Greater Sage Port

Community Wildfire Protection Plan

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Submitted by

Greater Sage Port Community

In collaboration with

The Colorado State Forest Service,
The Douglas County Wildfire Mitigation Staff,
And The Larkspur Fire Protection District

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Community Wildfire Protection Plan (CWPP)
For the
Greater Sage Port Community (GSPC)

Executive Summary

The purpose of the Greater Sage Port CWPP is to address community concerns affecting the Greater Sage Port area as they relate to wildland fire events. This plan analyzes the wildland fire hazards, values at risk, and portrays a comprehensive program for the reduction of loss from wildland fire within the Greater Sage Port area.

Community Wildfire Protection Plans (CWPPs) are authorized and defined in Title I of the "Healthy Forests Restoration Act" (HFRA) which was signed into federal law in 2003. This act emphasizes community planning for wildland fire events and hazard reduction implementation. A variety of benefits and incentives are afforded to those communities with a Community Wildfire Protection Plan in place and which is being actively implemented.

The major wildfire concern for the Greater Sage Port area is that the communities have a very high wildfire hazard rating based on the Douglas County CWPP Wildfire Hazard Assessment. The majority of the area is rated as a high wildfire hazard with some areas of extreme wildfire hazard within the communities. Existing wildfire fuel (vegetation) hazards, consist primarily of dense ponderosa pine, scattered Douglas-fir, ponderosa pine with Gambel oak in understory, and areas of contiguous Gambel oak. In many areas the oak has a high proportion of dead material present making this combination highly flammable. Oak understory provides the ladder fuel that would quickly take fire from the ground to the tree tops resulting in an uncontrollable crown fire. Additionally, there are large areas of contiguous oak brush that will rapidly extend intense fire behavior across the landscape. Clearly stated, the existing fuel conditions could lead to a fast moving, uncontrollable, catastrophic wildfire that would devastate the community by threatening lives, destroying structures and eradicating the aesthetic value of the area for decades.

The boundaries of Greater Sage Port Community (GSPC) (see Appendix I – 1) are Tomah Road to the North (39,299° N), Interstate Highway 25 and Spruce Mountain Road to the East (104.885° W), Fox Farm Road to the South (39.228° N) and Perry Park Road to the West (104.95° W). This encompasses about 17,830 acres. This Wildland Urban Interface (WUI) (Appendix I-1) includes the following communities (HOA's) and sites: Falcone Ranch, Young Ranch, Statter Ranch, Elk View Estates, Hayward Ranch, Meribel Village, Bear Dance, M & M Ranch, Antlers, Sterling Pointe, Sage Port, Hidden Forest, Perry Park East, McDonald Ranch, Larkspur Properties, Raspberry Butte, Monkey Face, and Crooked Willow Ranch.

This CWPP belongs exclusively to Greater Sage Port; however, at a minimum the HFRA requires that local governments (Homeowners Associations), the local fire authority (Larkspur Fire Protection District) and a state forestry representative (District Forester, Colorado State Forest Service) collaborate in the development of and concur with the plan. This plan satisfies both the spirit and the letter of the guidelines set forth in the HFRA of 2003.

The overarching goals of a CWPP are to protect lives first, property second and everything else third. Our first priority of the protection of lives is supported by adequate access and egress routes and a mature "Reverse 911" notification system. The sole life-safety recommendation of this plan, the formation of an GSPC committee to identify, assist and coordinate the safe evacuation of residents needing assistance, has been implemented.

The second priority is the protection of property, or more specifically of homes and other structures in the community. Inherent in the protection of property is the protection of the intrinsic and aesthetic values of the area and the environment that supports a diversity of wildlife. The following recommendations are presented in order.

- Evaluation of structures and property for wildfire defensibility/survivability.
- Targeted thinning and treatment of fuels in order to achieve the maximum possible protection within limited budgets.
- Homeowner reduction of structure ignitability in conjunction with routine maintenance and repair activities.

Portions of the CWPP may be implemented quickly and economically, while other portions, such as major tree and brush thinning and removal may take years, subject to the availability of funds. This CWPP provides the basis for setting implementation recommendations and priorities.

Introduction

Community Wildfire Protection Plans (CWPPs) are authorized and defined in Title I of the "Healthy Forests Restoration Act" (HFRA) which was signed into federal law in 2003. This act emphasizes community planning for wildland fire events and hazard reduction implementation. A variety of benefits and incentives are afforded to those communities with a Community Wildfire Protection Plan in place and which is being actively implemented.

The purpose of the Greater Sage Port CWPP is to address community concerns affecting the Greater Sage Port area as they relate to wildland fire events. This plan analyzes the wildland fire hazards, values at risk, and establishes a comprehensive program for the reduction of loss from wildland fire within the Greater Sage Port area.

The major wildfire concern for the Greater Sage Port area is that the communities have a very high wildfire hazard rating based on the Douglas County CWPP Wildfire Hazard Assessment. The majority of the area is rated as a high wildfire hazard with some areas of extreme wildfire hazard within the communities. Existing wildfire fuel (vegetation) hazards, consist primarily of dense ponderosa pine, scattered Douglas-fir, ponderosa pine with Gambel oak in understory, and areas of contiguous Gambel oak. In many areas the oak has a high proportion of dead material present making this combination highly flammable. Oak understory provides the ladder fuel that would quickly take fire from the ground to the tree tops resulting in an uncontrollable crown fire. Additionally, there are large areas of contiguous oak brush that can rapidly extend intense fire behavior across the landscape. Clearly stated, the existing fuel conditions could lead to a fast moving, uncontrollable, catastrophic wildfire that would devastate the community by threatening lives, destroying structures and eradicating the aesthetic value of the area for decades.

This plan provides a discussion of the community concerns and needs and is intended to be a resource document for all community members.

A major goal of this CWPP is the ongoing education of the Greater Sage Port area residents about the hazards of wildfire and the risks of living within a wildfire environment. Another goal is to explain how those hazards can be reduced both by individual and Homeowner's Association actions. Additionally, this CWPP provides residents with a much better understanding of where to prioritize their limited resources.

Efforts such as evaluating individual properties and structures can probably be done relatively quickly. Thinning and/or removal of brush and trees will probably take several years. The bulk of the costs for accomplishing this work must be borne by the individual landowners. This plan will provide better opportunities for obtaining matching grants for wildfire mitigation.

Priorities

The overarching goals of a CWPP are to protect lives, property, the environment and the aesthetics that define the lifestyle of our communities. Our first priority, the protection of lives, is supported by adequate access and egress routes and an enhanced, "Reverse 911" type, county wide emergency notification system. The CWPP core team has worked with the Douglas County Sheriff's Office to address the safe and expedient emergency evacuation of community residents and the result is a part of this plan.

The Secondary priority is the protection of property, or more specifically of homes and other structures in the community. Inherent in the protection of property is the protection of the intrinsic and aesthetic values of the area and the environment that supports a diversity of wildlife. The following recommendations are presented in order.

- Evaluation of structures and property for wildfire defensibility/survivability.

- Targeted thinning and treatment of vegetation in order to achieve the maximum possible protection within limited budgets.

- Homeowner reduction of structure ignitability in conjunction with routine maintenance and repair activities.

Core Team

The CWPP development is a collaborative process that involves the citizens of the community, local government, the Colorado State Forest Service and the local fire department as well as other interested stakeholders. To facilitate the document crafting process, a committee or "core team" was formed to expedite the development of the CWPP. The core team was formed in July of 2011. It was composed of property owners within the defined Primary WUI area and representatives of the Colorado State Forest Service, Douglas County and the Larkspur Fire Protection District. Monthly meetings were held to work on the plan and determine community outreach activities. As the document was developed, draft versions and meeting minutes were posted for public review on the Larkspur Fire website. The core team participated in a field trip of the community areas to discuss potential fuel treatment areas, community outreach activities, and learn about the current condition of the forests in terms of wildfire hazards and forest health.

In October 2012 a community meeting was held at the Larkspur Fire Station to review the draft plan and gather feedback from community members.

Physical Description of Wildland Urban Interface (WUI)

The boundaries of the Greater Sage Port Community (GSPC) Primary Wildland Urban Interface (WUI) area are as follows. Tomah Road from Perry Park Road east to Interstate 25 is the border on the north side. The east side is defined by Interstate 25 from Tomah Road south to Exit 173 and continuing south along Spruce Mountain Rd. from Exit 173 south to Perry Park Ave. The south border is Perry Park Avenue from South Spruce Mountain Road west to Perry Park Road. The West border is Perry Park Road from Perry Park Avenue north to Tomah Road. This encompasses about 8,185 acres.

This WUI includes the following communities (HOA's) and properties: Antlers subdivision, Douglas Park subdivision, Hidden Forest subdivision, Hidden Oaks subdivision, Perry Park East subdivision, Sage Port subdivision, Sterling Pointe subdivision, Taylor Mountain at Bear Dance subdivision, The Village at Bear Dance subdivision, Falcone Ranch, Hayward Ranch, Jellystone Park campground, Larkspur Properties, M & M Ranch, McDonald Ranch, Statter Ranch, and the Young property. The communities actively involved with the development of the CWPP are Sterling Pointe, Perry Park East, Sage Port, Hidden Forest, and Antlers at Sageport. Other communities within the WUI area are encouraged to develop a community implementation plan that can be incorporated into this plan. The WUI map is illustrated in the WUI map on page 8.

