
Non-pressurized water source > 250 gpm for 2 hours	3
Non-pressurized water source < 250 gpm for 2 hours	5
Water not available	10
On-site fire response resources	
Station < 5 mi from structure	1
Station > 5 mi from structure	3
Fixed fire protection	
NFPA 13, 13R, 130 sprinkler system	0
None	5
Placement of gas and Electric Utilities	
Utilities	
Both underground	0
One above, one below	3
Both above ground	5
Totals for home or subdivision	
84	
Hazard Rating Scale	
<40 LOW	
>40 MODERATE	
>70 HIGH	
>100 EXTREME	



Description: 2,300 acres; 214 observed homes; elevation 7,500 to 8,400 ft at the summit of Schaffer Hill with topography sloping centrally into the soda creek drainage; 4 primary ingress/egress routes are accessible; approximately 60% of roads are paved and generally support 2-way traffic; most secondary roads have adequate turnarounds; several long driveways and gated private drives prevented observation; both paved and non-surfaced roads in the northwest area tend to be steep and narrow, with no turnarounds; reflective street signs present, home addressing inconsistent; housing density is generally low with a predominance of 5-acre parcels with nearly half on slopes of over 20%; defensible space - 14% < 30', 79% 30' to 70'; roofing - 72% asphalt, 14% wood shake construction - 63% combustible siding; placement of utilities varied on location within the WUI with 1/3 buried, 1/3 above ground, and 1/3 one buried; 3 cisterns are noted as sources for strategic passive water supply; a separate subdivision with differing predominant characteristics is located at the southeast corner of the area at the intersection of Evergreen Parkway and Squaw Pass Rd; housing is dense, hydrants are present, roads are paved, and turnarounds are largely absent.

Vegetation: 50% light, 30% medium, 20% heavy, vegetation type is controlled largely by slope aspect with grass, brush and open Ponderosa pine stands (FBFM 1, 2, 4, & 9) predominant on south and southeast facing slopes; heavier stands of Lodgepole pine and Douglas-fir (FBFM 8 & 10) on most north facing slopes; significant Lodgepole pine stands observed along Snyder Gulch, meadow Mountain, and Fox Ridge.

Recommendations:

- Defensible space improvements including fuel reduction, seasonal mowing, and slash disposal
- Shaded fuel breaks along forested primary, secondary, and designated emergency access roads including Woodside, Soda Creek, Snyder Gulch, Woodland, and Deep Forest Access improvements including addressing, and turnarounds near Evergreen Parkway and Squaw Pass Rd
- Develop emergency water availability at Hwy 103 and Snyder Gulch Rd, at the ponds along Alta Vista Road and in the Fox Ridge area; emergency water access in the area of Squaw Pass Rd and Snyder Gulch
- Reduce structural ignitability; reduce percentage of flammable roofs, siding and decking
- Develop and maintain a emergency access from Meadow to Old Squaw Pass
- Improve or construct secondary road turnarounds at dead-ends
- Visible and constant home addressing

Figure 4: Hazard & Risk Page from Evergreen CWPP for Soda Creek/Fox Ridge

Wildfire Fire Risk and Hazard Severity Form NFPA 1144	
Hidden Valley, Ruby Ranch, Nob hill, Avery Acres, El Rancho	
WUI Hazard Rating HIGH	
Means of Access	
Ingress and Egress	1
2 or more back in & out	0
One road in & out	1
Road Width	
> 24 ft	0
> 20 ft - 24 ft	2
< 20 ft	4
All-Season Road Condition	
Set graded Road, grade <5%	0
Set graded Road, grade >5%	2
Not-graded Road, grade <5%	2
Not-graded Road, grade >5%	5
Other than all season	7
Fire Service Access	
< 300 ft to hydrant	0
> 300 ft to hydrant	2
< 300 ft to fire hydrant	4
> 300 ft to fire hydrant	5
Street signs (predominant)	0
Present - effective	0
Not present	5
Vegetation (fire behavior fuel models)	
Calculate fire exposure based on fuel model	
Light - 1, 2, 3	5
Medium - 5, 6, 7, 8, 9	10
Heavy - 4, 10	20
Slab - 11, 12, 13	25
Defensible Space - use defensible space standards	
< 100 ft to structure	1
> 70 ft - 100 ft to structure	3
> 30 ft - 70 ft to structure	10
< 30 ft to structure	25
Topography Within 300 ft of Structures	
Slope	
< 5%	1
10% to 20%	4
21% to 30%	7
31% to 40%	8
> 41%	10
Additional Rating Factors (rate all that apply)	
Additional factors	
Topographic features that adversely affect the behavior (0-5)	3
Areas with a history of high fire occurrence - high potential (0-5)	4
Presence of the wildfire potential (0-5)	4
Separation of adjacent structures consistent with the spread (0-5)	2
Roofing Assembly	
Roofing	
Class A	0
Class B	3
Class C	15
Unrated	25
Building construction	
Materials (predominant)	
Non-combustible fire-resistant siding, eaves and deck	0
Non-combustible siding, eaves and combustible deck	5
Combustible siding and deck	15
Building setback relative to slope of 30% or more	
> 30 ft to slope	1
< 30 ft to slope	5
Available Fire Protection	
Water source availability	
Hydrant 500 gpm < 1000 ft apart	0
Hydrant 250 gpm < 1000 ft apart	1
Non-pressure water source > 250 gpm for 2 to 4 hrs	3
Non-pressure water source < 250 gpm for 2 to 4 hrs	5
Water unavailable	10
Organized response resources	
Station < 5 m from structure	1
Station > 5 m from structure	3
Fixed fire protection	
None	0
None	5
Placement of gas and Electric Utilities	
Utilities	
Both inside structure	0
One above, one below	3
Both above ground	5
Totals for home or subdivision	
78	
Hazard Rating Scale	
< 40 LOW	
> 40 MODERATE	
> 70 HIGH	
> 110 EXTREME	



Description: 1200 acres; 86 observed homes, elevation 7,400 to 8,000 ft, prominent ridge trends northwest through WUI; predominant northeast aspect; 2 subdivisions have 2-way access, 1 subdivision single access; roads are 60%, low to moderate grade, 30% unpaved groomed and low to moderate grade, 10% steep grade; 14 turnarounds observed with dead ends on most private drives; street signage is standard and present although some are damaged in Pinecrest/Linda area; addressing inconsistent, housing density is generally low (1 - 5+ acre parcels), high density in Pinecrest/Linda area (1/4 to 1/2 acre parcels); defensible space - 31%, 30', 69% 30' to 70'; roofing - 76% asphalt, 5% wood shake, 20% non-combustible; construction - 72% combustible, 28% non-combustible; utilities were generally above, with gas buried in the Pinecrest/Linda subdivision; hydrants are located along some areas of Evergreen Parkway but no water supplies are observed in the interior of the assessment area.

Vegetation: 30% light, 60% medium, 10% heavy, slope aspect controls vegetation type with grass, brush and open Ponderosa pine stands (FBFM 1, 2, 4, & 9) predominant on south facing slopes; dense Ponderosa pine with some mix of Douglas-fir (10% - 20%) (FBFM 8, 9, & 10) dominate most north, east, and west slopes of the area; Lodgepole pine is mostly absent.

Recommendations

- Defensible space improvements including fuel reduction, seasonal mowing and slash disposal; reduce structural ignitability
- Develop and maintain emergency access between Ruby Ranch and Humphrey
- Shaded fuel breaks along forested primary, secondary, and designated emergency access roads
- Fuel reduction in identified treatment zones
- Develop emergency water supplies for Pine Crest and Ruby Ranch areas
- Improve or construct secondary road turnarounds at dead ends
- Visible and consistent home addressing

Figure 5: Hazard & Risk Page from Evergreen CWPP for Unit 4

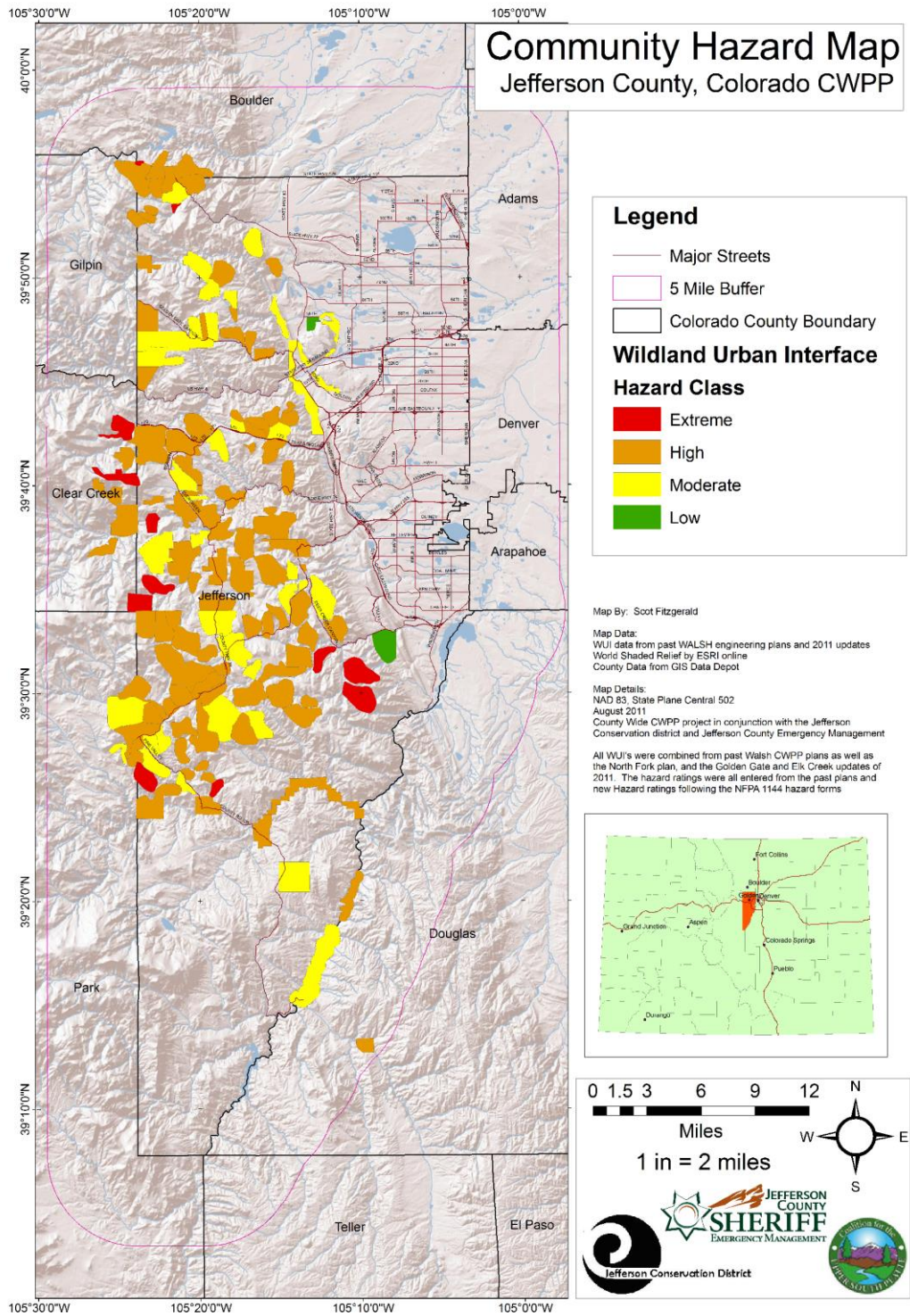


Figure 6: Community Hazard Map

Section 3: WILDLAND FIRE RESPONSE: INFRASTRUCTURE AND CAPABILITIES

Evergreen Fire Protection District:

Wildland firefighting operations within this CWPIP area are the responsibility of the Evergreen FPD. The EFPD is responsible for initial attack. Refer to the Evergreen CWPP or the Evergreen FPD website for details (<http://evergreenfirerescue.com/>).

