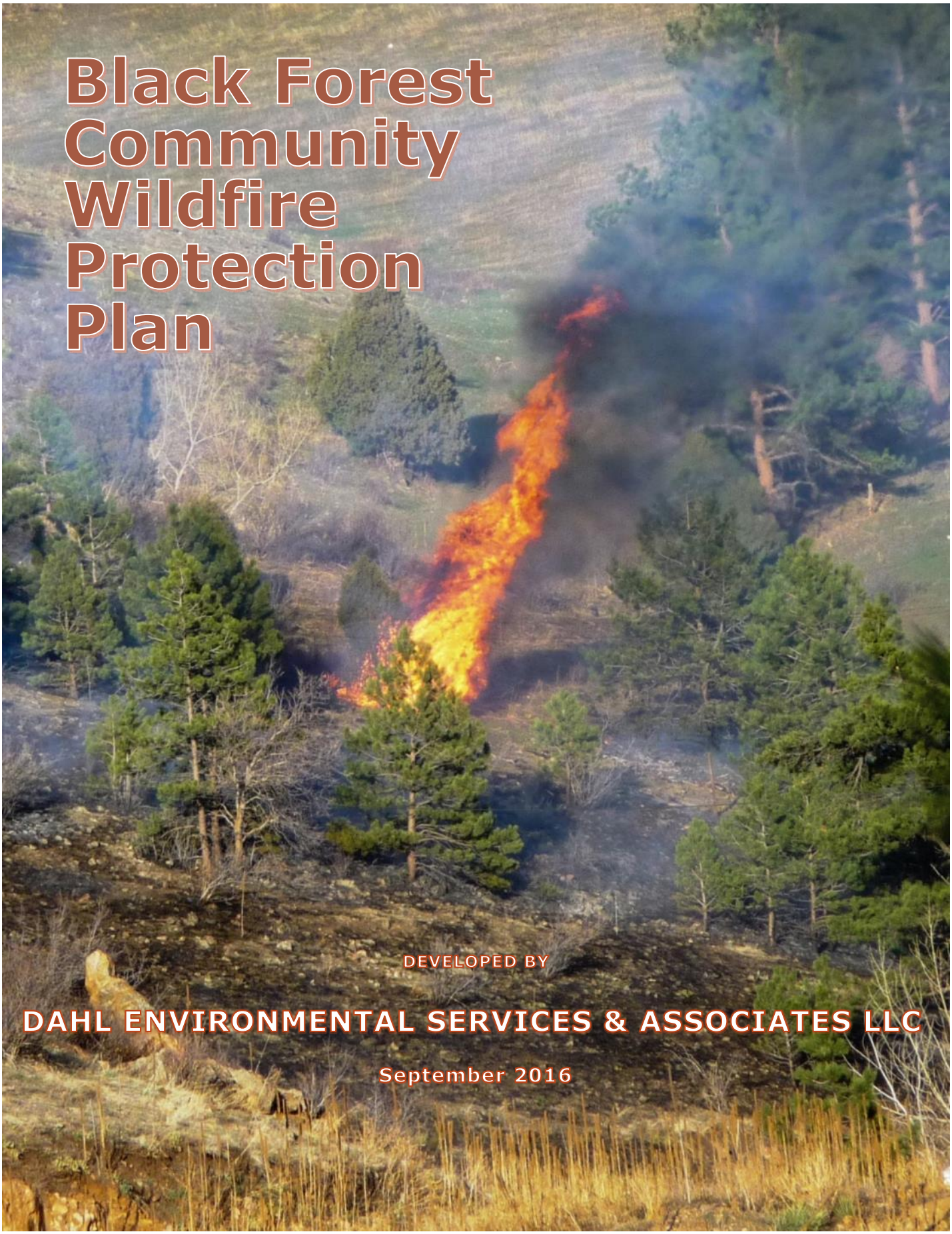
Black Forest Community Wildfire Protection Plan



DEVELOPED BY

DAHL ENVIRONMENTAL SERVICES & ASSOCIATES LLC

September 2016

PROJECT LEADERSHIP TEAM

DAHL ENVIRONMENTAL SERVICES, LLC and ASSOCIATES

Bjorn Dahl

Society of American Foresters, Certified Forester; Association of Consulting Foresters

Natural Resource Consultant

Lyle Laverty

Society of American Foresters, Certified Forester; Association of Consulting Foresters

Natural Resource Consultant

Jim McGannon

Certified Arborist, Association of Consulting Foresters

Natural Resource Consultant

Kristian Dahl

Geographic Information Management Manager

Natural Resource Consultant

Linda Ziccardi

Society of American Foresters, Forester; Association of Consulting Foresters

Natural Resource Consultant

Cover photos Black Forest Wildfires

3890 Genesee Village Road ● Golden, Colorado 80401

Office: 303-526-2822 ● Fax: 303-526-5197

Email: bdahl@dahlservices.com ● Website: www.dahlservices.com

BUILDING A FUTURE TOGETHER

BLACK FOREST TOGETHER INC

FOREST PLAZA CENTER

11460 BLACK FOREST ROAD

BLACK FOREST, CO 80908

719 495 2554

RECOGNITION

The Core Leadership Team developed this Community Wildfire Protection Plan in partnership with the communities it serves. The Project Leadership Team provided development of the Black Forest CWPP. A directory of current team representatives is provided in the beginning of this report.

Over 100 community members attended plan scoping meetings and submitted personal responses that are documented in the appendix of this report. Many individuals and organizations also participated in the development of the Goals and Objectives that develop the future desired condition of the Black Forest community. We thank the many participants that contributed their time and effort to this plan, and for their dedication and commitment to preparing our community for wildfire.

Special thanks for advice, review and the valuable comments provided by, Nancy Trosper, Fire Chief Bryan Jack, Rick McMorran, Dave Root, John Padgett, Carolyn Brown, Bob Sturtevant, Bill Kappel, Judy Von Ahlefeldt, Len Lankford, Keith Worley and a very special thanks to Edward R Bracken, Sr.

We also want to recognize the extraordinary commitment El Paso County and the Colorado State Forest Service that contributed valuable staff time and resources to support the creation and approval of this document.

The State of Colorado Department of Local Affairs and the federal government for this CWPP grant. The unprecedented level of support received from federal, state, and local entities will be instrumental in the forthcoming implementation of the Black Forest Community Wildfire Protection Plan. Thank you to the authors of the 2007 Black Forest CWPP for contributing to this 2016 CWPP.

2016 Core Leadership Team

Black Forest Together, Inc., Edward R. Bracken Sr. Chairman, Board of Directors
ebracken9396@msn.com 719-495-2445

Black Forest Fire/Rescue Protection District Bryan J Jack, Fire Chief
11445 Teachout Rd. bryan.jack@bffire.org 719-495-4300

El Paso Sheriff's Office, John Padgett, Commander, Deputy Fire Warden
johnpadgett@elpasoco.com 719-575-8407

Black Forest Together, Inc., Nancy Trosper, Planning Coordinator
Nancy.trosper@blackforesttogether.org 719-495-2554

Colorado State Forest Service, Dave Root, Assist. Dist. Forester, Technical Advisor
david.root@colostate.edu 719-687-2921

Black Forest Together, Inc., Kenneth Clark, Forest Director
Ken.clark@blackforesttogether.org 719-495-2933

Community Citizen Representative, Carolyn Brown
carolynb@q.com 719-495-2445

BLACK FOREST COMMUNITY WILDFIRE PROTECTION PLAN

September 2016

Plan Approval Document

As required by the Healthy Forest Restoration Act, the undersigned representatives, Chairman of the Black Forest Inc., El Paso County Board of County commissioners, Fire Chief, and the Colorado State Forest Service acknowledge that they have reviewed and approved the contents of this plan. The following agencies have reviewed and agree to this Community Wildfire Protection Plan.

Black Forest Together

Chairman, Edward R. Bracken, Sr. Date

El Paso County Representative

Chair of the Board of County Commissioners Date

El Paso County Sherriff's Office

Deputy Fire Warden, Commander, John Padgett Date

Black Forest Fire - Rescue Protection District

Chairman of the Board, Rick McMorran Date

Black Forest Fire - Rescue Protection District, Fire Chief

Chief, Bryan Jack Date

Colorado State Forest Service

Larry Long, District Forester, CSFS Date

Black Forest Community Representative

Carolyn Brown Date

CONTACT INFORMATION

Colorado State Forest Service
Dave Root, Assistant District Forester
Woodland Park District
P.O. Box 9024
113 S. Boundary Rd.
Woodland Park, CO 80866
david.root@colostate.edu
719-687-2921

El Paso County Commissioner
Darrell Glenn, District 1
200S Cascade Ave. Suite 100
Colorado Springs, CO 80903
darrylglenn@elpasoco.com
719-520-6411

El Paso County Commissioner
Sallie Clark, District 3
200 S. Cascade Ave. Suite 100
Colorado Springs, CO 80903
sallieclark@elpasoco.com
719-520-6413

El Paso County Sheriff's Office
Lt. Rick McMorran, Patrol Division
27 E. Vermijo Ave.
Colorado Springs, CO 80903
RickMcMorran@elpasoco.com
719-520-7137

El Paso County Sheriff's Office
John Padgett, Fire Warden
Emergency Services Division
27 E. Vermijo Ave.
Colorado Springs, CO 80903
JohnPadgett@elpasoco.com
719-575-8407

El Paso County Planning Department
Elaine Kleckner, Planning manager
2002 Creek Crossing
Colorado Springs, CO 80905
ElaineKleckner@elpasoco.com
719-520-6999

Colorado Springs Fire Department
Steven Oswald, Captain, PIO
375 Printers Pkwy.
Colorado Springs, CO 80910
soswald@springsgov.com
719-385-7223

Falcon Fire Department
Trent Harwig, Fire Chief
7030 Old Meridian Rd
Peyton, CO 80831
No email provided
719-495-4050

Donald Wescott Fire Protection District
Vinny Burns, Fire Chief
5055 SW Lake View Drive
Culver, OR 97734
15415 Gleneagle Dr.
Colorado Springs, CO 80921
vburns@wescottfire.org
719-488-8680

Tri-Lakes Monument Fire Protection District
Chris Truty, Fire Chief
15455 Gleneagle Dr. Ste 230
Colorado Springs, CO 80921
ctruty@tlmfire.org
719-484-0911

To obtain copies of this plan contact:
Nancy Trosper, Planning Coordinator
Black Forest Together
Office: 719-495-2554
nancy.trosper@blackforesttogether.org
Kenneth Clark, Forest Director
Black Forest Together
Office 719 495-2933
kclark.bft@gmail.com

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EXECUTIVE SUMMARY

Wildfire is inevitable in the front range of Colorado. In fact, many of the Black Forest's native plant and animal species are dependent on the natural disturbance caused by wildfires. Species in the Black Forest are fire-adapted and have developed strategies to survive and thrive in the presence of wildfire. However, wildfires become disasters when they threaten lives, burn homes, destroy infrastructure, and damage watersheds. Developing and implementing strategies to make human communities fire-adapted can reduce the severity of such disasters. This Community Wildfire Protection Plan (CWPP) provides strategies that can be implemented by community leaders, residents, fire professionals, and others that will make the Black Forest community better prepared for the next inevitable wildfire.

The Black Forest CWPP is a strategic plan that identifies specific wildland fire hazards and risks facing neighborhoods and the Black Forest community. This is a completely new CWPP prepared for the Black Forest community and provides recommendations designed to reduce those hazards and risks. The Black Forest Fire of 2013, taking two lives, destroying over 500 homes, and burning over 14T,000 acres, increased awareness of the devastating impacts wildfire can have on a community. The primary goal of this CWPP through outreach, education, strategic planning, and action, is to protect human life, animals, private property, the forest itself, and essential infrastructure and resources.

As was shown during the 2013 Black Forest Fire, the ignition risk is high throughout the community [refer to the Black Forest Fire Risk Map below]. Physical conditions and development in the wildland-urban interface emphasize the need for extensive and ongoing fuel reduction and fuels management. Many homeowners in the Black Forest community have wisely initiated a number of thinning and defensible space projects. Yet much remains to be done in a coordinated effort to address forest health and community safety objectives, reduce the potential for catastrophic crown fires, and safeguard Black Forest natural resources and the residents who live among them. The greatest pending danger from future wildfire arises from the ashes of the 2013 burnt over area with standing, black, dead timber in fields of grass. When these dead trees fall on the ground

CWPP GOALS

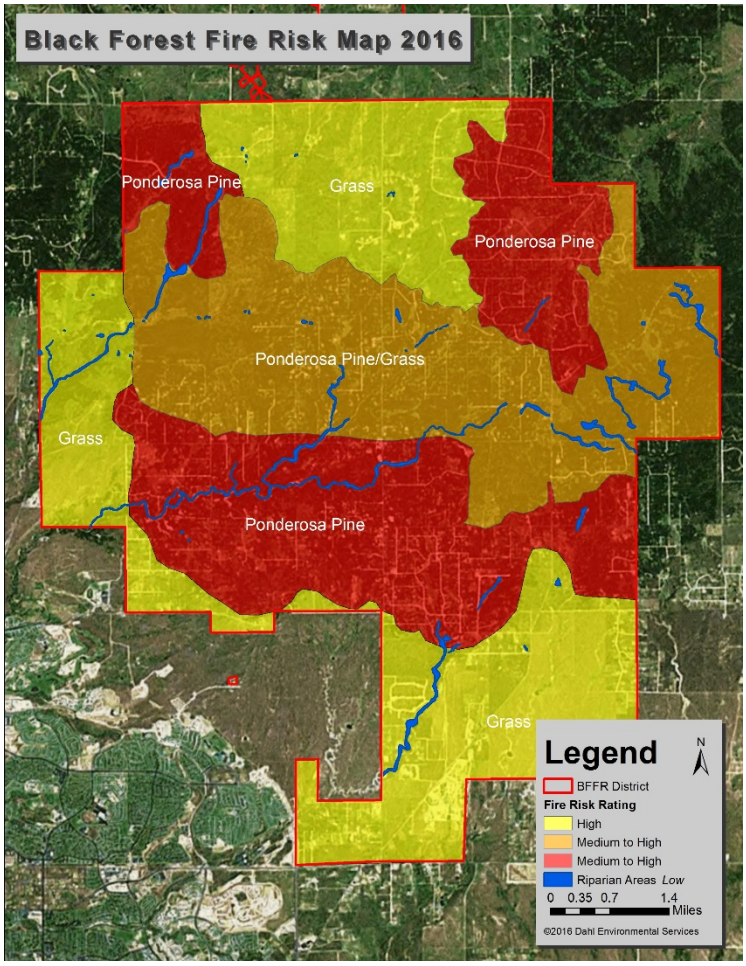
PROTECT LIVES, PROPERTY AND RESOURCES: This CWPP provides the Black Forest Community a framework and recommendations with an outcome that will save lives, reduce losses of property and community resources.

CREATE A FIRE-ADAPTED COMMUNITY: This plan provides mitigation strategies and community-driven action items to help create a community where citizens are engaged and active in preparing for wildfire. It facilitates interagency cooperation, and strengthens communication and support between agencies and the Black Forest community.

RESTORE & MAINTAIN FIRE-RESILIENT LANDSCAPES: This plan provides prioritized recommendations for fuel reduction treatments, to enable the Black Forest community to effectively address risks to the community and its ecosystems at a landscape scale.

PROVIDE EFFECTIVE & EFFICIENT WILDFIRE RESPONSE: This plan provides strategic treatments on the landscape that will facilitate safer and more successful fire suppression. It provides a plan for tracking, reporting, and sharing of both fuel reduction accomplishments and homeowner/community initiatives, and it will support risk-based management decisions and tactical actions.

they become heavy, large hazardous fuels creating extreme explosive fire behavior capable of running through the community at 3 miles per hour or more (i.e., from Black Forest Road to Vollmer Road in less than 20 minutes). Only 3-years post-burn, standing dead trees have already begun to fall.



Homeowners throughout the Black Forest community must be ever diligent and cognizant of creating and maintaining the necessary defensible space around their homes and other structures. The presence of untreated fuels on undeveloped parcels within Black Forest neighborhood boundaries increases the risk of wildland fire. Every effort must be made to encourage property owners to maintain fire-safe vegetative conditions throughout the community. The ongoing need for maintenance of fuel reduction and defensible space treatments must remain a priority for property owners choosing to live in the Black Forest community.

This plan recommends that the Black Forest community CWPP Leadership Team (BFT, BFFR, CSFS) (CWPP LT), move quickly to provide a pathway to reducing hazardous fuel accumulations within the community. To protect against the rain of burning embers from wildfires, we recommend that business owners, private landowners, with small and large tracts of land, eliminate their wildfire risks around their structures and inside the home ignition zone in a timely manner. Further, we strongly recommend forest treatments in closed canopy conifer stands adjacent to major evacuation routes and travel ways be seriously implemented as identified as high priority work areas in this plan. Additionally, we remind that all lands will need annual ongoing maintenance and retreatment.

With a great sense of urgency, we recommend continuing the strong reforestation program to maintain the ecosystem of the Black Forest community. Further, continue to recognize the work of volunteers in the community and the support of the El Paso County Slash-Mulch Program in the Black Forest. All citizens should maintain a watchful eye to eliminate dangerous insect and diseases that threaten the forest environment.

It's a basic premise of this plan that in "being prepared", the Black Forest community can minimize-or even prevent the more devastating effects of wildfire, and in doing so, better safeguard community and personal resources. Evacuation planning before a wildfire is essential. Residents should identify in advance normal and alternate escape routes out of the community and be prepared to Ready-Set-Go

when danger is near. Landowners with pets and large animals should consider their needs as an integral component of evacuation planning.

Embracing these goals and implementing the strategies and recommendations will make the Black Forest Community better prepared for the next inevitable wildfire. We suggest that a Firewise leader, homeowner in the community be recognized each year for their outstanding achievements.

This CWPP was developed in coordination with the Black Forest Fire Rescue Protection District (BFFR), Black Forest Together (BFT), Colorado State Forest Service (CSFS) and the Black Forest community. Every agency, organization, neighborhood, or individual in the Black Forest community that might be affected by the next wildfire has a role to play in creating a fire adapted community. This plan provides a common frame of reference for engaging and finding common solutions, implementing actions, and monitoring progress towards the CWPP goals.

ACRONYMNS AND ABBREVIATIONS

ACF	Association of Consulting Foresters of America
BFFR	Black Forest Fire Rescue Protection District
BFT	Black Forest Together
CO-WRAP	Colorado Wildfire Risk Assessment Portal
CSFS	Colorado State Forest Service
CWWP	Community Wildfire Protection Plan
DBH	diameter at breast height
FM	fuel model
HFRA	Healthy Forests Restoration Act
HOA	homeowners' association
ISO	Insurance Services Organization
NFFL	Northern Forest Fire Laboratory, USDA- Forest Service Research
SAF	Society of American Foresters
SI	Site Index
SAMCOM	El Paso County Slash and Mulch Committee
WUI	wildland-urban interface

1. INTRODUCTION

1.1 COMMUNITY WILDFIRE PROTECTION PLAN PURPOSE

Wildland fire in Colorado is well documented. It's been occurring for eons, and has shaped the landscape we treasure. It brings nutrients to the soil and diversity to the vegetation and wildlife, and in doing so benefits all of us who later live in its path. More to the point, we cannot stop wildfire from occurring. Our attempts to do so – our suppression of all wildland ignitions for most of the 20th century, without active vegetation management, have actually made a complicated "fire management" situation more difficult. Decades of aggressive fire suppression practices in fire-adapted ecosystems such as the Black Forest, have removed a critical natural cleansing mechanism from the vegetation regeneration cycle. Fire exclusion has altered historic forest and shrubland conditions, and contributed to an unprecedented and unnatural accumulation and buildup of naturally occurring flammable fuels. Additionally, years of persistent drought have resulted in stressed timber and regional epidemics of insect infestation. At the same time, demographic trends have shifted the nation's population growth, as well as Colorado's growth, to western states and communities where fire adapted ecosystems are predominant. The region where human development is pushing into these stressed ecosystems is known as the wildland-urban interface (WUI) and represents the area where potential loss due to wildfire is the greatest.

Crown fire from ladder fuels

The Community Wildfire Protection Plan (CWPP) is a strategic plan that identifies specific wildland hazards and risks facing the Black Forest community and neighborhoods and provides prioritized mitigation recommendations that are designed to reduce wildfire hazards and risks. This document emphasizes *collaboration*, and *reduction of hazardous fuels and structural ignitability*. It gives Black Forest residents "notice" of their wildfire hazards and risks and offers suggestions for actions to address them. Once the CWPP is approved and adopted, it becomes the Black Forest community's responsibility to move forward and implement the action items identified in this plan. This may require further planning at the project level, acquisition of funds, or simply motivating individual homeowners to take action.

Not that long ago, the job of protecting communities and other valued resources from wildland fire appeared to belong to the fire fighter. The citizen's job was to report the wildfire ignition to 911 and run to safety. This is still true, of course, but with a trend toward more episodes of severe wildland-urban interface fire in the United States, there is an increasing recognition that everyone within a community must be involved in protecting lives and property from fire. That means there is a role for property owners, developers, community planners, public officials, insurance agents, fire professionals, and many more. The task begins before a wildfire occurs. This demands planning and participation by those potentially affected.

Precipitated by over a century of increasing wildfire activity, spiraling suppression costs, and dramatic losses, the National Fire Plan was developed in 2000. Subsequently, President George W. Bush proposed the Healthy Forests Initiative, which was enacted into law by the Healthy Forests Restoration Act (HFRA) of 2003 (Public Law 108-408). The act helped implement the elements of the National Fire Plan and provided the foundation for wildfire risk assessment and planning. Communities were encouraged to create CWPPs to collaboratively designate areas in the Wildland-Urban Interface (WUI) that were the most in need of thinning at county and community level. The HFRA refers to this level of planning as the CWPP process. The HFRA provides a framework for hazard evaluation and strategic planning for community action to create resilient communities.

A CWPP must be collaboratively developed by local and state representatives in consultation with other interested parties…

Healthy Forests Restoration Act

The purpose of this CWPP is to protect lives, property and the environment within the Black Forest community from wildfire by implementing prioritized fuels reduction projects and engaging the public in becoming a Fire Adapted Community. This CWWP serves to identify the Black Forest community risks, identify what constitutes the risk, and develop an action plan to mitigate the risk, thereby providing a vegetative structure for the community that is resilient to the effects of wildland fire.

The HFRA defined the minimum requirements for a CWPP. These are:

COLLABORATION: Local and state government representatives, in consultation with federal agencies and other interested parties, must collaboratively develop a CWPP.

PRIORITIZED FUEL REDUCTION: A CWPP must identify and prioritize areas for hazardous fuel reduction treatments, and recommend the types and methods of treatment that will protect one or more at-risk communities and essential infrastructure.

TREATMENT OF STRUCTURAL IGNITABILITY: A CWPP must recommend measures that homeowners and communities can take to reduce the ignitability of structures throughout the area addressed by the plan.

The Black Forest CWPP is a community-wide assessment of the risks, hazards, and mitigation and prevention opportunities associated with wildfire in the Black Forest community. The Black Forest community changed dramatically as a result of the June 2013 Black Forest Fire. The development of this CWPP is specifically tiered to update the Black Forest CWPP dated October 11, 2007. Funding for this update is provided under the State of Colorado Community Development Block Grant Disaster Recovery Program from the federal government.

Authority and responsibility for managing vegetation on private property within Black Forest rests with the landowner. El Paso County and individual landowners share the authority and responsibility for managing vegetation on the road rights-of-way.

The CWPP will be reviewed annually to identify changes or updates; evaluate effectiveness of coordination between cooperating agencies; community groups, and neighborhoods; evaluate progress

in meeting specific performance measures; and will adjust any monitoring protocols as needed. Coordination and communication will be critical operative requirements. The CWPP Steering Committee will conduct a thorough review and risk analysis every 5 years. The steering committee is represented by representatives from BFFR, BFT, CSFS, El Paso County and SAMCOM.

Black Forest Together (BFT) has recognized that the community may be at risk from wildfires moving into or originating within the BFFR Protection District (District). BFFR has provided leadership to educate homeowners to develop defensible space for several years in conjunction with implementing the 2007 CWPP. One of the success of the 2007 CWPP has been creating and implementing Firewise concepts in the Black Forest community.

1.2 NEED FOR A COMMUNITY WILDFIRE PROTECTION PLAN

Historically, natural wildfire would pass through this area with relative frequency allowing forests, shrub lands, and grasslands to adapt morphology, growth and reproductive patterns to a periodic cleansing by fire. Land management policies centered on fire suppression have altered this cycle and exacerbated the potential for high-intensity wildfire by allowing fuels to build up and facilitating the decline of forest health.

Weather plays a critical role in determining fire frequency and behavior. A dry climate and available fuels in an area prone to strong gusty winds can turn any ignition into a major wildfire in a matter of several minutes.

The Black Forest community is characterized by a combination of a relatively dense population, heavily utilized travel routes, fire-adapted vegetation, and the potential for natural and human ignitions. These factors combine a degree of hazard, ignition risk, and values at risk that require serious evaluation. The combination of environmental esthetics, recreational opportunities, and proximity to a major metropolitan area make the Black Forest community a desirable location to live and work.

However, the community is characterized by several factors that typify a hazardous WUI: human development within fire-adapted ecosystems, uneven topography, frequent natural and human-caused ignitions, presence of hazardous fuels, prolonged drought, and dry, windy weather conditions. Each neighborhood or subdivision represents a distinct area with a unique combination of wildfire fuels, predominant building construction materials, topography, access, available resources, and opportunities for fuels mitigation.

The CWPP provides a coordinated assessment of neighborhood wildfire risks and hazards, and outlines specific mitigation treatment recommendations designed to make the Black Forest community a safer place to live, work, and play. The CWPP development process can be a significant educational tool for people who are interested in improving the environment in and around their homes. It provides ideas, recommendations, and guidelines for creating a defensible space around the house and ways to reduce structural ignitability through home improvement and maintenance.

HFRA places emphasis on local community wildfire protection and response planning by extending a variety of benefits to communities with a wildfire protection plan in place. This 2016 revised CWPP will meet or exceed the minimum standards established by the Colorado State Forest Service (CSFS).

Individual home and property owners should strive to understand and apply principles and guidelines in the CSFS Publication, *Protecting Your Home from Wildfire: Creating Wildfire Defensible Zones FIRE 2012-1*, and seek to implement the Firewise recommendations found at www.firewise.org.

This CWPP update covers 46 Sections or about 29,440 acres of the BFFR District. This plan has been prepared by professional foresters, certified by the Society of American Foresters (SAF) and the national Association of Consulting Foresters (ACF), at the request of the BFT, to guide them in development of a CWPP for the Black Forest community.

1.3 THE CWPP PLANNING PROCESS

The HFRA designed the CWPP to incorporate a flexible process that can accommodate a wide variety of community needs. This CWPP is tailored to meet specific goals as identified by the Core Team, following the standardized steps for developing a CWPP as outlined in *Preparing a Community Wildfire Protection Plan: A Handbook for Wildland-Urban Interface Communities* (SAF 2004) and the CSFS Minimum Standards for Community Wildfire Protection Plans (CSFS 2006). Table 1 outlines the CWPP step-wise development process.

The initial step in developing the Black Forest CWPP was to organize an operating group to serve as the core decision-making team. The Core Leadership Team consists of representatives from local government, local fire authorities, and the CSFS. In addition, the Core Leadership Team includes active community residents and homeowners' association (HOA) stakeholders. Collaboration between agencies and with communities is an important CWPP component because it promotes sharing of perspectives, plans, priorities, and other information that is useful to the planning process. Together these entities guide the development of the CWPP as described in the HFRA and must mutually agree on the plan's final contents.