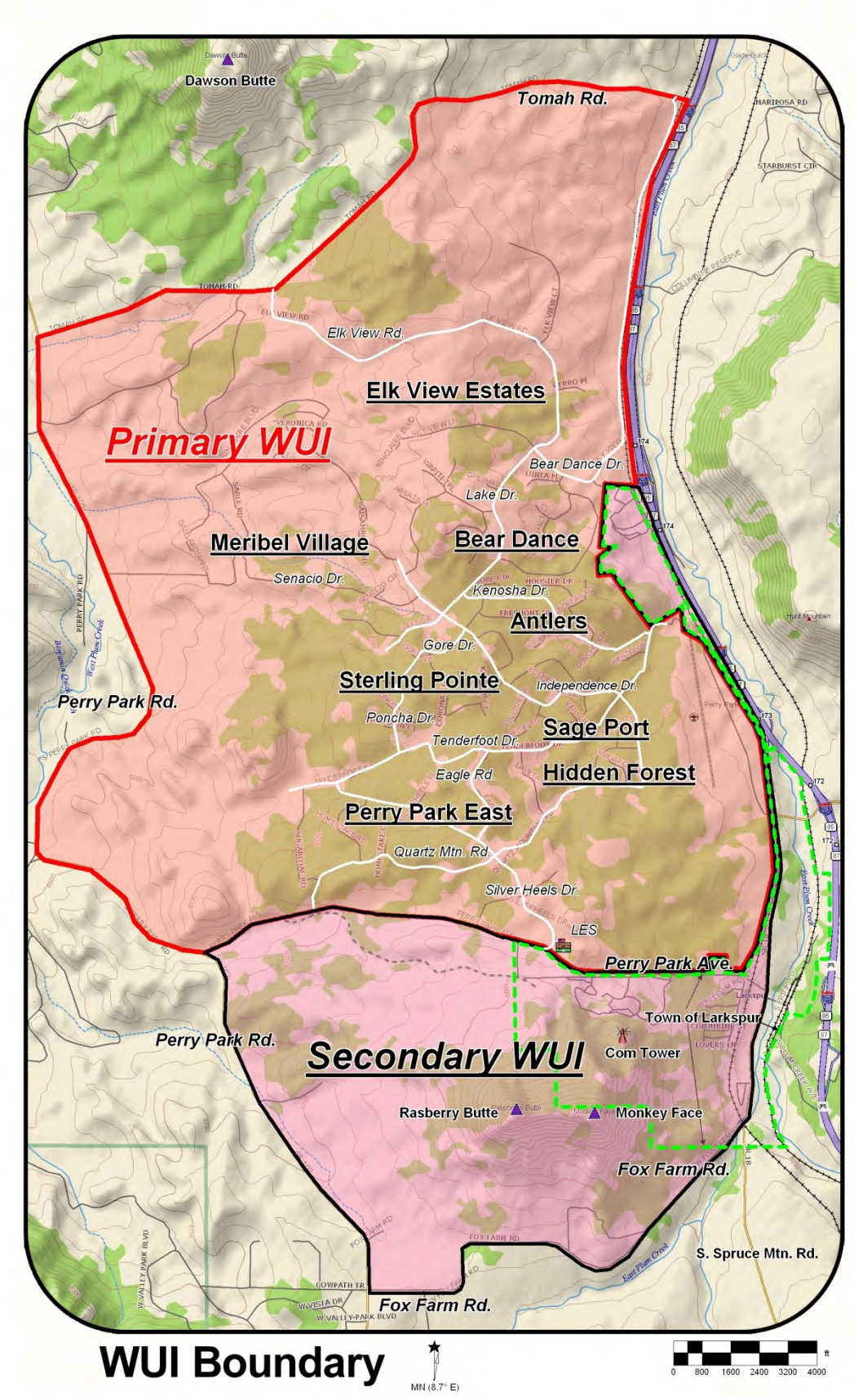
Secondary WUI:

The boundaries of the Greater Sage Port Community (GSPC) Secondary Wildland Urban Interface (WUI) are as follows. The north boundary of the secondary WUI is Perry Park Avenue from Perry Park Road east to South Spruce Mountain Road. The east boundary is South Spruce Mountain Road from Perry Park Avenue south to Fox Farm Road. The south boundary is Fox Farm Road from South Spruce Mountain Road west to Perry Park Road. And lastly, the west boundary of the Secondary WUI is Perry Park Road from Fox Farm Road north to Perry Park Avenue.

Purpose of defining a Primary and Secondary WUI:

The purpose in defining a Primary WUI and a Secondary WUI is to define and weight the wildfire hazard based the type and continuity of natural fuels and their proximity to the values at risk within the area that this CWPP is developed for. The primary WUI contains the values at risk as defined by this CWPP and adjoining lands that have fuel models that can rapidly transport fire into the Primary WUI without any substantial fuel breaks to interrupt the progress of the fire as it approaches the values at risk.

The Secondary WUI is designated as an area of concern due to the fuel models and terrain contained within it and the fact that the location of the Primary WUI is downwind from the Secondary WUI with regard to the prevailing winds that occur during fire season. This can allow embers from a fire to loft from the elevated terrain within the Secondary WUI and land into the area of the Primary WUI. Given that the terrain in the Primary WUI is generally uphill from Perry Park Avenue, which is the boundary between the two WUI areas, this would result in a wind driven fire that is aligned with an uphill slope, combining to create a very quick moving fire event that would threaten the values at risk.


Dawson Butte
Tomah Rd.
Elk View Rd.
Elk View Estates
Primary WUI
Bear Dance Dr.
Lake Dr.
Meribel Village
Bear Dance
Senacio Dr.
Kenosha Dr.
Antlers
Gore Dr.
Sterling Pointe
Independence Dr.
Perry Park Rd.
Poncha Dr.
Sage Port
Tenderfoot Dr.
Eagle Rd.
Hidden Forest
Perry Park East
Quartz Mtn. Rd.
Silver Heels Dr.
LES
Perry Park Ave.
Town of Larkspur
Perry Park Rd.
Secondary WUI
Com Tower
Rasberry Butte
Monkey Face
Fox Farm Rd.
S. Spruce Mtn. Rd.
Fox Farm Rd.
WUI Boundary
MN (8.7° E)
0 800 1600 2400 3200 4000 ft

The Greater Sage Port Community base map is located at Appendix I which also includes maps of the Homeowner Association areas:

I -7 Perry Park East Area Map

I -8 Sterling Point Area Map

I -9 Sage Port HOA and Hidden Forest HOA Area Map

I -10 Hidden Oaks & The Village & Taylor Mountain at Bear Dance Area Map

I- 11 Antlers as Sageport Map

The following table represents the Greater Sage Port communities and encapsulates pertinent information concerning each community:

- Community Name
- Whether a Homeowner's Association is included
- Number of properties in the area
- Average lot size within
- Available website for the community

Community Name	**HOA: Y/N**	**Approx. # of Properties**	**Ave Lot Size**	**Community Website**
Antlers at Sageport	Y	46	.5	N
Hidden Forest	Y	59	1	Y
Perry Park East	Y	164	5	Y
Sage Port	Y	240	1	Y
Sterling Pointe	Y	114	2.3	Y

Area History of Wildfire Occurrence

The Larkspur area has been settled since the late 1850's. Every year within the Larkspur area there have been wildfires and the majority of these are generally small and quickly controlled. The last recorded wildfire of significance within the Greater Sage Port area occurred in 1963 and consumed several hundred acres of oak brush and timber. The start of the fire was attributed to a train passing through the area on the southbound railroad tracks next to I-25. This fire was the catalyst for the formation of the Larkspur Fire Department.

Other fires of note include; the Hayman Fire in 2002 within the Pike National Forest which consumed 138,000 acres of forest and encroached within nine miles of the forest boundary west of Larkspur, the Tomah Rd. Fire in 2005 which consumed 40 acres of scrub oak and grassland northwest of the intersection of Tomah Rd. and I-25, the Yarnell Fire which burnt twelve acres of timber next to a number of homes near Yarnell and Perry Park Rd., and several fires within the

last two decades in what is now the Greenland Open Space area which consumed fifty to one hundred acres each.

Wildland fire starts are generally attributed to two primary sources, lightning and human caused. Lightning activity is considerable within the region and especially around the higher elevation areas of the Palmer Divide and Rampart Range. There have been lightning caused fires in the months from April through the end of October in the Larkspur area. Wildfires also occur from a wide variety of human activities with the numerous daily trains through the area being the single largest generator of human caused wildfires. Other human activities that have caused wildfires within the area include; mechanical malfunctions of equipment, car fires, welding and grinding, unauthorized campfires or burning of slash materials, arson and airplane crashes to name a few. Human caused fires can occur during any time of the year that the fuels are dry, the relative humidity is low and snow cover is sparse or nonexistent.

Additional information on fire occurrence is contained in Appendix II of this CWPP – the Larkspur Fire Protection District Analysis.

Local Preparedness and Firefighting Capability

The Greater Sage Port area is served by the Larkspur Fire Protection District (LFPD). The primary response is provided by LFPD Fire Station 161 located in the Town of Larkspur at 9414 S. Spruce Mountain Rd. and is located within five road miles of the majority of the greater Sage Port area. This fire station is staffed on a 24/7 basis and is fully equipped to fight structural and wildland fires. LFPD Fire Station 162 is located in the Perry Park Ranch community and is also staffed on a 24/7 basis and is located within five road miles of a portion of the Greater Sage Port area. Jackson 105 Fire Protection District's Fire Station 143 is located at the intersection of Perry Park Rd. and Greenwood Dr. and is also within five road miles of a portion of the Greater Sage Port area. The LFPD has an automatic aid response agreement with the Jackson 105 Fire Protection District.

Overall, the capacity of the LFPD to successfully contain and control wildland fire upon initial attack is very good. The LFPD response is enhanced through mutual aid from adjoining fire districts which respond on the initial call out for wildland fire events. Throughout the years, there have only been several wildland fires that have exceeded initial attack and moved into the extended attack mode for total suppression. No homes or major structures have been lost due to ignition from wildland fire within the LFPD. However, given the natural fuels, weather and topography within the LFPD, the potential for a wildland fire event that escapes initial and extended attack efforts and/or that will threaten lives or consume homes and other structures remains high within the LFPD.

The LFPD views that continued efforts with wildland fire mitigation are key to the defense of homes during a fire event. Successful wildland fire response is a partnership between the property owners' doing their part to prepare their properties prior to a fire and the fire department's ability to engage the fire with well trained personnel, the appropriate apparatus and in a timely manner. Many residents within the District have made great strides in making their homes and properties more resistant to the effects of wildland fire through appropriate mitigation measures including fuel reduction and alteration. The primary focus of wildfire mitigation efforts is to reduce the likely hood that life or property loss will occur during a wildland fire and should be viewed as a hand-in-hand effort with the LFPD wildland fire suppression response to ensure that they do not.