Emergency Evacuation for Animals:

The Jefferson County Animal Response Team (J-CART) is the overall management entity for emergency evacuation. It operates under the Sheriff's office. Responders include:

Jefferson County Horse Evacuation Assistance Team (Jeffco Heat):

While residents are primarily responsible for evacuation of their animals this is an important service.

Pre-evacuation tips and overall knowledge of how HEAT works are at:

www.jeffcoheat.org, [facebook.com/jeffcoheat](https://www.facebook.com/jeffcoheat), or 303-674-4669.

- Additional information is at: **Colorado State Animal Response Team/Community Animal Response Team** (<http://www.petaidcolorado.org/?60>); There is a link to "Emergency Preparedness for You and Your Animals".

Ready-Set-Go

Jefferson County endorses the Ready-Set-Go program (RSG) of wildfire action planning for residents and other property owners. This program assists firefighters to teach individuals who live in high risk wildfire areas and the wildland-urban-interface (WUI) how to best prepare themselves and their properties against fire threats. **To register, go to:** <https://public.coderedweb.com/CNE/655AC5D55998>

The RSG Program is a three step process:

- 1) Ready** – Preparing for the Fire Threat; Be Ready, Be FireWise. Take personal responsibility and prepare long before the threat of a wildfire so your home is ready in case of a fire.
- 2) Set** – Situational Awareness When a Fire Starts: Pack your vehicle with emergency items.
- 3) Go** – Leave early! Comply with any evacuation orders and follow evacuation plans early!

The RSG Program provides tools through its website, www.wildlandfireRSG.org. A more complete description of the program is in Appendix C.

Section 4: IMPLEMENTATION ACTIONS AND RECOMMENDATIONS

The heart of a Community Wildfire Protection Implementation Plan is the recommendation of mitigation projects that should be undertaken by the community, landowners, and adjacent land management agencies (county, state and/or federal). Public land projects, when combined with home owner defensible space and structural protection collaborate to provide area wide protection.

To quote the Jefferson County CWPP:

“Wildfire mitigation can be defined as those actions taken to reduce the likelihood of loss of life and property due to wildfire. The intent of mitigation is not to completely eliminate the risk of loss nor does it reduce the risk of a wildfire occurring. Effective wildfire mitigation enables residents to evacuate safely, homes to withstand the occurrence of wildfire, and firefighters to safely defend structures and suppress fires where possible...”

As much as possible recommended priority projects were established to include areas with common features: forest types, fuel loads, and ingress and egress routes.

1. **Values at risk:** Life and property are always the first values. Other values as mentioned earlier are: transportation and utility corridors and the natural values of vegetation and wildlife.
2. **Current level of activity:** Experience has shown that wildfire mitigation efforts are most effective when the community is involved.
3. **The important actions that residents should take:** Major components of a CWPIP are actions private land owners can take to protect life and property.
4. **Proximity to public lands priority zone:** The Healthy Forest Restoration Act builds on efforts to restore healthy forest conditions near communities and essential community infrastructure.

4.1 Mitigation Techniques to be applied

The Evergreen CWPP states: *“...Effective wildfire mitigation can be accomplished through a variety of methods including reducing hazardous fuels, managing vegetation, creating defensible space around individual homes and subdivisions, utilizing fire-resistant building materials, enhancing emergency preparedness and response capabilities, upgrading current infrastructure, and developing programs that foster community awareness and neighborhood activism. Once implemented, these actions will significantly reduce the risk of loss due to wildfire to an individual home, and on a larger implementation scale, to an entire community.”*

4.1a Structure Defensible Space – The Land owner

Defensible space is the important area around a structure where fuels and vegetation are treated, cleared or reduced to slow the spread of wildfire towards the structure. To quote the Colorado State Forest Service, *“Fire is capricious. It can find the weak link in your home’s fire protection scheme and gain the upper hand because of a small, overlooked or seemingly inconsequential factor”*

You, as residents of the Soda Creek area, are the most important component of this plan!
Your actions are truly meaningful in protecting life, property, and the beauty of the area.

To fully understand and act on Defensible Space go to the CSFS publication: “Protecting Your Home from Wildfire: Creating Wildfire-Defensible Zones”, on the CSFS website at: http://static.colostate.edu/client-files/csfs/pdfs/FIRE2012_1_DspaceQuickGuide.pdf.
This document is important! Please use it as a guide! It is complete in Appendix D.

You do not have to clear cut your property! Defensible space can be created in an esthetically pleasing manner that maintains privacy and the natural character of the community, and restores forest health.

Defensible space should be developed around all structures in the planning area. The CWPIP cannot mandate a property owner take any action. It is hoped residents in the area will see that when everyone takes action the broader neighborhood landscape is protected.

Research indicates homes with fire resistant roofs and defensible space have an 85% chance of surviving a wildfire while homes with neither of these characteristics have a 15% survival rate.

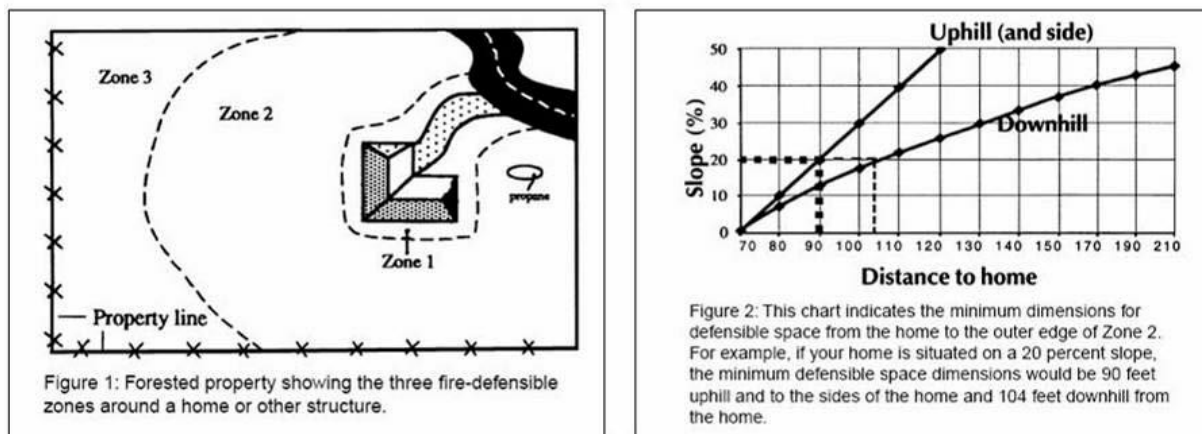


Figure 7: CSFS Defensible Space Standards (Dennis 2003)

The installation of a defensible space consists of three zones that can be adapted to specific building lot situations (See above).

Zone 1 extends a minimum distance of 15-30 feet from a structure. The closest 3 to 5 feet are a non-combustible zone consisting of such things as decorative rock. The lower branches of trees are pruned 5 to 10 feet above the ground (not to exceed one-third of the tree height). Woody and herbaceous plant debris, tall grass, and ladder fuels (low limbs, small trees, and shrubs that may carry fire into tree crowns) will be removed from this area. Leaves and overhanging branches will be removed from roofs. Leaves will be removed from under porches. Woodpiles will be removed and stored uphill in Zone 2.

Zone 2 (at least 100 feet from structures) depends upon the steepness of the slope around the structures. Treatment of ground fuels and ladder fuels will be the same as Zone 1. Trees (or small

groups of trees) and shrubs will be thinned to provide 10 feet of clearance among crowns on level ground. The distance between tree crowns needs to increase as slope increases. Herbaceous plants will be mowed as they dry in late summer.

Zone 3 occurs beyond Zone 2 and extends to the property line. Zone 3 will be managed for the appropriate land use objectives, such as aesthetics, recreation, and/or wildlife habitat.

Zones 1, 2, and 3 will be maintained annually. Two publications that provide information on appropriate plants to use for defensible space landscaping have been prepared by CSFS: *Grass Seed Mixes to Reduce Wildfire Hazard*, Bulletin No. 6.306 (Dennis, not dated), and *FireWise Plant Materials*, Bulletin 6.305 (Dennis, not dated)

Mitigation of Structural Ignitability: Structural mitigation to prevent ignition is very important to defensible space treatment. Please see CSFS publication *FireWise Construction; Site Design and Building Materials*.

<http://static.colostate.edu/client-files/csfs/pdfs/firewise-construction2012.pdf>

1. **Most structures DON'T ignite from direct flame contact, but from radiant heat** (heat that doesn't warm the intervening air but does warm objects). As a fire burns the heat passes through air and windows to objects inside the home that warm to the point of ignition then smolder for hours. **Use non-combustible roofing material and non-combustible siding (Class C or better), and spark arresters on chimneys.**
2. **Embers or fire brands also ignite house fires.** During fires the air contains embers and tosses them onto unburned fuels. Embers can catch in "traps" on roofing, such as beside chimneys or in gutters, and start new fires. **Clean pine needles out of gutters and off roofing. Screen attic and foundation vents with fine mesh screening.**
3. **Large windows are a threat** because they allow radiant heat to enter the structure. **Remove lacey and other decorative curtains** to prevent ignition through the glass. **Double and triple pane windows are more resistant** to heat transfer.

Signing and Evacuation; all Properties:

1. **Homes need visible address signing which are non-flammable and reflective** at the ends of their driveways. Emergency personnel respond based on street addresses.
2. **Create an evacuation plan – in advance.** Include a meeting place outside your area, and a family member or friend outside of your area who can be a point of contact. Think of the **Four Ps:** Pets, Pills, Papers, and Photos. You may have only a short time to evacuate. If you do leave the house, set a ladder in the driveway and connect garden hoses to spigots so firefighters can use your equipment to help defend your home.

4.1b Fuel Break

Shaded Fuelbreaks: The Evergreen CWPP states that, *“All forested access roads should be maintained as shaded fuelbreaks where possible. Reducing the forest canopy along access roads enhances the effectiveness of the physical canopy break the road provides... This creates safer emergency ingress/egress and aids suppression efforts.”*

The vegetation structure and/or composition are altered to reduce severe fire behavior. Vegetation treatments include reducing biomass, thinning trees and shrubs, and/or

removing ladder fuels. Breaking up vertical and horizontal fuel continuity affords better opportunities to control rate of spread. For mitigation actions under this plan the CSFS publications, *Fuelbreak Guidelines for Forested Subdivisions and Communities*, (Dennis, not dated) and *Lodgepole Pine Management Guidelines for Land Managers in the Wildland - Urban Interface* (Dennis et al) should be followed. These publications can be found under the “Publications” section of the COSFS website.

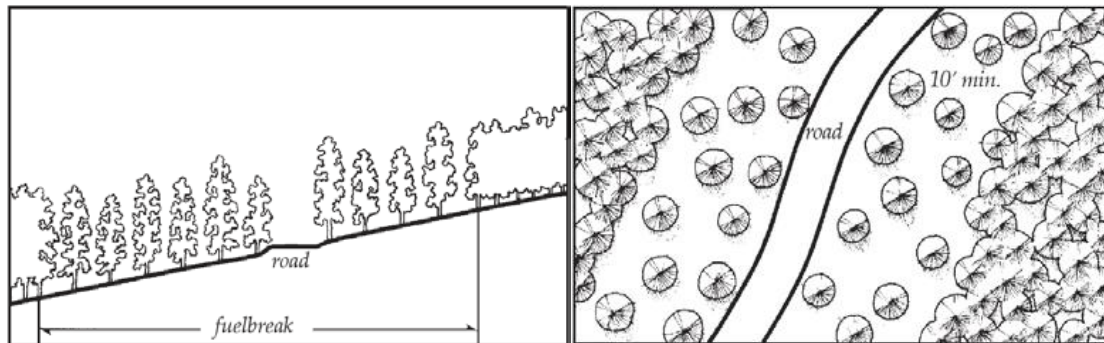
Stand Densities

CSFS publications state crown separation is a more critical factor for fuel breaks than a fixed tree density level. Minimum 10-foot spacing between the edges of tree crowns is recommended on level ground. As slope increases, crown spacing should also increase. Small, isolated groups of trees may be retained for visual diversity. **Aspen trees would not be harvested during the creation of the fuel breaks as aspen are fire resistant.**

Fuels break Width/Slope

Percent slope %	Minimum uphill distance (ft.)	Minimum downhill distance (ft.)	Total distance 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.