Community Engagement

The CWPP team held two community meetings in order to obtain Black Forest citizen input to the planning process. These meetings were held prior to development of the Draft plan. The Core Leadership Team assisted in organizing the community meetings held at the BFFR station. BFT advertised by word-of-mouth, posting in local businesses and news releases in the community newspaper. A slide presentation was used at these gatherings to describe the CWPP process and to solicit concerns and recommendations.

Public participation was very good; however, attendance was minimal at these community meetings (see meeting summaries in Appendix 10.4). Meaningful discussion focused on fire protection, hazardous fuels reduction, communication, and evacuation priorities. These conversations also capture the need for consistent community education and awareness. The product of public participation is framed in the CWPP as the desired future condition of the Black Forest community (Mission Statement), Goals, and Objectives.

Collaboration

BFT was the organization that initiated the collaborative efforts with key partners, targeting a cross-jurisdictional, regional approach to best leverage resources and was based on the collaborative process which is a key requirement the Congress established for a CWPP. Collaboration is simply people working together to address a shared problem. One of the significant outcomes of the collaborative process build trust, working relationships and partnerships among the community. Effective collaboration ensures that all bases are covered in the planning process and that potential problems are identified.

BFFR-BFT collaborative CWPP community meeting

The 2013 Black Forest Wildfire devastated 14,000 acres of forest in northern El Paso County, crossing over multiple fire districts. The majority of the fire occurred in the BFFR District with significant burn in the east bordering Falcon Fire Protection District and some burn in the west bordering Donald Wescott Fire Protection District. Additional neighboring fire districts were impacted with mandatory evacuation. A wildfire in El Paso County is a threat to the entire geographic area and in order to be effective it needs to be addressed on a regional level.

Successful collaboration at a regional level in northern El Paso County is already underway as demonstrated by mitigation projects between BFT, BFFR District and the Donald Wescott Fire Protection District. These projects have focused on the expansion of shaded fuel breaks along emergency evacuation routes on roadways used by both fire districts and also alignment on strategic projects that benefit the geographic area. This partnership is in the process of being expanded with additional neighboring fire districts as well as ongoing alignment with El Paso County, the Colorado State Forest Service, the Black Forest Slash/Mulch Program and private industry.

In addition, the recent fires in Colorado have demonstrated to residents the need for homeowners to take more responsibility to protect and preserve the forest in which they live. A cultural shift of shared responsibility and partnership between fire districts, municipalities, forestry organizations and homeowners is critical to achieve the common goal of healthy forests and watersheds. This collaboration needs to grow in order to leverage regional mitigation with limited funding.

This plan was developed in collaboration with representatives from:

- El Paso County Planners
- El Paso County Commissioners
- Black Forest Fire-Rescue District #1
- El Paso County Sheriff's Office
- Falcon Fire District
- National Audubon Society
- Colorado State Forest Service
- Society of American Foresters
- Black Forest Trails Association
- Association of Consulting Foresters
- Pikes Peak Region Humane Society
- La Foret Forest and Camp Officials
- Black Forest Citizens, Business owners
- BFFR Board of Directors
- Animal Groups in the Black Forest
- Homeowners Associations
- Professional Foresters in the Black Forest Area

THE CWPP METHODOLOGY

After the establishment of the Healthy Forests Restoration Act, a variety of planning framework models were developed throughout the country. This framework was developed by the National Association of State Foresters, National Association of Counties, Society of American Foresters and others. This framework, known as the "NASF" model and the CSFS model was chosen for the Black Forest CWPP process. Below is a summary of the steps identified in the process.

Table 1. CWPP Development Process

Step	Task	Explanation
1	Convene Decision Makers	Form a Core Leadership Team comprised of representatives from local government, BFFR, and the CSFS.
2	Involve Federal Agencies	Engage local representatives of appropriate Federal agencies.
3	Engage Interested Parties	Contact and encourage participation from a broad range of interested organizations and stakeholders.
4	Establish a Community Base Map	Develop a base map of the Black Forest community that provides an understanding of communities, critical infrastructure, and forest/open space at risk.
5	Develop a Community Risk Assessment	Develop a risk assessment that considers fuel hazards, community and commercial infrastructure, resources, and preparedness capability. Rate the level of risk and incorporate into the base map as appropriate.
6	Establish Community Priorities and Recommendations	Use the risk assessment and base map to facilitate a collaborative public discussion that prioritizes fuel treatments and nonfuel mitigation practices to reduce fire risk and structural ignitability.
7	Develop an Action Plan and Assessment Strategy	Develop a detailed implementation strategy and a monitoring plan that will ensure long-term success.
8	Finalize the CWPP	Finalize the Black Forest CWPP and communicate the results to interested parties and stakeholders.

1.4 MISSION, GOALS, AND OBJECTIVES

The mission of the Black Forest Team is to protect lives, property, and the environment within the District from wildfire by implementing prioritized fuel reduction projects and engaging the public in becoming a Fire Adapted Community.

Wildfire is inevitable in the Black Forest community. Many of the Black Forest's plant and animal species are dependent on the natural disturbance caused by wildfire. Such species are fire-adapted, and have developed strategies to survive and thrive in the presence of wildfire. The disturbance creates opportunities for new growth, cycles nutrients through soils, and maintains biological diversity.

Wildfires become disasters when they threaten life, burn homes, destroy infrastructure, and damage watersheds. Developing and implementing strategies to make human communities more fire adapted can prevent such disasters. This CWPP provides strategies that can be implemented by residents and the community that will make the Black Forest better prepared for the next inevitable wildfire. This plan recommends that the Black Forest community move quickly to reduce hazardous fuel buildup on properties in the community. The goals and objectives of the plan are to:

PROTECT LIVES, PROPERTY & RESOURCES: This CWPP provides the Black Forest Community a framework and recommendations with an outcome that will save lives, reduce losses of property and community re

Objective: Develop a comprehensive plan providing a suite of strategies to reduce hazardous fuels, improve communications, education and awareness to protect lives, property and the Black Forest ecosystem.

CREATE A FIRE-ADAPTED COMMUNITIY: This plan provides mitigation strategies and community-driven action plans to help create communities where citizens are engaged and active in preparing for wildfire. It facilitates interagency cooperation and strengthens communication and support between agencies and the Black Forest community.

Objective: Increase the ability to prepare, respond, and recover from wildfires in the Black Forest community.

- Update education and awareness materials
- Encourage evacuation planning and readiness
- Encourage the use of fire-resistant materials/design of non-combustible homes
- Assist community planners with comprehensive planning to mitigate disasters
- Clearly delineate evacuation routes and identify evacuation centers
- Eliminate hazardous trees along right of ways.
- Generate site development standards to enhance structural survivability in fire-prone areas.

Objective: Increase community understanding of living in a fire prone ecosystem.

- Develop monthly and annual education sessions on becoming a Firewise Community and high risk wildfire areas.
- Develop partnerships with those that can have an influence on wildfire risk to District residents and their forests.
- Instill as sense of personal responsibility for taking preventative actions regarding wildfire.
- Update emergency notification procedures and processes.

RESTORE & MAINTAIN FIRE-RESILIENT LANDSCAPES: This plan provides prioritized locations for fuel reduction treatments, to enable the Black Forest community to effectively address risks to the community and its ecosystems.

Objective: Protect against losses to life, property, and natural resources from wildfire at a landscape scale.

- Treat fuels to reduce potential flame lengths. The heat from a fire with flame lengths of four feet or more can be lethal to firefighters, people and animals. In areas where flame lengths exceed four feet, reduce fuels so that potential flame lengths are four feet or less.
- Identify erosion mitigation actions to reduce potential flooding impacts.

WHAT IS A FIRE-ADAPTED COMMUNITY?

A Fire Adapted Community is a community that has made a decision to reduce their vulnerability to destruction by wildfire. Fire Adapted Community members collectively share an understanding of wildfire threat, and the high probability of serious loss. This common understanding results in changes of behavior, and residents take action to mitigate the threat. Fire Adapted Community residents join together to prepare the community, themselves, and their homes for the inevitable occurrence of wildfire.

A Fire Adapted Community can survive a wildfire with little or no assistance from firefighters. These communities are characterized by homes that are built of fire resistant materials, and where vegetation and flammable items have been reduced around the homes to provide good defensible space. They are buffered by fuel breaks where flammable vegetation has been modified to slow the spread of flames, and provide a zone where firefighters can aggressively fight a fire.

PROVIDE EFFECTIVE & EFFICIENT WILDFIRE RESPONSE: This plan provides strategic treatments on the landscape that will facilitate safer and more successful fire suppression. It provides for tracking, reporting, and sharing of both fuel reduction accomplishments and homeowner/community initiatives, and it will support risk-based management decisions and tactical actions.

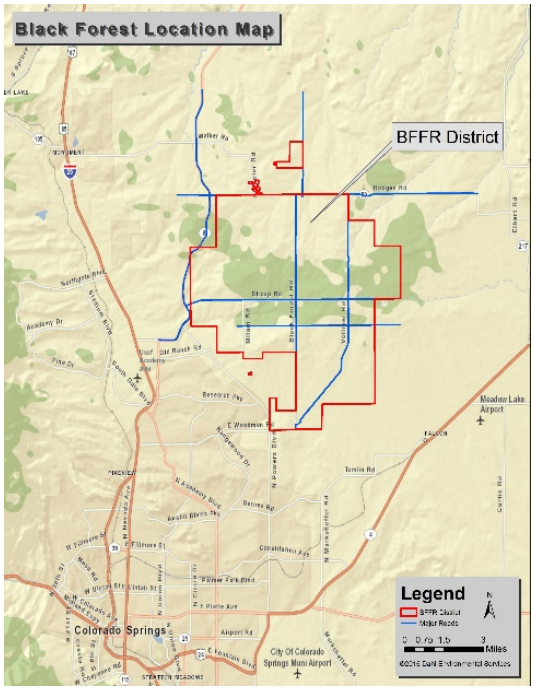
Objective: Improve fire prevention and suppression.

- Update mutual aid agreements with El Paso County and adjacent fire districts.
- Update fire response pre-plans in the District.

2. BLACK FOREST COMMUNITY PROFILE

2.1 COMMUNITY SETTING

For the purposes of this CWPP, the BFFR District is defined as the WUI. The District is located in El Paso County just north of Colorado Springs, Colorado, approximately seven miles east of Interstate 25, along County Road 228 (**Appendix 10.1**). See Black Forest Location Map.



Location Map

BFFR District Characteristics

The BFFR District is located in the north portion of unincorporated El Paso County, Colorado. The southern boundary of the District abuts the city limits of Colorado Springs. The average elevation is approximately 7,369 feet with a total land area of 50 square-miles. There are nine HOAs inside the BFFR. They are: (1) Longview Estates, (2) High Forest Ranch, (3) Cathedral Pines, (4) New Breed Ranch, (5) Wildwood Village, (6) Pine Cone Acres, (7) Pine Ranch, (8) Forest Gate and, (9) Park Forest States. Only the High Forest Ranch has a HOA CWPP (**Appendix 10.1**).

Demographic Characteristics

Located within the District boundaries is a resident population of approximately 13,000 individuals and approximately 5,000 residential/commercial structures. The population density, based on the 2000 census was 103.9 people per square mile. A majority of the properties in the Black Forest community vas located on 5 acre lots. The median income for a household was $77,085, and the median income for a family was $80,556. Males had a median income of $59,568 versus $32,043 for females. The average income was $30,786. About 1.9% of families and 2.9% of the population were below the poverty threshold limit including 3.9% of those under age 18 and 2.3% of those age 65 or over (Wikipedia). Historically, the District was classified as a rural area, but over the course of the past several years has seen suburban growth. The BFFR protects more than 5,000 structures with a 2014 estimated market value of $1.0 billion. The Black Forest community receives wildfire suppression from the BFFR, which has mutual aid agreements with all surrounding fire agencies, including the City of Colorado Springs (**Appendix 10.1**).

2.2 CLIMATE

Precipitation amounts for Black Forest are varied with the western (mountainous) portion receiving 28 to 60 inches annually, primarily in the form of snow. Climatic data from a weather station in Colorado Springs Municipal Airport, Colorado, 15 miles south of the Black Forest,

provides the following averages based on 42 years of continuous data collection (Western Regional Climate Center 2008):

- Average annual maximum temperature: 62.9 °F
- Average annual minimum temperature: 35.8 °F
- Average annual total precipitation: 14.4 inches
- Average annual daily wind speed: 9.6 MPH

2.3 TOPOGRAPHY

The Black Forest topography is varied with its highest point being the top of Vollmer Hill at 7,704 feet and the lowest elevation being 7,000 feet where the Burgess Creek crosses into Colorado Springs. The northern part of the District crests at the Palmer divide and flows northward to the Cherry Creek watershed. The south side of the District flows into the Fountain Creek drainage and into the Arkansas River watershed. The Black Forest mainly consists of private land managed by individual homeowners with some public parcels that are included within the Black Forest community. The city of Colorado Springs is located on the on the south side of the District.

2.4 WILDLAND VEGETATION & FUELS

The plant communities found in the Black Forest are typical of the Rocky Mountain Montane ecosystem. Vegetation type and distribution is controlled primarily by available soil moisture, which is closely related to slope aspect. Existing vegetation is the fuel source for wildland fire and has a direct effect on fire behavior. Understanding the fire behavior characteristics of particular fuel types facilitates effective fuel treatment strategies on individual properties and the community landscape. The Black Forest community is dominated by ponderosa pine *(Pinus ponderosa)*, with significant areas of grass and Gambel oak *(Quercus gambellii*) including shrub communities. All of these vegetative types can be extremely flammable under certain weather conditions.

On June 11, 2013, the Black Forest wildfire started around Highway 83 and Shoup Road, within Black Forest community. Nearly 35,500 people within and around Black Forest, Colorado Springs, and Elbert County were evacuated, and a portion of Douglas County was placed on pre-evacuation notice. Over 15,000 acres burned, 511 buildings were destroyed, and there were two fatalities. Based on number of homes destroyed, it surpassed the Waldo Canyon Fire as the most destructive wildfire in Colorado history. (Wikipedia)

MERITS OF PONDEROSA PINE

Ponderosa pine is the most common pine tree in the District. Ponderosa pines survived frequent fires that burned around the District prior to European settlement by evolving fire adaptations. Its thick bark and deep roots help insulate sensitive growing tissue from the heat of a wildfire. Ponderosa pine also "self-prunes", shedding its lower branches as it grows. This self-pruning provides spaces that separates low branches from the heat of a wildfire below, helping to protect the needles of mature trees from ignition.

Ponderosa pine depends on fire or similar disturbances to reproduce and thrive. Its seeds establish best on mineral soil that has been cleared of needles and duff. It is shade-intolerant, requiring open space and ample sunlight to grow. In the absence of fire, ponderosa pine forests can be overtaken by shade-tolerant trees like Douglas-fir, and these dense stands are more susceptible to insect attack, and to high-intensity "stand-replacing" wildfires that kill most trees.

Ponderosa pine closed canopy stand

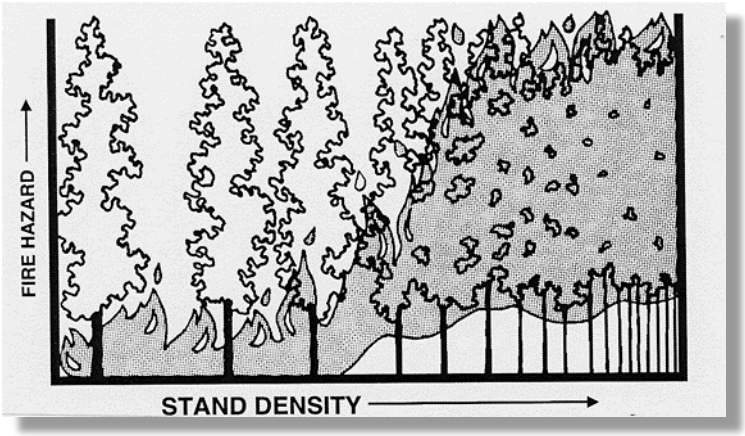
PONDEROSA PINE

Within the Black Forest, generally unburned areas have untreated ponderosa pine stands with closed canopies, and dense understory with other conifers and Gambel oak. Regeneration of these species is varied throughout the stand. The primary forest cover type is ponderosa pine stands, which is very representative of the Black Forest "forest vegetative type."

Within a representative stand in this community (La Foret Property), there is an average of 255 live trees per acre and 51 dead trees per acre, which have an average diameter at breast height (DBH) of 12.0 inches and an average height of 45 feet. The stand is two-aged with lesser stems of ponderosa pine and cohorts of 6 to 10 inch DBH which are trees about 75 to 100 years old, and a cohort of trees 14 inches DBH and greater that are approximately 180 years old. Site Index (SI, is an estimate of tree height at an index age, which is a measure used by foresters to describe a site's relative productivity) for ponderosa pine is estimated at 40 feet for a 100-year base (Lynch 2005). The representative stand has approximately 4,246 board feet per acre (as measured by Scribner board foot scale) and 1,768 cubic feet per acre. Average stand density is 120 square feet of basal area per acre. Slopes vary between 0 and 35 percent. There is some high incidence of older Ips beetle (*Ips pini*) activity (Cranshaw 2002), and dwarf mistletoe (*Arceuthobium americanum*), which are pest species affecting the ponderosa pine. Operability for tractor skidding is very good.

Of greatest concern to BFFR professionals is the, "closed canopy ponderosa pine with very dense under stories of biomass". The illustration below demonstrates how wildfire in dense conifer stands quickly transitions from a ground fire to a crown fire following ignition (Wildfire Spread Model). See the fuel models for rate of spread in Section 2.5.

Wildfire Spread Model



MEADOW / GRASS COMPLEX

Grass Complex

The meadows and savanna grassland, comprise the meadow/grass complex. Many of the meadows have been created as a result of wildfire and dead tree removal and have had little or no reforestation. Previous ponderosa pine stands have been converted to large meadow/pasture complexes. No inventory of the meadow area was done for this plan. The meadow complex basically surrounds the forested areas and is mainly in the central portion of the District. It consists of mostly native grasses and forbs. Some meadows may be currently used for hay production and livestock pasture. Many of these meadow grass complexes have standing dead fire-killed trees that are serious safety hazards. There is evidence of elk and deer use within the meadow/grass complex.

2.5 BLACK FOREST FUEL MODELS

Estimates of surface fuels are combined with fuel behavior maps to create fuel models (FMs) that are useful for quantifying current stand conditions. The data generated by the FMs are used for rating fire danger and predicting fire behavior (Anderson 1982). There are two main classification systems used in wildland fire management. The most recent system is presented in the USDA Forest Service General Technical Report RMRS-GTR-153 *Standard Fire Behavior Fuel Models: A Comprehensive Set for Use with Rothermel's Surface Fire Spread Model* (Scott and Burgan 2005). The other classification system is published in USDA Forest Service General Technical Report INT-GTR-122 *Aids to Determining Fuel Models for Estimating Fire Behavior* (Anderson 1982). The latter remains in use because it is somewhat easier to apply and comprehend, making it an effective tool for non-technical applications. A cross-walk table in (Scott and Burgan 2005) was applied to the Colorado Wildfire Risk Assessment Portal (CO-WRAP) report results so the categories on the FM map (**Appendix 10.1**) can be interpreted based on the (Anderson 1982) models. In the sections that follow, the (Anderson 1982) model is followed by the (Scott and Burgan 2005) model with a brief description of each FM and the total Black Forest acres that fall into each category.

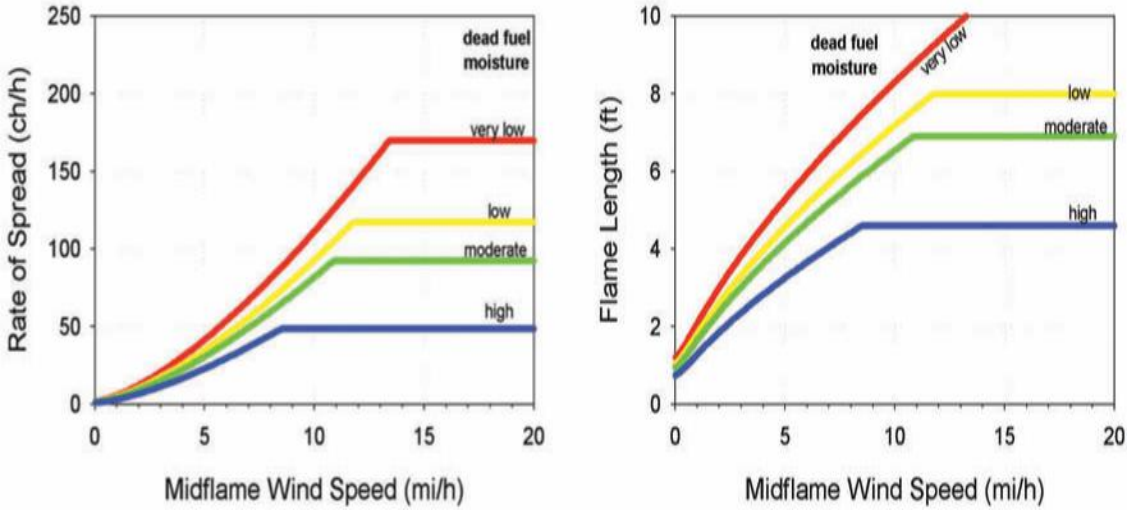
Wildfire fuel models are simply a tool for predicting wildfire behavior in different vegetative conditions. Wildland hazardous fuels have been classified into four basic groups—grasses, brush, timber, and slash. The differences in fire behavior among these groups are basically related to the fuel load on the ground environment. Fuel load and depth are significant fuel properties for predicting whether a fire will be ignited, its rate of spread, and its wildfire intensity. Flame lengths in excess of four feet, which is the upper limit at which fires can be attacked with persons using hand tools, and at which handline can be expected to hold a fire. Flame lengths in excess of four feet increase the chance that equipment may have to be relied on for suppression efforts to be effective (**Andrews 1986**).

The best representative FMs for describing fuel conditions in the Black Forest are 1, 2, 9 and 12, as described below.

Short Grass Standard Fire Behavior Fuel Model 1 (NFFL 1)

Fuel model 1 Grass

(GR2, a dry climate grass-ground cover is the primary carrier of wildfire and is present across the meadows). In this model, fire spread is governed by the fine, herbaceous fuels that have cured or are nearly cured. Wildfires are surface fires that move rapidly through cured grass and associated material. Relatively little shrub or timber is present on less than one third of the areas. Annual and perennial grasses are included in this FM. **In layman's terms:** With very dry moisture in the dead fuels and a mid-flame wind speed of 20 mph, the rate of spread is about 193 feet per minute (175 chains per hour or 11,550 feet per hour, or 2 miles per hour). The flame length is estimated to be 14 feet. Flame length is one of the factors used to determines the degree of difficulty in suppressing wildfire. The heat from fires with flame lengths of four feet or more can be lethal to firefighters.



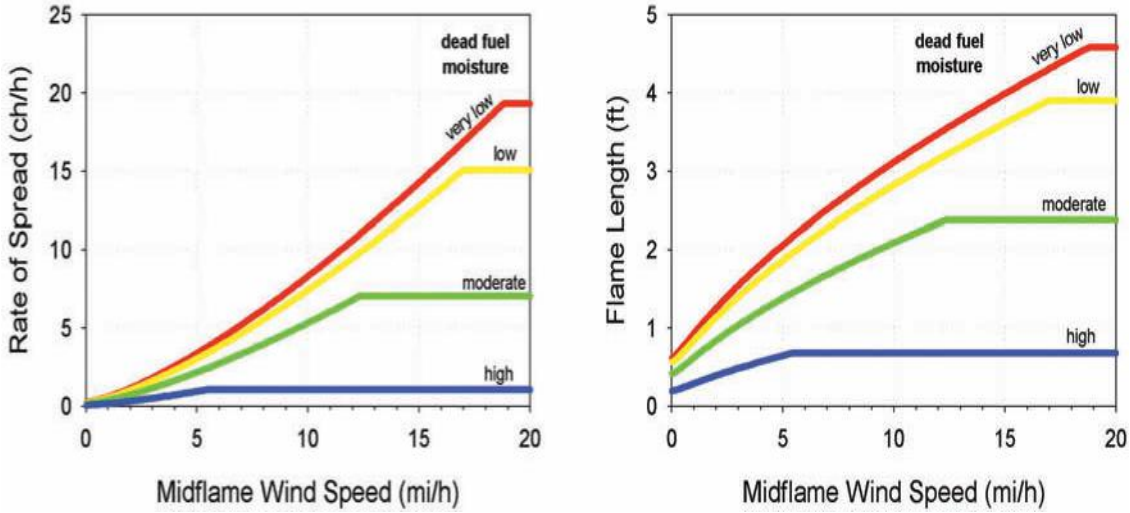
Reproduced from USDA Forest Service Gen. Tech. Rep. RMRS-GTR-153 (Scott and Burgan 2005)

Grasses are perhaps the most pervasive and abundant surface fuel in Colorado. Grasses and weeds should be mowed as often as needed throughout the growing season to keep them shorter than 6 inches. This applies to irrigated lawns and wild or native grasses. Mowing is critical in the fall, when grasses dry out, and in the spring, after the snow is gone but before plants green-up**.**

Timber-Litter Standard Fire Behavior Fuel Model 2 (NFFL 2)

(TU1, low load, dry climate timber-grass-shrub; the primary carrier of wildfire is a low load of grass and/or shrub with litter. Spread rate is low; flame length low). The effect of live herbaceous moisture content on rate of fire spread intensity is strong and depends on the relative amount of grass and shrubs in the FM. The primary carrier of fire is the fine herbaceous understory. Litter and dead twigs and branches from the conifer overstory contribute to fire intensity. Tree crown base heights are generally high and ladder fuels (live or dead vegetation in the understory that allows a fire to climb up from the forest floor into the tree canopy) are uncommon, so wildfire risk is low in this model. Fuel loads are usually less than 1.3 tons per acre and less than 12 inches deep. **In layman's terms**: With very dry moisture in the dead fuels and a mid-flame wind speed of 20 mph, the rate of spread is about 20 feet per minute (18 chains per hour or 1,188 feet per hour). The flame length is estimated to be 5 feet. The heat from fires with flame lengths of four feet or more can be lethal to firefighters

Fuel model 2 Ponderosa pine, BFFR Section 16



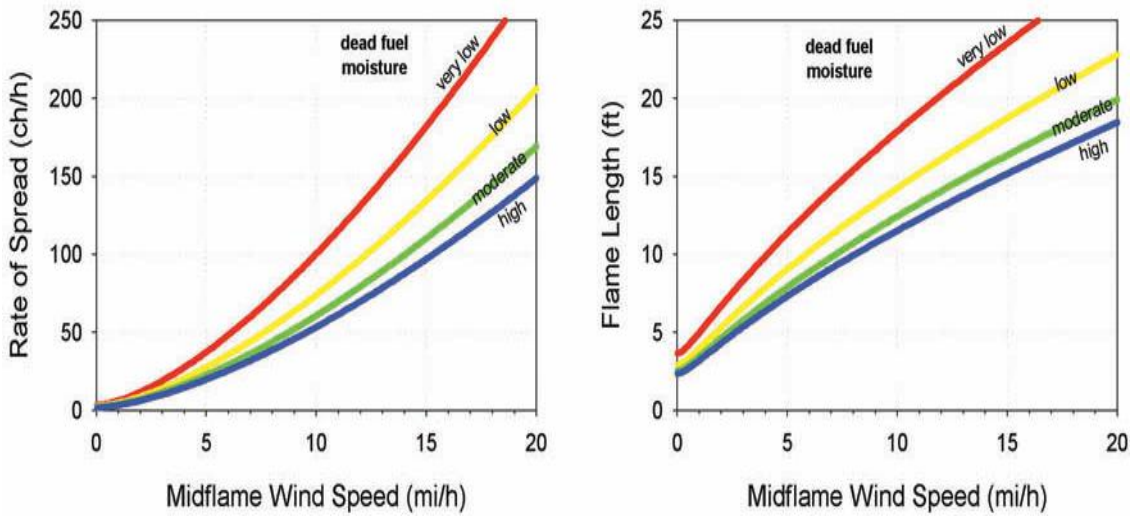
Reproduced from USDA Forest Service Gen. Tech. Rep. RMRS-GTR-153 (Scott and Burgan 2005)

However, when dry fuels are scarce and wind speeds are low, as seen in the image above, a fire cannot build momentum and intensity, which makes it much easier to control and is more likely to be beneficial to the land.