The detailed analysis of the capabilities of the LFPD is provided in Appendix II.

Douglas County Wildfire Mitigation Program

The Douglas County Wildfire Mitigation Program is multifaceted and consists of regulation, including development review, public education and outreach including active roles in collaborative partnerships, and natural resources consulting. The program has grown significantly since its inception in 1994 and has changed to meet the needs of the citizens of Douglas County and the natural resources professionals and organizations the county conducts business with across the state and region. The program is staffed by one professional forester and is housed in the Building Division of the Community Planning and Sustainable Development Department. . For more details visit the Douglas County Wildfire Mitigation websites at http://www.douglas.co.us/building/wildfire/index.html.

Community Values at Risk: Community Descriptions

Antlers at Sageport
The subdivision consists of 46 homesites (3 not build out) with lots ranging from .33-.90 acres in size. There are approximately 135 residents living in the community. There are two HOA owned parcels (open space) with one parcel consisting of 2.5 acres and the other parcel 7.5 acres. Each parcel is surrounded by private homes and Douglas county Open Space adjoins the larger parcel. The Antlers is a mandatory HOA. There are no wood shake roofs in the community; most are asphalt with one tile roof. Building materials include stucco, wood siding, brick, and natural stone. A forest health and wildfire mitigation plan was created in 2008 for the community.

Bear Dance
3 areas: Taylor Mountain Ranch at Bear Dance, 12 lots, 2.5-8 acres
Village at Bear Dance, 25 lots, 2.5-3 acres
Hidden Oaks at Bear Dance, 25 lots, 3-35 acres

Hidden Forest
The subdivision was created in February 2005. The lot size range from approximately .50 acre to approximately .90 acre. The original development plan was for 102 custom homes. Presently, there are approximately 52 homes built. The remaining open lots were either purchased by current homeowners to preserve open space or remain for sale by the individual owners of the lots.

The homes are constructed of stucco and stone exteriors with fire retardant roofing materials. The homes are all custom built single family ranging from ranches to two-story with homes as walk-out basements.

The HOA is mandatory and therefore, each homeowner is to abide by the covenants, declarations, and by-laws of community. There are no specific covenants that mandate a homeowner to do specific mitigation tasks. Mitigation is at the discretion of the homeowner. However, covenants do state the homeowner is to maintain an appropriately landscaped proper to the standards of the community.

The community values the indigence wildlife and natural scenery of the forest area including the ponderosa pines, scrub oak, and cotton wood trees. In addition, the privacy and peacefulness of the area are highly valued. The homeowners take great pride in their homes and surrounding areas.

Perry Park East
Perry Park East is a peaceful residential community nestled within the beauty and serenity of Perry Park with surrounding red rocks and forest. Located approximately four miles east of our well known neighboring community of Perry Park it has, residents enjoy the privacy and space afforded by the five-acre lots that make up Perry Park East. With 164 lots having beautiful homes and gorgeous views, Perry Park East is one of the premier residential communities in Southern Douglas County.

Sage Port
The subdivision was created in 1986. The average lot size is approximately 1 acre. The original development plan was for 234 homes. Presently, there are 232 homes built. There are no commonly owned areas within the community.

The homes are constructed of stucco, brick and wood. Utilities are both above and below ground.
The HOA is voluntary where homeowners have to abide by the covenants, but not the by-laws. Mitigation is at the discretion of the homeowner. There is no formal wildfire mitigation or forest health committee.

The community values the natural views/beauty of the forested areas, wildlife, and rural feeling of the community.

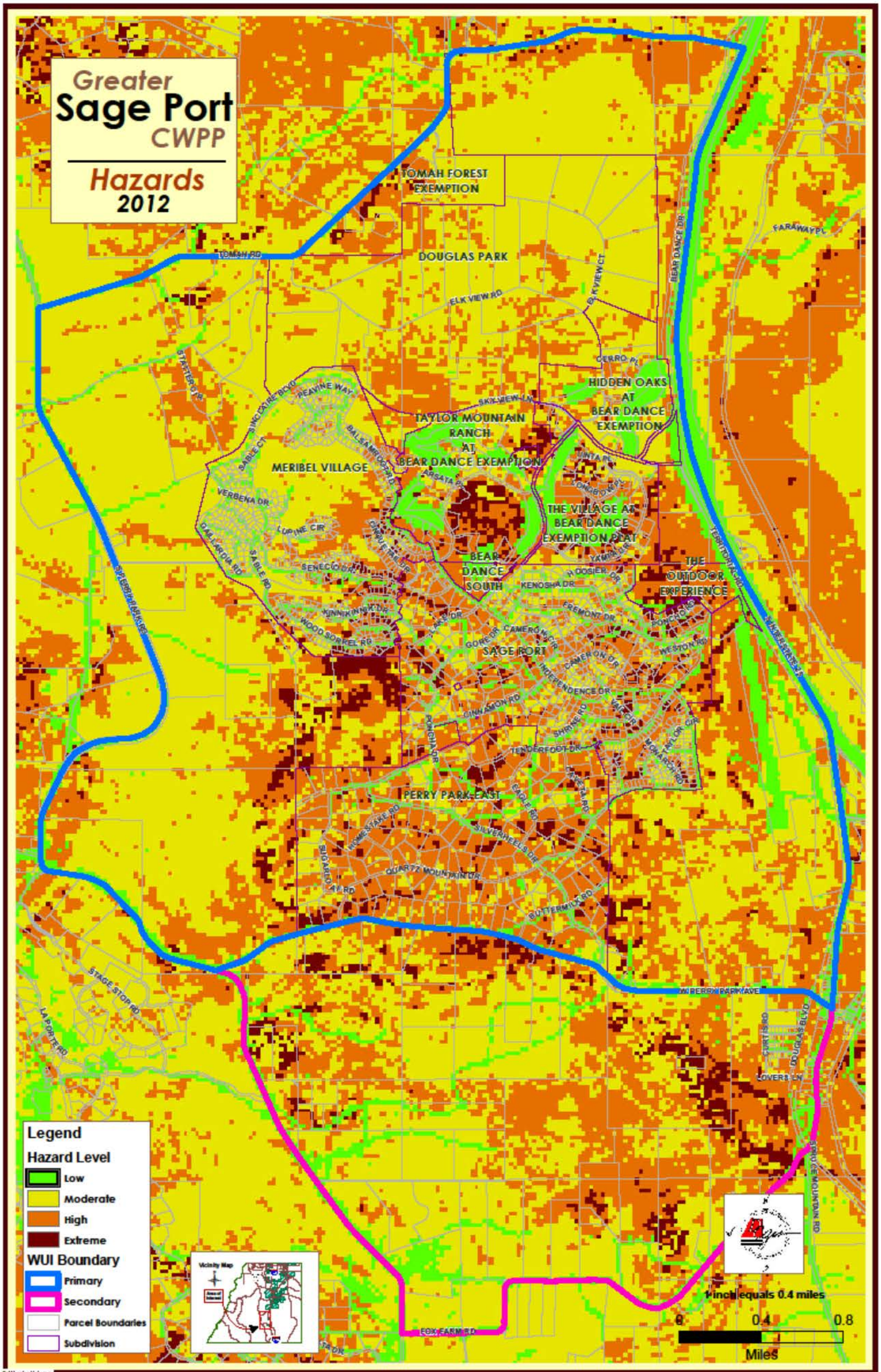
Sterling Pointe
The community consists of 114 lots with an average lot size of 2.3 acres. The HOA is mandatory. There are no wood shake roofs in the community.

Community Risk Analysis

The community risk analysis began with using the Douglas County wildfire hazard assessment model and was refined with community specifics regarding access, building materials, defensible space and water supply. The model consists of a weighted overlay of hazards, values, and risks of wildfire. For the purpose of the Douglas County model hazard is defined as the composite of resistance to controlling a wildland fire based on flame length and response time, its values and its ignition risk. Communities were then identified around concentrations of address points. The Douglas County model is a birds-eye view and should not be used to make a determination regarding an individual lot. Most of the lots within the community have a combination of fuel types present and differing hazard levels. Additional items such as exterior building materials, and defensible space should be taken into consideration for lot-level assessments.

Values are items to be protected in the event of a wildland fire. They are items that would pose significant consequences especially economic if they were lost or damaged in a wildland fire. Values included items such as structures, major power lines, publicly owned lands, developed infrastructure including major water treatment plants. Ignition risks included items such as roads and trails, lightning strikes, anything that would contribute as an ignition source for a fire.

On the Douglas County model communities that make up the larger GSPC area received a "Very high" category rating. The wildfire hazard potential map showed areas of "High", "Extreme" and low hazard (golf course) mixed in. There are areas outside of the conglomerate of address points that are within the GSPC WUI boundary and influence potential fire behavior. These areas are rated "Moderate" hazard due to fuel type and minimal structure density. The heaviest weighted input to the model is fuel hazard. Fuel hazard is also the item that can be most easily altered in terms of reducing hazards, and ultimately reducing the hazard ranking. It is more difficult to change the composition or location of structures, or the presence of other values that were part of the model. The hazard map for the GSPC is shown below.



Greater
Sage Port
CWPP
Hazards
2012
TOMAH FOREST EXEMPTION
DOUGLAS PARK
TOMAH RD
ELK VIEW RD
ELKVIEW CT
CERRO PL
HIDDEN OAKS AT BEAR DANCE EXEMPTION
SKY VIEW LN
TAYLOR MOUNTAIN RANCH AT BEAR DANCE EXEMPTION
MERIBEL VILLAGE
THE VILLAGE AT BEAR DANCE EXEMPTION PLAT
BEAR DANCE SOUTH
THE OUTDOOR EXPERIENCE
HOOSIER DR
KENOSHA DR
FREMONT DR
CAMERON DR
SAGE PORT
INDEPENDENCE DR
WESTON RD
CINNAMON RD
TENDERFOOT DR
PERRY PARK EAST
QUARTZ MOUNTAIN DR
BUTTERMILK RD
SILVERHEELS DR
STAGE STOP RD
LA PORTE RD
W PERRY PARK AVE
FOX FARM RD
FARAWAY PL
BEAR DANCE DR
DOUGLAS BLVD
LOVERS LN
VERBENA DR
LUPINE CIR
SABLE CT
SENECIO DR
KINNIKINNICK DR
WOOD SORREL RD
STARTER DR
Legend
Hazard Level
Low
Moderate
High
Extreme
WUI Boundary
Primary
Secondary
Parcel Boundaries
Subdivision
Vicinity Map
1 inch equals 0.4 miles
0
0.4
0.8
Miles

The communities that make up Greater Sage Port are a mixture of both older and newer construction materials. Homes that were built in the 80's and early 90's typically have wood siding present. Homes that were built during the late 90's and 2000s are comprised of more stucco and stone, composite siding and decking materials. Roofing material present in the community is either asphalt composition tile or metal.