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

Plan view of fuelbreak showing minimum distance between tree crowns.

Figure 8: Fuel Break Diagram (Dennis not dated)

Logs and other woody material generated from creating the fuel breaks would be disposed through salvage log sales, hauling debris off site to a designated disposal area, or burned on site following CSFS, Golden District *Prescribed Pile Burning Guidelines* (CSFS, not dated). An evaluation should be made to determine marketability of logs prior to logging. Burning the woody debris requires contact with the EFPD and/or CSFS.

Treatment Alternatives and Costs (from EFPD CWPP)

Treatment	Estimated Cost	Comments
Brush Mastication	\$300 - \$500, per acre	Brush species (Gamble oak in particular) tend to resprout vigorously after mechanical treatment. <input type="checkbox"/> Follow-up treatments with herbicides, fire, grazing, or further mechanical treatments are typically necessary. <input type="checkbox"/> Mastication tends to be less expensive than manual treatment and eliminates disposal issues.
Prescribed Fire	\$75 - \$300 per acre	<ul style="list-style-type: none"> • Can be very cost effective. • Ecologically beneficial. • Can be used as training opportunity for firefighters. • Cost varies with complexity. • Carries risk of escape, which may be unacceptable in some WUI areas. • Unreliable scheduling due to weather and smoke management constraints.
Timber Mastication	\$300 - \$1,200 per acre	<ul style="list-style-type: none"> • Materials up to 10 inches in diameter and slopes up to 30 percent can be treated. • Eliminates disposal issues. • Environmental impacts of residue being left onsite are still under study.
Manual Treatment with Chipping or Pile Burning	\$300 - \$1,200 per acre	<ul style="list-style-type: none"> • Allows for removal of merchantable materials or firewood in timber. • Requires chipping, hauling, and pile burning of slash.
Feller Buncher	\$750 and up per acre	<ul style="list-style-type: none"> • Mechanical treatment on slopes over 30 percent of materials over 10 inches in diameter may require a feller buncher rather than a masticator. • Costs tend to be considerably higher than mastication. • May allow for removal of merchantable material.

Figure 9: Treatment Alternatives and Estimated Costs

The above cost estimates are several years old. The community CWPIP team should consult with Evergreen Fire Rescue for cost estimate assistance.

4.1c Fire Break

A fire break is an area where vegetation has been removed to bare ground or replaced with non-flammable surface such as asphalt. The purpose of the fire break is to stop fire progression. Herbaceous vegetation should be mowed approximately 10 feet on each side annually to further enhance its effectiveness.

4.1d Slash Management

Removal of slash is an important action to protect property. The Jefferson County website <http://jeffco.us/slash/> states, *“Slash is debris, from nature, such as tree limbs, pruning and pine needles. If not removed, slash can add to potential fire hazards on your property...it is critical that home owners clear debris from their properties to help prevent fire damage...”*

4.2 Priority Mitigation Projects: Soda Creek area

Following are the priority projects and their descriptions as determined by the Soda Creek area CWPIP team.

Recommended Treatment Priority 1: Collaboration with officials and neighborhoods to facilitate creation of Defensible Space

Creation of personal defensible space is critical to area protection.

1a. the team recommends collaboration with Evergreen Fire Protection District, HOA and neighborhood/community events to educate residents and promote efforts to create Defensible Space on residential lands. See CSFS publication: “*Protecting Your Home from Wildfire: Creating Wildfire-Defensible Zones*”, on the CSFS website in the Defensible Space section at: http://static.colostate.edu/client-files/csfs/pdfs/FIRE2012_1_DspaceQuickGuide.pdf; and CSFS publication: *FireWise Construction; Site Design and Building Materials*: <http://static.colostate.edu/client-files/csfs/pdfs/firewise-construction2012.pdf> for structural ignitability concerns. The Defensible Space Guide is Appendix D of this plan.

1b. the team recommends working with the Evergreen Fire Protection District to develop submittals for various grant opportunities to gain funding for completing mitigation actions on properties and area roadways.

1c. the team recommends improvements in road and property signage: In areas where road names are similar, street signs should be revised to more clearly indicate the differences, (For example where roads have similar names such as “Drive” and “Road”).

Addresses on community driveways should be replaced with reflective markers which meet the standard for site address signage: “...plainly legible and visible from the street or road fronting the property. ...numbers shall contrast with their background. Address numbers shall be Arabic numbers or alphabetical letters. Numbers shall be a minimum of 4 inches...high with a minimum stroke width of ½ inch... Where access is by means of a private road and the building address cannot be viewed from the public way, a monument, pole or other sign or means shall be used...”

This system should be repeated at every place where the driveway divides and an individual driveway leaves the community driveway. Reflective markers should be placed for each home where the driveway leaves an access road, and on the house itself.

Jefferson County has requirements for Defensible Space and has contracted foresters who will evaluate defensible space actions. For information on requirements and contractors go to:

<http://jeffco.us/planning-and-zoning/faqs/wildfire-faqs/do-i-need-to-meet-the-wildfire-regulation-/>. To find current contracted foresters click on the link to “*Defensible Space Contact Form*”.

Recommended Treatment Priority 2: Mitigation along area roadways

The Evergreen CWPP calls for “*Shaded fuel breaks along forested primary, secondary, and designated emergency access roads*” in its recommendations for plan units. The hazard analysis page for Soda Creek includes: “...Woodside, Soda Creek, Snyder Gulch, Woodland, and Deep Forest Access improvements including addressing, and turnarounds near Evergreen Parkway and Squaw Pass Rd., “and, “...Improve or construct secondary road turnarounds at dead ends

The Evergreen CWPP also recommends development and maintenance of an emergency access from Meadow to Old Squaw Pass.

The Jefferson County CWPP states: “*All access roads flanked by heavy vegetation in WUI communities should be targeted for thinning or seasonal mowing. Treatments may be coordinated with property owners along private roads and with county and state transportation departments for public roads.*”

Coordination with private landowners

Private property involved along roadways recommended for mitigation will require working with property owners to gain agreement to treatment. While recommended thinning distances may not be achievable in all areas it will be important to educate and work with residents in achieving the best possible thinning results.

Roadways: The team evaluated the recommendations and conducted a drive around to identify roadsides in need of mitigation. The accompanying maps show roadways recommended for mitigation.

The team recommends the following road parcels for priority treatment:

- 1. Woodland Drive; from Snyder Gulch east**
- 2. Meadow Mountain Rd from west to east**
- 3. Soda Creek Road from Woodland Drive to Deep Forest Road**
- 4. Humphrey Drive**
- 5. Deep Forest Road from west to southeast**
- 6. Snyder Gulch Road**

The recommendation is for thinning along selected roadways. Thin (mostly dead fall) on either side of the road, following guidelines listed below. While encroachment is not along the full lengths of these routes, they will be evaluated for thinning. As noted in the publications, “*Road systems are important to fuel break construction...crown separation is a more critical factor for fuelbreaks than a fixed tree density level. Connected with county-specified roads within subdivisions, they provide good access and defensive positions for firefighting equipment...*”

Treatment would be in accordance with three main standards as determined by the team and EFPD:

- The USFS standard for roadside mitigation/hazard tree removal: “... *implement hazard tree removal activities within a distance equal to 110% of the height of the tallest hazard tree from the edge of: 1) National Forest System (NFS) roads open to motorized travel (maintenance levels two through five); 2) federal, state, county, or other permitted roads...*” In this case the height of the tallest tree within the treatment zone would be used.
- Colorado State Forest Service: “*Fuelbreak Guidelines for Forested Subdivisions and Communities*” by Frank Dennis
- Colorado State Forest Service: “*Lodgepole Pine Management Guidelines for Land Managers in the Wildland -Urban Interface*” (Dennis et al)

In general, mitigation would include, “... *fuel break clearing of dead standing and dead-fall coniferous growth and dead low growth with only moderate live-ground growth removal, then seeding with appropriate mixes to encourage grass cover and prevent soil erosion.*”

The fuelbreak guidelines referenced call for a minimum break of up to 150 feet on both side of the road (P21), and as much as 170 feet depending on steepness of the slope. Minimum 10-foot spacing between the edges of tree crowns is recommended on level ground. The recommended distances are from the toe of the fill for downslope distances, and above the edge of the cut for uphill distances. Minimum acreage would be approximately 24 acres per mile.

Where stands of Lodgepole pine exist there is potential for wind throw if fuelbreak thinning creates “wind” corridors in the forest. It is recommended that thinning be accomplished by leaving groups of 7 to 10 trees separated from adjacent groups of trees to create the desired spacing effect.

Treatment would be primarily hand thinning with some mechanical, and with slash pile and treatment of material or some use of wood for biomass business purposes. Cost would be approximately \$3000/acre. **The team should consult with EFPD for advice on getting an up-to-date cost estimate when it begins the process to accomplish this project.**

Coordination with Jeffco Road and Bridge

Jefferson County Road and Bridge may be able to take slash cut during projects along the roadways. The Division needs time to plan for slash pickup once a project is scheduled. The recommendations for roadside thinning where county roads are involved will be provided to Road and Bridge. The plan map(s) showing roads that may have mitigation done by property owners or be a CWPIP recommendation placed in a community action or grant will be sent to the Evergreen Fire Protection District Fire Marshal who will forward them to the Division.