Timber-Litter Standard Fire Behavior Fuel Model 2 (NFFL 2)

Potential fuel model 12 (dead trees ready to fall)

(TU1, low load, dry climate timber-grass-shrub, the primary carrier of wildfire is a low load of grass and/or shrub with litter). Within 3 to 10 years when the aerial dead ponderosa pine trees fall to the ground and become serious surface fuels, this FM will change to a **NFFL Standard Fire Behavior Fuel Model 12** (SB3, the primary carrier of wildfire is dead and down blowdown material). Blowdown is moderate, trees compacted near the ground. Spread rate is high; flame length is high. The surface fuel loads can be 35 to 75 tons per acre creating rapidly spreading fires with high intensities capable of generating firebrands, or floating embers. **In layman's terms:** With very dry moisture in the dead fuels and a mid-flame wind speed of 18 mph, the rate of spread is about 275 feet per minute (250 chains per hour or 16,500 feet per hour or 3 miles per hour). The flame length is estimated to be 25 feet. When these dead trees fall on the ground they become heavy large hazardous fuels creating extreme explosive fire behavior capable of running thru the community at 3 miles per hour or more i.e., from Black Forest Road to Vollmer Road in less than 20 minutes. The heat from fires with flame lengths of four feet or more can be lethal to firefighters



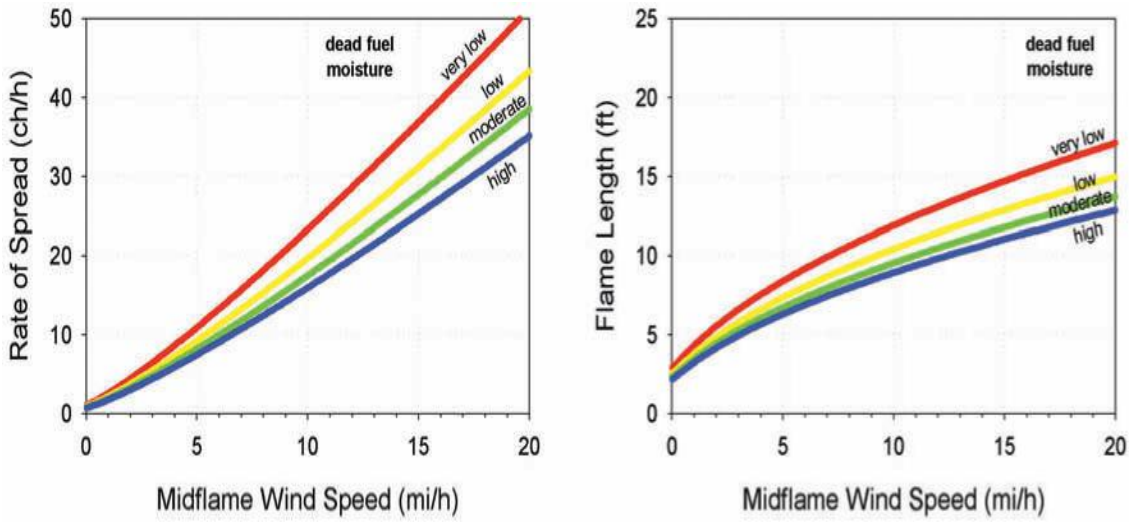
Reproduced from USDA Forest Service Gen. Tech. Rep. RMRS-GTR-153 (Scott and Burgan 2005)

When hazardous fuels become abundant, and if all the dead trees move from vertical fuels and become ground fuels as discussed above, a fire can be uncontrollable and very destructive. **This FM 12 has the potential to be the most destructive in the Black Forest community** if no treatment is done to remove dead trees from the areas burned in 2013.

Closed Canopy Long-Needled Conifer Standard Fire Behavior Fuel Model 9 (NFFL 9)

Closed canopy Conifer stand

(TU5, the primary carrier for wildfire is heavy forest litter with a shrub or small tree understory. Spread rate is moderate; flame length moderate; this FM model is for the closed canopy ponderosa pine cover type). Fires generally carry through the surface litter and low brush with low flame lengths. Interlocking tree crowns and the presence of concentrations of fuels coupled with low fuel moisture, low humidity, high temperatures, and moderate to high winds can increase spread rates and intensities and move fire into the tree crowns. The primary carrier of wildfire is forest litter in combination herbaceous and scrub fuels. Spread rate is moderate: flame length moderate. Fine fuel load is 7.0 tons per acre. Dead fuel load in this FM is about 3 tons per acre with an average depth of .2 feet**.** High-level winds in excess of 10 mph may move a fire into the tree crowns. **In layman's terms:** Wildfire hazard is currently moderate, but mortality from bark beetles like Ips or mountain pine beetle (**Cranshaw and Leatherman 2002**) and subsequent deadfall could increase hazard to high in the absence of fuel reduction treatments. With very dry moisture in the dead fuels and a mid-flame wind speed of 20 mph the rate of spread is 55 feet per minute (50 chains per hour or 3,300 feet per hour). The flame length is estimated to be 15 feet. The heat from fires with flame lengths of four feet or more can be lethal to firefighters



Reproduced from USDA Forest Service Gen. Tech. Rep. RMRS-GTR-153 (Scott and Burgan 2005)

When dry fuels are abundant and wind speeds increase, as shown in the image above, a fire can be uncontrollable and destructive.

2.6 FIRE SUPPRESSION WATER RESOURCES

Firefighting water supplies are available through hydrant systems in the developed portions of the BFFR District, which are served by the Park Forest and Cherokee Metro Water Districts. However, the more rural areas within the District are dependent on cisterns or hauled water. Current cisterns and hydrants are displayed on the water source map (**Appendix 10.1**). These are inspected annually by fire department staff.

Water supplies are critical for maintaining lower Insurance Services Organization (ISO) ratings that affect homeowner insurance rates. The BFFR District should continue to require such water supplies for all new subdivisions, as outlined in the El Paso County Land Use Code. Additionally, the District will make a concerted effort to identify other static water sources (e.g., ponds, pools) that may be utilized as drafting or dip sites during wildfire events. Land use agreements shall be made with private property owners prior to utilizing these sites (**Appendix 10.1**).

2.7 BLACK FOREST FIRE RESCUE RESOURCES

The Black Forest Fire Rescue Protection District (BFFR) is a mostly volunteer, combination fire department. Physically, the district serves approximately fifty square miles in Northern El Paso County, Colorado. We are an all hazards, emergency response agency that prides ourselves on providing professional, timely and fiscally responsible service to the residents and visitors of the district.

Historically, the district was classified as a rural area but over the course of the past several years we have seen suburban growth within our response area. This pattern of growth and development is projected to continue into the foreseeable future.

Emergency fire, medical and rescue services within the Black Forest community are provided by BFFR, which is comprised of 30 volunteer firefighters, 17 part-time firefighters, 6 full-time firefighters/EMTs, 3 full-time firefighter/paramedics, a full-time Chief and Assistant Chief and one Administrative Assistant. There are currently 2 Lieutenants, 1 Captain, and 1 Assistant Chief under the command of the Chief of BFFR. All operational staff is certified as wildland fire fighters, 27 are certified as basic national wildland firefighter, 5 are certified as advanced, 10 are certified as Sawyers, 9 Engine Bosses 3 Strike-Team Leaders and 1 Incident Commander Type 3.

BFFR operates out of two stations with the following apparatus:

Station 1

Located in the heart of the Black Forest Community, this is the primary response station for BFFR. Station #1 became operational in December of 2003 and replaced the station at the intersection of Shoup Road and Black Forest Road. Station #1 serves as the District headquarters. Additionally, this station provides a regional training room/Incident Command Center, community room, first-aid room and the District fitness center.

Station 1 Shoup Road and Black Forest Road.

Apparatus at Station 1 include:

- (2) Engines
- (2) Water tenders (water trucks)
- (2) Brush trucks
- (2) Ambulances
- (2) Command vehicles

Station 2

Located on Ridge Run Road, Station #2 is currently staffed with part-time employees from 0800-2000 hours (8 a.m. to 8 p.m.). Station #2 serves the northern portion of the District and provides back-up for Station #1's response area. Station #2 also has a regional training classroom and a fitness center. Additionally, Station #2 will house the District's Resident Firefighter Program in the future. This program will augment Station #2 staffing, with a goal of providing 24-hour coverage from Station #2.

Apparatus at Station 2 include:

- (1) Engine
- (1) Water tender
- (1) Brush truck
- (1) Ambulance

Brush Truck and Initial Attack Crew

BFFR protects the following critical infrastructure: gas/oil pipelines, natural gas sub-stations, cellular communication sites, Wolford Elementary School, School in the Woods, historical structures, and an 800-mhz radio tower; and provides many services to the community including:

- Structural fire response and suppression
- Wildland fire response and suppression
- Emergency Medical Services first response and transport
- Hazardous Materials Response
- Rescue Operations- Vehicle Extrication and Ice Rescue
- Fire Prevention- Youth, Firewise, Ready-Set-Go
- Community outreach and safety programs that include community education, driveway identification program, and blood pressure checks
- Regional Training Site for cooperating agencies
- Community Room for local citizen groups

BFFR Wildland Firefighters

2.8 COMMUNITY VALUES AT RISK

Given the diversity of people and resources in the Black Forest community, there are a large number of real and perceived values at risk. In any hazard and risk assessment, human life and welfare are the most important resources to protect. Homes, community infrastructure, and the forested characteristics of the Black Forest are important values to the community. In addition to the 5,000 homes and various found within the community. The damage or loss of this ecosystem could lead to serious erosion of bare soil areas as well as the destruction of habitat for the many birds and animals that thrive in the community, and could damage the valuable headwaters watershed for Colorado Springs. Potential loss of aesthetic values and the adverse effect on property values are some of the important risks to the Black Forest community. Common values at risk in the Black Forest community include:

Homes	Horses, cattle, other animals
Businesses	Air quality
Community infrastructure	Forest health
Watersheds	View shed
Water quality	Wildlife habitat
	Historic structures

Protect values at risk by understanding your wildfire weather severity during drought conditions. The US National Weather Service issue warnings during high wildfire danger. These Red Flag warnings are further issued by local television and radio stations. The Black Forest Fire Rescue Protection District: www.bffire.org post these Red Flag warnings during severe fire weather conditions. Red Flag warnings for the community are important information from BFRR for early alerts to potential for catastrophic wildfire conditions, such as the 2013 Black Forest Fire. All residents of the Black Forest community should become educated and knowledgeable about the Red Flag warnings.

A RED FLAG WARNING

A Red Flag Warning is issued by the U.S. National Weather Service to inform area firefighting agencies that conditions are ideal for wildland fire ignition and rapid spread. When a Red Flag warning is issued, firefighting agencies prepare for the increased risk. The public must also have a heightened awareness that fire danger is very high with an increased probability of flames spreading quickly. Red flag conditions occur when relative humidity is less than 25 percent with temperatures greater than 75 degrees and sustained winds of 15 mph or greater. The criteria for Fire Weather Watches and Red Flag Warnings is based on local vegetation type, topography, distance from major water sources, wind speed and direction, and temperatures, (Wikipedia). Red flag warnings should always indicate the need to have your Ready-Set-Go bag available.

Wildfires leave severe and long-term impacts on all natural and ecological values that people often take for granted. The actions recommended in this CWPP are designed to lower the wildfire risk to neighborhoods, as well as the ecological and economic values of the Black Forest community. Wildland wildfire may result in a significant decline in property values, resale values, and forested properties within the Black Forest community.

3. WILDFIRE RISK ASSESSMENT

Wildfire risk represents the possibility of loss or harm occurring from a wildfire. Wildfires are unwanted and unplanned fires that result from natural ignition or unauthorized human-caused wildfire. BFFR actively suppresses all wildfire ignitions within the District and attempts to have them under control by 10 a.m. the following day.

Wildland fires may be further classified as ground, surface, or crown fires. Ground fire refers to burning/smoldering materials beneath the surface including duff, tree or shrub roots, punchy wood, peat, and sawdust that normally support a glowing combustion without flame. Surface fire refers to fuels burning on the surface of the ground such as leaves, needles, and small branches, as well as grasses, forbs, low and medium shrubs, tree seedlings, fallen branches, downed timber, and slash. Crown fire is a wildland fire that moves rapidly through the crowns of trees or shrubs.

Home not mitigated to wildfire

3.1 WILDFIRE BEHAVIOR

Fire behavior is the manner in which a fire reacts to the influences of fuel, weather, and topography. Fire behavior is typically modeled at the flaming front of the fire, and described most simply in terms of fire line intensity (flame length) and in rate of forward spread. The implications of observed or expected fire behavior are important components of suppression strategies and tactics, particularly in terms of the difficulty of control and effectiveness of various suppression resources.

Fire risk is the probability that wildfire will start from natural or human-caused ignitions. Fire hazard is the presence of ignitable fuel coupled with the influences of topography and weather, and is directly related to fire behavior. Fire severity, on the other hand, refers to the immediate effect a fire has on vegetation and soils. This image is taken at night of the Black For

Black Forest 2013 fire viewed from Colorado Springs

The characteristics of fuels, topography, and weather conditions combine to dictate fire behavior, rate of spread, and intensity. Wildland fuel attributes refer to both dead and live vegetation and include such factors as density, bed depth, continuity, density, vertical arrangement, and moisture content.
Structures with flammable materials are also considered a fuel source.

When fire burns in the forest understory or through grass, it is generally a surface fire or a **good fire** as illustrated in the image to the right. When fire burns through the canopy of vegetation, or overstory, it is considered a crown fire or a **bad fire**. The vegetation that spans the gap between the forest floor and tree crowns can allow a surface fire to become a crown fire and is referred to as ladder fuel.

Ponderosa pine thinning survives wildfire (Pineries). Courtesy Bruce Short

For fire to spread, materials such as trees, shrubs, or structures in the flame front must meet the conditions of ignitability. The conditions needed are the presence of oxygen, flammable fuel, and heat. Oxygen and heat are implicitly available in a wildland wildfire. However, if the potential fuel does not meet the conditions of combustion, it will not ignite. This explains why some trees, vegetation patches, or structures may survive a wildland wildfire and others in the near vicinity are completely burned.

Weather conditions such as high ambient temperatures, low relative humidity, and windy conditions favor fire ignition and high-intensity fire behavior. Under no-wind conditions fire burns more rapidly and intensely upslope than on level terrain; however, wind tends to be the driving force in fire behavior in the most destructive WUI wildfires. The “chinook” winds common along the Front Range can rapidly drive wildfire downslope, (Black Forest CO-WRAP).

3.2 FIRE BEHAVIOR ANALYSIS

Fire behavior is defined as the manner in which a fire reacts to the influences of fuel, weather, and topography. Two key measures of this behavior are rate of spread and the intensity. Rate of spread is expressed by the fire community in “chains per hour”. A chain is 66 feet, and one chain per hour closely approximates a fire spread of 1.1 feet per minute. The flaming front is the zone of a moving fire where the combustion is primarily flaming. Fire intensity is reflected by the flame length at the flaming front. Behind this flaming fire zone combustion is primarily glowing. Light fuels typically have a shallow flaming front, whereas heavy fuels have a deeper front; however, the heat from a fire with flaming front that has a flame length of four feet or less can be lethal to firefighters, people and animals.

The Colorado State Forest Service (CSFS) has developed the *Colorado Wildfire Risk Assessment* (CO-WRAP) web portal (www.coloradowildfirerisk.com), which provides

information for communities to make informed decisions based on treatment priorities to reduce the risk of loss from a wildfire for each homeowner as well as the community as a whole. CO-WRAP was used in the development of this CWPP to assess potential fire behavior in the Black Forest community by incorporating fuel models, topography, and local weather

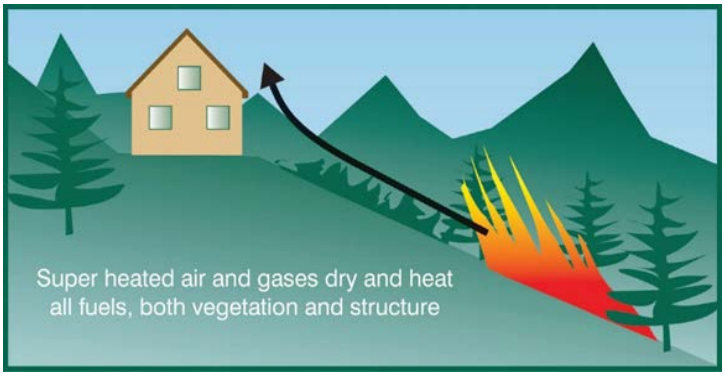
TRANSFORMED BY THE CATASTROPHIC BLACK FOREST FIRE, MORE THAN 14,000 ACRES OF PINE FORESTS WERE CONVERTED TO A GRASS FUEL TYPE: With this dramatic change in fuel types wildfire behavior changes as does wildfire risk. Cured grasses and surface fuels demonstrate high rates of spread, even with lower flame lengths, create high risks to homes and resources. Rapidly moving grass and surface fuels generate embers, just as canopy fires, creating ignitions for homes and other structures.

GRASS FUELS BECOME LADDER FUELS, MOVING QUICKLY FROM THE GROUND AND SURFACE INTO CROWN FUELS: Grass-fueled fires travel much faster than heavy-fueled fires. The changes in fuel structure and fuel type in the Black Forest community require continued awareness of the potential high risk of a rapidly spreading wildfire in this grass fuel type.

patterns and conditions. However, following the 2013 Black Forest wildfire a new revised Wildfire Risk Map was developed to forecast future wildfire behavior (**Appendix 10.1**). Fuel types changed following the Black Forest Fire. Ponderosa pine timber types have been replaced with grass.

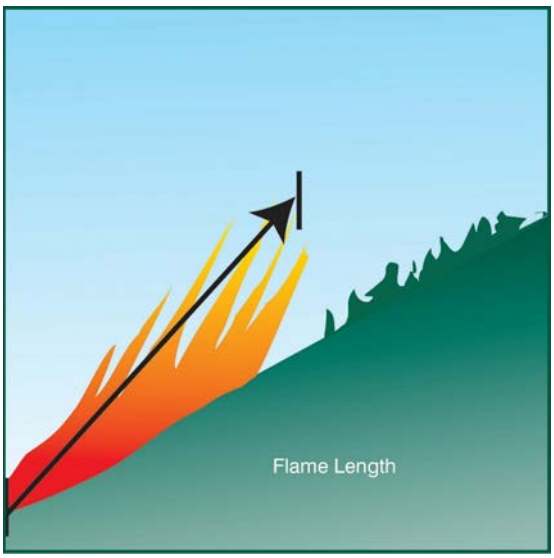
One significant indicator of concern for the Black Forest community is Fire Intensity Scale. Similar to the Richter scale for earthquakes, the Fire Intensity Scale provides a standard scale to measure potential wildfire intensity. Nearly 75 percent of the Black Forest community is rated moderate to high intensity. The Fire Intensity Scale is a fire behavior output and is influenced by three environmental factors – fuels, weather and topography. Weather, as experienced during the Black Forest Fire, is by far the most dynamic variable (**Appendix 10.1**).

Rate of Spread is the representative rate of spread of a potential fire, indicating the speed with which a fire moves in a horizontal direction across the landscape or community. Like the fire intensity scale, rate of spread is influenced by the three same environmental factors – fuels, weather and topography. Approximately 60 percent of the Black Forest community is predicted to have a rate of spread ranging from moderate to extreme, with corresponding rates of spread from approximately 1200 to 16,500 feet per hour, or approximately 20 to 275 feet per minute (**Appendix 10.1**).



Grasses are perhaps the most pervasive and abundant surface fuel in Colorado. Mow grasses and weeds as often as needed throughout the growing season to keep them shorter than 6 inches. This applies to irrigated lawns and wild or native grasses. This is critical in the fall, when grasses dry out,

and in the spring, after the snow is gone but before plants green-up, see **Appendix 10.2** and CSFS Quick Guide FIRE 2012-1, (**Colorado 2012**) for more details on specifics for mitigation in the grass fuel environment.



Characteristic ***Flame Length*** is the typical or representative flame length of a potential fire based on a weighted average of four percentile weather categories. Flame Length is defined as the distance between the flame tip and the midpoint of the flame depth at the base of the flame, which is generally the ground surface. It is an indicator of fire intensity and is often used to estimate how much heat the fire is generating. Flame length is typically measured in feet. Flame length is the measure of fire intensity used to generate the Fire Effects outputs for the CO-WRAP risk assessment. Predicted flame lengths vary from 8 feet to 150 feet in length, exhibiting great potential for harm or damage to life and property. In the grass fuel models, predicted flame lengths, with an average 20 mile per hour wind, flame lengths will vary between 14 feet to 25 feet. Flame lengths that are 4 feet or greater are lethal to firefighters, people and animals.

Flame length is a fire behavior output, which is influenced by three environmental factors - fuels, weather, and topography. Weather is by far the most dynamic variable as it changes frequently. To account for this variability, four percentile weather categories were created from historical weather observations to represent low, moderate, high, and extreme weather days for each weather influence zone in Colorado. A weather influence zone is an area where, for analysis purposes, the weather on any given day is considered uniform, (**Slack 2000**).

3.3 APPROACH TO THE WILDFIE RISK ASSESSMENT

The wildfire risk assessment for the Black Forest community considers a variety of factors that ultimately result in a hazard rating for the community. Wildland fire impacts are dramatic as evidenced by the 2013 Black Forest Fire behavior. The spectrum of factors that influence fire behavior in the Black Forest community include vegetation and fuels, topography, and weather. Community infrastructure risk is evaluated in terms of emergency response, defensibility, and structural flammability. Analyzing the relationship between expected fire behavior and the built environment in the Black Forest community is the core of an effective community wildfire risk assessment. From this process, mitigation recommendations are developed that directly address the hazards and, that if implemented, will greatly reduce the risk of loss from a wildfire for each homeowner as well as the community as a whole.

Fire hazard, in this assessment refers to vegetation or naturally occurring wildland fuels, in terms of its contribution to fire behavior and its resistance to control. Risk is the probability of

ignition of wildland fuels. Values at risk include infrastructure, structures, improvements, and natural resources that are likely to suffer long term damage from the direct impacts of wildfire.

As part of this assessment, a concerted effort was made to solicit and include input and suggestions from the community, and Black Forest fire professionals. Community meetings were held to explain the CWPP process and to present the findings and recommendations of the CWPP analysis to the community, and to solicit comment for the final CWPP.

3.4 WILDLAND URBAN INTERFACE

The wildland-urban interface (WUI) is defined as the zone where communities and wildland fuels interface and is the central focus of this CWPP. The WUI layer reflects housing density depicting where humans and their structures meet or intermix with wildland fuels. Every fire season catastrophic losses from wildfire plague the WUI in our country. Homes are lost, businesses are destroyed, community infrastructure is damaged, and most tragically, lives are lost. Precautionary action taken before a wildfire strikes often makes the difference between saving and losing a home (**Appendix 10.1**).

Unmitigated homes in the WUI subject to wildfire danger

While reducing hazardous fuels around a structure is very important to prevent fire loss, recent studies indicate that, to a great extent, the attributes of the structure itself determine ignitability. Studies of home survivability indicate that homes with noncombustible roofs and a minimum of 30 feet defensible space have an 85 percent fire survival rate. Conversely, homes with shake roofs and less than 30 feet of defensible space had a 15 percent survival rate (Foote 1996).

3.5 WILDFIRE RISK TO THE BLACK FOREST COMMUNITY

The current fire regime in the Black Forest community is characterized by high intensity fires rather than the majority of low intensity fires that historically occurred in the area. Fire intensity assessment in the CO-WRAP is supported by the observed 2013 Black Forest fire behavior. With ladder fuels and closed crown canopies, future high intensity fires are predicted to result in high mortality of the forest resources of the Black Forest community, and could result in extensive property loss and large amounts of erosion and sedimentation adversely affecting water quality.

WILDFIRE HAZARD ON STRUCTURES AND ROADWAYS

Transportation Road Right-of-Ways

Roads in the Black Forest serve several purposes during a wildfire. Roads are access routes for emergency vehicles and serve as escape routes for residents during a fire. The important network of roadways needs to provide safe simultaneous access for emergency vehicles and public evacuation. Vegetation management strategies for access routes in the Black Forest can serve as effective fuel breaks to provide fire protection, assist in fire suppression efforts, and improve effective evacuation. Most of the right-of-way's in the subdivision need active intervention – removal, reduction, or conversion of on-site fuels. This image characterizes the very dense pockets of regeneration trees.

Homes, Structures and Other Sites

The goal of vegetation management is to create a modified fuel area in which flammable vegetation surrounding buildings is reduced to creating an environment that will not support high-intensity crown fires. The main objective of fuel management in this site is to create conditions that will only support surface fires of lower intensity and lower rates of spread.

Black Forest Water Resources

Ponds and water bodies are valuable water resources during interface suppression situations. Many incidences resulting in tragic and costly losses are often the result of inadequate water supply. Water supply for suppression in many communities is often limited to the amount carried on responding emergency vehicles.

Wildfire suppression requires substantial quantities of water from a dependable source. The capability of responding fire agencies is often limited by the adequacy of the water supply. Reducing wildfire risk and protecting the Black Forest water infrastructure is a priority. Water sources should be clearly identified.

Municipal Drinking Water Sources

Ponds and water bodies are valuable water resources during interface suppression situations. These infrastructure facilities become extremely important and should be protected with defensible space as the highest priorities. This water supply can be available with appropriate signed agreements for wildfire suppression and emergencies. Many incidents resulting in tragic and costly losses are often the result of inadequate water supply.

Evacuation Routes

Pre-designated principal evacuation routes should be well marked with easily identifiable signs. Secondary evacuation routes are also important to the safety of BFRR District residents. They may be the only routes to safety in the event the principal evacuation route is blocked by fire, vehicle accidents, or by emergency vehicles. The secondary evacuation route should be marked, known and accessible to all residents.

A Dangerous Dead End Road

Emergency Exit Gates

Gated and dead-end systems should be designed for easy escape and with mechanical openings should electrical or solar powered systems become inoperable. Fire service personnel must have access to any locking mechanism on any gate restricting access to the Black Forest community.

The wildfire mitigation must involve interested community members, private landowners, stakeholders, and interest groups in the implementation process. The community base map (**Appendix 10.1**) illustrates important features such as landownership, structures, roads, surface water, fire district boundaries, and major utility corridors. The map's importance is that it illustrates community values from which recommendations concerning wildfire planning can occur.

The risk assessment will provide critical information to make informed decisions. Community members should be actively involved in the risk assessment step. Items that may be addressed include risk of wildfire occurrence, structure hazard and risk, economic and ecological values at risk, local fire authority, preparedness and capability, and hazardous fuels.