There is a differing amount off defensible space present on lots throughout the community. Some older homes have little or no defensible space present, while newer constructed homes have defensible space. There are also large spaces in the forest canopy due to mortality from dwarf mistletoe infestations and subsequent bark beetle infestations and subsequent bark beetle infestations complicated by drought and overcrowding.

Access in, out and through the communities is good. There are several entrances and exits in and out of the community. There is a main entrance in from the north on Bear Dance Drive and two from the south off of Perry Park Boulevard. Roads are wide, (built to Douglas County Standards) and paved where there are residences. There is an additional unimproved access to the west through what is known as Meribel Village, a platted, but unimproved/undeveloped subdivision. The roads have been roughed in for some time. There are areas of the subdivisions that make up the GSPC, including roads that are platted but not completely built out which pose a hazard for illicit activity, as well as rough access to areas of unbroken fuel beds and accumulations of older dead material as a result of past storm damage and mortality.

The communities are served by a central water system operated by Perry Park Water and Sanitation District. The water system provides fire hydrants on a spacing of approximately 500 feet and these hydrants can provide a minimum flow of 1500 gallons per minute for a duration of two hours.

Vegetation Description

In low elevation areas (5,500-8,000 feet) along the Front Range ponderosa pine forests have become very dense in comparison to pre-European settlement due to a combination of post-European activities including grazing, logging, and fire exclusion. The increase in dense, homogeneous forests in these areas have resulted in many stands of trees that are approximately the same age and size and are now stressed from competition for resources. These conditions combined with the building of homes and structures in this zone have increased risk from wildfire.

Ponderosa pine historically has grown in open, park like stands with 20-50+ trees per acre. Ponderosa pine is a shade intolerant species, which means that it needs full sun in order to grow successfully. Fire is a natural part of the ecosystem and frequent fires (every 25-50 years) were common in this area. These fires were typically low intensity surface fires that would burn in the understory of the forest consuming grasses, needles, duff, and smaller trees/regeneration. Low intensity surface fires provide a good seedbed for natural regeneration from the mature ponderosa pine overstory.

Open, park like stand of ponderosa pine

Pre-European ponderosa pine stand along Front Range

With the increase in settlement in the area fires have been actively suppressed for over 100 years. In addition, active forest management has not been common place. These two factors have led to natural regeneration growing unchecked and is now in dense, overcrowded stands that are competing for limited resources. These dense stands result in low growth rates, poorly formed trees and poor forest health. Many areas have smaller trees growing up underneath larger trees, bending to gain sunlight, are snowbent, and have branches only on one side of the tree due to limited sunlight from competition. Instead of having 20-50 trees per acre there are areas of 100 trees per acre. These conditions combined with the building of homes and structures in this area have increased the risk from wildfire.

In addition to the increase in fire risk, trees are more susceptible to insect attacks due to the poor forest health conditions. Trees are stressed due to competition and dwarf mistletoe infestation which makes them vulnerable to bark beetle attacks, primarily ips beetle. Ips beetle is not as aggressive as mountain pine beetle and typically attacks smaller diameter trees that are stressed from competition, drought, and poor growing conditions. Ips has been found in various areas throughout the community.

The majority of the GSPC area is covered by ponderosa pine with scattered Douglas-fir and an understory of a variety of shrub species. Shrub species in the area include mountain mahogany, however, the dominant shrub in the area is Gambel oak. Only a few areas are covered by meadow/grass. Tree and shrub densities fluctuate throughout all communities due to site conditions-dense trees grow on north facing slopes where there is more moisture while trees are usually not as dense on drier, south facing slopes. In addition, dwarf mistletoe infections have created openings where oak and smaller ponderosa pines are the predominant vegetation type. A detailed vegetation map for the area is shown in Appendix I.

Perry Park East is characterized by larger lots with more Gambel oak than is seen in other communities. The oak ranges from contiguous stands to isolated clumps in and around residual ponderosa pine. There are openings in many of the stands due to tree loss from heavy dwarf mistletoe infection. Existing trees, including regeneration, have mistletoe present. Scattered Douglas-fir are also present throughout the community.

The following photos show examples of variety of vegetation in the community.

Sterling Pointe is characterized by smaller lots with less Gambel oak. The eastern portion of the community has heavy dwarf mistletoe infestation which has led to some of the lots being open with minimal oak in the understory and smaller residual trees.

The following photos show examples of variety of vegetation in the community.

Sage Port is characterized by smaller lots with areas of dense trees and scattered oak. There is not as much dwarf mistletoe in this community; however it is heavy in areas east of Independence Drive.

The following photos show examples of variety of vegetation in the community.

Hidden Forest is characterized by smaller lots with limited vegetation surrounding the homes due to defensible space regulations and very small building envelopes. The vegetation consists of scattered ponderosa pine with minimal oak in the understory. The surrounding undeveloped lots contain dense ponderosa pine with oak in the understory.

The following photos show examples of variety of vegetation in the community.

Antlers at Sage Port is characterized by smaller lots with limited vegetation surrounding the homes due to defensible space regulations and very small building envelopes. The vegetation consists of scattered ponderosa pine with minimal oak in the understory. The surrounding undeveloped lots contain dense ponderosa pine with oak in the understory. Dwarf mistletoe is present in portions of the community.

The following photos show examples of variety of vegetation in the community.

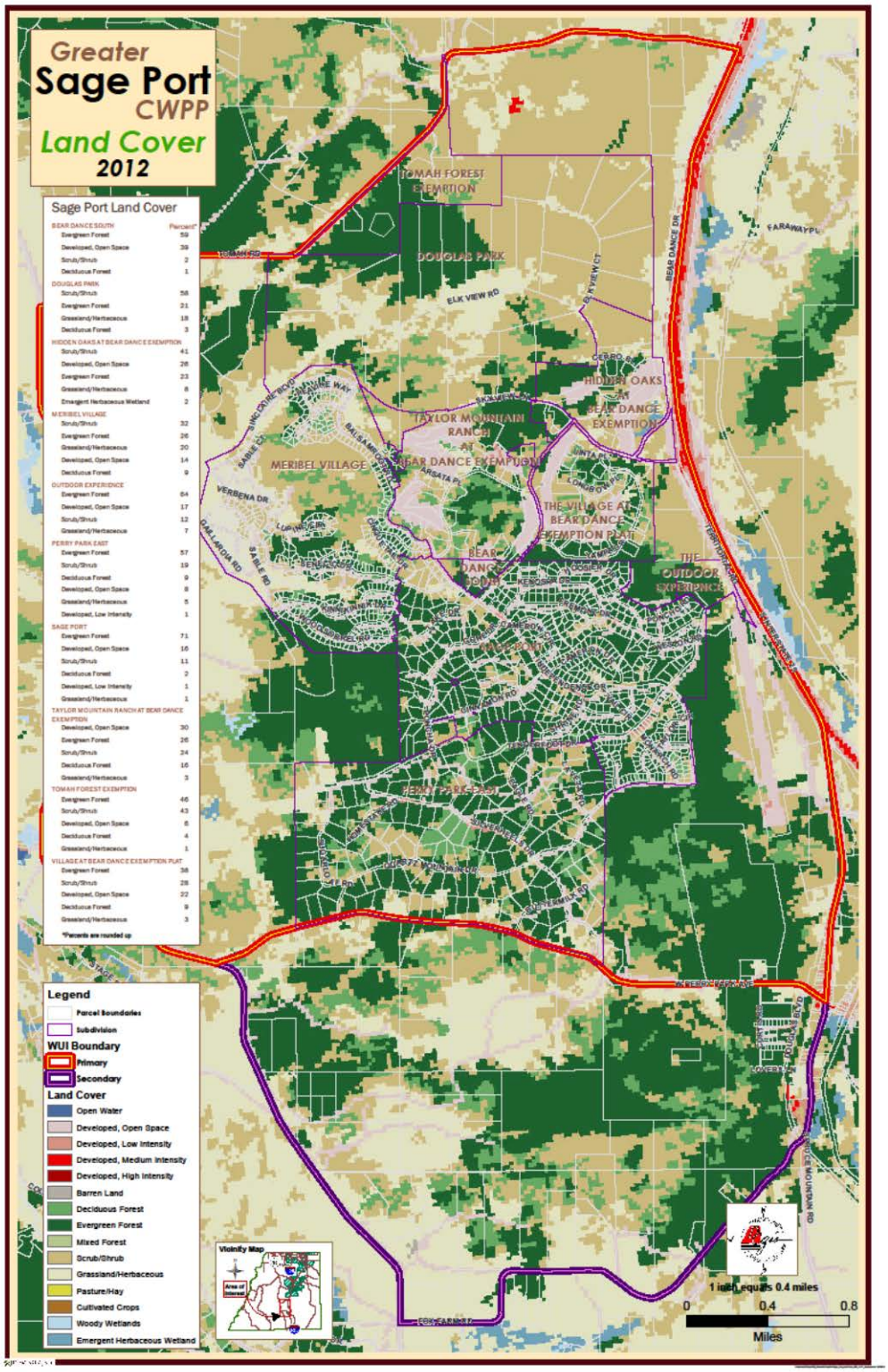
A summary of the GSPC land cover is provided below.