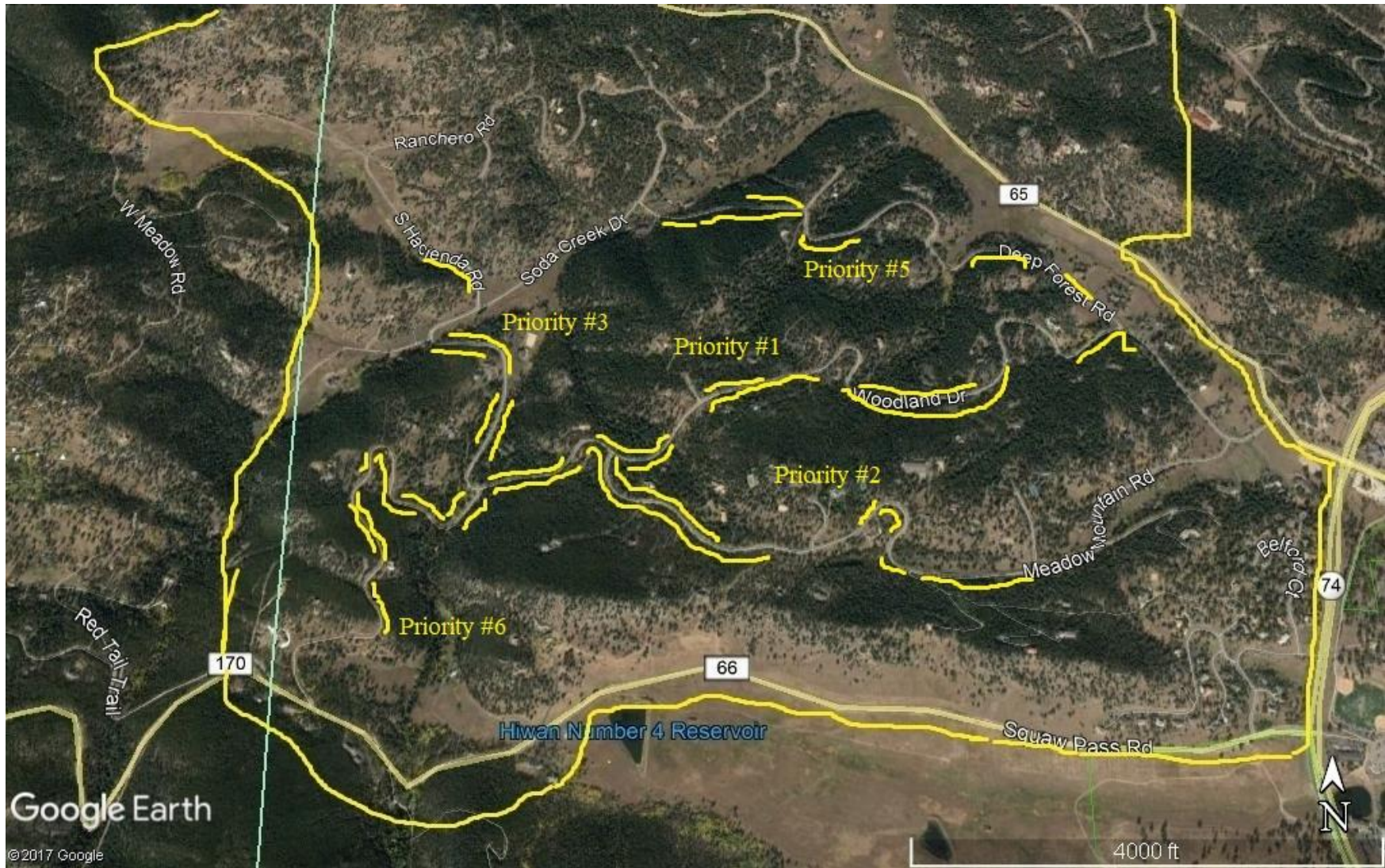


Figure 10 : Soda Creek roadside mitigation priorities

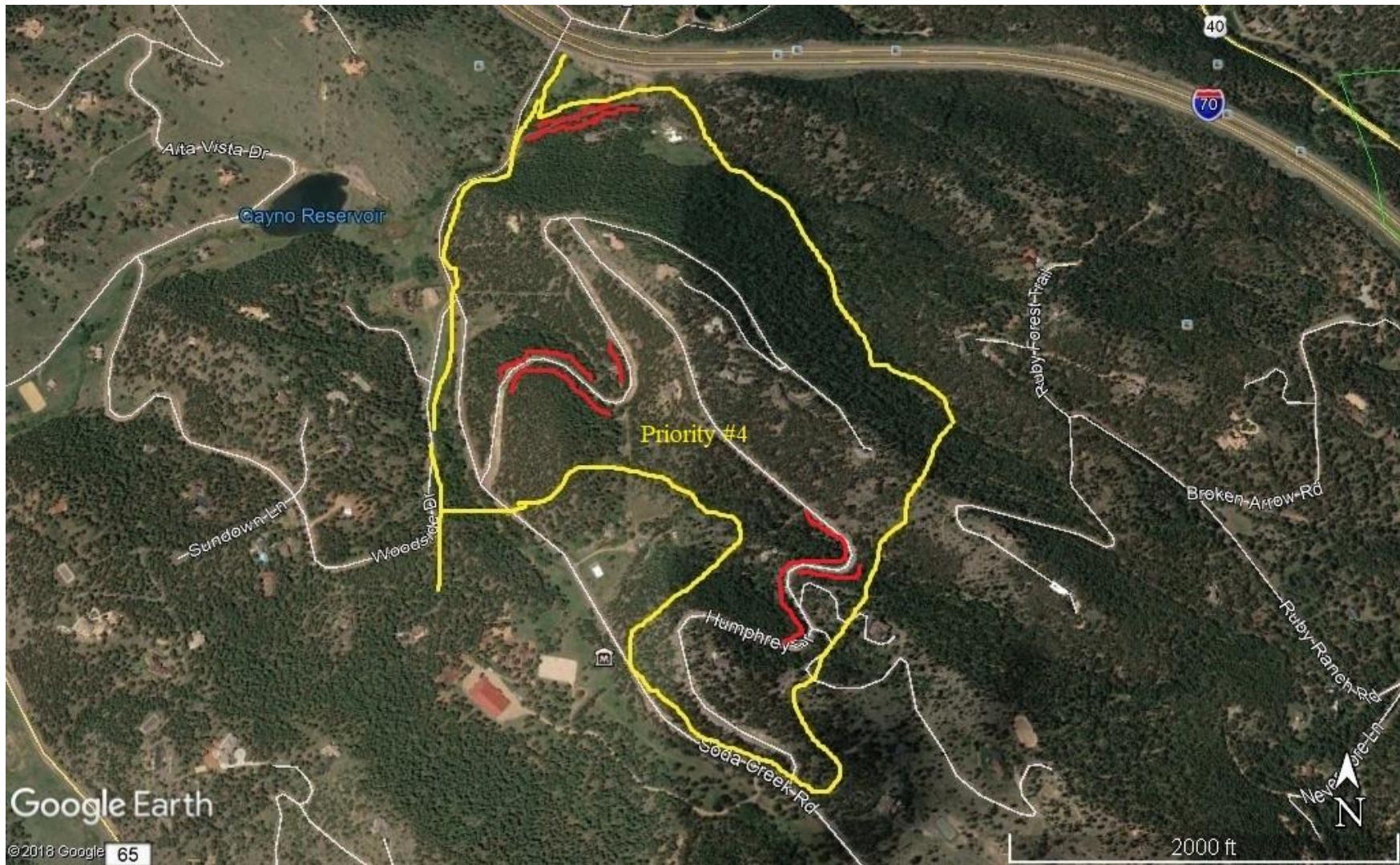
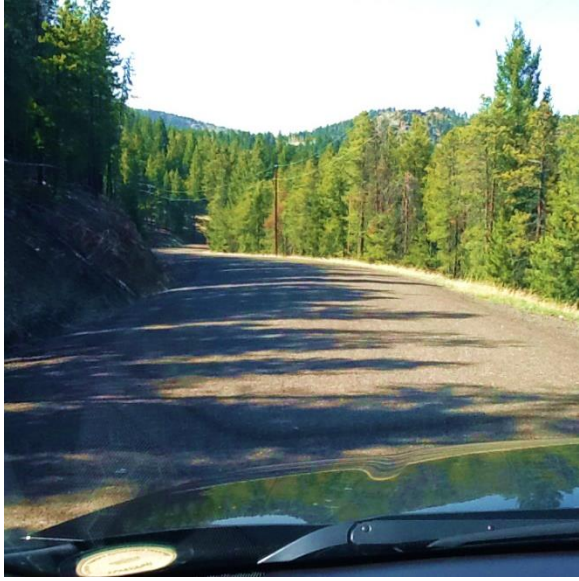


Figure 11: Soda Creek roadside mitigation priorities



Sample pictures of mitigation areas

Recommended Priority 3 Availability of Emergency Evacuation Routes

The team seeks to assure availability of routes for evacuation in event of wildfire emergencies. Depending on fire location and behavior various main roads in the area could be cut off from use. Determinations of which routes to take would be made by Sheriff's Department and fire officials at the time of an emergency.

Recommendation:

The team coordinates with Evergreen FPD, and Jefferson County Sheriff's Office to provide current and incoming residents with the EFPD information brochure on existing evacuation route recommendations' sheet for Unit 2 (Soda Creek/Fox Ridge) & Unit 4, showing potential evacuation routes.

If additional route(s) are added work with EFPD to see the brochure is revised.

Recommendation:

In initial study the team feels that with existing roadways in the area the emergency evacuation routes recommended in the Evergreen FPD CWPP would be difficult to establish due to private property, and may not be needed. If the team and Evergreen Fire Rescue later determine a need the team will work to carry out the recommendation(s).

The recommendation in the Evergreen CWPP...Unit 2, *"Develop and maintain emergency access from Meadow to Old Squaw Pass."*

In Unit 4 it is recommended to *"...Develop and maintain emergency access between Ruby Ranch and Humphrey."*

If it were decided to attempt to establish these routes it will require the team and Evergreen FPD working with residents to explain the evacuation recommendation and need for route development. Thinning along parts of the routes could involve portions of the private properties. Treatment would be by contract or residential and team project.

Shaded fuel break treatment would be in accordance with established guidelines such as:

- The USFS standard for roadside mitigation/hazard tree removal: "... implement hazard tree removal activities within a distance equal to 110% of the height of the tallest hazard tree from the edge of: "...federal, state, county, or other permitted roads..." In this case the height of the tallest tree within the treatment zone would be used.
- The Colorado State Forest Service "Fuelbreak Guidelines for Forested Subdivisions and Communities" by Frank Dennis. Treatment would be primarily hand thinning with some mechanical, and with slash pile and burning of material or some use of wood for biomass purposes. If it is assumed up to 60 feet would be involved on either side of the road this means maximum acreage would be approximately 5.8 acres/mi.

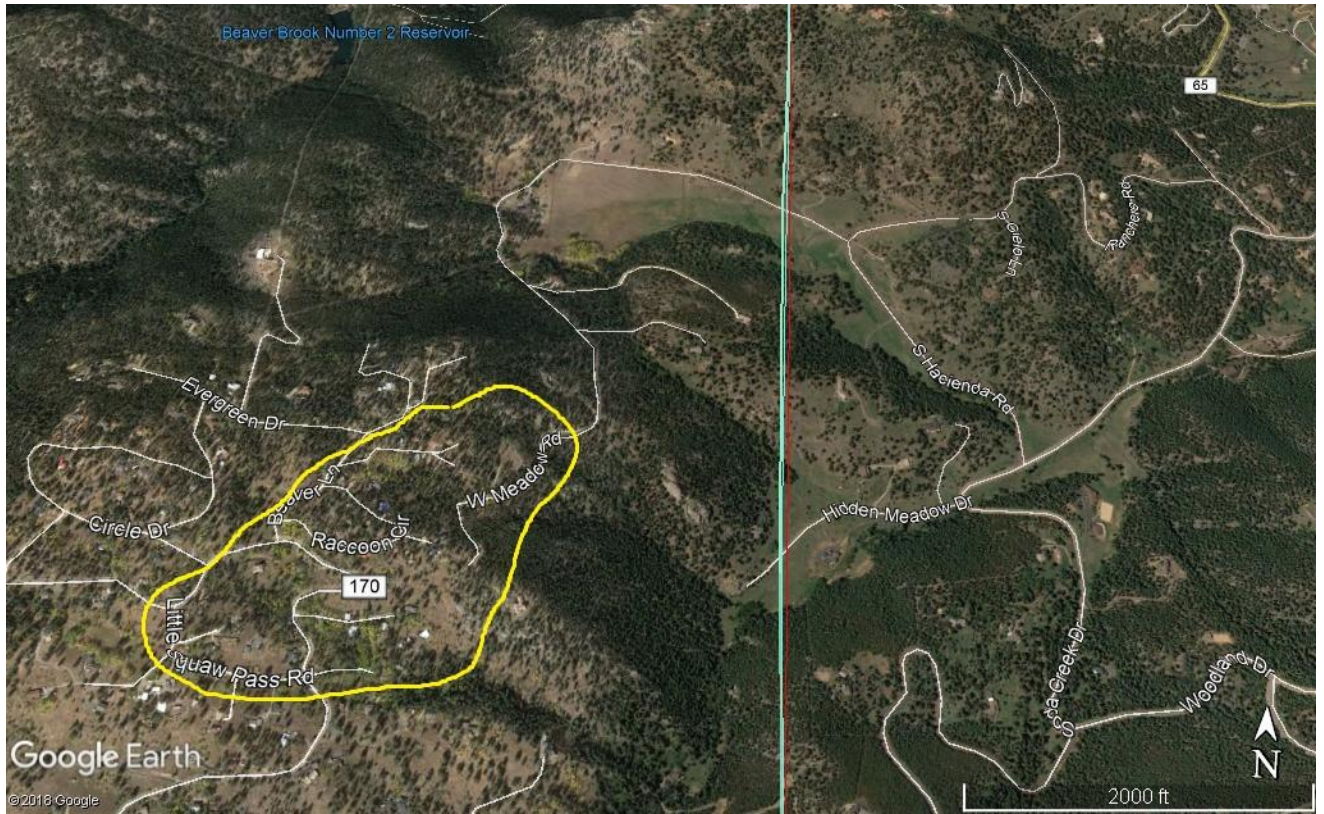


Figure 12: Meadow to Squaw Pass emergency route consideration area



Figure 13: Humphrey to Ruby Ranch emergency access potentials

Section 5: IMPLEMENTATION AND FOLLOW UP

Implementing this CWPIP has the potential to significantly reduce the effects of wildfire. This will require the efforts of a committed Soda Creek area CWPIP team collaborating with the Evergreen FPD, local interest groups, and the citizens of the area. While groups may not be available for every meeting they should be invited and consulted. Representation from the area neighborhoods is important. The team should strive for membership from throughout the area.