Fire Hydrants

Hydrants provide fire service agencies additional wildfire suppression resources. Hydrants should be well marked and maintained annually. Vegetation management should reduce fuel loading to protect hydrant infrastructure and provide safe access to these important suppression resources.

Power Communication Natural Gas Utilities Resources

Wildfire suppression requires substantial quantities of energy from a dependable source. The capability of responding fire emergencies is often limited by the adequacy of the communications, and energy and infrastructure supply. Reducing wildfire risk and protecting the Black Forest power utilities infrastructure is a huge priority. Energy sources should be clearly identified and protected by defensible space around all utility infrastructure. The utility infrastructure shown in these pictures is at high risk for wildfire and should be immediately mitigated for defensible space.

Electrical Utilities

Communication Utilities

Natural Gas Utilities

4. A FIRE-ADAPTED COMMUNITY

4.1 APPROACH TO MITIGATION PLANNING

Wildfire mitigation can be defined as those actions taken to reduce the likelihood of loss due to wildfire. Effective wildfire mitigation can be accomplished through a variety of methods including reducing hazardous fuels, managing vegetation, creating defensible space around individual homes and neighborhoods, utilizing fire-resistant building materials, enhancing emergency preparedness, and developing programs that foster community awareness and action. Once implemented, these actions will significantly reduce the risk of loss due to wildfire for an individual home, and on a larger scale, for an entire community.

Mitigation recommendations for the Black Forest community were identified and developed through fuel hazard assessments that evaluated elements such as vegetation and hazardous fuels, predicted fire behavior, topography, and community infrastructure. The vegetation pattern forms a hazardous forest canopy creating an extreme wildfire hazard risk. In moderate to extreme fire weather conditions, a wildfire ignition, such as the 2013 fire, has the potential to generate catastrophic losses in the community. Defensible space and strategic forest treatment recommendations will address the wildfire fuel hazards associated with this area of concern.

Another area of concern is community access and egress. Despite paved roads throughout the community, in an emergency evacuation scenario, the entire Black Forest community is forced to use two principal routes: Black Forest Road and Shoup Road.

Most mitigation projects involve some level of vegetation management, since wildland fuels are the common hazard to communities in the WUI. This plan identifies and develops projects that address the wildfire hazards to protect lives and property in the Black Forest community.

All projects are designed to change vegetation conditions to modify fire behavior and reduce the potential for wildfire by altering three primary fuel conditions as necessary: surface fuels, ladder fuels, and overstory crown fuels. This is accomplished through the implementation of a variety of treatments, commonly using more than one treatment type on the same piece of ground to achieve the desired condition. The following discussion describes the most common treatment types that are currently used in similar timber types such as the Black Forest ponderosa pine stands. It is important to note that the vegetation conditions that pose a fuels hazard today are dynamic, with continued growth, needle cast, litter fall, and new growth of understory vegetation continually occurring. As such, future treatments will need to occur over time on the same area to sustain the benefits of the previous treatment.

Some treatments have been completed, including some projects identified in the 2007 CWPP. Treatments completed to date have been accomplished by individual landowners taking responsibility to create defensible space.

Forest Health

Black Forest residents should be encouraged to monitor forest health on their property. The current mountain pine beetle epidemic has gravely impacted much of Colorado's lodgepole pine,

though lodgepole pine is not a significant component of forest lands in the BFFR District. Ponderosa pine may also be attacked by the mountain pine beetle, and diligence on the part of the property owner is warranted. Other forest pathogens, such as dwarf mistletoe (Jacobi 2002), are observed at endemic levels in some areas of the District.

4.2 TREATMENT OPTIONS

Treatment options for wildfire mitigation include thinning, mastication, chipping, and prescribed burns. Mechanical and hand thinning are used to remove ladder fuels and reduce tree densities that contribute to extreme fire behavior. Initial entries generally reduce the density of smaller trees on the site that typically create ladder fuels and can wick fire into the overstory. Overall tree densities are also decreased to reduce the likelihood of crown fire, and to increase overall forest resilience to natural disturbances such as fire or insect infestation.

Ponderosa pine Seed Trees

Depending on the fuels reduction treatment prescribed and equipment used, very large volumes of limbs and small diameter trees can be generated on site, particularly from an initial entry. It has long been recognized that leaving excessive slash on site substantially increases surface fuels and resultant fire intensity. Therefore, slash must be reduced or reconfigured by mechanical removal, chipping on site, or burning. Slash that can be removed by mechanical means can be transported to a biomass facility where electrical energy, heat, or landscaping material can be produced. Thus, mechanical removal of biomass will also reduce the amount of pile burning and resulting smoke. However, mechanical systems can only be used on slopes with less than a 30 percent grade, and where there is access to a landing or processing site where the biomass and timber can be processed, sorted and hauled. For some areas of the District, hand thinning and pile burning will be employed because of the steep slopes and challenging access. Proper thinning produces excellent regeneration for a new future forest.

Hotshot Crew hand thinning immature Ponderosa pine
Courtesy National Park Service

Hand Thinning

To thin a forest, you remove the smaller, weaker trees to enable the trees you want—your main tree crop—to flourish. BFRR Fire Chief Jack says “you take the worst and leave the best.”

Hand thinning is conducted with crews of approximately 10-30 individuals who cut trees with chainsaws and pile the resulting slash. Hand thinning is generally used to cut smaller trees (less than 10-14 inches diameter) on steep slopes where machines cannot operate, or in environmentally sensitive areas where the wrong machine could have a significant environmental impact. Hand thinning is not as effective as mechanical thinning at restoring tree densities to pre-European colonization conditions because many of the suppressed trees in a stand can be greater than 14 inches in diameter. However, hand thinning is very effective at removing sufficient fuel to modify fire behavior.

Production rates with hand crews vary with fuel type and density. However, in general, a 10-person crew can treat 0.5 to 2 acres daily, depending on the type and amount of material that is removed. Unlike mechanical thinning, hand thinning only describes how the vegetation will be cut and does not address how the material is disposed. Hand thinning may be the appropriate method for vegetation cutting, but some other mechanical means may be necessary for removal of the cut material from the site. One or more of the following disposal treatments must be applied in combination with hand thinning to remove the fuels from the forest.

Mechanical Thinning

Mechanical thinning `Courtesy John Deere

Mechanical thinning utilizes equipment with hydraulically driven saws to cut and remove trees (generally under 24 inches in diameter). Mechanical thinning equipment is most effective on slopes less than 30 percent.

The two major mechanical thinning systems used in the District include cut-to-length systems which carry the logs to the processing site, and whole tree removal systems that typically skid or drag the logs to the processing site. Cut-to-length systems use a harvester to cut trees and to remove the branches before automatically cutting trees into predetermined log lengths. This is known as processing at the stump. The branches from the trees can be distributed across the forest floor or laid to form a path that is used for travel by the cut-to-length equipment depending on soil sensitivity. In either case, the slash must be processed into chip or removed from the site in order to effect real fuels reduction. In cut-to-length systems the slash is typically masticated on site. The masticator can both treat the slash from the tree falling operations, and can also treat dead and down fuels and brush or other finer fuels on the site. In some cases, where it is preferable to completely remove all of the cut material, whole tree chippers can be used to drive to the slash and chip it on site.

Mastication

Machine mastication with skid steer

Mastication uses excavators with purpose-built grinding heads to grind small trees (up to 10 inches DBH), surface fuels, and dead and down wood into chips. Mastication provides a quick and cost effective method to modify the fuel structure and reduce flame length, and therefore potential fire intensity. Mastication is a very useful tool in brush fields and for thinning small trees and roadside maintenance. Cutting, processing and disposal of material occur in a single action. Chips are left on the ground where decomposition will take place. Like other mechanical methods, rocky sites, sites with heavy downed logs, and sites dominated by large trees are difficult places to operate mastication equipment. Additionally, sparks from mastication heads have the potential to start fires and, when working on public land, these machines are subject to the same activity-level restrictions that apply to most other heavy equipment.

Chipping

BFT sponsored chipper

Chipping may be used as an alternative to pile burning for removing cut vegetation. However, its usefulness is greatly reduced because of the necessity to carry material to the chipper. The Black Forest community slash/mulch program, supported by volunteers and th been extremely successful in facilitating the disposal of slash and thinning material. The program accepts material up to eight inches in diameter, producing mulch through a tub grinder. The chipper is operated by BFT volunteers who have been trained and equipped to use it safely because BFT cannot simply loan the chipper to a property owner due to safety and liability issues. Homeowners help by bringing the slash from the land to the machine. This provides an efficient, simple, and safe division of labor for effective disposal of brush and slash.

Prescribed Fire

There are two types of prescribed burning: pile burning and broadcast/understory burning. Pile burning is used where hand thinning is employed for the initial treatment of a property where large volumes of cut debris must be disposed of. Broadcast/under-story burning is intended to thin trees while also consuming surface fuels.

BFFR permitted pile burning

Pile burning is another disposal method for landowners in the Black Forest Community since it provides homeowners an efficient means of disposing thinning and slash debris. During hand thinning projects, crews cut small trees, brush, and surface fuels and stack them into piles that are typically four to eight feet in diameter and height. Piles are allowed to cure, generally at least one year, and then burned when conditions are favorable such as under snow cover or after recent precipitation events. County ordinances are very specific regarding burning conditions. Check with BFFR before lighting any slash piles or other prescribed fire activities.

Multiple resource benefits of fuel reduction projects

The benefits of fuel reduction projects are more-fully realized when implemented using an “all-lands” or “all neighbor” approach. This approach requires understanding the role that each project plays within the broader landscape ecologically, socially, and economically. When considering all-lands within the Black Forest community, projects can be designed that span multiple ownerships and accomplish landscape-scale fuel reduction and forest restoration.

By engaging with multiple stakeholders and gaining a full understanding of a region at the landscape scale, fuel reduction projects can be developed that will provide multiple resource benefits, including the enhancement of water quality, wildlife habitat, forest vegetation, recreation and scenic resources, and carbon sequestration.

BUILDING PARTNERSHIPS

A Community Leader's Perspective by Bob Sturtevant, Forester from the La Foret Firewise Community

The La Foret Conference and Retreat Center recognizes the potential danger from wildfire coming from adjacent properties as well as a fire starting on their property and spreading offsite. The property managers feel a responsibility to protect the center's improvements, many of which are listed on the National Register of Historic Places, as well as being a good neighbor and doing their part in promoting the health and safety of the surrounding Black Forest area.

Over the past 30+ years, La Foret has been under a forest management plan that has directed the center to complete periodic thinnings, remove heavily dwarf mistletoe-infected trees, and to complete mitigation around their buildings. Since the 2013 Black Forest fire, fire mitigation efforts have been expanded to a larger area of the property with the objectives of both fire resistance and improved forest health. Ultimately, we would like the entire property to be managed in a sustainable manner, that is resilient to a wildfire, provides quality wildlife habitat, and maintains the esthetics that has been the hallmark of the retreat center. We hope that our work will add to the efforts of other Black Forest landowners.

This plan supports prioritized hazardous fuel reduction and forest health improvement treatments across multiple jurisdictions on a landscape scale to maximize realized co-benefits. Environmental co-benefits provided by the projects include the protection and enhancement of water quality, wildlife habitat, and forest vegetation. Socio-economic benefits include the protection of community assets from wildfire, improved public health and safety, increased institutional capacity for future projects, and providing greenhouse gas emission and carbon sequestration benefits. High-intensity wildfires have extraordinary effects on ecosystem processes and human communities. The projects in this plan will substantially reduce potential fire intensity by altering ground fuels and reducing stand density, serving as a surrogate for the frequent, low-intensity wildfires that frequently burned throughout the region. Selective thinning will reduce competition among desired tree species, and improve resistance to insects and disease. Thinning will favor the retention of, and provide regeneration opportunities for fire-tolerant tree species, such as ponderosa pine, and promotes a structurally diverse forest stand better suited for a wide variety of species.

La Foret portal to property/camp

The reduced potential fire behavior within treated areas will prevent resource impacts associated with high-intensity wildfires. Water quality will be protected by preventing significant vegetation loss that can result in flooding, erosion, mass wasting, and the rapid transport of nutrient loaded sediment into surface waters. Flooding that occurred following the 2013 Black Forest Fire provides evidence of the

potential for post-fire impacts. Forest vegetation will be protected by preventing stand-replacing wildfire, which would make the area vulnerable to infestation by invasive species. In addition to protection of environmental assets, reduced potential fire intensity will help prevent damage to high-value community assets, including homes, businesses, municipal watersheds, and utility infrastructure. Following the implementation of this plan, wildfires will be less likely to threaten the Black Forest community, and the fires will be more easily controlled, enhancing the safety of the public and emergency responders. The collaborative approach to fuel reduction in this plan provides an opportunity to increase capacity by implementing multi-owner projects at the landscape scale.

CSFS Assisting Roadside Fuelbreak Thinning

This collaborative approach is illustrated in the image to the right whereby the CSFS, BFFR, BFT and La Foret Community are working together on shaded fuel breaks along Shoup Road. This roadside project will provide demonstration areas for the community to witness active forest management for strategic wildfire defensible space zones along major evacuation routes.

Community Slash Disposal

The Black Forest community has also benefited greatly from the 23 years of the slash/mulch operation that has substantially reduced our fuel load. Run by the Slash and Mulch Committee (**SAMCOM**), manned by numerous volunteers, and under major sponsorship of El Paso County Solid Waste Management, this program has been exceptionally successful. Located southeast of the intersection of Shoup and Herring Roads, the site accepts trees up to eight inches in diameter, as well as pine needles, and hires a commercial tub grinder to produce mulch, which is then provided to all who want it for free. There is a $2 fee for each entry regardless of size, although to Black Forest Cares are gratefully accepted donations.

SAMCOM process site

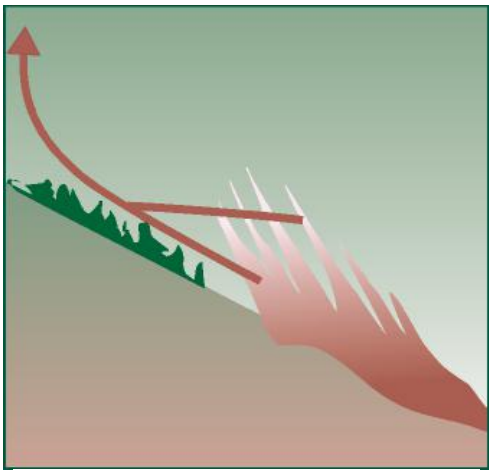
Rainbow over the Mulch Pile means a Glowing Success.
Photo courtesy Judy von Ahlefeldt

COMMUNITY SLASH AND MULCH COMMITTEE (SAMCOM)

Carolyn Brown, Director

When residents create defensible space around their homes by thinning shrubs and trees, it can be difficult to dispose of the cut material. To help make it easier to create and maintain defensible space, BFT offer community chipping to residents or they can bring their slash to the SAMCOM site which is located southeast of the intersection of Shoup and Herring Roads. The program has a $2 fee. More information can be found by visiting bfslash.org or the BFT website. Run by the Slash and Mulch Committee (SAMCOM), manned by numerous volunteers, and under major sponsorship of El Paso County Solid Waste Management, this program has been exceptionally successful. The site accepts trees up to eight inches in diameter, as well as pine needles and any other tree debris except roots and stumps, and hires a commercial tub grinder to produce mulch which is free to the community.

4.3 REDUCING STRUCTURE IGNITABILITY



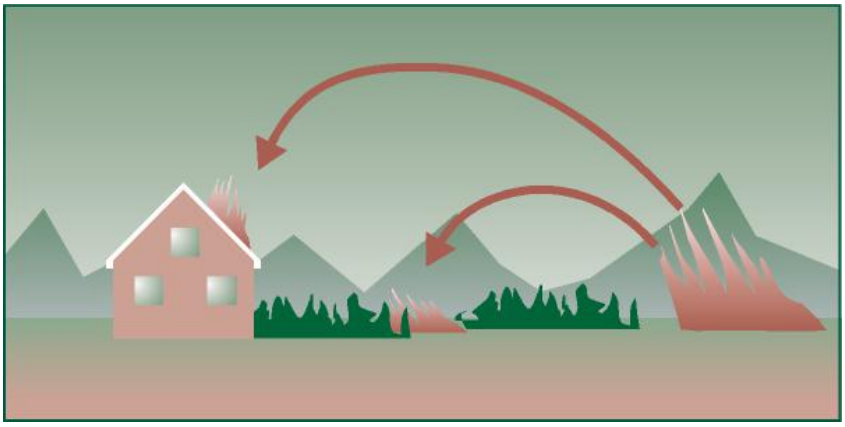
Convective and radiant energy from a

Wildland wildfire prevention and Firewise programs in the Black Forest community are intended to reduce the chances of home ignition by reducing wildland fuels and reducing opportunities for structure ignition, and then by increasing the resilience of the structure. Firebrands from wildfire become a major source for home ignitions. Wildfires can also ignite structures through radiation, convection or conduction. Wood is very resistant to ignition from radiation. This means that the heat from a fire is very unlikely to ignite a home. Convection occurs when heat is carried by air currents. In wildland fire, this is known as pre-heating. Pre-heating can make the home and landscape far more vulnerable to fire, but rarely, by itself, ignites a home. Conduction is the primary ignition source for homes, generally through direct flame impingement, or by the accumulation of burning embers that then ignite a receptive fuel bed around the home and inside the home ignition zone (HIZ).

Recognizing the methods of home ignition then leads to a strategy to protect against structure fire. The approach is three-pronged, and includes building with ignition resistant construction, creating defensible space, and reducing wildland fuels within the wildland-urban interface. Ignition resistant construction means using materials and building methods that resist ignition. All plans for new construction and substantial remodels should be reviewed by an El Paso County Fire Marshal's office to incorporate as much ignition resistance design and materials as possible.

Vulnerable construction elements on the exterior structure are the roofing, siding, venting, windows and decking or attached structures. Gutters can be particularly vulnerable as they can hold light flashy fuels and catch embers. Decks, walkways and fencing that are combustible can act much like a fuse and wick fire to the structure. Building these attached structures with non-combustible or flame resistant materials can greatly reduce the likelihood of ignition (**Appendix 10.2**).

How the home is constructed is also as important as the products used in construction. Common features where construction methods should be evaluated include the gables, gutters, eaves, and venting. These areas of the home can either resist fire intrusion, or can actually funnel heat and embers into the building envelope. An example is the gable end of a structure and the vents used. The eave overhanging the gable can trap heat and wick embers and heat into the attic. Inside corners are also particularly vulnerable to fire, as winds tend to swirl in the corner, effectively creating a vortex of fire that can reach beyond the roofline. *Firewise Construction, Design* and *Materials* by Peter Slack, printed in 2000 has excellent information on protecting the home ignition zone and structure protection (**Slack 2000**).



Firebrands major source of home ignitions

Structural Flammability

Improving the fire-resistant characteristics of a structure goes hand-in-hand with the development of defensible space. Extensive recommendations can be found in CSFS publications available at http://csfs.colostate.edu/csfspublications/ (**Appendix 10.2**). The most significant improvement that can be made to many of the homes in the assessment areas is the replacement of wood shake roofing with noncombustible roofing material, as is required for all new and replaced roofs in the El Paso County WUI. All homeowners should also keep roofs and gutters clear of leaves and pine needles. Screening of gutters and roof vents with 1/8th inch metal screening is recommended. Firebrands or embers from a wildfire can become windborne and travel long distances before settling and become a source of home ignitions.

Common structural fuel hazards associated with homes in the WUI include:

- Combustible roofing and siding;
- Combustible decks with exposed undersides;
- Combustible material under decks;
- Plastic culverts; replace with metal
- Flammable debris on roofs or in gutters.
- Plastic gutters; should be replaced with metal.
- Plastic soffit vents; replace with metal

Community Design

Ideally, all efforts to protect communities in high fire hazard areas should begin with appropriate community design and layout. In the Black Forest today, with the existing stage of community development, it is not likely that many new communities will be built where contemporary

design features can be employed. More likely, given the trend toward the redevelopment of existing properties, it is possible to incorporate some elements of safe community design into the Black Forest community.

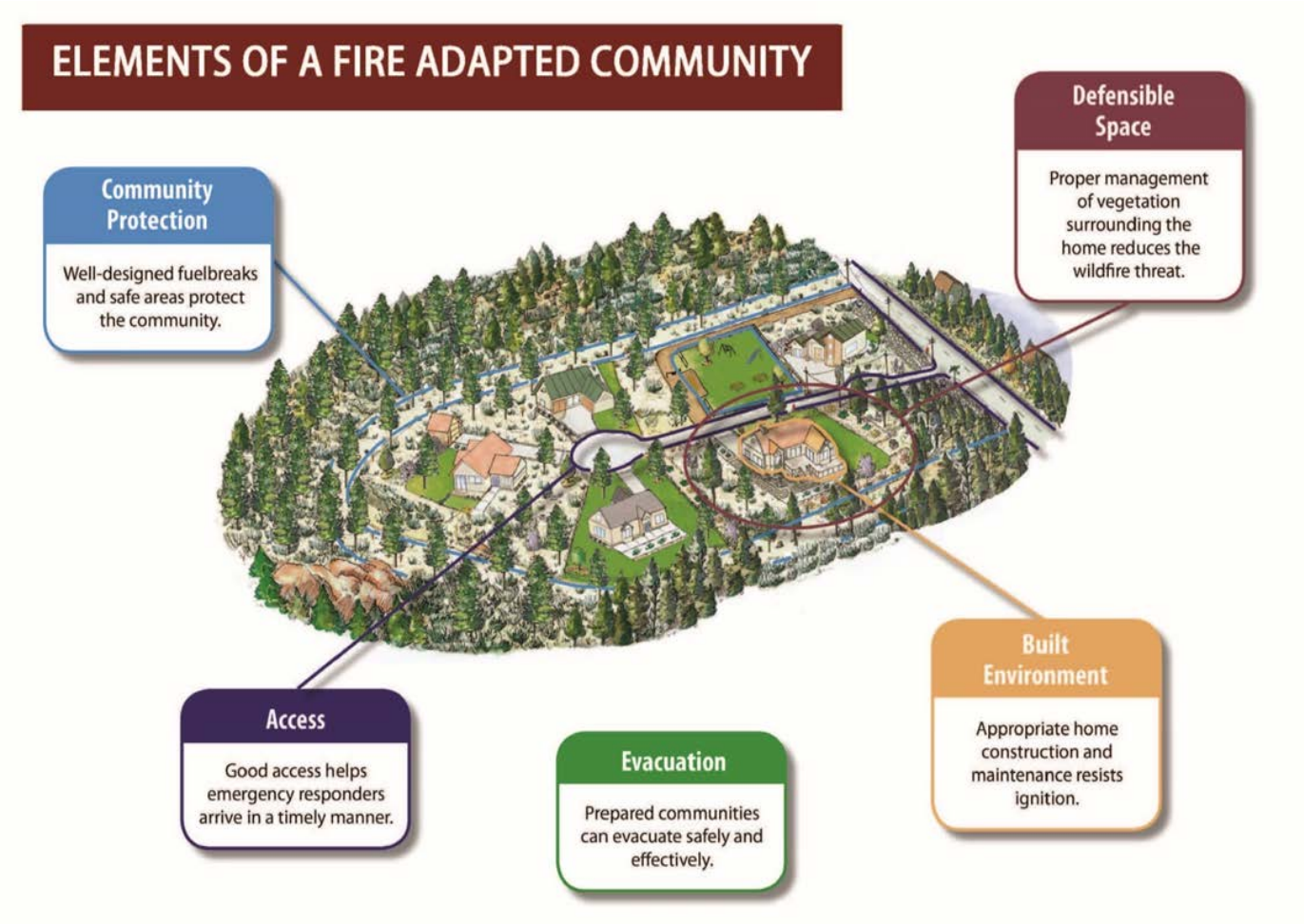
The basics of Fire Adapted Community design include:

ENCOURAGE INDIVIDUAL PREPARATION FOR EACH STRUCTURE IN THE COMMUNITY: Design guidelines required by neighborhood associations can be stricter than applicable state defensible space laws. Require ignition resistant landscapes and building materials/methods

PREVENT WILDFIRE INTRUSION INTO THE COMMUNITY: Design a reduced fuel zone around the community that will be maintained to prevent extreme fire behavior and to provide a safe zone for firefighters to engage an approaching wildfire

FACILITATE EVACUATION: Design the community with at least two access roads and provide adequate space to turn large equipment. Many neighborhoods in the Black Forest community have only a single road for ingress and evacuation.

FACILITATE EMERGENCY RESPONSE: Fire engines used for structure and community protection are typically greater than 30 feet in length and 10 feet in width. An engine must be able to enter the community, quickly turn and prepare to retreat to a safe zone and then begin operations. Turnarounds provide engine crews with the ability to safely maneuver equipment and allow them to maintain access to escape routes.



Wildfire is everyone's responsibility. Every year thousands of wildfires burn millions of acres across the United States. It's not if, but when the next wildfire will threaten your community. The Fire Adapted Communities website offers information and specific actions you can take, no matter what your role, to reduce your risk to the next wildfire www.fireadapted.org.

Defensible Space on Structures

Homes constructed in the natural vegetation of Colorado's landscapes such as the Black Forest are inherently at risk from a wildfire. Wildfires are a natural part of Colorado's varied forest ecosystems, hence living in the wildland requires Firewise planning to reduce fire hazards. 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 fire. The CSFS (2012) publication, *Protecting Your Home from Wildfire: Creating Wildfire-Defensible Zones* (**CSFS Quick Guide FIRE 2012-1**), serves as a useful guide for homeowners to better understand the defensible space options for their homes and community.

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

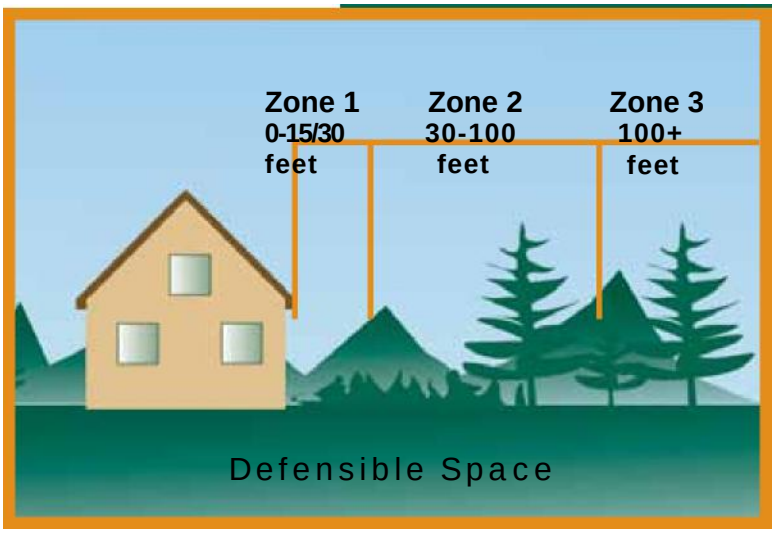
from an approaching wildfire. The presence or absence of defensible space around a structure is a significant determining factor used in the structural triage process, as defensible space gives firefighters an opportunity to do their job safely. In turn, this increases their ability to protect your home.