Greater Sage Port Community Land Cover

COMMUNITY	% Coverage
BEAR DANCE SOUTH	
Evergreen Forest	59
Developed, Open Space	39
Scrub/Shrub	2
Deciduous Forest	1
DOUGLAS PARK	
Scrub/Shrub	58
Evergreen Forest	21
Grassland/Herbaceous	18
Deciduous Forest	3
HIDDEN OAKS AT BEAR DANCE EXEMPTION	
Scrub/Shrub	41
Developed, Open Space	26
Evergreen Forest	23
Grassland/Herbaceous	8
Emergent Herbaceous Wetland	2
MERIBEL VILLAGE	
Scrub/Shrub	32
Evergreen Forest	26
Grassland/Herbaceous	20
Developed, Open Space	14
Deciduous Forest	9
PERRY PARK EAST	
Evergreen Forest	57
Scrub/Shrub	19
Deciduous Forest	9
Developed, Open Space	8
Grassland/Herbaceous	5
Developed, Low Intensity	1

COMMUNITY	% Coverage
THE OUTDOOR EXPERIENCE	
Evergreen Forest	64
Developed, Open Space	17
Scrub/Shrub	12
Grassland/Herbaceous	7
SAGE PORT	
Evergreen Forest	71
Developed, Open Space	16
Scrub/Shrub	11
Deciduous Forest	2
Developed, Low Intensity	1
Grassland/Herbaceous	1
TAYLOR MOUNTAIN RANCH AT BEAR DANCE EXEMPTION	
Developed, Open Space	30
Evergreen Forest	26
Scrub/Shrub	24
Deciduous Forest	16
Grassland/Herbaceous	3
TOMAH FOREST EXEMPTION	
Evergreen Forest	46
Scrub/Shrub	43
Developed, Open Space	6
Deciduous Forest	4
Grassland/Herbaceous	1
THE VILLAGE AT BEAR DANCE EXEMPTION PLAT	
Evergreen Forest	38
Scrub/Shrub	28
Developed, Open Space	22
Deciduous Forest	9
Grassland/Herbaceous	3

As evidenced in the table GSPC is predominately forested. Over one-half is evergreen, about twenty percent is scrub and shrub and ten percent deciduous forest. Thus about eighty percent of the land contains tree type fuel. Less than ten percent of the WUI is grass land.



Dwarf Mistletoe *(Arceuthobium spp.)*

Due to drought and the presence of some insects and dwarf mistletoe, the forests area stressed and very susceptible to attack from more damaging insects such as mountain pine beetle or ips engraver beetles. Currently there are no high-priority insect or disease infestations in the area aside from a known and ongoing dwarf mistletoe infestation.

Dwarf mistletoe is a parasitic plant that infects ponderosa pine in the area. The mistletoe slowly deprives the tree of water causing the tree to eventually die. A tree can live 20-30 years with mistletoe, depending on the extent of the infection. Mistletoe spreads by the seeds being dispersed up to 60 feet away from the host tree, but the average is usually less than 30 feet. Seeds are dispersed in August and it can take up to 4 years to see the plant emerge on the tree. Although mistletoe is a slow killer, it can make the tree more susceptible to attacks from Ips and mountain pine beetle. Pruning branches and removing heavily infested trees are the main management techniques to control dwarf mistletoe.

Fire Behavior

Wildland fires have been studied in great detail to help predict fire behavior. Predicting a fire's intensity, rate of spread, duration, direction and spot-fire production is important for firefighter safety and is the basis for tactical decisions made during the suppression of a fire.

Three factors affect wildland fire behavior in the WUI:

1. Fuels: The type, continuity and density of surrounding vegetation and, sometimes, flammable structures, provide fuel to keep the fire burning.
2. Weather: Wind, relative humidity and atmospheric stability all affect potential fire behavior.
3. Topography: The steepness and direction of slopes, and building-site location in relation to topography are features that affect fire behavior.

The only factor that we can have direct influence over is fuel.

Fuels are defined as anything that burns in a fire
Wildland fuels are divided into four categories:

1. Grass
2. Brush or shrubs
3. Timber
4. Woody debris

All plants can burn under extreme conditions, such as drought; however, plants burn at different intensities and rates of consumption. The type and density of a specific plant determines how it will burn. Some vegetation rarely burns, while other vegetation burns at different times of the year; and some can burn almost anytime. The amount of moisture in the fuels is the biggest factor affecting flammability.

Grasses: Grass primarily exists in two conditions – green and cured. When grass is green, moisture content is high enough to prevent or decrease fire spread. Firefighters sometimes use green meadows and lawns as safety zones. As the year progresses, plants enter a dormant state and the residual surface vegetation dies. Cured grass has the potential to promote extreme fire rates of spread (ROS); grass fuels have the highest potential ROS of any fuels. Another hazard associated with cured grass is the potential for a rapid decrease in fuel moisture; the ability of air to circulate through standing grass allows the grass to dry rapidly and can result in sudden changes in fire behavior.

Brush: Brush fires spread slower than grass fires, but burn at a higher intensity. The most common flammable brush species in Colorado are oak brush and sagebrush. Brush is least flammable in late spring when new growth occurs.

Timber: Timber burns in two manners – surface fires and crown fires. Surface fires consume fuels on the forest floors without burning trees, although Trees may burn individually, which is called torching. Crown fires occur when entire stands of trees are totally consumed. These fires are the most intense, but tend to move less rapidly than other types of fires. Coniferous trees are more susceptible to crown fire than deciduous trees. Torching and crown fires are the major source of ember production, which can start new fires (spot-fires) in vegetation and structures downwind.

Woody debris: Dead logs, branches and sticks on the ground surface are referred to as woody debris. Debris can be a result of human activity such as thinning, or natural processes such as wind-throw or beetle-killed trees that have fallen to the ground. Fires in these fuels vary greatly, but can produce high-intensity, slow-moving fires that are very difficult to control. Colorado's mountain pine beetle epidemic will result in a major increase in woody debris over large areas.

Complexes: More than one fuel component is present in most wildland areas. Areas containing these fuel complexes are more common than those represented by a single fuel component.

Structures: The effect of a burning structure can significantly impact fire behavior. Structures burn with extreme intensity, often launching large burning embers over long distances.

The GSPC area contains three of the four wildland fuel categories: grass, brush, and timber. Fuel models have been developed for these categories which describe standard fire behavior and a fuel model map for the CWPP area has been developed that shows the models present for the area. The map and detailed description of the fuel models for the area can be found in Appendix I-Greater Sageport Fuel Models.

Weather

Weather is the major factor that affects fire behavior and is highly variable in terms of time, intensity and location.

Wind: Surface winds are the most important element in determining fire direction and rate of spread. Wind pushes flames into adjacent fuels, facilitating rapid ignition, and tends to be the common theme in large fire events. High-velocity, warm, dry, down-slope winds, such as a Chinook, can cause fuels to dry rapidly, resulting in extreme fire behavior.

Relative Humidity (RH): RH is a measure of how much moisture is in the air compared to the maximum amount of moisture the atmosphere can hold at that temperature. RH has a major influence on the moisture content of dead fuels. The smaller the dead fuel, the faster it will react to a change in the RH. Cured grass can dry out in less than 15 minutes when a dry air mass moves into an area. Firefighters generally monitor RH on an hourly basis when fighting a fire.

Temperature: Before combustion can occur, fuels must reach ignition temperature (approximately 450° F); fuels heat up and reach ignition temperature more quickly on hot days. In addition, when fuels are preheated, fire expends less energy and will burn at a higher intensity.

Topography

Slope: Defined as the angle of the ground relative to the horizon, slope commonly is measured in degrees or as a percent. On calm days, heated air, including flames, rises and preheats the fuels upslope, which causes an increase in fire spread. On gentle slopes, this has little effect on fire behavior, but on steep slopes, the effect can be significant. During summer months, preheating generally causes winds to blow upslope. The combined effect of slope and wind results in rapid fire spread. A slope map for the GSPC area is shown in Appendix I.

Aspect: Aspect is the direction the slope faces. South and southwest aspects are warmer and drier than north and northeast aspects. South, southwest and west aspects generally have lighter fuels and are more susceptible to fast-moving fires. North, northeast and east aspects tend to have heavier fuels and, under normal conditions, have slow-moving surface fires. Under extreme conditions, these aspects can burn with high intensity and fires can be difficult or impossible to control. An aspect map for the GSPC area is shown in Appendix I.

Climate: Fire seasons in Colorado's high country and on the Western Slope tend to last from late spring until mid-autumn. Fire seasons on the Front Range and Eastern Plains tend to be split, with most large fires occurring in the spring or fall. It's important to keep in mind that these are generalizations and that large fires can occur anytime conditions are right.

General Vegetation Treatment Recommendations to Reduce Hazardous Fuel Loads

The main concept in reducing fuel hazard levels is to reduce the density and the continuity of the fuel present.

Significant strides can be made in this community to reduce the fuel hazard levels with a small amount of work. There are existing openings and breaks in the vegetation due to that can be easily increased and have a significant effect on the fire behavior.

Removing the dead material present within the community will also have a significant effect on potential fire behavior.

To decrease the risk of insect and disease infestations, tree removal and thinning of forest stands is recommended. Thinning will reduce competition and will ultimately increase the overall health of the forest. Fortunately, removing fuels for fire risk reduction and for forest health can often be achieved simultaneously in ponderosa pine systems.

For those areas with heavy dwarf mistletoe infestations it may be necessary to remove the most heavily infested trees with ratings of 5 or 6 altogether (see dwarf mistletoe rating guide in Appendix VI Heavily infested branches may also be pruned. For those areas with infestation in all trees on a property it may not be possible to remove all mistletoe from the area without removing all trees.

The following recommendations are for areas where the vegetative fuel is contiguous or in large contiguous patches across the lot, parcel or the landscape and outside of the home ignition zone. Although these recommendations are for larger lot owners, the recommendations are applicable across the landscape. Conceptually, the goals should be to reduce the continuity and the density of the fuels across the landscape.

These recommendations are not intended to eliminate the ability of fire to burn across the landscape. They are recommendations that if implemented correctly will slow the rate of spread and the burning intensity of a wildfire, prevent catastrophic loss and aid in the ability of firefighting efforts.

It is important to note that these are general guidelines: topography and the spatial arrangement of fuels across the landscape must be taken into consideration and prescriptions adjusted accordingly. It is suggested large landowners consider meeting with a professional forester to design a long term plan that meets the needs and management goals of the landowner while accomplishing mitigation goals.