The effectiveness of this plan will be the result of actions taken over time; *completion of the plan is only the beginning.*

To quote the Evergreen CWPP, “Maintaining the momentum created by this process is critical to successful implementation and ongoing community wildfire hazard reduction. Ownership of this responsibility lies with each community, neighborhood, and HOAs identified in the CWPP.

“As wildfire hazard reduction efforts are implemented over time and the characteristics of particular WUIs change, neighborhoods may wish to reassess particular areas and update the findings of the original CWPIP.”

Ongoing community education and demonstration events are needed to demonstrate the necessity of taking personal action. Grant funding, contract crews, and volunteer projects will be spread out over a number of years.

Maintenance of the Plan

The CWPIP is meant to be a “living document” which is updated annually to pursue priority concerns. The overall goal is accomplished through:

- 1) Ongoing monitoring of plan accomplishments and effectiveness;
- 2) Adjusting the plan to account for changes in wildfire hazard conditions, response capabilities, technologies and other circumstances;
- 3) Setting goals and selecting projects for the coming year;
- 4) Seeking funding and other project assistance; and
- 5) Facilitating community project days and other events.

The team should establish guidelines for representation and ongoing operation at its first meeting following acceptance of this plan. Following are some guidelines to be considered by the team:

The CWPIP team should be an ongoing team as long as the community and planning efforts have need of such direction. The CWPIP team should conduct recruitment of new members as needed.

Team meetings should be held at least quarterly (it may be desirable to meet more often as summer approaches each year) to review plan goals, actions and public response. Each year the CWPIP team will conduct a performance review to evaluate accomplishments and problems over

the past year. The team should also consider any proposed changes to the CWPIP for the upcoming year and select new or ongoing project goals. The team should consult with EFPD and reach out to neighborhood stakeholders.

The overall CWPIP evaluation, recommended changes, and upcoming project goals should be presented to the residents through various meetings and informational avenues such as the HOA website community meetings, and Community Wildfire days and forums.

The CWPIP team contact list should be made available to residents so they can be informed or offer suggestions for the team to consider.

The CWPIP team should organize or take part in an annual community open house each spring to keep the public continuously aware of healthy forest restoration and wildfire mitigation needs and opportunities.

The team should develop or participate in demonstration days, chipping days, and other opportunities in area neighborhoods to showcase projects, techniques, and new ideas.

The CWPIP team should follow up on completed projects, using a monitoring and evaluation format which addresses the following issues:

- 1) Implementation: Track the CWPIP 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 and Monitoring: Evaluate areas that have been treated in the past, but are in need of maintenance treatments to maintain effectiveness as originally intended.

The CWPIP should be available to residents on various websites, such as an HOA site and the Evergreen FPD site.

Section 6: APPENDICES

APPENDIX A: Publications and Websites

APPENDIX B: Tips on insurance coverage from a *United Policyholders* handout.

APPENDIX C: Wildfire Action Planning - The Ready, Set, Go! Program (RSG)

APPENDIX D: COLORADO STATE FOREST SERVICE: PROTECTING YOUR HOME FROM WILDFIRE; CREATING WILDFIRE-DEFENSIBLE ZONES

APPENDIX E: Colorado State Income Tax Deduction for Mitigation

APPENDIX A

Websites and Publications for Assistance

Following is a listing of websites and publications available from the Colorado State Forest Service and elsewhere which provide guidance on a range of mitigation activities and grant opportunities which will aid communities in lessening the impact of wildfire. *Residents are encouraged to view these sites.*

The following publications can be viewed on the Colorado State Forest Service website page for Publications: <http://csfs.colostate.edu/csfspublications/>, (or linked directly from below). If you need copies for events contact the CSFS to order (see website) or you may have to print them from the website.

Funding Assistance

Grant Opportunities:

CO State Forest Service: <https://csfs.colostate.edu>

- Land Owner & Assistance Programs: <http://csfs.colostate.edu/funding-assistance>
- Natural Resource and Grant Assistance Database: <http://nrdb.csfs.colostate.edu/Home/Search>

CO Dept. of Natural Resources:

- Wildfire Risk Reduction Grant (WRRG) Program:

FireWise: <http://www.firewise.org/>

Resources for Homeowners & Landowners

Jefferson County CWPP and plans in county areas such as Evergreen Fire Protection Dist. CWPP: <http://csfs.colostate.edu/> (go down list by county to the plan).

Jefferson County Slash Management Program: <http://jeffco.us/slash/>

Colorado State Forest Service: Publications on Wildfire, Mitigation, and Resources for Home and Land Owners:

Go to: <http://csfs.colostate.edu/csfspublications/>. Publications with the following titles will be found here under the following headings.

Wildfire Mitigation & Education

- Are You FireWise? Notebook
- Are You Plains FireWise? Notebook
- Cheat grass and Wildfire
- Protecting Your Home from Wildfire:
Creating Wildfire-Defensible Zones – 2012
Quick Guide
- Fire-Resistant Landscaping
- FireWise Plant Materials
- Forest Home Fire Safety
- Grass Seed Mixes to Reduce Wildfire
Hazard
- Home Fire Protection

- Living with Fire

- Wildfire & Insurance

Managing your Land & Forest Stewardship

- Colorado’s Forest Stewardship Program Brochure (458 KB PDF)
- Landowner Assistance Programs in Colorado
- Landowners Guide to Thinning

FireWise Construction

- FireWise Construction: Site Design & Building Materials
- Decks
- Roofing Materials
- Siding
- Windows and Glass

Resources for Communities – Community Wildfire Protection Planning

Community Guide to Preparing & Implementing a CWPP

- Community Wildfire Protection Plan Evaluation Guide
- Community Wildfire Protection Planning: HFRA and Beyond
- Community Wildfire Protection Plans: Guidelines for Implementation

- CWPP Briefing Paper – May 11, 2005
- CWPP Minimum Standards – REVISED 2009
- Fuelbreak Guidelines for Forested Subdivisions & Communities
- Leaders Guide for Developing a CWPP
- Preparing a Community Wildfire Protection Plan – Handbook

Post-Fire Rehabilitation

- Fire-Resistant Landscaping
- Forest Home Fire Safety
- Grass Seed Mixes to Reduce Wildfire Hazard
- Insects and Diseases Associated with Forest Fires

- Replanting in Burn Areas: Tips for Safety and Success
- Soil Erosion Control after Wildfire
- Vegetative Recovery after Wildfire

Websites

Evergreen Fire/Rescue: <http://evergreenfirerescue.com/>

Denver Mountain Parks: <https://www.denvergov.org/content/denvergov/en/denver-parks-and-recreation/parks/mountain-parks.html>

Jefferson County: <http://jeffco.us/>

- Sheriff’s Office & Wildfire: <http://jeffco.us/sheriff/wildfire/>

Arapahoe & Roosevelt National Forest: <http://www.fs.fed.us/r2/arnf/index.shtml>

Front Range Roundtable: http://frontrangeroundtable.org/Home_Page.php

APPENDIX B

The following insurance tips are from a *United Policyholders* handout and are good tips for home and business owners in the wildland-urban interface. Insurance companies are well aware of the CWPP and Firewise efforts and are taking more in depth looks at how home owners are protecting and mitigating their properties.

Preparedness Tips from the Trenches

What do disaster victims wish they'd known about insurance before they had a loss?

- How can I avoid the most common gaps in coverage?
- What helps fire fighters save homes during wildfires and after earthquakes?

Insurance money – not charitable or government aid makes the biggest difference in people's ability to rebuild and recover after a disaster.

Having the right kind and amount of insurance on your property is so important.

- What do disaster victims wish they'd known about insurance before they had a loss?
- How can I avoid the most common gaps in coverage?
- What helps fire fighters save homes during wildfires and after earthquakes?

FEMA money is needs-based and the maximum allocation is \$39k. SBA loans take time and have to be repaid. Charitable aid generally covers basic needs – not the cost of rebuilding a home.

Ask your insurer if you're covered for flooding, earthquakes, and a total loss from wildfire.

After a 2007 wildfire in San Diego County, 75% of the victims found themselves underinsured by an average of more than \$100,000.

Don't blindly trust that your insurance company has got you fully covered.

The goal of an insurance sales rep is to sell you a policy at a price you're willing to pay. In most cases, the true replacement value of your property gets underestimated at the point of sale and as years go by. Read UP's Home Insurance Buying Tips at www.uphelp.org to avoid this problem. Confirm and keep records of insurance sales promises.

Complete as much of the UP Home Inventory as you can, then store the records off site in a safe place.

If you don't have insurance coverage for flooding and earthquakes, consider buying it.

Hopefully you'll never need it, but if you do, you'll be glad you did and that you created an inventory.

Do it now! Earth movement, earthquakes and landslides are not covered by most homeowner policies. You have to buy this coverage separately. It's worth finding out how much it would cost to add these items to your protection package.

Take advantage of insurance discounts for making your home safer.

Avoid letting your insurance lapse.

Get help if your insurer drops you and you can't find replacement coverage.

Clear brush from around your home and keep it clear.

Have an evacuation plan that includes “grab and go” or off-site access to important documents.

Shop around to find which company offers the best discounts for “mitigation” and/or “retrofitting”. If you install a seismic shut-off valve on your gas line, a premium discount will cover most of the cost. Strapping your water heater and installing plywood shear panels won't cost a fortune but will make your home safer and more insurable.

If money's tight, raise your deductible to keep premium costs down.

Read “Dropped by your insurer?” at www.uphelp.org/pdfs/Wheretogoforhelp.pdf

Ask your local Fire Department if they'll inspect and certify for an insurance company that you've cleared brush adequately.

The #1 thing that helps fire fighters save homes is brush clearance. Clean out gutters and roof drains regularly. Install screens on all your roof vents to keep embers from flying in. Install spark arrestors in chimneys and get the chimney professionally cleaned periodically.

Keep a copy of your policy in a safe place away from your home and better yet, scan the complete document onto your computer or onto a UP Roadmap to Preparedness Flash Drive.

Information presented in this publication is for general informational purposes, and should not be taken as legal advice. If you have a specific legal issue or problem, United Policyholders recommends that you consult with an attorney.

APPENDIX C

Wildfire Action Planning

Code Red

Smart 911

The Ready, Set, Go! Program (RSG): www.wildlandfireRSG.org

CodeRed:

CodeRED: The Jefferson County Jefferson County Emergency Communications Authority (JCECA) is the contractor for "CodeRed™" high-speed telephone emergency notification services sometimes referred to as "reverse 911 ®". The CodeRed system allows emergency dispatchers to deliver public safety messages to targeted areas or the entire county. This service includes those residents and businesses in Evergreen Meadows East/West.

You may receive a CodeRED call from either Evergreen Fire Rescue Dispatch or from the Jefferson County Sheriff's Dispatch Center. The 911 system works with all phones that have a TDD line (for the hearing impaired). If you have a telephone zapper used to block out telemarketers, or if your phone is blocked to unknown callers, you will not receive 911 calls.

Opt In to CodeRED

The CodeRED system calls numbers from two databases. If you have a land line, it is automatically included. There is also a database of mobile phone and VoIP numbers. If you don't have a traditional land line phone, or would like to receive a cell phone call you can register for this free service. **To register go to:** <http://jeffco.us/sheriff/emergencies/code-red/>

SMART 911

Smart911 is a free service that allows citizens to create a Safety Profile for their household that includes any information they want 9-1-1 to have in the event of an emergency. When anyone dials 9-1-1 from a phone associated with their Safety Profile, their profile is immediately displayed, providing information to facilitate the proper response. It is on the internet at: <https://www.smart911.com/>.