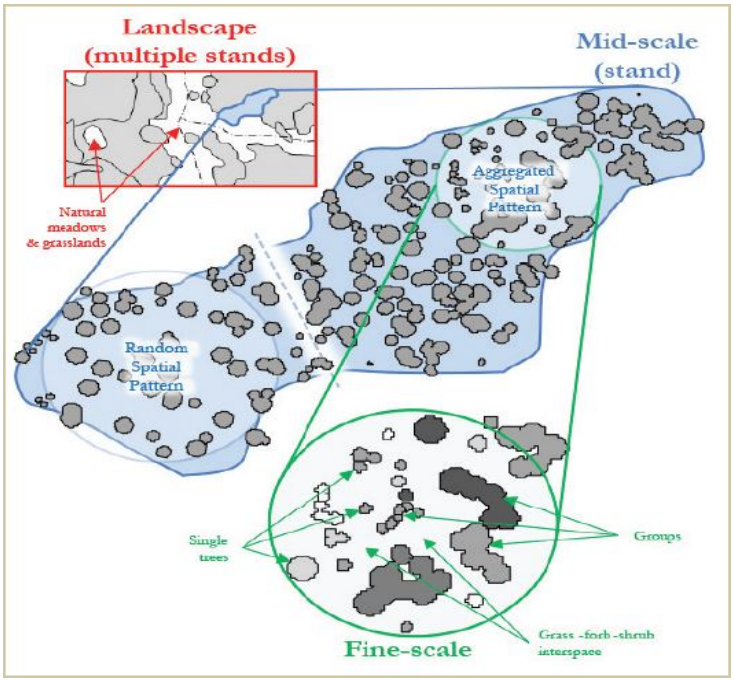
If firefighters are unable to directly protect your home during a wildfire, having an effective defensible space will still increase your home's chance of survival. It is important to remember that with wildfire, there are no guarantees. Creating a proper defensible space does not mean that your home is guaranteed to survive a wildfire, but it does significantly improve the odds (**CSFS 2012**).

Effective defensible space consists of a fuel-free zone adjacent to the home, a treated secondary zone that is thinned and cleaned of surface fuels, and if the parcel is large enough, a transitional third zone that is basically a managed wild land area. These component all work together in a proven and predictable manner.

Zone 1, a noncombustible area keeps fire from burning directly to the home. This area extends from the structure 15 to 30 feet. In this area most flammable vegetation is removed. Increasing the width of Zone 1 will increase the structure's survivability.

Zone 2, lean, clean and green. This is a transitional area of fuels reduction between Zones 1 and 3 and extends out 100 feet from all structures. Zone 2 reduces the adjacent fire intensity and the likelihood of torching crown fire. Treatment objective is to remove enough trees to create at least 10 feet of separation between crowns. Zone 2 should extend 30 feet from each edge of the driveway to the road. Remove all ladder fuels from under remaining trees, pruning branches to a height of 10 feet from the ground. On smaller trees leave at least 2/3 of the crown with green needles. (**CSFS 2012**).





Zone 3, wildland fuel reduction area. This area extends from the lean, clean, and green area with no specified width. In the wildland fuel reduction area, the objective is to minimize the horizontal and vertical continuity of wildland fuels. Creating a stand structure incorporating "groupie clumpie" prescriptions breaks up fuel and crown continuity as well as providing a sustainable forest

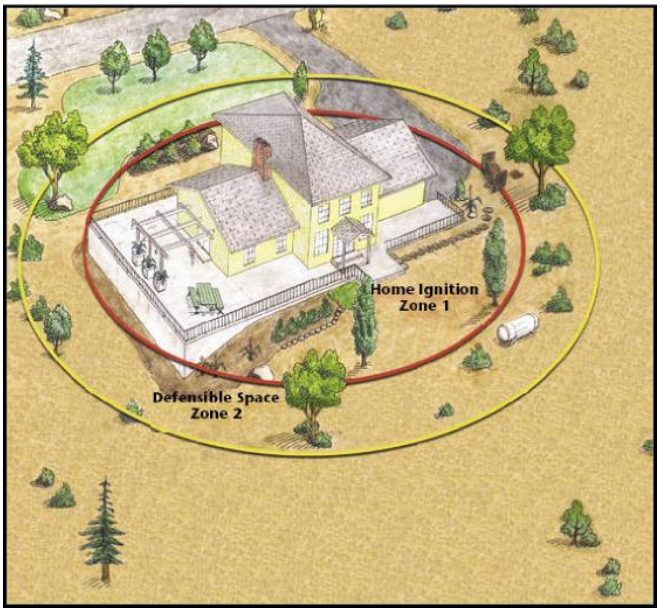
Characteristic vegetation patterns at three spatial scales for frequent-fire forests in the Southwest. The landscape-scale illustrates the importance of multiple stands (patches), meadows, and grasslands. The mid- and fine-scales illustrate grass-forb-shrub interspaces and uneven-aged stand conditions consisting of single, random, and grouped trees of different vegetation structural stages (from young to old), represented by different shades and sizes at the fine-scale. Also depicted are two different tree spatial patterns at the mid-scale (separated by the dashed line): trees are randomly spaced on the left side of the dashed line and are aggregated on the right (given the definition of stand as a homogenous area, both patterns could not actually be present) (**Reynolds et al. 2013**).

Home Ignition Zone

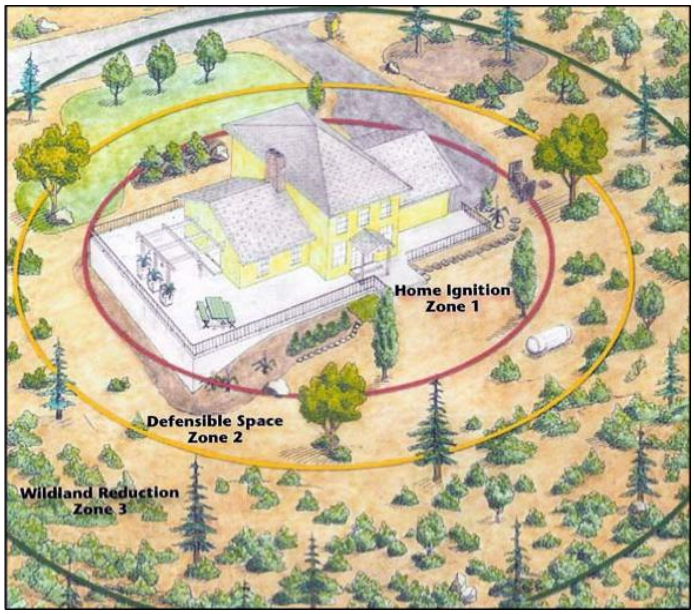
Two factors have emerged as the primary determinants of a home's ability to survive a wildfire – the quality of the defensible space and a structure's ignitability. Together, these two factors create a concept called the Home Ignition Zone (HIZ), which includes the structure and the space immediately surrounding the structure. To protect a home from wildfire, the primary goal is to reduce or eliminate fuels and ignition sources within the HIZ (CSFS 2012, **Appendix 10.2**).

The illustrations below show how to effectively implement defensible space inside the home ignition zone with wildfire resistant plants (**Appendix10.2**) in two types of wildland settings. The first image is of a home site in a grassland setting. The second image is home site located in a forested landscape.

Grassland Meadow Landscape



Forested Landscape

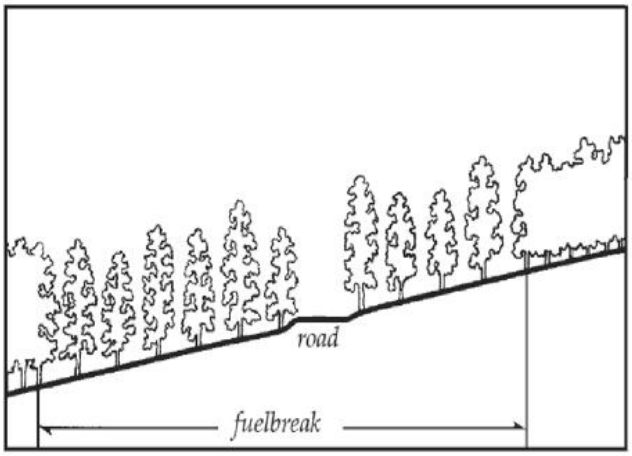


Access

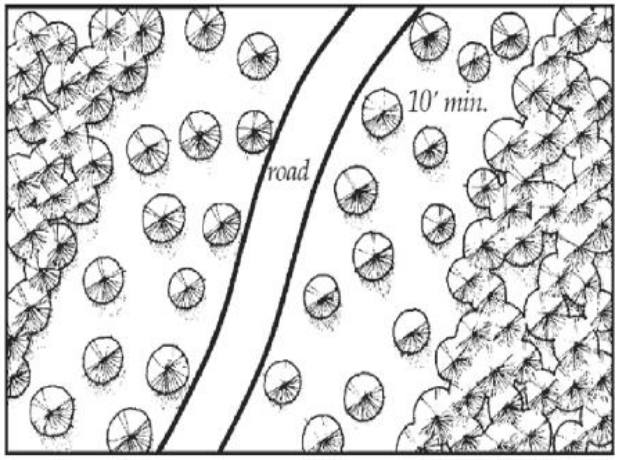
Access is an important component of any community's wildfire hazard and risk profile. Availability of ingress/egress, characteristics of road surface, road layout and design, treatment of dead ends, grade, characteristics of switchbacks, and width all factor into access assessment and emergency scenario and evacuation planning. Road conditions within the District were found to be adequate with paved access throughout. Conversely, emergency access onto secondary roads and cul-de-sacs were found to be restricted with single lanes and limited dead end turn arounds that would hamper emergency access and two-way traffic flow in the event of an evacuation. Further, the entire southern and central portions of the community have very limited egress access along the Black Forest Road to Hodgen Road to the north and Woodmen Road on the south; Shoup Road to the west, and Meridian Road to the east in the BFFR District Roads.

Shaded Fuelbreaks on Roadways

Reducing the forest canopy along access roads enhances the effectiveness of the physical forest canopy break the road provides, as well as critical safety factors along likely evacuation and incident access routes. This creates a safer emergency ingress/egress scenario while greatly aiding potential tactical suppression efforts. Consult *Fuelbreak Guidelines for Forested Subdivisions & Communities* (**Dennis 2005**) for further guidance on creating shaded fuelbreaks in subdivisions (**Appendix 10.2**).



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



Plan view of fuelbreak showing minimum distance between tree crowns.

Project priority should be given to the forested road margins of the primary El Paso County Roads, Black Forest Road (North and South), Shoup Road (West), Shoup/ Meridian (East), Milam Road South to Old Ranch Road and Burgess Road (East) as evacuation routes at intersections and along where traffic flow for residents is restricted. Shaded fuelbreak treatment has been identified along the entire El Paso County Road system through the BFFR District,

Forest treatment reducing fuels along existing roads will create shaded fuelbreaks improving firefighter access and resident egress in the case of fire evacuation. Shaded fuelbreak treatments should be modified as seen on the Fuelbreak Width/Slope chart where percent of slope extends treatment boundaries according to the chart recommendations.

Fuelbreak Width / Slope

Percent Slope (%)	Minimum Uphill Distance (ft.)	Minimum Downhill Distance (ft.)	Total Width of Modified fuels (ft.) *
0	150	150	300
10	140	165	303
20	130	180	310
30	120	195	315
40	110	210	320
50	100	225	325
60	100	243	340

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

The next images visually depict an open ponderosa pine stand with similar conditions before and after harvest.

Before and After Thinning in Conifer Stands with Slash Deposal Remaining

Strategic Community Fuelbreaks

Thinning recommendations may also target stands posing specific wildfire threat to neighborhoods, typically where a steep forested gully or slope runs up into a subdivision. Strategic fuelbreaks may be designed with shaded fuelbreaks characteristics or as a fuel buffer for more aggressive fuel reduction. Strategic fuelbreaks along neighborhood margins should mutually support adjacent defensible space efforts.

To date, stand treatment in the BFFR District has focused primarily on timber units within community-owned private land parcels. While this strategy has provided streamlined access to critical hazardous timber units, the majority of additional recommended treatments involve surrounding private lands as well as closed canopy timber stands located inside of the District. Treatments at this scale may be of critical strategic importance but will involve more complex hurdles including negotiations with private land owners, public support, presiding agency support, funding and capacity, as well as environmental impact concerns. Coordination with these entities may be necessary to implement strategic community fuelbreaks.

4.4 OUTREACH & PUBLIC EDUCATION

There is an ongoing need to continually inform landowners and community members regarding the risks posed by wildfire, and to educate them about strategies for living safely in the WUI, preventing fire, minimizing risk, protecting structures and resources, and participating in evacuation procedures. Both the BFFR and BFT provide educational information and programs to the Black Forest community. Additionally, the CSFS and the El Paso County Sheriff's office provide prevention, education and land stewardship programs and information. These organizations are recognized for their effective leadership in community education, and for collaborating to achieve results in the Black Forest community.

The most effective means to initiate local action is through community education and public outreach. Community education may target a number of goals and objectives including:

- Identify wildfire hazards and risks;
- Introduce the benefits of defensible space and Firewise construction principals;
- Urge homeowners to take action on their own property and influence neighbors, friends, and HOAs;
- Initiate creation of an oversight group to drive CWPP implementation and grant application;
- Increase awareness of current forest conditions and how hands-on management practices can help restore forest health and reduce wildfire risk; and
- Create awareness of the historical role fire has played in the regional ecosystem and forest and rangeland health.

Some parcels within subdivisions may be undeveloped and/or owned by absentee owners. A lack of fuels management on these lots can impact the entire community. An effort should be made to contact these landowners and determine how to address their concerns and overcome potential obstacles to conducting hazard fuel mitigation on their land.

4.5 FIREWISE COMUNITY

BFFR has had a long-standing Firewise Program. This program provides our community and surrounding communities through inter-department relationships, assessments and mitigation assistance. This provides our community with valuable information for keeping their home and family as safe as possible. Within this program we also provide Ready, Set, Go!, a program that prepares homeowners and families for an evacuation during any kind of natural disaster. This program is administered by the membership as a whole utilizing career and Volunteer members of the BFFR District.

BECOME A FIREWISE HOME AND LANDSCAPE

Concerned about brush, grass or forest fires where you live? Use this section to learn more about Firewise principles. Find tips and tools to make your home and neighborhood safer from wildland fire. This home in the BFFR community demonstrates excellence in Firewise principles and landscaping.

Firewise homeowner in compliance with wildfire mitigation

Find out from the BFFR and the experts on how the best way to make your home and neighborhood safer from wildfire. From the basics of defensible space and sound landscaping techniques to research on how homes ignite (and what you can do about it), there are tips, tools and teachings you can use!

Share your knowledge with others using our Firewise Toolkit tip sheets, our Communicators' Guide, or our videos and Public Service Announcements (PSAs).

For information on BFFR Firewise Programs see www.bffire.org.

These guidelines complement Colorado State Forest Service Publication, *Protecting Your Home from Wildfire: Creating Wildfire Defensible Zones*. Individual home and property owners should strive to understand and apply these principles and guidelines and seek to implement the Firewise recommendations found at www.firewise.org (**Appendix 10.2**).

5. RESTORE AND MAINTAIN FIRE RESILIANT LANDSCAPES

5.1 POST-FIRE RECOVERY RESTORATION

Post-fire landscapes present significant community challenges. Key considerations for the Black Forest community include identifying both the desired future condition for the Black Forest and defining the community action to get there. Immediate post-fire stabilization activities, such as erosion control, generally has broad levels of support. Removal of hazard trees, particularly along roads, is highly supported. Broader management decisions, such as salvage logging, tend to elicit a greater range of opinions.

Similar to other natural disasters, experiencing wildfire can lead to a variety of responses. For some, the experience will increase motivation to take proactive measures while others may be less likely to engage in risk reduction behaviors due to a sense of fatalism or a belief that risk reduction is unnecessary because "lightning doesn't strike twice" (**Toman et al. 2013**). See **Appendix 10.3**.

The ponderosa pine forest of the Black Forest community provides important amenities and services to the community including quality habitat for wildlife, biodiversity of plant and animal communities, clean water, aesthetic benefits, and recreational opportunities. Timely reforestation to restore forest cover on denuded lands following a major catastrophic event, such as the Black Forest Fire, is important to maintaining forest ecosystems and deriving associated ecological, social, and economic benefits.

Seedlings are available from the CSFS nursery in Fort Collins

Reforestation is an element of a land stewardship ethic that includes growing, nurturing trees to meet specified resource objectives while conserving soil, air, and water quality in harmony with other resource management concerns. Reforestation of areas denuded by catastrophic fire is important to sustaining the values important to the Black Forest community (see **Appendix 10.3)**. BFT has initiated a Tree Donor and Recipient Program to assist land owners who lost trees in the June 2013 Black Forest Fire. This program matches landowner donors with those landowners requesting replacement trees. For those landowners that are interested in either donating trees or purchasing transplanted trees, a Donor Registration Form and instructions are available on the BFT website.

Catastrophic wildfires, such as the Black Forest Fire, have resulted in significant losses to critical wildlife habitat, imperiled fisheries, watersheds, and municipal water sources. These events also

threaten the long-term productivity of forest soils, through erosion and changes in soil properties, as well as many other resources.

Restoring forested ecosystems following a large-scale disturbance typically involves a series of steps:

- Emergency stabilization to prevent threat to life, property, and further damage to watersheds;
- Rehabilitation of resources affected by the disturbance that are unlikely to recover without human intervention; and
- Longer term restoration treatments, including reforestation, that span many years and are needed to restore functioning ecosystems.

On some occasions, natural regeneration can serve to meet forest management objectives. In other instances, active reforestation actions such as planting seedlings may be necessary.

Seedlings, which can be obtained for a range of species and sizes from the CSFS Nursery, can be used for a diverse range of conservation efforts, which include (**CSFS 2016**):

- Reforestation in areas devastated by fire and flood
- Stabilizing soil and contributing to erosion control
- Providing an edible landscape while enhancing pollinator and wildlife habitats
- Creating shelterbelts and wind rows to protect livestock, crops and homes

Black Forest post-fire recovery and restoration projects have been underway by Black Forest Together since 2014. These projects have been made possible through dedicated volunteers focused on fire cleanup, erosion control and forest restoration. Recovery from a wildfire is a long-term process and requires continued commitment with both time and funding.

Following the June 11, 2013 Black Forest Fire, El Paso County mobilized an assessment team to identify the hazards to life and safety and risks to County Parks infrastructure and adjacent properties. The assessment report addresses burn severity, outlines recovery methods and provides recommendations to address long-term impacts. The recommendations are applicable across the 14,000 impacted by the Black Forest Fire. The assessment report, *Black Forest Fire Burn Assessment*, can be accessed through the following link: http://adm.elpasoco.com/CommunityServices/planning/Documents.

The assessment report, *Black Forest Fire Burn Assessment,* has information on recovery methods and long-term impacts of the Black Forest Fire. Information can be accessed through the following link: http://adm.elpasoco.com/CommunityServices/planning/Documents.

5.2 NOXIOUS WEEDS

Common Mullin

The Colorado Agriculture Commission has established a three-tiered ranking system to determine if a noxious weed should be eradicated immediately (List A), plants that should be stopped before they spread (List B) or if they are selected for recommended control methods (List C). Weeds can easily spread across the property by wind, birds, animals and vehicle traffic. Listed B plant species observed during the field inventory include Canada thistle (*Cirsium arvense*), leafy spruge (*Euphorbia esula*), diffuse knapweed (*Centaurea deusa*), and musk thistle (*Carduus nutans*). Common mullein (*Verbascum Thapsus*), a List C species has also been observed on the property. Additional information is available on the Black Forest Together web site, www.blackforesttogether.org Forest Recovery, Best Management Practices and in **Appendix 10.3**

6. EFFECTIVE AND EFFICIENT WILDFIRE RESPONSE

6.1 NOTIFICATION AND EMERGENCY ALERTS

Large scale explosion in conifer stand wildfire

In the event that the El Paso County Sheriff orders the community to evacuate because of threatening wildfire, residents should leave in an orderly manner. The Sheriff would proclaim the preferred evacuation routes and safe sites. The need to evacuate may be communicated by telephone, media, and/or direct contact from emergency personnel. Emergency notification was a community concern expressed during the development of this CWPP. Recommendations to improve communications and emergency notification resulted from these discussions. However, if a wildfire is threatening the area it is not necessary to wait for an evacuation order to leave.

The Black Forest community has unique challenges when it comes to evacuation planning and conducting an evacuation during a wildfire. Historically, fire department and offices of emergency services have relied on a reverse 911 call system (where you receive an emergency call to your home) to notify residents when an evacuation has been ordered in their community. With the proliferation of mobile phone services, reverse 911 may result in communications with only a limited number of residents. Cell phones may be rendered even more ineffective when large numbers of people try to use them at once and exceed carrier capacity.

DETERMINE WHAT SYSTEM for emergency notification or method of notification would best fit and implement it throughout the Black Forest community. A coordinated countywide approach would make it easier for anyone in the Black Forest community to be notified of an emergency and be advised as to what actions to take in the event of an evacuation order. This is particularly important as it applies to electronic notification on mobile phones or computers. A system similar to an “Amber Alert” could be effective.

PRESENT A CONSISTENT MESSAGE to the community of what to do to prepare for an emergency. Numerous fire districts use similar documents, but some may need to be updated. There should be one preparedness guide for all the districts in El Paso County that could be periodically updated and conveniently made available on the internet and through other publication and distribution channels.

EVCUATION PLANNING IS CRITICAL and scenarios for evacuation should be run periodically with law enforcement, fire personnel, and local community members. Community evacuation practice opportunities help residents understand the importance of evacuation planning, and law enforcement and emergency personnel can understand potential evacuation challenges. More also need to be done to inspire community members to prepare their own evacuation plans. The recent wildfire tragedy in Fort McMurray, Alberta, Canada, where recovery efforts are now underway after catastrophic wildfire destroyed 2,400 structures and caused over 80,000 residents to flee their homes (**The Globe and Mail 2016)**, demonstrates the critical nature of community evacuation planning.

Reverse 911 Notification

Reverse 911 calls are not automatically routed to cellular phones. El Paso and Teller Counties maintain an Emergency Notification System to alert the public of emergency situations that are a threat to life or property. To be certain to receive notifications, residents' landlines, cell phones, text message, VOIP, TYY/TDD, and email addresses should be registered at: http://member.everbridge.net/index/1772417038942752#/signup; more information is provided at www.elpasoteller911.org. It is important to note that telephone lines that carry a solicitation blocker (where a caller has to enter their phone before the line will ring) may prevent emergency calls from being delivered (El Paso-Teller County Emergency Notification System 2016).

6.2 EVACUATION PLANNING AND PREPARATION

Planning for evacuation from fire is challenging because fire emergencies are dynamic with the location and direction of spread varying depending on start location, weather, topography, and fuel. With flood and earthquakes, the area that will be most greatly impacted is typically better understood, and residents can plan their evacuation knowing where the high water will be over the roads or where the areas of most likely earthquake damage will occur. In these situations, the location of the emergency evacuation centers will be relatively stable.

Black Forest Fire looking West on Shoup Road - Courtesy Smitty

With a wildfire evacuation, the location and direction of the fire may change rapidly, so the evacuation route must be determined specific to the incident. Emergency evacuation centers will also be established based on the location of the fire, the size of the incident, and area ordered to evacuate. Being prepared to evacuate before the fire is the single most important action people can take to safely evacuate. BFFR actively supports **Ready, Set, Go!**, a program that prepares homeowners and families for an evacuation during any kind of natural disaster This program helps residents be **Ready** with preparedness understanding, be **Set** with situational awareness when fire threatens, and to **Go**, acting early when a fire starts. This

program is administered by the membership as a whole utilizing career and volunteer members of the department. Tips and tools for residents are provided by Ready, Set, Go! at www.wildlandfirersg.org/Resident.

There is no "magic recipe" for evacuation. By knowing all possible options community residents are better prepared when the order is given. There are several consistent elements of basic emergency preparedness:

- Understand and identify all ingress and egress routes that take you to a major roadway. Depending on the emergency, some routes may be unusable. Listen carefully to the evacuation instructions provided by the El Paso County Sheriff.
- Consider discussing evacuation with your neighbors in an effort to watch out for each other. BFFR will gladly meet with you (or preferably a group of neighbors) to make this plan neighborhood-specific.
- While the emergency alert system and television stations are a potential source of emergency information, the power may be out leaving your vehicle's radio as your only information option. Program local radio stations (KRDO 105.5 FM or 1240 AM, KVOR 740 AM, or KZNT 1460 AM) into your car radio as part of emergency preparedness.

Recommended emergency preparedness actions

Each household or other group should prepare or review their Emergency Family Evacuation Plan and prepare a To-Go Bag. An Emergency Evacuation Plan should contain the following elements:

- Meet with household members. Explain dangers to children and work as a team to prepare your family or household for emergencies.
- Discuss what to do about power outages and personal injuries.
- Post emergency phone numbers near phones.
- Learn how to turn off the water, gas and electricity at your home.
- Select a safe meeting point. During an emergency you may become separated from family, household or other group members.
- Complete a family/household communication plan. Your plan should include contact information for family members, work and school.
- Complete an inventory of household contents and photograph/videotape the house and landscape. Place files in your To-Go Bag. A second copy of these files should be stored in a location away from your community.
- Identify escape routes and safe places. In a fire or another emergency, you may need to evacuate very quickly. Be sure everyone in your family/household knows the best escape routes out of your home and where safe places are in your home for each type of disaster. Draw an escape plan with your family/household highlighting two routes out of each room.

- Prepare “EVACUATED” signs and if you have an emergency water source (pool, pond or hot tub), “WATER SOURCE HERE” signs. Select sites to post the signs where they will be clearly visible from the street. After planning, the family/household is encouraged to prepare to evacuate and plan to leave within minutes. Pre-packing relieves the stress of sudden evacuation and enables the family/household to focus on evacuating.
- The To-Go Bag enables a household to grab important paperwork, pictures and enough personal effects that the family can focus on learning the safe evacuation routes and evacuate. When a wildfire is approaching, evacuees may only have enough time to retrieve this bag. At a minimum this should contain:
    - Clothing, personal toiletries and prescription medicines.
    - Inventory of home contents and photographs/videotape of the house and landscape.
    - Flashlight, portable radio tuned to an emergency radio station and extra batteries (change batteries annually).
    - Extra set of car and house keys.
    - Extra pair of eyeglasses.
    - Contact information for family, friends and physicians.

Evacuation plans are intended to organize a family or household actions during an emergency so that everyone can safely evacuate and reunite. Grouped together at the community level, the elements of the family evacuation plan can be incorporated into a community evacuation plan. The community evacuation plan should consider evacuation of persons with special needs, such as the elderly or those with medical conditions. Consider the following when preparing evacuation plans for those with special needs:

- If the family/household member is dependent upon medications or equipment, or has special dietary needs, plan to bring those items with you. Documentation about insurance and medical conditions should also accompany the person.
- Transportation available to the general public during an emergency evacuation may not be suitable for family members with special needs. Plan ahead for their transportation
- Many special-needs persons are easily upset and stressed by sudden and frightening changes. Your plans should ensure that a caregiver or trusted family member is able to stay with them at all times during an evacuation.

Pets and large animals always have special needs during an evacuation and many evacuation centers cannot accommodate pets. It is therefore imperative that people consider how their pets can be cared for during the entire period of the evacuation. Plan to take your animals with you or have other arrangements in place. Never simply turn them loose. Contact El Paso animal services department for advice on animal and livestock/horse evacuation (**Appendix 10.5**).

- Make sure dogs and cats wear properly fitted collars with identification, vaccination, microchip and license tags.

- Your pet evacuation plan should include routes, transportation needs and host sites. Share this plan with trusted neighbors in your absence.
- Exchange veterinary information with neighbors and file a permission slip with the veterinarian authorizing emergency care for your animals if you cannot be located.
- Make sure all vehicles, trailers and pet carriers needed for evacuation are serviced and ready to be used.
- Assemble a pet To-Go Bag with a supply of food, non-spill food and water bowls, cat litter and box, and a restraint (chain, leash or harness). Additional items to include are newspaper, paper towels, plastic bags, permanent marker, bleach/disinfectant solution and water buckets.