Grasses

Grass fuel types can be very dangerous. Fire can spread quickly through dry grass and wind can increase the rate of spread as witnessed in the Burning Tree fire in March 2011. Recommendations for grass fuel types include:

- Mow grasses around structures or any infrastructure that property owners would want to protect in the event of a wildland fire. Recommended grass heights around structures are four inches.

Property owners often mow along property boundaries, especially if the property is adjacent to a road or other hazardous fuel loads. It is more difficult for fire to burn and carry in low grasses.

Gambel Oak

For those areas of contiguous Gambel oak recommendations include reducing the continuity and the density of the oak. With breaks in the oak burning intensity may be reduced.

- Break large clumps into smaller clumps and increase the spacing between clumps. We recommend following the CSFS Guidelines for Oak Management and provide a *minimum* clump spacing of 2 ½ times the height of the clump between clumps on a relatively flat ground. If the clumps are on a hillside spacing should increase based on the topography present. The larger the clump size the larger the spacing required between clumps. Oak clumps can be distributed across the landscape in any pattern or shape or size as long as the spacing guidelines are implemented correctly. The goal is to create a mosaic pattern throughout the stand and not have clumps evenly spaced.

Mosaic clumps in Gambel oak

- Thin stems within the clumps. Stems should be spaced a minimum of three to five feet apart and stems should be pruned a minimum of two to three feet above the ground to eliminate contact with ground fuels.

- Remove concentrations of dead material within clumps.

Thinning within a Gambel oak clump

- Areas where Gambel oak is treated will need to be re-treated every 5-7 years. When Gambel oak is disturbed intense sprouting occurs and the oak must be maintained to prevent the oak from re-establishing in dense levels that were present on the property prior to treatment.

Ponderosa pine or mixed conifer

For a pure ponderosa pine stand or mixed conifer forest recommendations include reducing the density and continuity of the crown fuels (tops of trees) and ladder fuels through thinning and pruning to prevent the spread of crown fire and the potential for catastrophic loss and mortality. Keep in mind Douglas-fir is a shade tolerant species and will grow well on north facing slopes and needs shade for establishment and early growth. Reducing the density and continuity of the crown fuels can be implemented in creative ways that will not leave a uniform appearance. Recommendations for thinning include:

- Creating and maintaining minimum ten-foot crown spacing between trees or small clumps of trees with a minimum twenty-foot crown spacing between clumps of trees on relatively flat ground. Crown spacing should increase with increasing topography and clumps should be approximately three to five trees based on tree size and distribution across the landscape.

- Remove ladder fuels from underneath residual trees.

Ladder fuel removal

Space between tree crowns

For forest health recommendations include trying to increase and maintain size and age class diversity to promote forest structure diversity and heterogeneity. Recommendations include the following:

- Favor well-formed regeneration and saplings where they are more open grown and the young trees are not acting as ladder fuels.

- Remove suppressed and poorly formed trees, reducing competition for the healthiest and most vigorous trees as the residual stand is a continuing seed source for future generations of trees.

- Remove concentrations of dead and down material with the exception of two to three snags per acre for wildlife. A few down logs may also be left, the key is to reduce or eliminate any heavy concentrations of fuels.

- Options may also include creating openings of at least an acre for natural regeneration if there is a viable seed source close by or to create some openings for immediate or future plantings.

Forest health and restoration prescriptions in ponderosa pine stands are often described by reducing density based on basal area (BA) targets in addition to crown spacing and age class diversity targets. Recommended BA targets for forest health in Front Range ponderosa pine are an average across the landscape of 40 to 60 BA or approximately 30 to 50 trees per acre for each forested acre. To be a true restoration prescription treatments should be followed by implementing prescribed fire activities in the stand.

Fuelbreaks are often implemented in ponderosa pine or mixed conifer stands. Recommendations for installing fuelbreaks can be found in the CSFS publication *Fuel Break Guidelines for Forested Subdivisions and Communities.* Fuel breaks are a fire suppression tool often strategically located along ridges, roads, or in many cases property boundaries. Within a fuelbreak the density and continuity of the vegetation is significantly reduced to:

- Drop a crown fire to a ground fire where suppression crews can suppress the fire.

- Drop fire retardant and reinforce the fuel break for suppression operations. Trees are spaced far enough apart enough for the fire retardant to drop through the space between tree crowns and land on the ground.

- Suppression crews often perform burnout operations from fuel breaks, using the fuel break as an anchor.

Fuel breaks are recommended at a minimum width of 300 feet on flat ground. The distance of a fuel break should increase with increasing topography (slope).

Gambel oak understory with ponderosa pine

Where Gambel oak is found in the understory with a ponderosa pine overstory component the emphasis should be on reducing the density and the continuity of the fuels. Create openings or breaks in the vegetation large enough to affect the fire behavior and reduce potential for fire to spread. In this fuel type ladder fuel elimination and reduction is key to accomplishing this goal. Eliminating and or reducing the ladder fuels will have the greatest impact on the ability of fire to spread from the ground into the crowns of trees and potentially across the landscape.
With understory and overstory fuels combinations there are several ways to modify the density and the continuity of the fuels loading across the parcel or landscape. The key concepts are to reduce the continuity and density of the fuels.

Clumping-This option includes maintaining an understory and overstory component, for example, oak under pines, and creating openings of significant size between the clumps of oak and pines. With this option the recommendations include:

- Removing concentrations of dead woody material.
- Prune pines to a height approximately ten feet above the ground and thin oak stems to create and maintain a three to five foot stem spacing between stems and limb stems to a height two to three feet above the ground, making stems “tree-like.”
- Remove lower growing oak sprouts.

Clumps must be separated enough that if fire spreads from the ground fuels into the tree crowns of that clump that clump may be lost, but the fire will not spread to another clump.

Understory vegetation treatment-This option includes removing oak under pines past the dripline (the extent of the branches) of the trees a minimum of ten feet on relatively flat ground. Where the ground is steeper, removing oak up to twenty feet past the dripline is recommended. Prune pines to a height approximately ten feet above the ground.

Where oak is not growing under trees but is open grown, small clumps of oak can remain. Spacing recommendations are located in CSFS Guidelines for Oak Management fact sheet. Oak clump thinning and removal of dead material is also recommended.

Clumping of Gambel oak

Gambel oak clumps with residual trees

Overstory component treatment: understory retention-Landowners may want to remove overstory vegetation, such as pines and retain oak. For this type of treatment recommendations include:

- Removing overstory pine component where understory oak is targeted for retention.
- Outside of oak target retention areas follow one of the above desired target prescriptions.

Areas where Gambel oak is treated it will need to be re-treated every 5-7 years. When Gambel oak is disturbed intense sprouting occurs and the oak must be maintained to prevent the oak from re-establishing in

Recommendations for Reducing Structural Ignitability

Reducing structural ignitability and preventing the loss of property in the event of a wildland fire is a high priority in Douglas County. Efforts to reduce structural ignitability can be separated into regulations governing development designs, building materials and vegetation management (defensible space around structures). Public education campaigns designed to raise awareness and move those who are aware to action to reduce hazardous fuel loads within the home ignition zones and beyond complement the regulatory efforts. The county has taken steps to address development in wildfire hazard areas by developing and adopting codes and regulations through the land use and building processes. Most of the codes and regulations focus on hazardous fuels reduction, defensible space, and the prohibition of wood shake roofs in a wildfire hazard area.

In order to identify and understand methods for increasing a structure's ability to survive a wildfire it is important to first understand how structures burn during a wildland fire. Homes ignite and burn by meeting the parameters for ignition and combustion (Cohen 2008). Homes in the WUI are fuel. Structures may be ignited by firebrands, which are embers that are lofted through the air from a moving flame front or by radiant or convection heating. Firebrands can ignite structures by landing on flammable materials either *on* or *surrounding* a structure. Firebrands are particularly detrimental to structures with flammable building materials including wood shake roofs. Accumulations of flammable materials in roof valleys, in gutters, or directly adjacent to the structure can significantly increase a structure's vulnerability.

The two main factors affecting a structures ability to survive a wildfire are the exterior building materials and the amount of defensible space surrounding the structure within 100 feet to 200 feet of the structure, known as the *Home Ignition Zone* (Cohen 2008). The home ignition zone typically is located on private property, which requires property owners to recognize the hazards, take ownership and responsibility of the hazards, and mitigate the hazardous fuels to a level that will increase the survivability of the structure.

All building permits are subject to the mitigation standards, which are the basic tools that require implementation of defensible space around newly permitted structures. If a wildfire hazard assessment is generated at the time of building permit application it identifies the minimum defensible space requirements that must be met at the time of final inspection for a Certificate of Occupancy (C.O.) for structures that can be occupied and a Certificate of Completion for accessory structures.

Construction materials typically found for new residential construction are fairly fire resistive and include stucco and stone combination or a cement siding product for exterior construction materials. Roofing materials are typically asphalt composition or concrete tile as Douglas County prohibits wood shake roofs in a wildfire hazard area.

Building Materials

- Replace older shake roofs with those of a higher fire resistive rating including asphalt composition, tile or metal roof assembly
- Replace wood siding with a more fire resistive cement product including cement, stucco, cement plank siding, stone or masonry
- Screen attic, roof, foundation and eve vents openings with 1/8" metal screens
- Enclose areas under decks completely
- Windows should be double-paned or tempered glass

For more information visit http://www.firewise.org

Defensible Space

Where regulation is not applicable, educational campaigns are encouraged to be in place to raise awareness and encourage homeowners to implement defensible space standards as identified in CSFS Quick Guide *Creating Widlfire-Defensible Zones.* Defensible space should be encouraged around all structures.

Douglas County Wildfire Mitigation Staff, CSFS, fire district representatives, and private consultants offer on-site consultations for wildfire hazard assessments and site specific defensible space recommendations. Defensible space is the area around a structure where the vegetative fuels have been modified to slow the rate of spread of a wildfire towards the structure, and away from the structure if the structure is on fire. The primary purpose of defensible space is to improve the structure's ability to survive a wildfire in the absence of firefighter intervention. Firefighters may use defensible space to work to protect a structure during a wildland fire event. Defensible space is an effort to reduce structure ignitability but is not a guarantee a structure will survive during a wildfire.