Ready-Set-Go!

The RSG Program is a three step process that can significantly increase the safety of residents and the safety of responding firefighters. The RSG Program provides the implementation guidance; background knowledge; and presentation tools to assist fire departments.

- **Ready** – Preparing for the Fire Threat: Be Ready, Be Firewise. Create defensible space by clearing brush away from your home. Use fire-resistant landscaping and harden your home with fire-safe construction measures. Assemble emergency supplies and belongings in a safe spot. Plan escape routes. For more information go to Firewise.org.
- **Set** – Situational Awareness When a Fire Starts: Pack your vehicle with your emergency items. Stay aware of the latest news from local media and your local fire department.
- **Go** – Leave early! Comply with any evacuation orders and follow evacuation plans early!

The RSG Program provides tools through its website, www.wildlandfireRSG.org.

APPENDIX D
COLORADO STATE FOREST SERVICE: PROTECTING YOUR HOME
FROM WILDFIRE; CREATING WILDLFIRE-DEFENSIBLE ZONES



QUICK GUIDE SERIES

FIRE 2012-1

Protecting Your Home from Wildfire: Creating Wildfire-Defensible Zones

Formerly CSU Extension Factsheet 6.302

If your home is located in the natural vegetation of Colorado's grasslands, shrublands, foothills or mountains, you live in the **wildland-urban interface (WUI)** and are inherently at risk from a wildfire. The WUI is any area where structures and other human developments meet or intermingle with wildland vegetative fuels. In many vegetation types, it is not a matter of *if* a wildfire will impact your home, but *when*.

Wildfires are a natural part of Colorado's varied forest ecosystems. Many rural communities are located in areas historically prone to frequent natural wildfires. Living in the wildland requires more self-reliance than living in urban areas. It may take longer for a fire engine to reach your area, and a small fire department can easily become overwhelmed during an escalating wildfire. Planning ahead and taking actions to reduce fire hazards can increase your safety and help protect your property. As more people choose to live in areas prone to wildfire, additional homes and lives are potentially threatened every year. Firefighters always do their best to protect rural residents, but ultimately, it is **YOUR responsibility to protect your life, family, animals and property from wildfire.**

The information contained in this document is for use by individual landowners to help reduce wildfire risk on their property. In order to effectively protect subdivisions and communities, all landowners must work together to reduce fire hazards within and adjacent to communities.



Figure 2: Colorado's grasslands, shrublands, foothills and mountains all have areas in the wildland-urban interface where human development meets wildland vegetative fuels. Photo: CSFS

This includes treating individual home sites and common areas within communities, and creating fuelbreaks within and adjoining the community where feasible. This document will focus on actions individual landowners can take to reduce wildfire hazards on their property. For additional information on broader community protection, go to www.csfs.colostate.edu.

In this guide, you'll read about steps you can take to protect your property from wildfire. These steps focus on beginning work closest to your house and moving outward. Also, remember that keeping your home safe is not a one-time effort – it requires ongoing maintenance. It may be necessary to perform some actions, such as removing pine needles from gutters and mowing grasses and weeds several times a year, while other actions may only need to be addressed once a year. While



Figure 1: Firefighters will do their best to protect homes, but ultimately it is the homeowner's responsibility to plan ahead and take actions to reduce fire hazards around structures. Photo: National Interagency Fire Center

This quick guide was produced by the Colorado State Forest Service to promote knowledge transfer.

October 2012
www.csfs.colostate.edu



Figure 3: Burning embers can be carried long distances by wind. Embers ignite structures when they land in gaps, crevices and other combustible places around the home. Photo: CSFS

Remember...

- **Reducing fuels around a home will increase the chances for survival in a wildfire, but there is no guarantee.**
- **This quick guide provides minimum guidelines. The more fuels you remove, the greater the chance your home will survive.**
- **Working with your neighbors and community will increase the effectiveness of your home's defensible space.**

you may not be able to accomplish ALL of the actions described in this document to prepare your home for wildfire, each completed activity will increase the safety of your home, and possibly your family, during a wildfire.

(Note: These guidelines are adapted for ponderosa pine, Douglas-fir and mixed-conifer ecosystems below 9,500 feet. See page 9 for guidelines adapted to other forest ecosystems.)

This guide primarily will help design your defensible space. **Defensible space** is the natural and landscaped area around a home or other structure that has been modified to reduce fire hazard. Defensible space gives your home a fighting chance against an approaching wildfire. Creating defensible space also reduces the chance of a structure fire spreading to the surrounding forest and other homes.

Three factors determine wildfire behavior: **fuels, weather and topography**. We cannot alter weather or topography, so we must concentrate on altering fuels. Fuels include vegetation, such as trees, brush and grass; near homes, fuels also include

such things as propane tanks, wood piles, sheds and even homes themselves. Some plant species are more flammable than others, and the flammability of vegetative fuels changes depending on the season, recent weather events, and other factors such as drought. Fuel continuity and density also play an important role in wildfire.

Wildfire often creates its own weather conditions. Hot rising air and associated winds can carry embers and other burning materials into the atmosphere for long distances, where they can ignite vegetation and structures up to several miles away. Embers have caused the loss of many homes during wildfires.

As you think about protecting your home and property from wildfire, consider how you can manage fuels on your property to prevent fire from spreading to your home and other structures.

For more information on wildfire behavior, please see [Fire Wise Construction: Site Design and Building Materials](http://www.csfscolorado.edu) at www.csfscolorado.edu.

Fuel Arrangement and Types

When fuels are abundant, a fire can be uncontrollable and destructive. But when fuels are scarce, a fire cannot build momentum and intensity, which makes it much easier to control and is more likely to be beneficial to the land.

The more dense and continuous the fuels, the bigger the threat they pose to your home. The measure of fuel hazard refers to its continuity, both horizontal and vertical. Horizontal continuity refers to fuels across the ground, while vertical continuity refers to fuels extending from the ground up into the crowns of trees and shrubs. Fuels with a high degree of both vertical and horizontal continuity are the most hazardous, particularly when they occur on slopes. Mitigation of wildfire hazards focuses on breaking up the continuity of horizontal and vertical fuels.

Heavier fuels, such as brush and trees, produce a more intense fire than light fuels, such as grass. However, grass-fueled fires travel much faster than heavy-fueled fires. Some heavier surface fuels, such as logs and wood chips, are potentially hazardous heavy fuels and also should be addressed.



Figure 7: Addressing both components of the Home Ignition Zone will provide the best protection for your home. Credit: CSFS

The Home Ignition Zone

Two factors have emerged as the primary determinants of a home's ability to survive a wildfire – the quality of the defensible space and a structure's ignitability. Together, these two factors create a concept called the **Home Ignition Zone (HIZ)**, which includes the structure and the space immediately surrounding the structure. To protect a home from wildfire, the primary goal is to reduce or eliminate fuels and ignition sources within the HIZ.

Structural Ignitability

The ideal time to address home ignition risk is when the structure is in the design phase. However, you can still take steps to reduce ignitability to an existing home.

The **roof** has a significant impact on a structure's ignitability because of its extensive surface area. When your roof needs significant repairs or replacement, use only fire-resistant roofing materials. Also, check with your county building department – some counties now have restrictions against using wood shingles for roof replacement or require specific classifications of roofing material. Wood and shake-shingle roofs are discouraged because they are highly flammable, and are prohibited in some areas of the state. Asphalt shingles, metal sheets and shingles, tile, clay tile, concrete and slate shingles are all recommended roofing materials.



Figure 8: (above) Wood shingle roofs are highly flammable and not recommended. Photo: CSFS



Figure 9: (above right) Class A roofing materials including tile, clay, concrete, slate and asphalt shingles are fire-resistant options. Photo: CSFS

The extension of the roof beyond the exterior structure wall is the eave. This architectural feature is particularly prone to ignition. As fire approaches the building, the exterior wall deflects hot air and gasses up into the eave. If the exterior wall isn't ignition-resistant, this effect is amplified.

Most **decks** are highly combustible. Their shape traps hot gasses, making them the ultimate heat traps. Conventional wooden decks are so combustible that when a wildfire approaches, the deck often ignites before the fire reaches the house.

The **exterior walls** of a home or other structure are affected most by radiant heat from the fire and, if defensible space is not adequate, by direct contact with flames from the fire.

Windows are one of the weakest parts of a building with regard to wildfire. They usually fail before the building ignites, providing a direct path for flames and airborne embers to reach the building's interior.

Burning embers are produced when trees and structures are consumed by wildfire. These embers sometimes can travel more than a mile. Flammable horizontal or nearly horizontal surfaces, such as wooden decks or shake-shingle roofs, are especially at risk for ignition from burning embers. Since airborne embers have caused the loss of many homes in the WUI, addressing structural ignitability is critical, even if the area surrounding a home is not conducive to fire spread.



Figure 10: Decks, exterior walls and windows are important areas to examine when addressing structure ignitability. Photo: CSFS

This guide provides only basic information about structural ignitability. For more information on fire-resistant building designs and materials, refer to the CSFS *FireWise Construction: Site Design and Building Materials* publication at www.csfs.colostate.edu.

Defensible Space

Defensible space is the area around a home or other structure that has been modified to reduce fire hazard. In this area, natural and manmade fuels are treated, cleared or reduced to slow the spread of wildfire. Creating defensible space also works in the reverse, and reduces the chance of a structure fire spreading to neighboring homes or the surrounding forest. Defensible space gives your home a fighting chance against an approaching wildfire.

Creating an effective defensible space involves a series of management zones in which different treatment techniques are used. Develop these zones around each building on your property, including detached garages, storage buildings, barns and other structures.

The actual design and development of your defensible space depends on several factors: size and shape of building(s), construction materials, slope of the ground, surrounding topography, and sizes and types of vegetation on your property. You may want to request additional guidance from your local Colorado State Forest Service forester, fire department or a consulting forester as you plan a defensible space for your property.

Defensible space provides another important advantage during a fire: increased firefighter safety. Firefighters are trained to protect structures only when the situation is relatively safe for them to do so. They use a process called "structural triage" to determine if it is safe to defend a home from an approaching wildfire. The presence or absence of defensible space around a structure is a significant determining factor used in the structural triage process, as defensible space gives firefighters an opportunity to do their job more safely. In turn, this increases their ability to protect your home.

If firefighters are unable to directly protect your home during a wildfire, having an effective defensible space will still increase your home's chance of survival. It is important to remember that with wildfire, there are no guarantees. Creating a proper defensible space does not mean that your home is guaranteed to survive a wildfire, but it does significantly improve the odds.

Defensible Space Management Zones

Three zones need to be addressed when creating defensible space:

Zone 1 is the area nearest the home and other structures. This zone requires maximum hazard reduction.

Zone 2 is a transitional area of fuels reduction between Zones 1 and 3.

Zone 3 is the area farthest from the home. It extends from the edge of Zone 2 to your property boundaries.



Figure 11: Homesite before defensible space. Photo: CSFS



Figure 12: Homesite after creating a defensible space. Photo: CSFS



Figure 13: Defensible space management zones. Credit: CSFS



Figure 14: This homeowner worked hard to create a defensible space around the home. Notice that all fuel has been removed within the first 5 feet of the home, which survived the Waldo Canyon Fire in the summer of 2012. Photo: Christina Randall, Colorado Springs Fire Department



Figure 15: Clearing pine needles and other debris from the roof and gutters is an easy task that should be done at least once a year. Photo: CSFS



Figure 16: Enclosing decks with metal screens can prevent embers from igniting a house. Photo: Marilyn Brown, La Plata County

Zone 1

The width of Zone 1 extends a minimum distance of 15-30 feet outward from a structure, depending on property size. Most flammable vegetation is removed in this zone, with the possible exception of a few low-growing shrubs or fire-resistant plants. Avoid landscaping with common ground junipers, which are highly flammable.