6.3 EVACUATION ROUTES

Notification to evacuate will be issued by the El Paso County Sheriff by means of a reverse emergency notification system. The message will indicate the safest and preferred evacuation route. Residents should follow directions provided in the recorded message. Other notifications may come from local TV and radio stations.

- TV: KOAA Channel 5 (NBC), KKTV Channel 11 (CBS), KRDO Channel 13 (ABC), KXRM Channel 21 (Fox)
- Radio: KRDO 105.5 FM or 1240 AM, KVOR 740 AM, or KZNT 1460 AM)

The primary evacuation routes are: Major north and south routes are Highway 83, Black Forest, Vollmer, Meridian and Milam Roads; Major east and west routes are Shoup Road, Burgess Road and Hodgen Road. (**Appendix 10.1 Maps).**

6.4 LARGE ANIMAL EVACUATION CENTERS

The following is a list of potential evacuation centers and shelters for large animals for disaster and wildfire events. Refer to **Appendix 10.1** for maps.

West side:
Pikes Peak Community College
New Life Church

South:
St. Francis Medical Center
6001 East Woodmen Road
Colorado Springs, Colorado
(719) 571-1000

East:
Latigo Equestrian Center
(Large Animal Facility)
13710 Hallelujah Trail
Elbert, Colorado 80106
(719) 495-0176

North:
Wolford Elementary School
13701 Black Forest Road
Colorado Springs, Colorado 80908
(719) 234-4300

Ray Kilmer Elementary School
4285 Walker Road
Colorado Springs, Colorado 80908
(719) 488-4740

- Black Forest Animal Sanctuary (719) 494 0158
- Shiloh Ranch (719) 208 7058
- El Paso County Fairgrounds (719) 520 7880
- Elbert County Fairgrounds (303) 621 3152
- Humane Society of the Pikes Peak Region (719) 473 1741
- National Mill Dog Rescue (719) 495 7679
- Wild Blue Animal Rescue (719) 964 8905

6.5 STAGING AREAS

The District has identified locations where responding mutual aid or auto aid fire departments may be staged for assignment in the early stages of a wildland event, or until an Incident Command Post or Emergency Operations Center is established. BFFR will determine the establishment of Command or Operation Center as an emergency event unfolds. Other considerations for staging area locations include: type of incident, expected duration, number of resources, and other operational and logistical needs.

Emergency Preparedness

BFFR is fortunate to maintain adequate staff and equipment to effectively handle the vast majority of the most likely fire and medical emergencies. Mutual Aid agreements with adjacent fire protection districts and other fire agencies, with participation with the Colorado Springs Fire Department, are in place to cover incidents that may overload current BFFR resources.

7. IMPLEMENTATION

7.1 RECOMMENDED ACTIONS

The wildland wildfire treatment prescription is to aggressively thin the closed canopy conifer stands as prescribed in this report, progressively remove dead trees, and initiate a widespread reforestation campaign program. The objective is to restore the great forests of the Black Forest community before losing control of the ecosystem.

The following recommendations should be considered to ensure adequate forest management, wildfire mitigation, and to increase the forest health in the BFFR community:

- Develop an CWPP Annual BFFR Operation Plan with the community to implement the CWPP action plan and control work.
- Develop an annual event to celebrate the top three Firewise home and landscape winners.
- Schedule an annual strategic community fuelbreak thinning to create a healthy forest with a fire-resistant stand structure.
- Remove all portions of trees, including the bole (wood) and slash (limbs) from the mitigation project area.
- Develop an annual strategic community fuelbreak project along the major access roads aimed for ingress and egress.
- BFT should complete an annual voluntary community survey for insects and diseases between October and June, and prepare a treatment plan for the community.
- Seek highly qualified certified foresters to marked all designated trees and administer mitigation project work.
- Adhere to Colorado's Best Management Practices (**Appendix 10.9**).
- Work in cooperation with the neighboring residents where feasible in implementing this BFFR CWPP plan. If similar management measures can be implemented on adjacent lands in conjunction with this property, it will strengthen the forest management for the entire BFFR area.
- Implement the *Colorado State Forest Service Quick Guide for 2012* **(Appendix 10.2)**.
- Retain ponderosa pine over Douglas-fir in general but select for Douglas-fir if this species has superior form and crown condition locally.
- Retain clumps of trees across all stands to maintain natural aesthetics and provide thermal cover for wildlife.
- Maintain defensible space for existing structures using the standards listed in the Colorado State University Cooperative Extension resource publication: *Colorado State Forest Service Quick Guide for 2012* (**Appendix 10.2**).
- Encourage community homeowners to work together with BFFR and initiate an emergency response pre-attack plan and become a Colorado Firewise Community, www.firewise.org.

- For additional grants and grant application assistance visit: Rocky Mountain Wildland Fire Information - Grant Database: www.rockymountainwildlandfire.info/grants.htm
- Grant Writing Handbook: www.theideabank.com/freeguide.html

The CWPP Action Plan and wildfire mitigation priorities are based on a 5-year timeline and were derived from the identified priorities and the wildfire risk assessment. Each action (defined in Action Plan below) is stated in the wildfire mitigation priorities.

Table 2. CWPP Action Plan

Objective	Actions	Responsible Party	Target Date
Outreach/Public Education	• Encourage stakeholder participation in community meetings. Become a Firewise community. • Distribute Firewise materials. • Assess individual homes.	BFFR and BFT	
Defensible Space	• Establish a Firewise fuel zone around homes. • Establish a treated second zone that is thinned, pruned, and cleared of excess surface fuels. • Extend treatment to property boundary to improve natural forest conditions and reduce excess hazardous vegetation. • Where lots are small and housing is dense, coordinate efforts between multiple homes to maximize effectiveness. • Employ defensible space practices around identified resources such as cisterns, dip and draft sites, potential safety zones, or observation areas.	BFFR, BFT, and Homeowners	
Firewise Building Improvements	• Replace shake roofs with fire resistant roofing material. • Implement Firewise construction principals for all remodels. • Enclose exposed decks and gables. • Screen vents and chimneys.	Homeowners	
Shaded Fuelbreaks	• Treat fuelbreaks along primary and secondary evacuation routes. • Improve/expand utility right-of-ways.	BFFR, BFT, Adjoining landowners and El Paso County	
Access/Egress Improvements	• Improve hazardous primary access routes. • Create/improve dead end turn arounds. • Create/improve secondary evacuation routes where needed. • Improve identification of DEAD END streets. • Mark driveways with reflective non-flammable house numbers.	BFFR, BFT, and Homeowners	
Supporting Actions	• Support grant funding acquisition actions.	BFFR and BFT	
Emergency Preparedness	• Involve El Paso County in evacuation improvements. • Consider County rules addressing defensible space requirements for home sales.	BFFR	
Fire Department Preparedness	• GIS and update all water resources. • Survey potential dip sites and safety zones. • Develop and distribute community incident pre-attack plans. • Continue community education and outreach. • Continue recruitment, training, and certification. • Continue mutual aid strategic planning. • Continue apparatus, facility, and personal protective equipment (PPE) upgrades.	BFFR	

Outreach and Public Education

Action Item: All community meetings should include reminder information concerning the benefits of defensible space, recommended methods to reduce structural ignitability, forest health issues, as well as wildfire probability. Yard slash disposal opportunities should be coordinated on an annual basis. The Black Forest community has also benefited greatly from the 25 years of the slash/mulch operation that has substantially reduced our fuel load. Run by the Slash and Mulch Committee (SAMCOM). This is coordinated with the Education/Awareness activities and may include the coordination of a central disposal site, mobile chipping services, or a hauling service.

Defensible Space

Action Item: Creating and improving defensible space around individual homes is the most effective method to reduce hazard fuels and the threat of wildfire within the BFFR. It is suggested that the above outreach efforts be used to coordinate and spur implementation and slash disposal at the individual homeowner level. Broad participation on an individual basis ultimately leads to effective hazard reduction at the neighborhood or community level. In neighborhoods where lots are smaller and housing density is high, coordinating efforts between multiple adjacent lots may be necessary to achieve recommended zone dimensions. Many homeowners with the highest need for defensible space are directly adjacent to public community open space properties. Coordinating fuel reduction activities between public, open space, and private lands creates a mutually beneficial environment. Establishing a procedure whereby homeowners who have established defensible space on their property to petition for fuels management on adjacent public lands would facilitate more effective fuels reduction and increase opportunities to enhance forest health.

Effective defensible space consists of a reduced fuel zone adjacent to the home, a treated secondary zone that is thinned and cleaned of surface fuels, and, if the parcel is large enough, a transitional third zone that is basically a managed wildland or forest area. These components all work together in a proven and predictable manner. **Zone 1** keeps fire from burning directly to the home; **Zone 2** reduces the adjacent fire intensity and the likelihood of torching, crown fire, and ember production; and **Zone 3** does the same at a broader scale, keeping the fire intensity lower by maintaining a more historic condition, which in turn reduces the risk of extreme/catastrophic fire behavior.

Structural Flammability

Action Item: Provide for community education, outreach, and information distribution through HOAs and other neighborhood associations. Coordinate public education through existing spring cleanup programs. Grassroots action can be as simple and straightforward as coordinating with a local scout troop to distribute applicable CSFS flyers door-to-door.

Shaded Fuelbreaks on Roadways

Action Item: All access roads within the BFFR with vegetation or timber encroachment should be considered for shaded fuelbreak treatment and/or seasonal mowing. Project priority should be given to the forested road margins of the primary evacuation routes along The Black Forest Road to Hodgen Road to the north and Woodmen Road on the south; Shoup Road to the west, and Meridian Road to the east. Shaded fuelbreak treatment units have been identified in this CWPP.

Future treatments may be coordinated with property owners along adjoining private land and along public or community right-of-ways. Conifer regeneration and reproduction in previously mitigated areas should be addressed. It is recommended that any mitigation projects that involve timber thinning be evaluated, coordinated and monitored by a CSFS mitigation specialist and/or certified forester (**Appendix 10.2**), CSFS *Fuelbreak Guidelines for Forested Subdivisions and Communities*, has been included as procedural and methodology reference for all thinning projects.

Strategic Community Fuelbreaks

Action Item: The current strategy of targeting specified timber units on community open space should be continued. Treated stands within the district will be much less likely to support significant fire behavior in the event of an ignition.

Specific strategic fuel break recommendations target neighborhood margins overlooking steep forested drainages, slopes in along evacuation routes, and community fuel breaks. Showcase demonstration areas like the vegetation management project at La Foret along Shoup Road.

Access

Action Item: Existing turn-arounds should be evaluated for adequate turning radius and improved to meet minimum requirements, restricted critical dead-ends should be evaluated for upgrades to support apparatus turning radius. Remaining dead-ends should be mapped and identified as back-in-access-only for emergency response.

Incident evacuation must support 2-way traffic flow accommodating both residents and emergency responders. Considering existing road infrastructure, incident pre-planning efforts should identify the egress routes for residents. In the event of an incident that requires evacuation, this scenario would provide separate 2-way flow for both residents and responding emergency units. Should these routes become blocked, secondary emergency access should be established through the other public private road connecting BFFR Roads.

Emergency Preparedness

Action Item: Mutual Aid agreements should be reviewed and amended annually to reflect changing conditions. Tactical pre-attack plans should be developed to support larger scale incidents involving Type III, II or I Incident Management Teams, i.e. identify all dead-ends, hydrants, dip sites, security gate locations and access codes, etc. Map books or District runbooks should be created or enhanced with updated strategic and tactical information,

including evacuation routing and hazardous cul-de-sacs. Coordination of evacuation plans should be executed with the El Paso County, Office of Emergency Management.

Forest Health

Action Item: Residents should monitor the health of trees on their property and contact their local CSFS District Forester or a professional arborist with concerns. Further information is available at http://csfs.colostate.edu/districts/.

7.2 MONITORING AND EVALUATION

Maintaining the momentum created by this process is critical to successful CWWP implementation and ongoing community wildfire hazard reduction. Ownership of this responsibility lies with each individual, neighborhood, and HOA in the Black Forest community.

As wildfire hazard reduction efforts are implemented over time and the characteristics of the community change, neighborhoods may wish to reassess particular areas and update the findings of the CWPP. Monitoring the progress of project implementation and evaluating the effectiveness of treatments are important components of CWPP oversight and maintenance. Successes, challenges, and new concerns should be noted and subsequently guide any modifications to the CWPP that better accommodate the changing landscape.

Residents will be responsible for CWPP monitoring and evaluation through regular meetings, public involvement, and coordination with BFFR, neighborhood communities, and HOAs. Monitoring is the collection and analysis of information acquired over time to assist with decision making and accountability and to provide the basis for change. Evaluation includes analysis of the effectiveness of past fuels reduction and non-fuels mitigation projects, as well as recent wildfire suppression efforts. Monitoring and evaluation measures should progress over time in a way that will determine whether the CWPP goals and objectives are being attained.

Table 3. Monitoring and Evaluation Tasks

Objective	Specific Tasks	Timeline	Responsible Party & Date Accomplishment
Risk Assessment	Use reliable data that is compatible among partner agencies.	Annually	
	Update the CWPP as new information becomes available.	Annually	
	Continue to assess wildfire risk neighborhoods and landowners.	Annually	
Fuels Reduction	Identify and prioritize fuels treatment projects on public land through development of a 5-year plan.	Annually	
	Track fuels reduction projects and defensible space projects on private land.	Annually	
	Monitor fuels reduction projects on evacuation routes.	Annually	
	Track grants and other funding sources and make appropriate application.	Ongoing	
Emergency Management	Review suitability and the need for fuels reduction along evacuation routes.	Annually	
Public Outreach	Plan and hold Firewise education week.	Annually	
	Provide Firewise pamphlets at public events.	Annually	
	Evaluate techniques used to motivate and educate private landowners.	Annually	

8.0 GLOSSARY

Abiotic factors: The non-living components of the environment, such as air, rocks, soil, water, peat, and plant litter.

Acre: an area of land containing 43,560 square feet. A square acre would be about 209 feet by 209 feet. A circular acre would have a radius of 117.75 feet.

Afforestation: The establishment of trees on an area that has lacked forest cover for a very long time, or has never been forested.

Aerial fuels: Standing and supported live and dead combustibles not in direct contact with the ground and consisting mainly of foliage, twigs, branches, stems, cones, bark, and vines: typically used in reference to the crowns of trees.

Basal area: the cross-sectional area of a single stem, including the bark, measured at breast height (4.5 feet).

Blowdown: trees or trees felled or broken off by wind.

Cambium: A single layer of cells between the woody part of the tree and the bark. Division of these cells result in diameter growth of the tree through formation of wood cells (xylem) and inner bark (phloem).

Canopy: The forest cover of branches and foliage formed by tree crowns.

Chain: A measuring tape, often nylon, 50 meters or 75 meters in length, used to measure distances. This term is derived from an old unit of measurement (80 Chains = 1 mile).

Chimney: A topographical feature such as a narrow drainage on a hillside or the upper end of a box canyon that could channel wind, smoke or flames up the slope; acting as a fireplace chimney would to draw smoke and heat upward.

Class A roof: Effective against severe fire test exposures, as classified by the Universal Building Code (UBC). Under such exposures, roof coverings of this class are not readily flammable, afford a fairly high degree of fire protection to the roof deck, do not slip from position, and are not expected to produce flying brands.

Class B roof: Effective against moderate fire test exposures, as classified by the Universal Building Code (UBC). Under such exposures, roof coverings of this class are not readily flammable, afford a moderate degree of fire protection to the roof deck, do not slip from position, and are not expected to produce flying brands.

Class C roof: Effective against light fire test exposure, as classified by the Universal Building Code (UBC). Under such exposures, roof coverings of this class are not readily flammable, afford a measurable degree of fire protection to the roof deck, do not slip from position, and are not expected to produce flying brands.

Clearcut: The cutting of essentially all trees, producing fully exposed microclimate for the development of a new age class. An area of forest land from which all merchantable trees have recently been harvested.

Climax forest: A forest community that represents the final stage of natural forest succession for its locality, i.e. for its environment.

Coarse Woody Debris (CWD): Sound and rotting logs and stumps that provide habitat for plants, animals, and insects, and a source of nutrients for soil development.

Colorado Champion Tree: The largest known tree of its species in the state. Trees are ranked by a point system based on three measurements: trunk circumference in inches at 4.5 feet above the ground, tree height in feet, and the average crown spread in feet.

Commercial thinning: A silviculture treatment that "thins" out an overstocked stand by removing trees that are large enough to be sold as poles or fence posts. It is carried out to improve the health and growth rate of the remaining crop trees.

Competing vegetation: Vegetation that seeks and uses the limited common resources (space, light, water, and nutrients) of a forest site needed by preferred trees for survival and growth.

Conifer: Cone-bearing trees having needles or scale-like leaves, usually evergreen, and producing wood known commercially as "softwoods."

Conservation: Management of the human use of the biosphere so that it may yield the greatest sustainable benefit to present generations while maintaining its potential to meet the needs and aspirations of future generations. It includes the preservation, maintenance, sustainable utilization, restoration, and enhancement of the environment.

Crown fire / Crowning: A form of extreme wildland fire behavior consisting of fire that advances from top to top of trees or shrubs more or less independent of a surface fire. Crown fires are sometimes classed as running or dependent to distinguish the degree of independence from the surface fire.

Dead fuels: Fuels with no living tissue in which moisture content is governed almost entirely by atmospheric moisture (relative humidity segmentation), dry-bulb temperature, and solar radiation

Deciduous: Perennial plants that are normally leafless for some time during the year.

Defensible space: An area around a structure where fuels and vegetation are treated, cleared or reduced to slow the spread of wildfire towards the structure. An area within the perimeter of a parcel, development, neighborhood, or community where basic wildland fire protection practices and measures are implemented, providing the key point of defense from an approaching wildfire or defense against encroaching wildfires or escaping structure fires. The perimeter as used herein is the area encompassing the parcel or parcels proposed for construction and/or development, excluding the physical structure itself. The area is characterized by the establishment and maintenance of emergency vehicle access, emergency water reserves, street names and building identification, and fuel modification measures. In simplest terms, it is adequate space between structures and flammable vegetation which allows firefighters a safe working area from which they can attack an oncoming wildfire. Defensible Space is the best element of fire protection for individual property owners.

Defoliator: An agent that damages trees by destroying leaves or needles.

Dripline: The outer most leaves on a tree defines its dripline and the ground within the dripline is known as the drip zone; also defined as the area defined by the outermost circumference of a tree canopy.

Deforestation: The removal of a forest stand where the land is put to a non-forest use.

Direct attack: A method of fire suppression where actions are taken directly along the fire's edge. In direct attack, burning fuel is treated directly, such as by wetting, smothering, or chemically quenching the fire or by physically separating burning from unburned fuel.

Eave opening: A vent located in an eve or soffit which allows airflow into the attic and/or walls of a structure.

Ecosystem: A functional unit consisting of all the living organisms (plants, animals, microbes) in a given area, and all the non-living physical and chemical factors of their environment, linked together through nutrient cycling and energy flow. An ecosystem can be of any size a log, pond, field, forest, or the earth's biosphere but it always functions as a whole unit. Ecosystems are commonly described according to the major type of vegetation; for example, forest ecosystem, old-growth ecosystem, or range ecosystem.

Engineering: Engineering is a fire mitigation strategy used to remove or reduce ignition sources from what can ignite or readily burn.

Escape route: A preplanned and understood route firefighters take to retreat from an unsafe or fire-threatened area and move to a safety zone or other low-risk area**.**

Extreme fire behavior: A level of fire behavior that ordinarily precludes firefighting methods involving direct attack on the fire. One or more of the following is usually involved: high rate of spread, prolific crowning and/or spotting, presence of fire whirls, strong convection column. Predictability is difficult because such fires often exercise some degree of influence on their environment and behave erratically, sometimes dangerously.

Felling: The cutting down of trees.

Firebrands: Flaming or glowing fuels lofted into the air during intense burning by strong upward convection currents. Also referred to as airborne embers.

Fire behavior: The manner in which a fire reacts to the influences of fuel, weather and topography.

Fire break: A natural or constructed fuel-free barrier used to stop or check fires that may occur, or to provide a control line from which to work.

Fire danger: The broad-scale condition of the rules as influenced by environmental factors.

Fire front / Flame front: The part of a fire within which continuous flaming combustion is taking place. Unless otherwise specified, the fire front is assumed to be the leading edge of the fire perimeter.

Fire Dependent: Requiring one or more fires of varying frequency, timing, severity, and size in order to achieve optimal conditions for population survival or growth.

Fire hazard: The presence of ignitable fuel coupled with the influence of terrain and weather.

Fire intensity: A general term relating to the heat released by fire.

Fire hazard mitigation: Various methods by which existing fire hazards can be reduced in a certain area, such as fuel breaks, non-combustible roofing, spark arresters, etc.

Fire management: The activities concerned with the protection of people, property, and forest areas from wildfire and the use of prescribed burning for the attainment of forest management and other land use objectives, all conducted in a manner that considers environmental, social, and economic criteria.

Fire suppression: All activities concerned with controlling and extinguishing a fire following its detection.

Firewise: A National Fire Protection Association's (NFPA) program encouraging local solutions for wildfire safety by involving homeowners, community leaders, planners, developers, firefighters, and others in the effort to protect people and property from wildfire risks.

Flame Height: The average maximum vertical extension of flames at the leading edge of the fire front. Occasional flashes that rise above the general level of flames are not considered. This distance is less than the flame length if flames are tilted due to wind or slope.

Flame Length: The distance between the flame tip and the midpoint of the flame depth at the base of the flame (generally the ground surface); an indicator of fire intensity.

Flaming Front: The zone of a moving fire where the combustion is primarily flaming. Behind this flaming zone combustion is primarily glowing. Light fuels typically have a shallow flaming front, whereas heavy fuels have a deeper front. Also called fire front.

Forest fire: Any wildfire or prescribed burn that is burning in forest, grass, alpine, or tundra vegetation types.

Forest type: A group of forested areas or stands of similar composition (species, age, height, and stocking) which differentiates it from other such groups.

Fuel: Any living or dead material that will burn.

Fuelbreak: An existing barrier or change in fuel type (to one that is less flammable than that surrounding it) or a wide strip of land on which the native vegetation has been modified or cleared, that acts as a buffer to fire spread so that fires burning into them can be more readily controlled. Often selected or constructed to protect a high value area from fire.

Fuel management: The act or practice of controlling flammability and reducing resistance to control of wildland fuels through mechanical, chemical, biological, or manual means, or by fire in support of land management objectives.

Fuel reduction zone: An area similar to a fuel break but not necessarily linear, in which fuels have been reduced or modified to reduce the likelihood of ignition and/or to reduce fire intensity thereby lessening potential damage and resistance to control.

Germination: The development of a seedling from a seed.

Improvement cutting: the removal of less desirable trees of any species in a stand of poles or larger trees, primarily to improve composition and quality.

Home Ignition Zone (HIZ): An area including the home and its immediate surroundings within which burning fuels could potentially ignite the structure; usually considered to be an area extending out roughly 100 feet from the home. The HIZ is often used to describe the area in which fuel modification measures should be taken to protect the home.

Ladder fuels: Fuels that provide vertical continuity between the surface fuels and crown fuels in a forest stand, thus contributing to crown fires. Vegetative materials with vertical continuity that allows fire to burn from the ground level up to the branches and crowns of trees (Dennis 1999).

Lines of effort: Tasks sets or sets of actions that are linked or coordinated with other task sets to accomplish a larger mission or reach a desired end state. Lines of effort allow leaders and decision makers to direct a variety of separate actions toward a unified result.

Litter: the surface layer of a forest floor that is not in an advanced stage of decomposition, usually consisting of freshly fallen leaves, needles, twigs, stems, bark, and fruits.

Maximum density: The maximum allowable stand density above which stands must be spaced to a target density of well-spaced, acceptable stems to achieve free-growing status.

Mid flame wind speed (MFWS): is defined as the velocity winds, in miles per hour taken at the mid-height of the flame length.

National Fire Protection Association (NFPA): A private, non-profit organization dedicated to reducing fire hazards and improving fire service.

Noxious weed: a plant specified by law as being especially undesirable, troublesome, and difficult to control.

Patch: a small part of a stand or forest.

Phloem: A layer of tree tissue just inside the bark that conducts food from the leaves to the stem and roots.

Pitch tubes: A tubular mass of resin that forms on bark surface at bark-beetle entrance holes.

Prescribed burning: Controlled application of fire to wildland fuels, in either their natural or modified state, under certain conditions of weather, fuel moisture, soil moisture, etc. as to allow the fire to be confined to a predetermined area and at the same time to produce results to meet planned land management objective.

Ready, Set, Go! (RSG): A program, managed by the International Association of Fire Chiefs (IAFC), seeking to develop and improve the dialogue between fire departments and residents. The program helps fire departments teach individuals who live in high-risk wildfire areas how to best prepare themselves and their properties against fire threats.

Regeneration: The act of renewing tree cover by establishing young trees, naturally or artificially note regeneration usually maintains the same forest type and is done promptly after the previous stand or forest was removed.

Riparian area: related to, living, or located in conjunction with a wetland, on the bank of a river or stream but also at the edge of a lake or tidewater.

Saddle: A depression, dip or pass in a ridgeline; significant in wildland firefighting because winds may be funneled through a saddle, causing an increase in wind speed.

Safety zone: An area essentially cleared of flammable materials, used by firefighters to escape unsafe or threatening fire conditions. Safety zones are greatly enlarged areas in which firefighters can distance themselves from threatening fire behavior without having to take extraordinary measure to shield themselves from fire/heat.

Sapwood: The light-colored wood that appears on the outer portion of a cross-section of a tree.

Serotinous: Pertaining to fruit or cones that remain on a tree without opening for one or more years note in some species cones open and seeds are shed when heat is provided by fires or hot and dry conditions.

Shaded fuelbreak: A fuelbreak built in a timbered area where the trees within the break are thinned and limbed up to reduce crown fire potential, yet retain enough crown canopy to provide shade, thereby making a less favorable microclimate for surface fires.

Silviculture: The art and science of controlling the establishment, growth, composition, health, and quality of forests and woodlands. Silviculture entails the manipulation of forest and woodland vegetation in stands and on landscapes to meet the diverse needs and values of landowners and society on a sustainable basis.

Snag: A standing dead tree or part of a dead tree from which at least the smaller branches have fallen.

Stand: A continuous group of trees sufficiently uniform in age-class distribution, composition, and structure, and growing on a site of sufficiently uniform quality, to be a distinguishable unit.

Spot Fire / Spotting: Fires ignited beyond control lines or outside the perimeter of a fire by firebrands landing on/among flammable material. Spot fires/spotting are a form of extreme fire behavior typically resulting from high wind conditions.

Structure protection: A defensive strategy in wildland firefighting in which firefighters are assigned to evaluate, prepare and, when possible, defend structures/homes that may be threatened by a wildfire.

Structure triage: Evaluating and sorting structures/homes into categories based on their relative likelihood of surviving a wildland fire threat (*defensibility*). Triage decisions are based multiple factors and conditions occurring during an actual fire - weather, fire behavior, home ignition potential, defensible space, presence of escape routes, and availability of firefighting resources, among others - with the goal of doing the most good with the resources available.

Succession (or ecological succession): The replacement of one plant and/or animal species over time by another in progressive development toward climax vegetation.

Surface fuels: Fuels lying on or near the surface of the ground, consisting of leaf and needle litter, dead branch material, downed logs, bark, tree cones, and low-lying live vegetation.