Minimum recommendations for defensible space are identified in CSFS Quick Guide *Creating Widlfire-Defensible Zones.* Minimum defensible space recommended by the CSFS are 100 feet from a structure on a flat lot. Defensible space should increase with increasing topography as fire moves easily uphill preheating vegetative fuels.

Defensible space consists of three zones: Zone 1 is closest to the structure and is the most heavily modified zone. Recommendations include but are not limited to:

- Remove all flammable vegetation within 15 feet of the structure
- Remove any tree branches hanging over structures that will drop needles or other debris onto roofs, gutters, or decks
- Do not plant vegetation underneath eves or roof lines

Zone 2 is where the vegetation is modified to reduce the intensity of an oncoming fire, or create speed bumps through the vegetation approaching the structure. Recommendations in this zone include but are not limited to:

- Remove all ladder fuels
- Provide a minimum crown spacing between trees of 10 feet between crowns on a flat lot
- Prune trees to a height approximately 10 feet above the ground
- Provide a minimum shrub spacing of 2 ½ times the height of the shrub between shrubs
- Prune shrubs to remove contact with ground fuels
- Keep grasses mowed
- Remove all dead material

Zone 3 is a transition zone toward a more traditional vegetation management style to meet landowner objectives while working with principles of stewardship. Recommendations include but are not limited to:

- Thinning to remove suppressed and overstocked trees while promoting and maintaining healthy vigorous trees
- Limit vegetation combinations that contain ladder fuels to isolated clumps.

- Reduce shrub densities to promote healthy growth and reduce density and continuity through the zone.
- Snags (dead standing trees) should only remain if they do not pose a safety hazard

Firewood should be stacked along the contour or above the structure, but not below. If firewood is stored in a location that is above the structure, make sure that the house or other structures are not in the fall line of any burning material that may roll down the hill from the firewood stack during a fire. Firewood should be stacked a minimum of 30 feet from the structure and should be separated from other flammable vegetation. Flammable vegetation and other materials should not be stored under decks.

Past Mitigation Activities

Until the formation of Greater Sage Port each of the communities have performed their own fire mitigation efforts;

Sterling Pointe

Foundation Sterling Pointe Owners Association was incorporated on March 13, 1996 and had as part of its founding Declaration, By-Laws, Rules and Regulations an enforceable set of covenants to create and maintain a healthy and safe forest within its boundaries. For example:

Section 2.6 – "Management of the infected (mistletoe) trees or adjacent areas within the Planned Community may be imposed by the Colorado State Forest Service or the Association."

Section 6.20 – "As required by the plat and by the provision of this Section, each Residence on a Lot shall be surrounded by a thirty (30) foot defensible space or area, for protection against wildfire."

Section 6.21 – "Each owner consents to the implementation of a forest management plan as may be approved or required by the Colorado State Forest Service or the Association."

Fire Mitigation Grant

In 2003 the Sterling Pointe Owners Association applied for and received a Federal Grant to implement an active wildfire mitigation program within the community. This was followed by implementing a demonstration fire mitigation project on a single lot within the community and the subsequent "clean up" of more than a dozen parcels within Sterling Pointe. From 1999 to 2009 an active community slash chipping program was conducted using rental chippers. In 2010 and 2011 Sterling Pointe elected to participate with Sage Port HOA and Perry Park East HOA in a joint slash chipping program that used the services of the Coalition for the Upper South Platte (CUSP).

Insect and Mistletoe Control

Three surveys of the Sterling Pointe forest have been performed by outside parties, two by the Colorado State Forest Service and one by Keith Worley, private consultant.

In February, 2002 Sterling Pointe completed a comprehensive study, including a survey by the Colorado State Forest Service, of insect and mistletoe infestation of trees within the community. This effort included an organized survey and work parties and the trimming and removal of infected trees. In June, 2006 a follow up study and report to the community was conducted in order to re-energize the forest cleanup effort. However, not all owners agreed to allow the

inspection of their property. Also, the intensity of the cleanup and control effort was less than satisfactory. Therefore, starting with drive-by inspections in 2010, the Sterling Pointe Board of Directors undertook a proactive program to enforce the Sterling Pointe covenants, including fines, to cause regular clean up and control of dwarf mistletoe within the community. This last effort has met with some initial success, but much work is left to do.

Only recently a new working committee has been formed called "The Healthy Forest Committee" to design and implement action plans to improve the health of the forest and maximize owner participation.

Perry Park East

Perry Park East has an active Fire Mitigation and Chipping Program since 1999 with the majority of residents helping with the Spring and Fall chipping schedule on an ongoing basis.

Sage Port Homeowners Association

Starting in the spring of 2009 the Sage Port community has encouraged slash pickup on individual properties (there is no common community property) on a semi-annual basis. Sage Port uses the services of the Coalition for the Upper South Platte (CUSP) to chip the slash and then encourage the property owner to make use of (as ground cover or mulch) chips.

Starting 2007 Sage Port has conducted annual meeting at which community business is discussed. As well, the Larkspur Fire Marshall is invited to address the community with words of wisdom concerning fire mitigation and issues to be concerned about within the community.

Hidden Forest

Mitigation efforts thus far have been on an individual homeowner basis. Individual homeowners have thinned the scrub oak, remove dead trees, and reduce fire danger. All activity has been limited to their respective property.

Due to the small lot size (comparable to the lots in other communities), the defensible space around each home is relatively good. Each homeowner is encouraged to conduct a fire assessment with the Larkspur Fire Dept. to determine their specific risk.

A portion of Hidden Forest is adjacent to an area of Douglas County open space. This area runs from the corner of Independence and Tenderfoot to the corner of Red Hill and Quartz Mountain. In addition, Hidden Forest is adjacent to approximately 700 acres of undeveloped forest privately owned. This area runs all along Quartz Mountain through Independence.

Antlers at Sageport

Mitigation efforts have consisted of thinning of the 2.5 acre HOA open space parcel in 2009 after a spring snowstorms caused storm damage to the trees. The HOA plans on treating the 7.5 acre open space parcel in 2014 in conjunction with Douglas County Open Space treating their adjoining parcel.

GSP Fuel Treatment Priorities

Protection of property through the development of adequate defensible space by clearing and thinning to reduce the existing fuels hazard burden is the second priority. Most of the residents of Greater Sage Port were attracted to the community by its location, aesthetic value and the environment. Inherent in the protection of the properties are the protection of both the area's aesthetic value and the environment which supports a diversity of wildlife. Protecting this environment from the destruction of vegetation, erosion and loss of wildlife that results from wildfires by thinning and the removal of ladder fuels is the third priority of the community.

Defensible Space:

Landowners should focus on creating defensible space around their homes and reducing hazardous vegetation between homes and on community-owned lands within communities to be most effective in reducing wildfire hazards. Defensible space must be created around each structure if the first responders are expected to have any chance of saving the property from a wildfire. There may not be enough resources to protect every home and in many instances the fire will burn through the area before firefighters can arrive so it is critical to have defensible space. The structures themselves must be built and maintained so that they are as fire resistant as possible. All areas around homes should be mitigated to a level sufficient to reduce the possibility of home ignition from both flame impingement and aerial firebrands (embers).

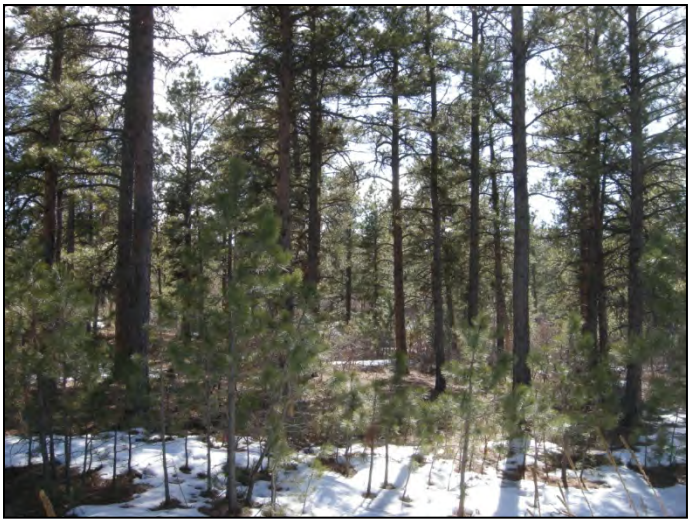
Homeowners are encouraged to have the LFPD or Douglas County Mitigation Staff come to their property and give them a one on one firewise analysis of the property. This evaluation will allow each owner to best plan what mitigation or structure changes would be the most beneficial for their situation. Follow up evaluations may also be requested to review completed actions and plan next steps.

In most cases, the development of adequate defensible space will extend over a period of time. Therefore, the work should be prioritized. Priority must go to the development of Zones 1 and 2 in respective order, which includes clearing and thinning along drives to assure easy access. The next step is to work on the development of Zone 3 and then work with adjoining neighbors to reduce hazardous vegetation between lots.

Although the main focus is to reduce fire hazards, improving forest health is key component of the treatment recommendations. The goal is to reduce the hazardous vegetation to the extent where when a wildfire burns through the community the existing vegetation will be more resilient with minimal permanent damage to the vegetation and soils.

Open Space Parcels:

Perry Park Water and Sanitation Parcel in Perry Park East



Perry Park Water and Sanitation District owns a 5 acre lot off of Silverheels Drive that could be a potential demonstration area for treating dense ponderosa pine regeneration along the road and removing ladder fuels from underneath residual trees. The dense stands of regeneration need to be thinned to reduce competition, improve forest health, and reduce the fire hazards along the road. Work could be completed using mastication equipment or chainsaws and a chipper. Perry Park East HOA will pursue discussions with Perry Park Water and Sanitation District to determine when the parcel could be treated.

Douglas County School Section in Sterling Pointe

Douglas County Schools owns a 10 acre parcel within the Sterling Pointe community. This property contains Gambel oak in the understory that is acting as a ladder fuel with the overstory ponderosa pine trees. The pine trees are in clumps in the northern portion of the parcel, however, there trees need to be thinned to improve crown spacing and forest health. There are dense stands of small ponderosa pine trees on the southern portion of the parcel that need to be thinned to improve forest health and reduce fire potential.