Increasing the width of Zone 1 will increase the structure's survivability. This distance should be increased 5 feet or more in areas downhill from a structure. The distance should be measured from the outside edge of the home's eaves and any attached structures, such as decks. Several specific treatments are recommended within this zone:

- Install nonflammable ground cover and plant nothing within the first 5 feet of the house and deck. This critical step will help prevent flames from coming into direct contact with the structure. This is particularly important if a building is sided with wood, logs or other flammable materials. Decorative rock creates an attractive, easily maintained, nonflammable ground cover.
- If a structure has noncombustible siding (i.e., stucco, synthetic stucco, concrete, stone or brick), widely spaced foundation plantings of low-growing shrubs or other fire-resistant plant materials are acceptable. However, do not plant directly under windows or next to foundation vents, and be sure areas of continuous grass are not adjacent to plantings. Information on fire-resistant plants is available on the CSFS website at www.csfs.colostate.edu.
- Prune and maintain any plants in Zone 1 to prevent excessive growth. Also, remove all dead branches, stems and leaves within and below the plant.
- Irrigate grass and other vegetation during the growing season. Also, keep wild grasses mowed to a height of 6 inches or less.
- Do not store firewood or other combustible materials anywhere in this zone. Keep firewood at least 30 feet away from structures, and uphill if possible.
- Enclose or screen decks with 1/8-inch or smaller metal mesh screening (1/16-inch mesh is preferable). Do not use areas under decks for storage.
- Ideally, remove all trees from Zone 1 to reduce fire hazards. The more trees you remove, the safer your home will be.
- If you do keep any trees in this zone, consider them part of the structure and extend the distance of the entire defensible space accordingly.
- Remove any branches that overhang or touch the roof, and remove all fuels within 10 feet of the chimney.
- Remove all pine needles and other debris from the roof, deck and gutters.
- Rake pine needles and other organic debris at least 10 feet away from all decks and structures.
- Remove slash, wood chips and other woody debris from Zone 1.

Zone 2

Zone 2 is an area of fuels reduction designed to diminish the intensity of a fire approaching your home. The width of Zone 2 depends on the slope of the ground where the structure is built. Typically, the defensible space in Zone 2 should extend at least 100 feet from all structures. If this distance stretches beyond your property lines, try to work with the adjoining property owners to complete an appropriate defensible space.

The following actions help reduce continuous fuels surrounding a structure, while enhancing home safety and the aesthetics of the property. They also will provide a safer environment for firefighters to protect your home.

Tree Thinning and Pruning

- Remove stressed, diseased, dead or dying trees and shrubs. This reduces the amount of vegetation available to burn, and makes the forest healthier.
- Remove enough trees and large shrubs to create at least 10 feet between crowns. Crown separation is measured from the outermost branch of one tree to the nearest branch on the next tree. On steep slopes, increase the distance between tree crowns even more.
- Remove all ladder fuels from under remaining trees. Prune tree branches off the trunk to a height of 10 feet from the ground or $\frac{1}{3}$ the height of the tree, whichever is less.
- If your driveway extends more than 100 feet from your home, thin out trees within a 30 foot buffer along both sides of your driveway, all the way to the main access road. Again, thin all trees to create 10-foot spacing between tree crowns.
- Small groups of two or three trees may be left in some areas of Zone 2, but leave a minimum of 30 feet between the crowns of these clumps and surrounding trees.
- Because Zone 2 forms an aesthetic buffer and provides a transition between zones, it is necessary to blend the requirements for Zones 1 and 3. For example, if you have a tree in Zone 2 with branches extending into Zone 1, the tree can be retained if there is proper crown spacing.
- Limit the number of dead trees (snags) to one or two per acre. Be sure snags cannot fall onto the house, power lines, roads or driveways.
- As in Zone 1, the more trees and shrubs removed, the more likely your house will survive a wildfire.



Figure 17: In Zone 2, make sure there is at least a 10-foot spacing between tree crowns. Credit: CSFS

Shrub Thinning/Pruning and Surface Fuels

- Isolated shrubs may be retained in Zone 2, provided they are not growing under trees.
- Keep shrubs at least 10 feet away from the edge of tree branches. This will prevent the shrubs from becoming ladder fuels.
- Minimum spacing recommendations between clumps of shrubs is $2\frac{1}{2}$ times the mature height of the vegetation. The maximum diameter of the clumps themselves should be twice the mature height of the vegetation. As with tree-crown spacing, all measurements are made from the edge of vegetation crowns.
- Example – For shrubs 6 feet high, spacing between shrub clumps should be 15 feet or more (measured from the edge of the crowns of vegetation clumps). The diameter of these shrub clumps should not exceed 12 feet.
- Periodically prune and maintain shrubs to prevent excessive growth, and remove dead stems from shrubs annually. Common ground junipers should be removed whenever possible because they are highly flammable and tend to hold a layer of duff beneath them.
- Mow or trim wild grasses to a maximum height of 6 inches. This is especially critical in the fall, when grasses dry out.
- Avoid accumulations of surface fuels, such as logs, branches, slash and wood chips greater than 4 inches deep.



Figure 18: Pruning trees will help prevent a wildfire from climbing from the ground to the tree crowns. Credit: CSFS

Firewood

- Stack firewood uphill from or on the same elevation as any structures, and at least 30 feet away.
- Clear all flammable vegetation within 10 feet of woodpiles.
- Do not stack wood against your home or on/under your deck, even in the winter. Many homes have burned as a result of a woodpile that ignited first.

Propane Tanks and Natural Gas Meters

- Locate propane tanks and natural gas meters at least 30 feet from any structures, preferably on the same elevation as the house.
- The tank should not be located below your house because if it ignites, the fire would tend to burn uphill. Conversely, if the tank or meter is located above your house and it develops a leak, gas will flow downhill into your home.
- Clear all flammable vegetation within 10 feet of all tanks and meters.
- Do not visibly screen propane tanks or natural gas meters with shrubs, vegetation or flammable fencing. Instead, install 5 feet of nonflammable ground cover around the tank or meter.



Figure 19: Keep firewood, propane tanks and natural gas meters at least 30 feet away from structures. Photo: CSFS



Figure 20: This ponderosa pine forest has been thinned, which will not only help reduce the wildfire hazard, but also increase tree health and vigor. Photo: CSFS

Zone 3

Zone 3 has no specified width. It should provide a gradual transition from Zone 2 to areas farther from the home that have other forest management objectives. Your local Colorado State Forest Service forester can help you with this zone.

This zone provides an opportunity for you to improve the health of the forest through proper management. With an assortment of stewardship options, you can proactively manage your forest to reduce wildfire intensity, protect water quality, improve wildlife habitat, boost the health and growth rate of your trees, and increase tree survivability during a wildfire.

In addition, properly managed forests can provide income, help protect trees against insects and diseases, and even increase the value of your property. Typical forest management objectives for areas surrounding home sites or subdivisions provide optimum recreational opportunities; enhance aesthetics; improve tree health and vigor; provide barriers against wind, noise, dust and visual intrusions; support production of firewood, fence posts and other forest commodities; or cultivate Christmas trees or trees for transplanting.

Consider the following when deciding forest management objectives in Zone 3:

- The healthiest forest is one that includes trees of multiple ages, sizes and species, and where adequate growing room is maintained over time.
- Remember to consider the hazards associated with ladder fuels. A forest with a higher canopy reduces the chance of a surface fire climbing into the tops of the trees, and might be a priority if this zone has steep slopes.
- A greater number of snags – two or three per acre, standing or fallen – can be retained in Zone 3 to provide wildlife habitat. These trees should have a minimum diameter of 8 inches. Make sure that snags pose no threat to power lines or firefighter access roads.
- While tree pruning generally is not necessary in Zone 3, it may be a good idea from the standpoint of personal safety to prune trees along trails and firefighter access roads. Or, if you prefer the aesthetics of a well-manicured forest, you might prune the entire area. In any case, pruning helps reduce ladder fuels within tree stands, thus reducing the risk of crown fire.
- Mowing grasses is not necessary in Zone 3.
- Any approved method of slash treatment is acceptable, including piling and burning, chipping or lop-and-scatter.

Other Recommendations

Windthrow

In Colorado, some tree species, including lodgepole pine, Engelmann spruce and Douglas-fir, are especially susceptible to damage and uprooting by high winds or windthrow. If you see evidence of this problem in or near your home, consider making adjustments to the defensible space guidelines. It is highly recommended that you contact a professional forester to help design your defensible space, especially if you have windthrow concerns.

Water Supply

If possible, make sure that an on-site water source is readily available for firefighters to use, or that other water sources are close by. Lakes, ponds, swimming pools and hot tubs are all possible options. If there are no nearby water sources, consider installing a well-marked dry hydrant or cistern. If your primary water source operates on electricity, be sure to plan for a secondary water source. During wildfires, structures often are cut off from electricity. For more information on how to improve the accessibility of your water source, contact your local fire department.

Recommendations for Specific Forest Types

The above recommendations refer primarily to ponderosa pine, Douglas-fir and mixed-conifer ecosystems. For other forest types, please refer to the additional recommendations below:

Aspen

Tree spacing and ladder fuel guidelines do not apply to mature stands of aspen trees. Generally, no thinning is recommended in aspen forests, regardless of tree size, because the thin bark is easily damaged, making the tree easily susceptible to fungal infections. However, in older stands, numerous dead trees may be on the ground and require removal. Conifer trees often start growing in older aspen stands. A buildup of these trees eventually will increase the fire hazard of the stand, so you should remove the young conifers. Brush also can increase the fire hazard and should be thinned to reduce flammability.

Lodgepole Pine

Lodgepole pine management in the WUI is much different than that for lodgepole pine forests located away from homes, communities and other developments. Normally, it is best to develop fuels management and wildfire mitigation strategies that are informed and guided by the ecology of the tree species. This is not the case with lodgepole pine.

Older lodgepole pine stands generally do not respond well to selective thinning, but instead respond better to the removal of all trees over a defined area to allow healthy forest regeneration. Selectively thinning lodgepole can open the stand to severe windthrow and stem breakage. However, if your home is located within a lodgepole pine forest, you may prefer selective thinning to the removal of all standing trees.

To ensure a positive response to thinning throughout the life of a lodgepole pine stand, trees must be thinned early in their lives – no later than 20 to 30 years after germination. Thinning lodgepole pine forests to achieve low densities can best be



Figure 21: During high winds, these lodgepole pine trees fell onto the house. Lodgepole pine is highly susceptible to windthrow. Photo: CSFS



Figure 22: Mature aspen stands can contain many young conifers, dead trees and other organic debris. This can become a fire hazard. Photo: CSFS



Figure 23: A young lodgepole pine stand. Thinning lodgepole pines early on in their lives will help reduce the wildfire hazard in the future. Photo: CSFS

The defensible space guidelines in this quick guide are predominantly for ponderosa pine and mixed-conifer forests. These guidelines will vary with other forest types.



Figure 24: Piñon-juniper forests are often composed of continuous fuels. Creating clumps of trees with large spaces in between clumps will break up the continuity. Photo: CSFS



Figure 25: Gambel oak needs to be treated in a defensible space at least every 5-7 years because of its vigorous growing habits. Photo: CSFS

accomplished by beginning when trees are small saplings, and maintaining those densities through time as the trees mature.

Thinning older stands of lodgepole pine to the extent recommended for defensible space may take several thinning operations spaced over a decade or more. When thinning mature stands of lodgepole pine, do not remove more than 30 percent of the trees in each thinning operation. Extensive thinning of dense, pole-sized and larger lodgepole pine often results in windthrow of the remaining trees. Focus on removing trees that are obviously lower in height or suppressed in the forest canopy. Leaving the tallest trees will make the remaining trees less susceptible to windthrow.