Survivable space: A term typically used to describe the area around a structure/home indicating that fuels in the area have been reduced to the point that there is little or no serious fire threat to the structure; the structure has a high probability of surviving a wildland fire without anyone on scene providing active protection.

Thinning: A cutting made in an immature crop or stand primarily to accelerate diameter increment, but also, by suitable selection, to improve the average form of the tree that remain.

Topography: Also referred to as "terrain." The physical parameters of the "lay of the land" that influence fire behavior and spread. Key elements are slope (in percent), aspect (the direction a slope faces), elevation, and specific terrain features such as canyons, saddles, "chimneys," and chutes.

Torching: The burning of the foliage of a single tree or a small group of trees, from the bottom up. Sometimes, also called candling. Torching is an extreme form of fire behavior, similar to but less extreme than crowning in that crowning affects larger numbers, even entire stands of trees.

USDA FS: United States Department of Agriculture - Forest Service, what is commonly known as just "The Forest Service."

Windbreak: A strip of trees or shrubs maintained mainly to alter wind flow and microclimates in the sheltered zone, usually farm buildings.

Windfirm: trees able to withstand strong winds and resist windthrow.

Wildland-Urban Interface or Wildland-Urban Intermix (WUI): The line, area, or zone where structures and other human development meet or intermingle with undeveloped wildland or vegetative fuels. Although ***Interface*** is the more general, more commonly used term; it technically refers specifically to the area where development and wildlands meet. ***Intermix*** indicates the presence of wildland vegetation/fuels intermingled throughout the developed area.

[Source: Helms, J. A., 1998, Jeffco CWPP 2011, Falcon CWPP 2016 and CSFS 2012]

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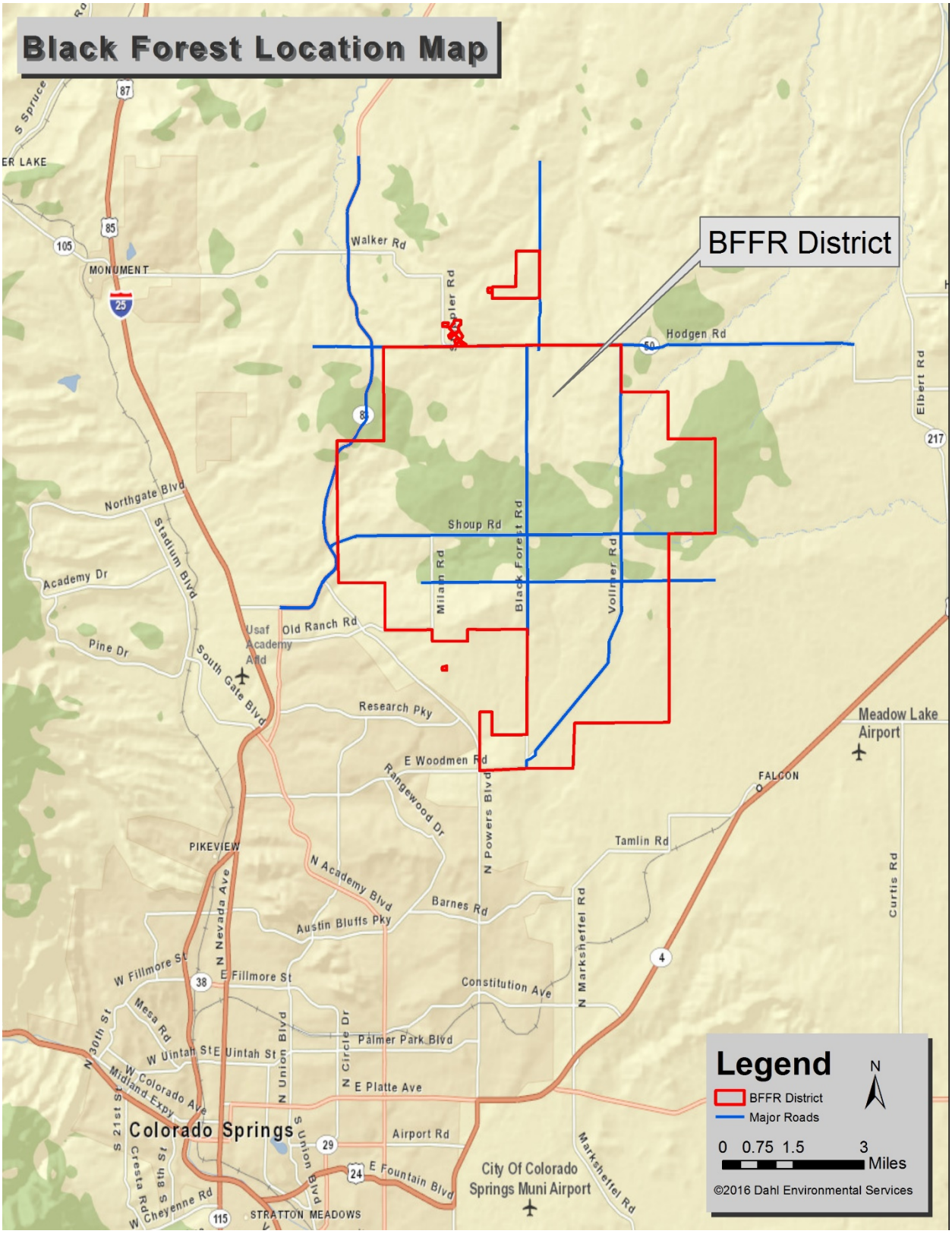
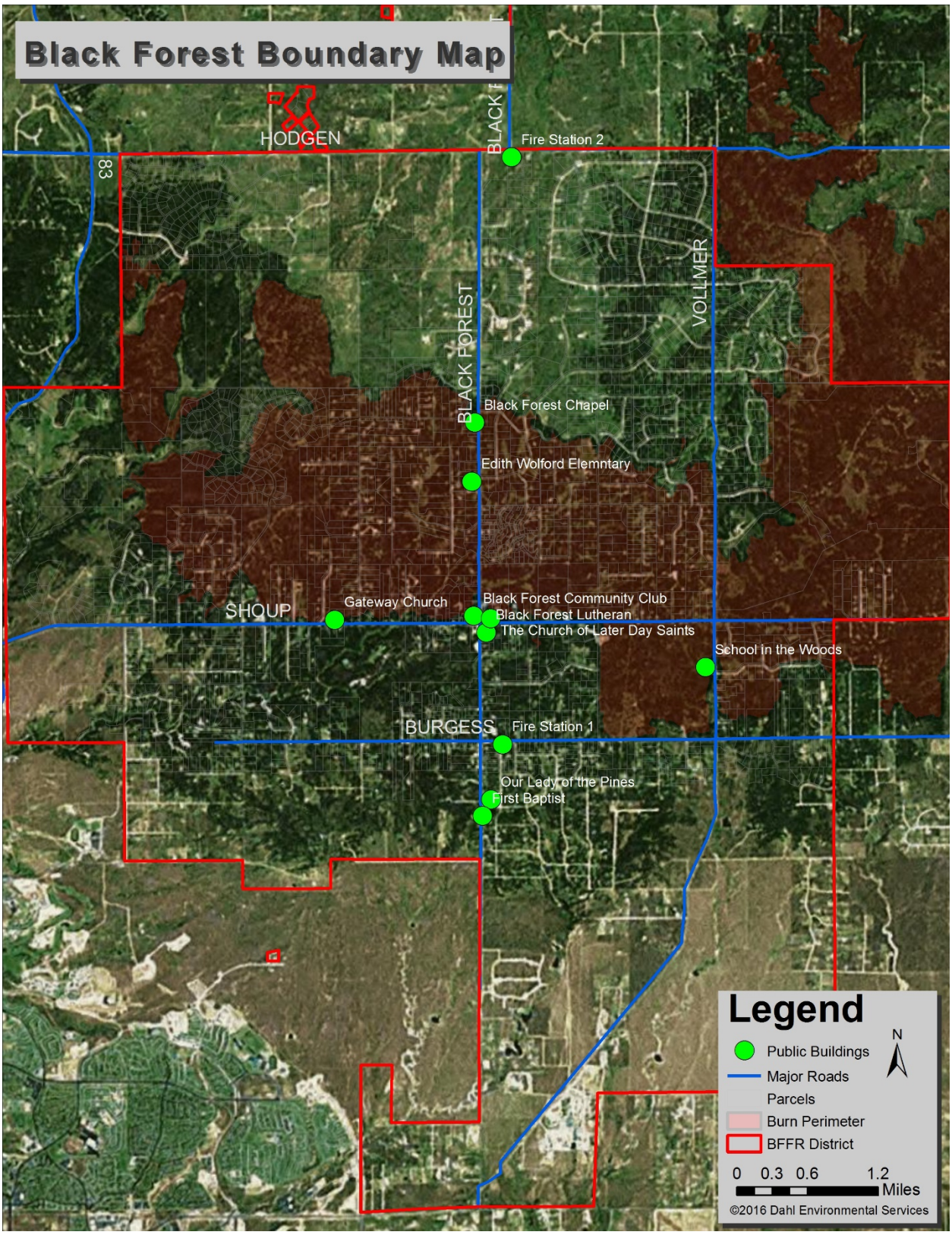
10. APPENDICES

APPENDIX 10.1 MAPS

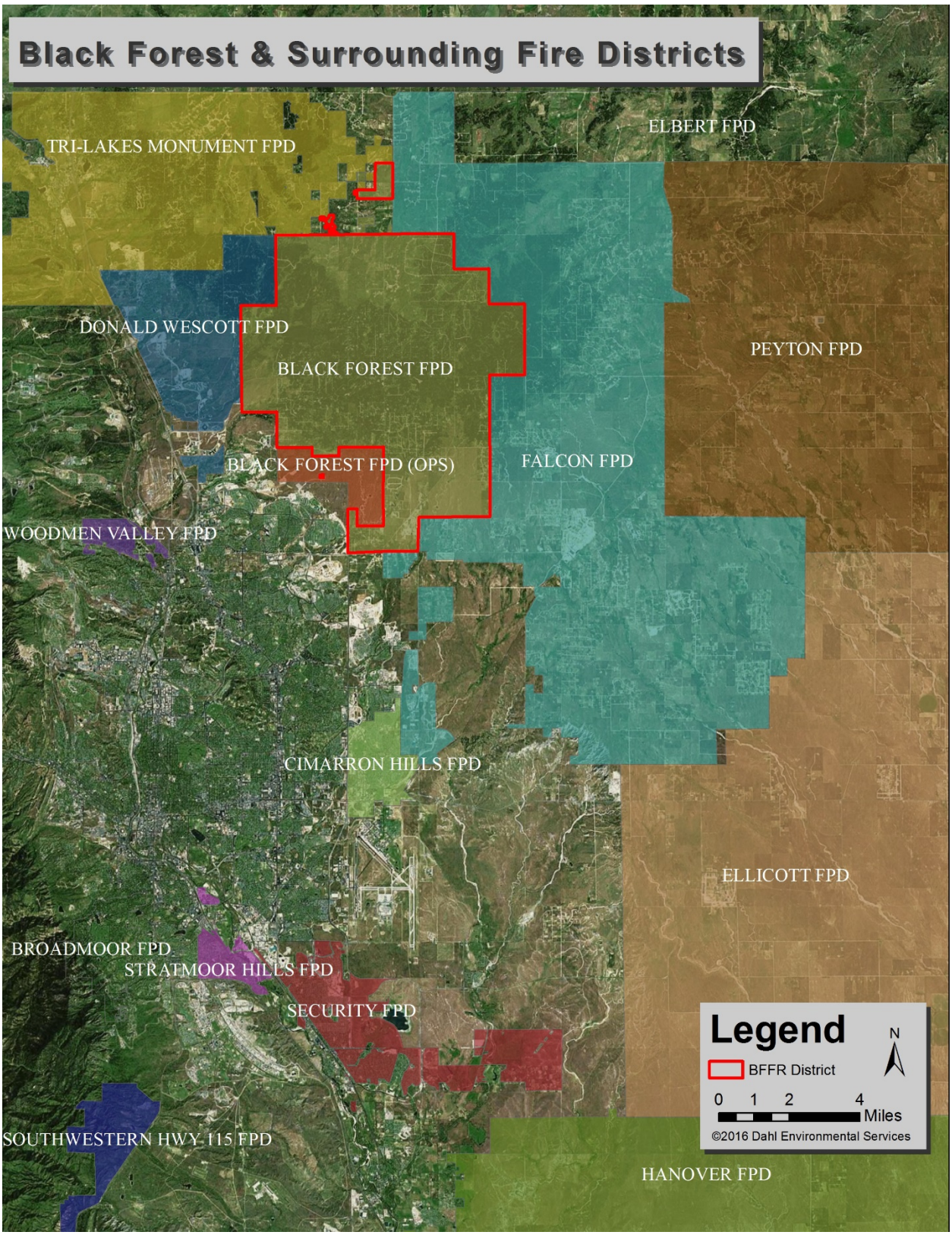
1. Location Map



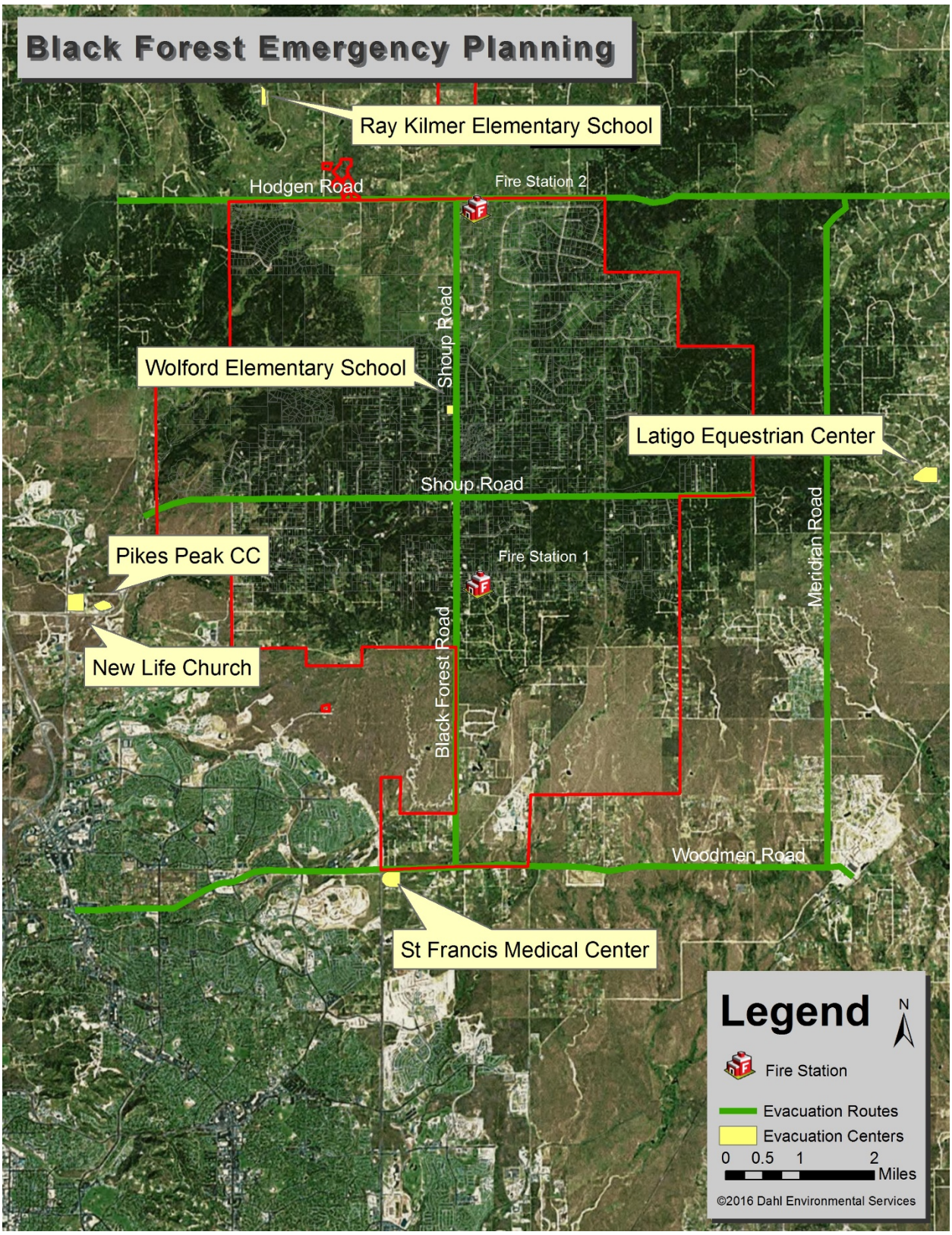
2. Community Fire Protection District Base Map