Another option is leaving clumps of 30-50 trees. Clumps are less susceptible to windthrow than solitary trees. Allow a minimum of 30-50 feet between tree crowns on the clump perimeter and any adjacent trees or clumps of trees. Wildfire tends to travel in the crowns of lodgepole pine. By separating clumps of trees with large spaces between crowns, the fire is less likely to sustain a crown fire.

Piñon-Juniper

Many piñon-juniper (PJ) forests are composed of continuous fuel that is highly flammable. Fire in PJ forests tend to burn intensely in the crowns of trees. Try to create a mosaic pattern when you thin these trees, with a mixture of individual trees and clumps of three to five trees. The size of each clump will depend on the size, health and location of the trees. The minimum spacing between individual trees should be 10 feet between tree crowns, with increasing space for larger trees, clumps, and stands on steeper slopes.

Tree pruning for defensible space is not as critical in PJ forests as in pine or fir forests. Instead, it is more important to space the trees so that it is difficult for the fire to move from one tree clump to the next. Trees should only be pruned to remove dead branches or branches that are touching the ground. However, if desired, live branches can be pruned to a height of 3 feet above the ground. Removing shrubs that are growing beneath PJ canopies is recommended to reduce the overall fuel load that is available to a fire.

It is NOT recommended to prune live branches or remove PJ trees between April and October, when the piñon ips beetle is active in western Colorado. Any thinning activity that creates the flow of sap in the summer months can attract these beetles to healthy trees on your property. However, it is acceptable to remove dead trees and dead branches during the summer months.

For more information, please refer to the CSFS [Piñon-Juniper Management Quick Guide](http://www.csfs.colostate.edu) at www.csfs.colostate.edu.

Gambel Oak

Maintaining Gambel oak forests that remain resistant to the spread of wildfire can be a challenge because of their vigorous growing habits. Gambel oak trees grow in clumps or groves, and the stems in each clump originate from the same root system. Most reproduction occurs through vegetative sprouts from this deep, extensive root system. You may need to treat Gambel oak near your home every five to seven years. Sprouts also should be mowed at least once every year in Zones 1 and 2. Herbicides can be used to supplement mowing efforts for controlling regrowth.

For more information, please refer to the CSFS [Gambel Oak Management](http://www.csfs.colostate.edu) publication at www.csfs.colostate.edu.

Note: This publication does not address high-elevation spruce-fir forests. For information on this forest type, please contact your local CSFS district office.

Maintaining Your Defensible Space

Your home is located in a dynamic environment that is always changing. Trees, grasses and shrubs continue to grow, die or are damaged, and drop their leaves and needles each season. Just like your home, the defensible space around it requires regular, ongoing maintenance to be effective. Use the following checklists to build and maintain your defensible space.

Defensible Space: Initial Projects

- Properly thin and prune trees and shrubs within Zones 1 and 2.
- Dispose of slash from tree/shrub thinning.
- Screen attic, roof, eaves and foundation vents, and periodically check them to ensure that they are in good condition.
- Screen or wall-in stilt foundations and decks; screens should be 1/4-inch or smaller metal mesh (1/8-inch mesh is best).
- Post signs at the end of the driveway with your last name and house number that are noncombustible, reflective and easily visible to emergency responders.
- Make sure that the driveway is wide enough for fire trucks to enter and exit, and that trees and branches are adequately cleared for access by fire and emergency equipment. Contact your local fire department or check the CSFS website for information specific to access.
- Take pictures of your completed defensible space for comparison of forest growth over time.



Figure 26: Keeping the forest properly thinned and pruned in a defensible space will reduce the chances of a home burning during a wildfire. Photo: CSFS

Defensible Space Tasks: Annual Requirements

- Clear roof, deck and gutters of pine needles and other debris. *
- Mow grass and weeds to a height of 6 inches or less. *
- Rake all pine needles and other flammable debris away from the foundation of your home and deck. *
- Remove trash and debris accumulations from the defensible space. *
- Check fire extinguishers to ensure that they have not expired and are in good working condition.
- Check chimney screens to make sure they are in place and in good condition.
- Remove branches that overhang the roof and chimney.
- Check regrowth of trees and shrubs by reviewing photos of your original defensible space; properly thin and prune trees and shrubs within Zones 1 and 2.
- Dispose of slash from tree/shrub thinning. *

*Address more than once per year, as needed.



Figure 27: Sharing information and working with your neighbors and community will give your home and surrounding areas a better chance of surviving a wildfire. Photo: CSFS

Be Prepared

- Complete a checklist of fire safety needs inside your home (these should be available at your local fire department). Examples include having an evacuation plan and maintaining smoke detectors and fire extinguishers.
- Develop your fire evacuation plan and practice family fire drills. Ensure that all family members are aware of and understand escape routes, meeting points and other emergency details.
- Contact your county sheriff's office and ensure that your home telephone number and any other important phone numbers appear in the county's Reverse 911 or other emergency notification database.
- Prepare a "grab and go" disaster supply kit that will last at least three days, containing your family's and pets' necessary items, such as cash, water, clothing, food, first aid and prescription medicines.
- Ensure that an outdoor water supply is available. If it is safe to do so, make a hose and nozzle available for responding firefighters. The hose should be long enough to reach all parts of the house.

Preparing your home and property from wildfire is a necessity if you live in the wildland-urban interface. It is important to adequately modify the fuels in your home ignition zone. Remember, every task you complete around your home and property will make your home more defensible during a wildfire.

Always remember that creating and maintaining an effective defensible space in the home ignition zone is not a one-time endeavor – it requires an ongoing, long-term commitment.

If you have questions, please contact your local CSFS district office. Contact information can be found at www.csfs.colostate.edu.

List of Additional Resources

- The Colorado State Forest Service, <http://www.csfs.colostate.edu>
- CSFS wildfire-related publications, <http://csfs.colostate.edu/pages/wf-publications.html>
- Community Wildfire Protection Planning, <http://csfs.colostate.edu/pages/community-wf-protection-planning.html>
- Colorado's "Are You FireWise?" information, <http://csfs.colostate.edu/pages/wf-protection.html>
- National Fire Protection Association's Firewise Communities USA, <http://www.firewise.org>
- Fire Adapted Communities, <http://fireadapted.org/>
- Ready, Set, Go!, <http://wildlandfirersg.org/>



Figure 28: This house has a high risk of burning during an approaching wildfire. Modifying the fuels around a home is critical to reduce the risk of losing structures during a wildfire. Photo: CSFS



Figure 29: This house survived the Fourmile Canyon Fire in 2010. Photo: CSFS



Figure 30: Firefighters were able to save this house during the 2012 Weber Fire because the homeowners had a good defensible space. Photo: Dan Bender, La Plata County

**Colorado
State**
FOREST
SERVICE
www.csfs.colostate.edu

This quick guide was produced by the Colorado State Forest Service (CSFS). CSFS programs are available to all without discrimination. No endorsement of products or services is intended, nor is criticism implied of products not mentioned.

APPENDIX E

Colorado State Income Tax Deduction for Mitigation

Colorado landowners with property located in a wildland-urban interface area may qualify to receive a tax subtraction for the costs of wildfire mitigation work. As authorized by §39-22-104(4)(n)(II), C.R.S., **for income tax years 2009 through 2024** individuals, estates and trusts may subtract from federal taxable income certain costs incurred in performing wildfire mitigation measures.

Following is a summary from the Colorado Department of Revenue.
Colorado Department of Revenue Taxpayer Service Division: 07/14 Income 65 Wildfire Mitigation Measures Subtraction

GENERAL INFORMATION

Individuals, estates and trusts may subtract from their federal taxable income certain costs incurred while performing wildfire mitigation measures on their property.

LIMITATIONS

- The taxpayer must own the property upon which the wildfire mitigation measures are performed.
- The property must be located in Colorado and within a wild land-urban interface area.
- For tax years 2009 through 2012 only, the wildfire mitigation measures must be authorized by a community wildfire protection plan adopted by a local government within the interface area.
- The total amount of the subtraction cannot exceed 50% of the landowner's out-of-pocket expenses, \$2,500, or the owner's federal taxable income, whichever is less.
- The deduction is available for tax years 2009 through 2024.

Jointly Filed Returns

In the case of two individuals filing a joint return, the amount subtracted from federal taxable income shall not exceed \$2,500 in any taxable year. In the case of a married individual who files a separate return, only one individual may claim the deduction.

Tenants in Common

In the case of real property owned by tenants in common, the subtraction can be taken only by one of the individuals.

SUPPORTING DOCUMENTATION

The department may request documentation to support the claim. Correspondence from the department should specify what is required; however, the examples are as follows:

- Proof of property ownership,
- Receipts of costs incurred,
- Approved Wildfire Protection Plan (tax years 2009 through 2012 only). See www.csfs.colostate.edu

DEFINITIONS

Community Wildfire Protection Plan

Community wildfire protection plan must meet the following requirements:

- It must be approved by a local government entity, local fire department and the Colorado State Forest Service...

- It must identify and prioritize areas for hazardous fuel reduction treatments and recommend the types and methods of treatments.
- It must recommend measures to reduce structural ignitability.

Additional information regarding community wildfire protection plans can be found online at www.csfs.colostate.edu.

Costs

Costs means any actual out-of-pocket expense incurred and paid by the landowner and documented by receipt for performing wildfire mitigation measures. The following expenses are specifically excluded:

- Inspection or certification fees;
- In-kind contributions;
- Donations;
- Incentives;
- Cost sharing;
- Expenses paid by the landowner from any grants awarded to the landowner for performing wildfire mitigation measures.

Landowner

Landowner means any owner of record of private land located within the state, including any easement, right-of-way or estate in the land and includes the heirs, successors and assignees of such land and shall not include any partnership, S-corporation or other similar entity that owns private land as an entity.

Wildfire Mitigation Measures

Wildfire mitigation measures mean the following activities to the extent that they meet or exceed any Colorado State Forest Service standards or any other applicable state rules:

- Creating and maintaining a defensible space around structures;
- Establishing fuel breaks;
- Thinning of woody vegetation for the primary purpose of reducing risk to structures from wildland fire;
- Secondary treatment of woody fuels by lopping and scattering, piling, chipping, removing from the site or prescribed burning.

Additional information regarding wildfire mitigation measures can be found online at www.csfs.colostate.edu.

COMMON QUESTIONS

Does the community wildfire protection plan (CWPP) have to be approved before the fire mitigation activities take place? (For example: landowner performed work in the summer of 2011, but the CWPP was not approved until Dec. 2011.)

Yes, the CWPP must be approved before the mitigation measures are performed. The mitigation measures must be performed in a wild urban interface area and authorized by an existing CWPP.

Can a person who leases real property claim the credit if the lessee performs wildfire mitigation measures?

No. The credit is limited to the owner of the property. However, if the owner/lessor reimburses the lessee for the cost of the mitigation effort, then the owner/lessor can claim the credit.

CWPIP Certification

The Soda Creek Area Community Wildfire Protection Implementation Plan (CWPIP) was developed in accordance with the guidelines set forth by the Healthy Forests Restoration Act (2003) and the Colorado State Forest Service's Minimum Standards for Community Wildfire Protection Plans (CWPP) (Revised 2010).

This Plan is under the umbrella of the Evergreen Fire Protection District CWPP. It provides analysis and mitigation recommendations for the Soda Creek area. The plan:

- Was collaboratively developed – residents, interested parties, local government and stakeholders. State and Federal and local agencies managing land in the area were consulted as appropriate;
- Identifies and prioritizes areas for hazardous fuels reduction treatments and recommends the types and methods of treatment to reduce the wildfire threat to values at risk in the area;
- Presents measures to reduce the ignitability of structures throughout the plan area.

The following entities mutually agree with the contents of this Community Wildfire Protection Implementation Plan:

Tandy Jones 2/18/19
Team Leader: Tandy Jones (For the Team) Date

[Signature] 9/20/2018
Chief: Evergreen Fire Protection District Date

Assistance and Consultation

John Chapman; Plan Facilitator for Evergreen Fire Protection District

Paul Amundson; Wildland Coordinator, Evergreen Fire Protection District