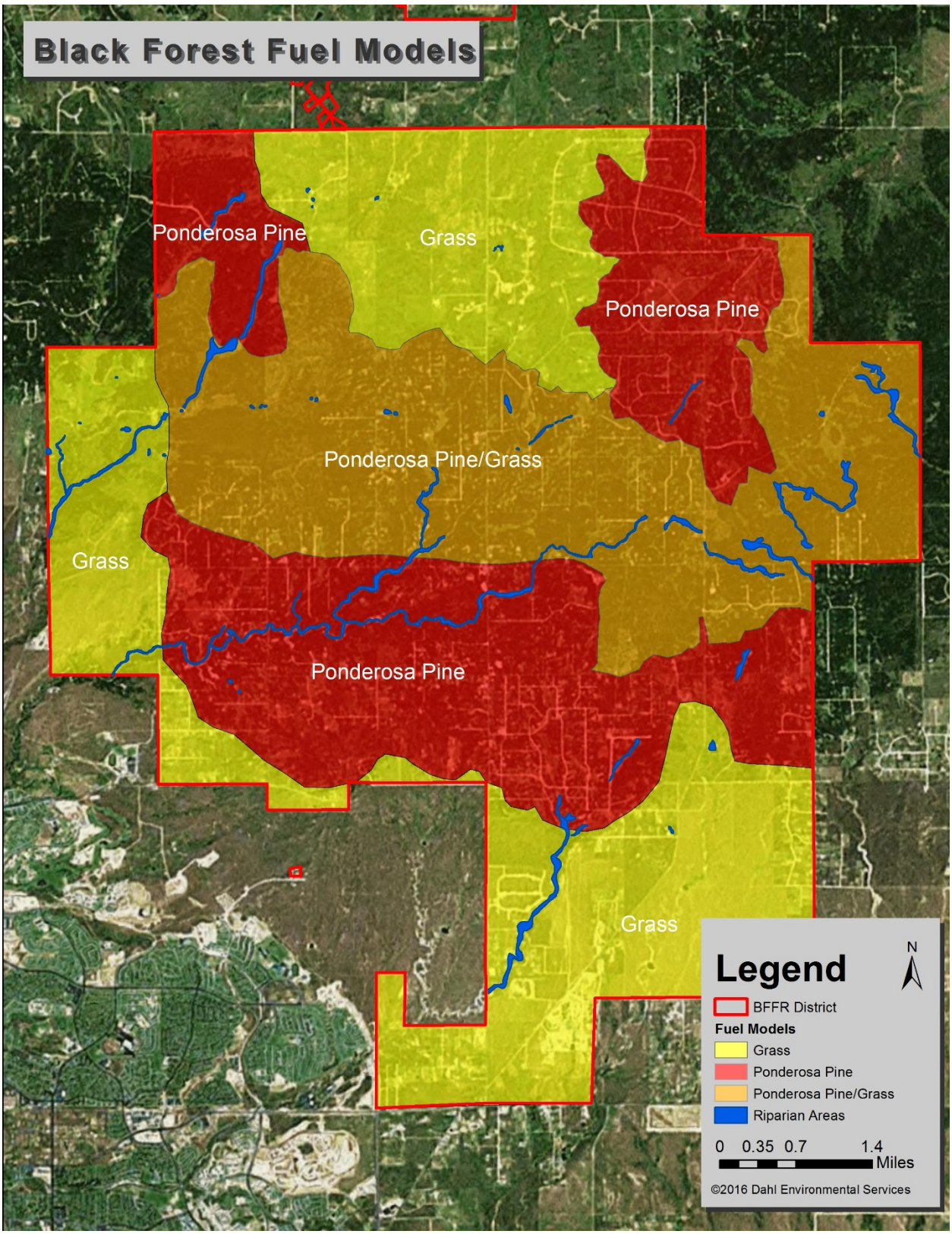
3. Fire Districts Map



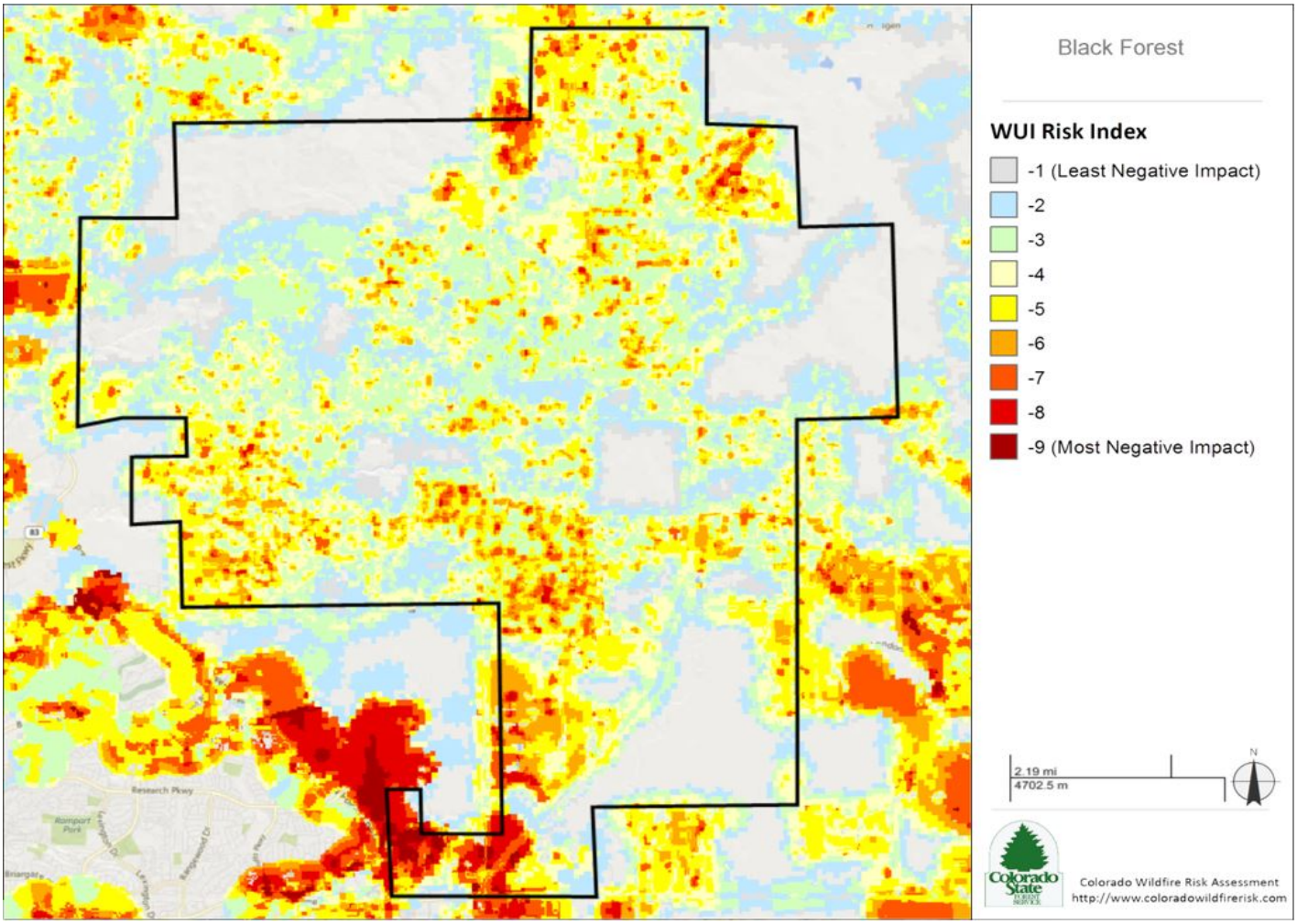
4. Emergency Planning Map



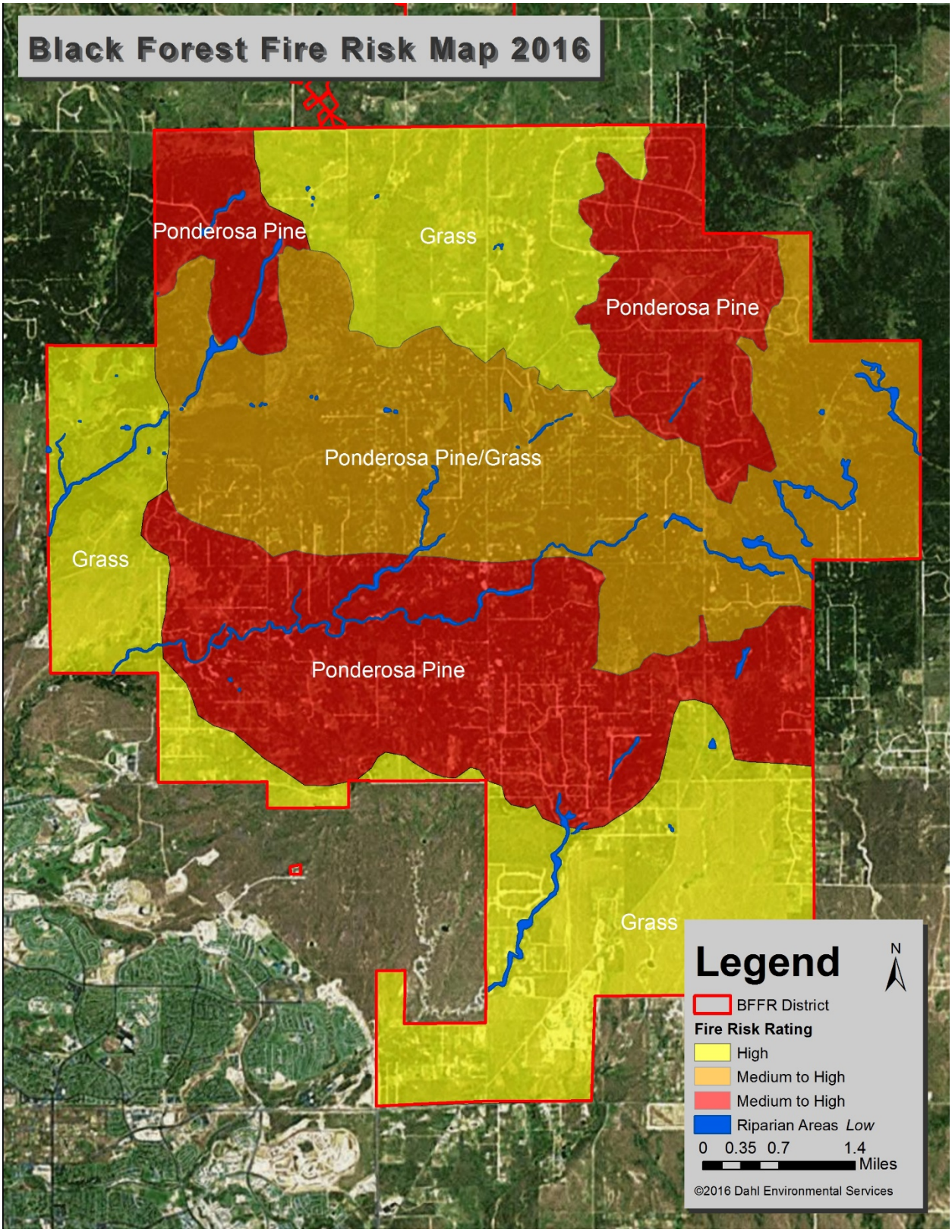
5. Fuel Models Map



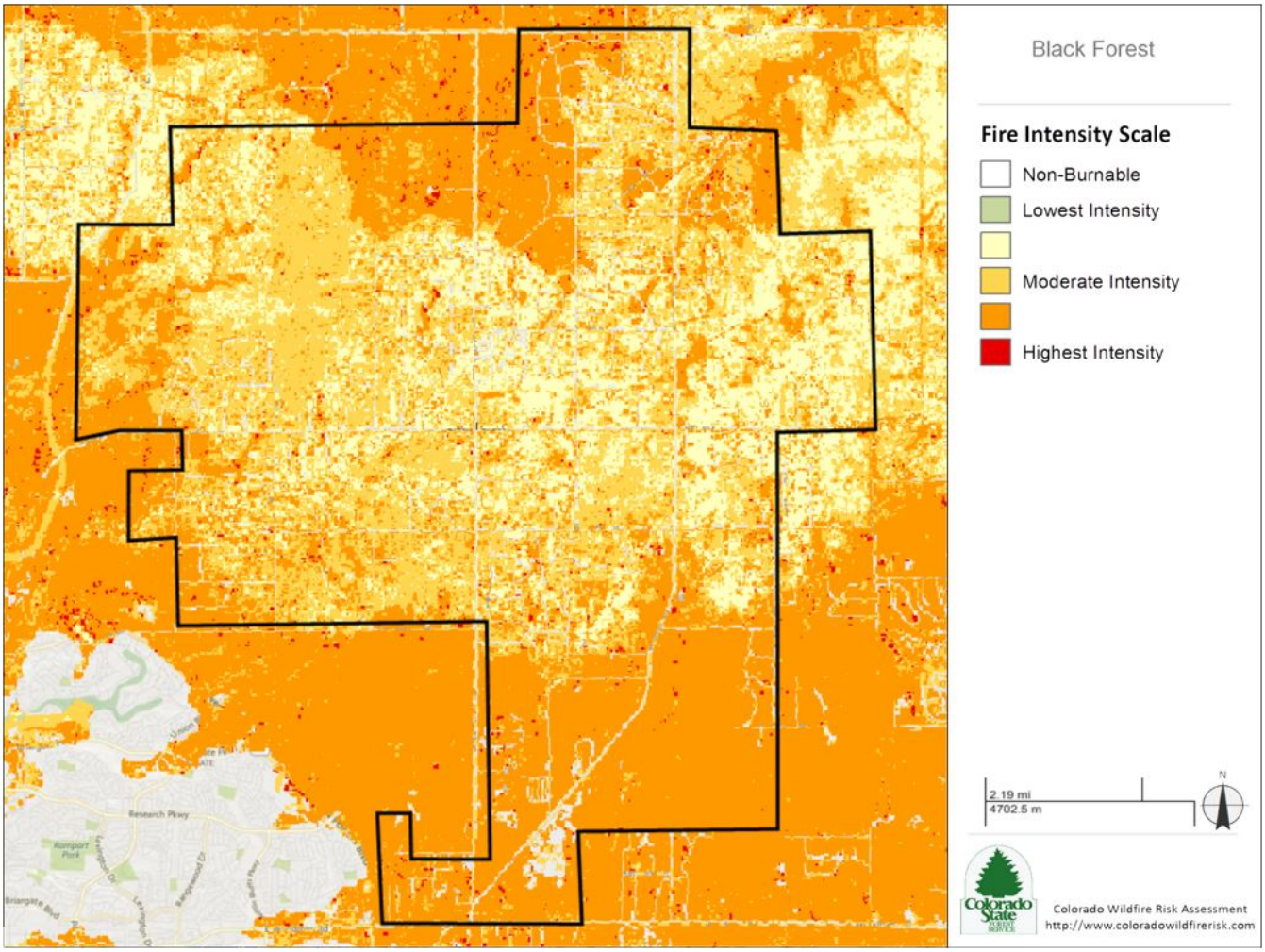
6. WUI (from Co-Wrap Fire Risk) Map



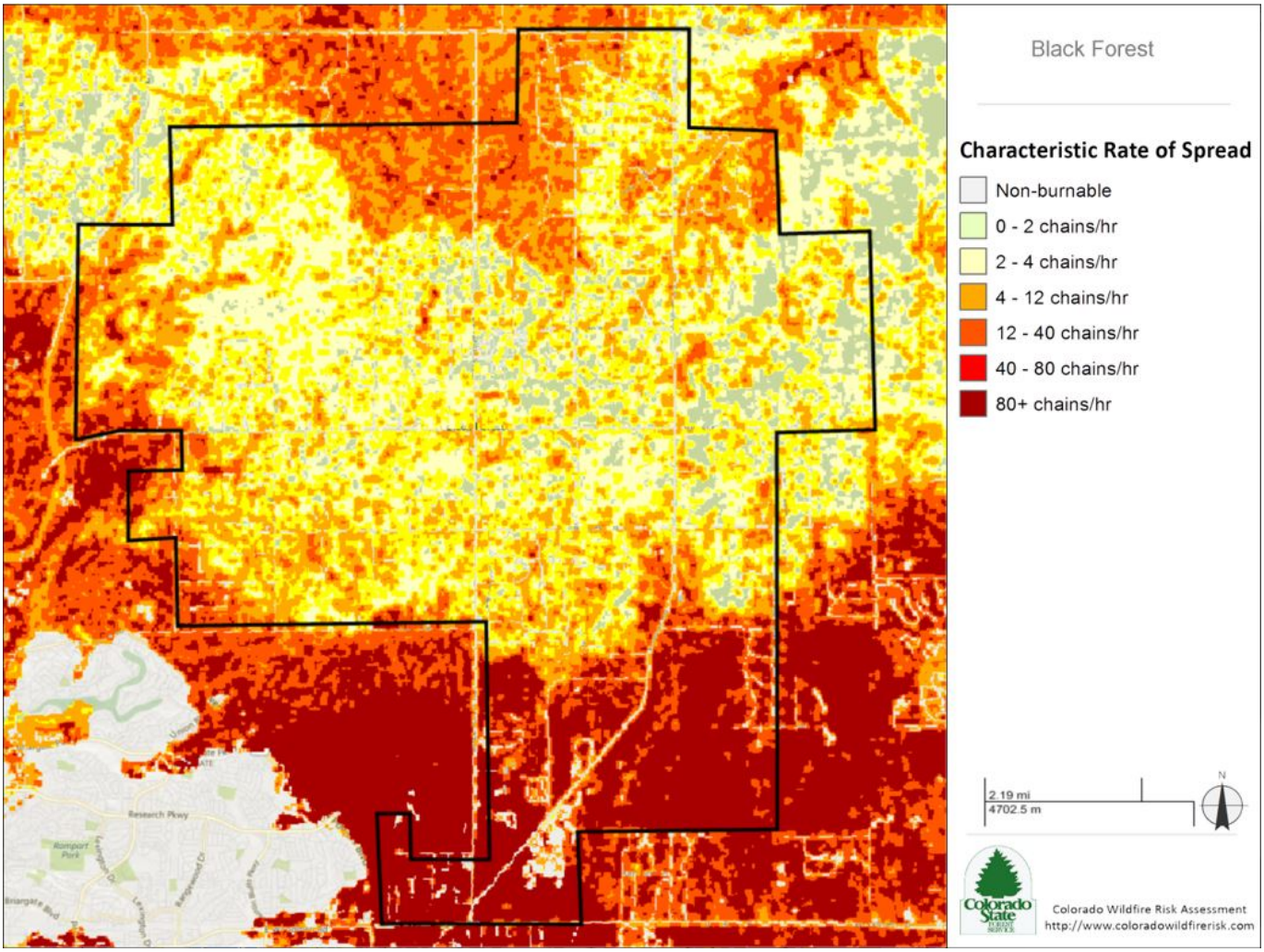
7. Post Fire Risk Map



8. Fire Intensity Scale Map (from Co-Wrap)



9. Rate of Spread Map (from Co-Wrap)



APPENDIX 10.2 WILDFIRE MANAGEMENT

Links to Important Documents and Websites

Colorado Wildfire Risk Assessment Report
http://www.coloradowildfirerisk.com/CoWRAPReportDocs/RiskSummaryReport_Black_Forest_20160623_190207.docx

Creating Wildfire-Defensible Zones Quick Guide
http://static.colostate.edu/client-files/csfs/pdfs/FIRE2012_1_DspaceQuickGuide.pdf

Fire Resistant Landscaping
http://static.colostate.edu/client-files/csfs/pdfs/06303.pdf

FireWise Plant Materials
http://static.colostate.edu/client-files/csfs/pdfs/06305.pdf

Creating Fuelbreaks
http://static.colostate.edu/client-files/csfs/pdfs/fuelbreak_guidellines.pdf

Forest Home Fire Safety
http://static.colostate.edu/client-files/csfs/pdfs/06304.pdf

Colorado Fire Adapted Communities
http://csfs.colostate.edu/wildfire-mitigation/colorado-fire-adapted-communities/

Colorado Firewise Communities
http://csfs.colostate.edu/wildfire-mitigation/colorado-firewise-communities/

Wildfire and Insurance
http://csfs.colostate.edu/media/sites/22/2014/02/co_wildfire_guide.pdf

USDA Forest Service Research on Saving Homes from Wildfire

- Dr. Jack Cohen, Fire Science Researcher with the U.S. Forest Service, explains current research about how homes ignite during wildfires, and the actions that homeowners can take to help their home survive the impacts of flames and embers. This video was produced by the National Fire Prevention Association http://forestpolicypub.com/2016/06/22/u-s-forest-service-expert-explains-how-your-home-can-survive-a-wildfire/.
- Uncontrolled, extreme wildfires are inevitable. These are the conditions when wildland-urban interface disasters occur the hundreds to thousands of houses destroyed during a wildfire.
- Does that mean that wildland-urban interface is inevitable as well? No! We have great opportunities as homeowners to prevent our houses from igniting during wildfires. There is lot that we can do, the little things – to our house and its immediate surroundings – in order to reduce the ignition potential of that house. Jack Cohen (Cohen 1997/2016).

Local Websites

For more information, visit these local websites:

Black Forest Together
A source of resource information, CWPP plan implementation information.
www.blackforesttogether.org

Black Forest Fire/Rescue
Local tips for preparing for wildfire.
Download the brochure "Wildfire... Are You Prepared?" www.bffire.org.

Slash-Mulch to collect what you cut www.bfslash.org. Note: All slash disposal procedures should be implemented to avoid attracting mountain pine bark beetle to the project area.

The FireWise Web Site
A wealth of wildfire information, defensible space advice, and preparation tips
www.firewise.org.

Colorado State Forest Service
Protect Your Home and Forest section; Grants and Funding
http://csfs.colostate.edu/homeowners-landowners/

U.S. Forest Service: Rocky Mountain Area Coordination Center
Everything you ever wanted to know about wildfire.
This page includes links to all information below: http://gacc.nifc.gov/rmcc/.

U.S. Drought Monitor
http://droughtmonitor.unl.edu/

The Fire Weather and Intelligence Page
Potential and activity in the Rocky Mountain region
http://www.blm.gov/co/st/en/BLM_Programs/fire/interagency_coordination.html

Observed Fire Danger Class
http://www.fs.fed.us/land/wfas/fd_class.png

Fire Weather Outlook U.S. Forest Service: Rocky Mountain Region
Visual summary of weather conditions http://www.fs.fed.us/r2/fire/rmafwx.png

Fire Weather Forecast
Detailed text report of local fire weather is provided by the Pueblo Dispatch Center
(Black Forest is Zone 226) http://www.srh.noaa.gov/ridge2/fire/

How to survive a wildfire by Dr. Jack Cohen
http://forestpolicypub.com/2016/06/22/u-s-forest-service-expert-explains-how-your-home-can-survive-a-wildfire/

Firewise information at the Black Forest Fire Department
For a free Firewise Assessment from a uniformed Fire Department volunteer
e-mail firewise@bffire.org to set up an appointment.

Firewise Construction, Design and Materials
The basics of defensible space and the "home ignition zone"

Firewise Landscape/Construction Guide

How to have a Firewise home

Preparing a Home for Wildfire Season

Wildfire Approaching

Explore a Firewise Home

http://firewise.org/wildfire-preparedness/wui-home-ignition-research/the-jack-cohen-files.aspx

Research About How Homes Ignite

A Homeowner's Guide to FireSafe Landscaping (2005), www.firesafecouncil.org

The Five Steps to be Recognized as a FireWise Community

1. Form a Firewise board or committee
2. Obtain a wildfire risk assessment from the CSFS and local fire department and create an action plan
3. Hold a Firewise event once per year
4. Invest a minimum of $2 per capita in local Firewise actions for the year
5. Submit an application to the state Firewise liaison (Courtney.Peterson@colostate.edu)

To learn more about the FireWise Communities/USA recognition program or to fill out an application, visit the National Firewise website

APPENDIX 10.3 POST FIRE RECOVERY

Reforestation- Restoration- Noxious weeds

Grass Seed Mixes to Reduce Wildfire Hazard
http://static.colostate.edu/client-files/csfs/pdfs/06306.pdf

Insect and Disease Associate with Forest Fires
http://static.colostate.edu/client-files/csfs/pdfs/06309.pdf

Soil Erosion After Wildfire
http://static.colostate.edu/client-files/csfs/pdfs/06308.pdf

Veg Recovery After Wildfire
http://static.colostate.edu/client-files/csfs/pdfs/06307.pdf

Noxious Weeds and Control Methods, El Paso County, Colorado
http://adm.elpasoco.com/Environmental%20Division/Forestry%20and%20Noxious%20Weeds/Documents/Noxious%20Weed%20Control%20Book%202014.pdf

APPENDIX 10.4 PUBLIC MEETING SUMMARIES

Black Forest Community Wildfire Protection Plan
Community Information Workshop
April 5, 2016
Issues and Concerns

Group 1

Issues
Black Sticks
Non-mitigators (Black and Green)
County Road – Non mitigating (Large dead trees – ROW) Not seeding post fire
Access – driveways – loops (Cul de sacs)
Concerns
Erosion
Insect pests – MPB
Weed growth – post fire
Lawns –Water use; households (less shade, more water)
Restoration Forest Pattern (tree clusters)
Personal emergency evacuation plan

Group 2

(H) Communication Breakdown (Broadcast)
(H) Implementation (fuel reduction)
Rule enforcement (mandatory or voluntary)
Standing dead trees
(H/M) Erosion
(H) Roadways/firebreaks (Right aways cleared; turnarounds for fire department)
(H) Notifications – Individual
(H) Water Resources
Fire Resistant structures
(H) All Fire Fighting Resources

Group 3

Remove fuels from rights of way
Evacuation is a concern
Publicize FD risk assessment and triage for saving a house
Fire breaks throughout B.F.
What is the actual boundary of the CWPP?
Collaboration with FD & County – Cherokee WD
Enforcement of mitigation
Access in/out of B.F.
Individual H>O> standards for mitigation
Promote fire suppression inside homes
Make Structures fire resistant

Group 4

Unmitigated properties
Methods of fire/emergency/ all notifications (Special fire alerts)
Community involvement in restoration
Overcome independent attitudes
Evacuation plans/routes

Black Forest Community Wildfire Protect Plan
April 5, 2016
Community Meeting Themes

Fuel Management

- Right of ways
- Defensible space – properties
- Fire breaks
- Mitigation
- Utilization

Public Safety

- Hazard tree removal
- Evacuation planning
- Notification (Communications)

Restoration

- Vegetative
- Watershed restoration
- Erosion
- Flooding

Education and Awareness

Protection Capability

Preliminary Update to the Black Forest Community Wildfire Protection Plan to be Presented at Community Briefing May 17

Highlights of the preliminary Black Forest Community Wildfire Protection Plan (CWPP) update will be presented to the community the evening of Tuesday May 17th, 7-9 PM, at the Black Forest Fire/Rescue Station 1, 11445 Teachout Road, Black Forest. This updated CWPP is being collaboratively developed by Black Forest Together, Black Forest Fire/Rescue Protection District and the Black Forest community.

The CWPP is a comprehensive planning document with project and community recommendations that have been proven to effectively reduce wildland fire danger. The current planning effort will update the CWPP developed in 2007. The updated plan will address the dramatic changes in the community following the 2013 Black Forest Fire. It will provide a strategic framework for how property owners, organizations and the Black Forest Fire/Rescue Protection District can work together to lessen the risk of loss from wildland fire.

The Healthy Forest Restoration Act of 2003 created the concept of CWPPs. The updates to the Black Forest CWPP are incorporating the elements common to successful programs from across the country. Its goals are to:

- **Create fire-adapted communities:** The plan provides mitigation strategies and a community action plan to create a community where residents are engaged and active in preparing for wildfire. It strengthens communications and support between agencies and community residents.
- **Restore and maintain fire-resilient landscapes**: The plan provides prioritized locations for fuel reduction treatments to address risks to the Black Forest community on a landscape scale.
- **Provide effective and efficient wildfire response**: The plan provides strategic treatments on the Black Forest landscape that will facilitate safer and successful suppression response. This plan provides for tracking, reporting and sharing of both fuel reduction accomplishments and homeowner/community initiatives.

This plan is based on ideas and information shared by community members who took time to participate in the development of this plan. While Black Forest Together and Black Forest Fire/Rescue Protection District will be the stewards of this plan, it will be the Black Forest community that makes this plan a reality and a viable solution to the wildfire risks facing the Black Forest community.

For more information, contact Lyle Laverty, Black Forest CWPP Planning Team, at 720-490-6878.

Black Forest Community Wildfire Protection Plan

CWPP Update Agenda
Black Forest Fire Station #1
11445 Teachout Road
Black Forest
Tuesday May 17, 2016

7:00 PM

7:00	Welcome/ Introductions	Chief Bryan Jack Bjorn Dahl
7:10	Evening Overview • Evening expectations	Lyle Laverty
7:15	Community Wild Fire Protection Plan Review • What is it? • What does it do? CWPP Update • Community Assessment • Goals/ Objectives • Recommendations	DES Team
8:00	Breakout Group Conversations • Recommendations Assessment • Majority/Minority perspectives • Alternatives for action	Lyle Laverty
8:30	Group Reports	All
8:45	Next Steps	Lyle Laverty
9:00	Adjourn	Chief Bryan Jack Bjorn Dahl

Black Forest Community CWPP Update

Black Forest Fire Rescue Station

May 17, 2016

Raw Meeting Minutes (Recommendations)

- Outreach by BFFR
    - Existing Fire Department contact w/ Homeowners
    - Needs a broader outreach
- Communication
    - BFT email blasts
    - District 20 notifications; Churches
    - Non profits
    - Establish committees responsible for specific avenues of communications
- Establish committees to address specific objectives
- Safety zones, facilities outside the district
- Need sirens
- Marking roads/signs for evacuation routes
- What is natural and not
    - How does that affect how we respond?
- Consistency among Insurance companies
- Executive summary that summarizes and encapsulates" What needs to be done"
- How to influence ISO ratings
- Best recommendations for county planning requirements for development
- Change paradigm of how we manage forests "now" to "clumpy/groupy" strategy
- Establish a Firewise community
- Getting insurance companies to work together
- How to get community to "buy into" "implementing the plan of action"
- Add one recommendation: Mitigate zone 3 with "clumpy/groupy"
- Distinguish between "resiliency" and "resistance" and what makes it that way
- Vegetation models in COWRAP do not accurately represent BF and should not be used.
- Build on HOA that have mitigation efforts in place
- Cite existing legislation or laws (other states?) that may assist with future efforts
- This CWPP is mechanism to:
    - Grants
    - Schedule of action
    - A how for best management practices … restoration
- Who will be "in charge" of information and education? Or any of the other recommendations
    - This was lacking in previous plan

APPENDIX 10.5 ANIMAL EVACUATION

Wildfire Preparedness for Horse Owners

http://extension.colostate.edu/topic-areas/agriculture/wildfire-preparedness-for-horse-owners-1-817/

APPENDIX 10.6 WEBSITE LINKS

Wildfire Resources

Black Forest Fire Rescue Protection District: www.bffire.org

Colorado State Forest Service: www.csfs.colostate.edu

El Paso County Sheriff's Office: www.EPCSheriff.com

Pikes Peak Wildfire Prevention Partners: www.ppwpp.org

Emergency Notification System (ENS) Signup: www.elpasoteller911.org
(NOTE: If you do not have a phone land line through Century Link, your phone number may not be in the ENS (often referred to as "Reverse 911"). Homeowners who rely only on their cell phone or Voice-over-internet-protocol (VIOP) through their cable provider must register their devices and phone numbers at this web site.

Firewise Links

Firewise Communities web site: www.firewise.org
1. Resources, contacts and access to library
2. "How to's" for homeowners with downloadable pdf's

Ready! Set! Go! (RSG)
Sign up at: www.wildlandfirersg.org
Ready, Set, Go! Your Personal Wildfire Action Plan brochure

Ready Colorado: www.readycolorado.com
READY Colorado Pack a Kit brochure (pdf) -*Pet Preparedness* brochure (pdf)

Insurance Institute for Business and Home Safety (IBHS) Web site:
www.disastersafety.org
1. Site has regional guides for retro-fitting homes for wildfire.
2. Wildfire Home Assessment & Checklist
3. View videos of ember ignition lab tests.

Rocky Mountain Insurance Information Association: www.rmiia.org
Wildfire and Insurance brochure (pdf)

Fire Adapted Communities (FAC): www.fireadapted.org
Waldo Canyon post-fire report viewable.

National Cohesive Strategy:
www.forestsandrangelands.gov/strategy/documents/strategy/CSPhaseIIINationalStrategyApr2014.pdf

APPENDIX 10.7 COLLABORATION

Black Forest Community Wildfire Protection Plan Contacts

Megan Astrella, El Paso County, Public Information Office
Jarrod Biggs, Colorado Department of Local Affairs, Division of Local Affairs
Melissa Bottorff, Black Forest Fire Rescue
Edward Bracken, Black Forest Together, Inc.
Carolyn Brown
Peter Burleson
Ken Clark, Black Forest Together, Inc.
Sallie Clark, El Paso County Commissioner
Daryl Glenn, El Paso County Commissioner
Sarah Dunlier
Tom Flynn, Front Range Arborists
Don Gray
Jack Hinton
Gary Hoffman
Phil Hosmer
Bryan Jack, Chief, Black Forest Fire Rescue
Steve Jacobs
Elaine Kleckner, El Paso County, Community Services Department
John Kowall
Joen Krantz
Cathy Lane
Len Lankford
Chuck Liddenhall
Sherri Little
Dick Losee
Bill Manita, Black Forest Together, Inc.
Cathy Martin
Jay Matheson
Emmy McAllister
Anita McMorran
Rick McMorran, Black Forest Fire Rescue
Craig Meeks
Alex Murchant
Bob North
John Padgett, El Paso County Sheriff's Office
James Rebitski, Black Forest Fire Rescue
Reggie Blackwell, Black Forest Fire Rescue
Dave Root, Colorado State Forest Service
Amber Rossman
Bruce Sardeson
Bob Sturtevant, La Foret, Colorado State Forest Service
Linda Subie
Dave Thorne
Nancy Trosper, Black Forest Together, Inc.
Judy von Ahlefeldt
Rebecca Wellin
Tim Wolken, El Paso County Parks
Stephen Fischer, El Paso County Appraiser Office

APPENDIX 10.8 FIRE HISTORY

June is a very critical fire weather month for El Paso County in general and for Colorado in particular. You will readily note that many of Colorado's largest, most destructive fires have occurred during the month of June, particularly within the first two weeks. Among other factors, drought due to low rainfall and/or snowpack, low snow water equivalence, high nocturnal temperatures from midnight to 0600, low humidities, strong winds, moderate (5) to high (6) Haines Indices, and low fuel moistures have contributed to the extreme fire behavior and large fire growth. The huge lesson learned from the information below is that June is wildfire month in Colorado. Therefore, watch out, June can be the Red Flag month of the wildfire season!

The twelve Colorado, June 2000 to 2013 wildfires enumerated below are listed in chronological order and detailed by the fire name, location (city and county), dates, and the number of acres and structures burned.

1. High Meadow Fire, Bailey (Park County), June 12 to 20, 2000; 10,800 acres, 51 structures;
2. Trinidad Complex, Stonewall/Trinidad (Las Animas County); June 2 – 14, 2002; 33,000 acres;
3. Coal Seam Fire, Glenwood Springs (Garfield County), June 7 to July 9, 2002, 12, 209 acres; 43 structures;
4. Hayman Fire, Lake George (Park County); June 8 – July 18, 2002, 138,114 acres, 133 structures;
5. Missionary Ridge Fire, Durango (La Plata County); June 9 – July 14, 2002, 71,739 acres, 56 structures;
6. Spring Creek Complex, New Castle (Garfield County); June 22 to July 21, 2002, 13,490 acres;
7. Bridger Fire, Piñon (Las Animas County) June 8 - July 9, 2008; 45,800 acres; 3 structures;
8. Last Chance Fire, (Las Animas County) June 5 – 21, 2011; 44,662 acres; 11 structures;
9. Shell Fire, Kim (Las Animas County), June 7 to 17, 2011, 14,390 acres; 7 structures;
10. High Park Fire, Fort Collins (Larimer County); June 9 – 30, 2012, 87,250 acres, 259 structures;
11. Waldo Canyon Fire, Colorado Springs (El Paso County); June 23 - July 10, 2012; 18,247 acres, 346 structures; and taking two lives.
12. Black Forest Fire, Black Forest (El Paso County); June 11 to 21, 2013; 14,280 acres, 487 structures; and taking two lives.

The most recent and devastating wildfire in the Black Forest was during the summer of 2013. The Black Forest Fire started on Tuesday, June 11th. The cause is undetermined. The fire was located in Black Forest, Colorado. Rich Harvey's Great Basin Type 1 Incident Management Team took over management of the fire on Wednesday June 12th at 6 a.m.

This wind driven fire moved very quickly the first day. The current assessment has determined 488 structures have been destroyed and 18 were damaged. Several thousand residents were evacuated. As areas cool down and have been cleared of potential safety hazards, residents are being allowed to

return to their homes. Safety assessments of structures are ongoing. Multiple resources have been released and re-assigned to other incidents. Full containment of the fire we reached on Thursday evening, June 20. Management of the fire was transferred to a local Type 4 organization on Friday morning, June 21.

The historic fire event in Black Forest that started on June 11, 2013, has generated more studies and reports than most of fires in our country. Many dynamics complicated the responses and the actions to address this historic event. The weather condition, the fuel loads, the various residential configurations, agency collaborations, community preparedness, mitigation or non-mitigation, and so many other factors contributed to a devastating and complex conflagration.

For complete Black Forest Fire History see website below:
http://www.blackforesttogether.org/history.html

This Community Wildfire Protection Plan was developed by the Core, Leadership and Steering Team (CLST) an action-oriented forum of individuals involved in implementing the BFFR Black Forest CWPP with citizens in the community. It builds on previous planning efforts, and covers the wildland-urban interface for all partners in the adjacent Black Forest fire protection districts and departments. Chapters 1 through 7 examine common issues faced by Black Forest communities and general strategies for mitigation. Chapters 8 through 12 provide an in-depth assessment of each geographic division and provide specific recommendations, actions, and projects for improving community resiliency to wildfire.

APPENDIX 10.9– COLORADO BEST MANAGEMENT PRACTICES

Forestry Best Management Practices to Protect Water Quality in Colorado
http://static.colostate.edu/client-files/csfs/pdfs/ForestryBMP-CO-2010.pdf