- Guidelines for treating oak:
    - Target old, dead, decadent patches, especially those with significant top kill.
    - Focus on leaving clumps containing oak greater than 4 inches in diameter. There are larger stems in the treatment area and if healthy should be retained if not acting as a ladder fuel.
    - Remove all oak from underneath the dripline of residual trees and within 10 feet of the branches of residual trees.
    - Small openings should be created to separate healthy clumps of oak. Spacing between clumps of oak should be approximately 2.5 times the height of remaining oak. *For example: Spacing between clumps 6 feet in height is 15 feet or more. This would result in average spacing between remaining clumps of 20 feet.* A variety of oak heights should be chosen for the remaining clumps.

- Thin dense stands of trees and increase space between crowns. Crown spacing is recommended at 10 feet between crowns, however, trees can be clumped and grouped in most instances to avoid "cookie cutter" appearance (all equal spacing).

- Prune residual trees 10 feet from the ground or 1/3rd of the live tree crown, whichever is less.

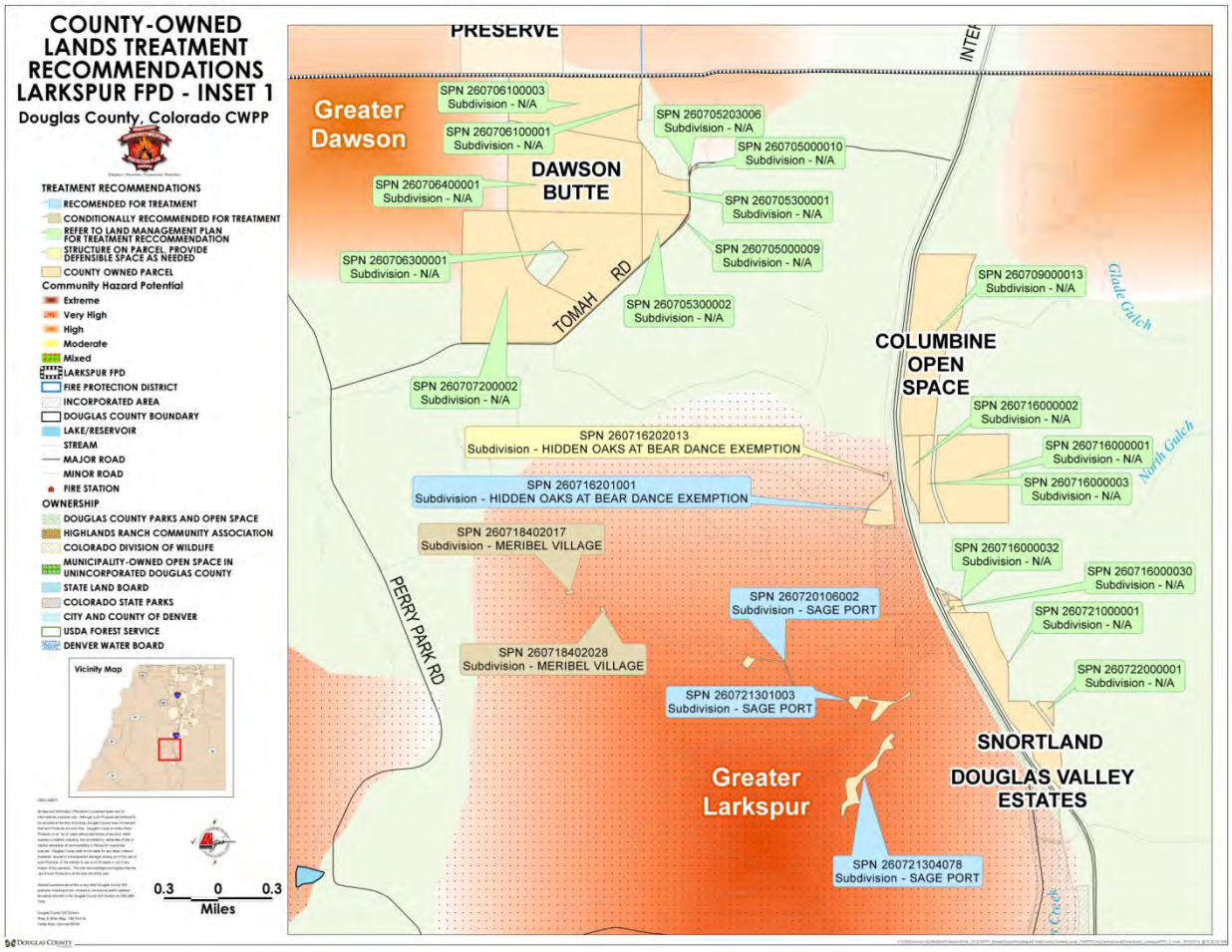
- Remove trees that are acting as ladder fuels and that are overtopped, poorly formed (bent, broken topped, forked), damaged, poor health (heavy dwarf mistletoe), and excessive (dense clumps).

- All stumps will be 6 inches or less in height as measured on the uphill side.

This parcel was treated in May/June 2014 and will serve as a demonstration area for the community.

Douglas County Open Space Parcels

The communities that make up the GSPC area contain eight parcels recommended for some level of management action in the Douglas County CWPP.



There are two parcels located in the *Hidden Oaks at Bear Dance Exemption*. One parcel (SP 260716202013) contains a structure, the restored Crull-Hammond cabin and is recommended to have the area directly surrounding the cabin mowed once a year in an effort to protect the structure. The Parks, Trails, and Building Grounds Division is responsible for mowing and mows the area once per year. The parcel is one acre in size.

The other parcel is a 17 acre parcel (SP 260716201001) with power lines (distribution line) over head and the rail road tracks adjacent. The parcel has roadside access from Bear Dance Drive and contains a moderately heavy and dense oak and some pine overstory where fuels are contiguous. The parcel also contains large grassy openings and approximately 30% of the parcel is recommended for treatment. Treatment recommendations include ladder fuel reduction, removing oak under pines past the dripline to release pines and promote tree vigor, and reduce the density and the continuity of the oak by clumping following CSFS 6.311 spacing guidelines. Mastication equipment could be used to break up the oak. There is also opportunity for hand thinning as the parcel contains oak clumps with large, dominant stems that lend themselves for an effective demonstration site. Also recommended is to reduce the amount of oak underneath the power lines. Due to the location of this parcel can potentially serve as a good demonstration site.

The remaining parcels are within the Sage Port filings and have been recommended for treatment as the parcels would serve as potential demonstration sites within the parcel or on the entire parcel.

Sage Port Filing 1, 15 acre parcel (SP 260721304078). This parcel is mostly a drainage tract and contains a detention area (the parcel is located to the left of the tree in the photo below). Several trees in this parcel have died where the drainage structures were installed. Where fuels are contiguous the parcel would benefit from thinning overstory pines where clumpy and adjacent to homes. Ladder fuel reduction focusing on oak thinning, sapling thinning, and removing dead limbs off of large pines is also recommended especially adjacent to private properties at the north end of the parcel.

There is a 4 acre parcel (SP 260720106002) that surrounds Cameron Cir and has two sections with easy road access that will serve as good demonstration areas for crown spacing and ladder fuels reduction. The parcel contains a combination of overstory pines and some Gambel oak. The pines are heavily infested with mistletoe. There is dense pine regeneration located along the road that could be thinned to demonstrate treatment along roads.

A demonstration area was created in 2012 and a sign was placed near the road to promote the project. Post-treatment photos are shown below.

There is a 9 acre parcel (SP 260721301003) that has limited and difficult access off of Tenderfoot Dr and contains a detention pond behind Engineers Ct. Some areas of the parcel would benefit from thinning small saplings, general thinning, clean-up of dead material, and ladder fuel reduction but the parcel is narrow and access is difficult making treating portions of this parcel a lower priority.

There are two residential lots owned by Douglas County located within the Meribel Village plat. The lots have been identified as a conditional treatment as treating these lots without the surrounding lots would have no benefit. Lots contain oak and pine, oak is not contiguous, lots are .5 acre in size a piece. Whatever work Douglas County pursues will be subject to the county process which includes stakeholder input from the Greater Sage Port Community residents.

Antlers at Sageport HOA Open Space

Sage Port Filing #6 (The Antlers) homeowners own a 7.5 acre parcel to the west of the Douglas County parcel. The parcel contains dense pockets of ponderosa pine with Gambel oak in the understory. It would be most beneficial to do work in conjunction with this parcel not only for the access to the Douglas County parcel, but to also provide forest health improvement and wildfire hazard reduction to adjoining lots over a larger area.

Community Education/Outreach

Ongoing education and outreach is an integral part to a successful CWPP especially given the number of communities involved with this CWPP. The GSPC Core Team will address education/outreach on a broader scale focusing on holding community meetings on an annual basis to discuss progress made in implementing the CWPP, grant opportunities, and various topics of fire mitigation, preparedness, and forest management that affect our communities.

The most effective community outreach will take place through the individual HOAs. Monthly board meetings, annual meetings, newsletters, and email contact lists are avenues to get information out to local residents. Listed below are the five active HOAs in this CWPP and the methods of outreach for each.

Hidden Forest: No monthly HOA meetings. Annual meeting in January. No newsletter. Email contact list.

Sageport: Monthly HOA board meetings. Annual meeting in January. Newsletter is part of Sentinel. Email contact list.

Perry Park East: Monthly HOA board meetings. Annual meeting in May. No newsletter-utilize website.

Sterling Pointe: Monthly HOA board meetings. Annual meeting in September. Newsletter is sent out 3-4 times per year. Email list.

Antlers: HOA board meetings are held as necessary. Annual meeting in the fall. Email communication to all members. No newsletter.

In order to direct future outreach efforts a community survey was developed for the CWPP process.

The Greater Sageport CWPP Core Team created a survey to gain a better understanding of the community's views of wildfire hazards, mitigation actions, preparedness, and outreach preferences. The survey was advertised through the Sentinel and local HOA contact lists. Residents had from February 5-March 30, 2012 to respond to the survey. Perry Park East, Sage Port, Hidden Forest, Sterling Pointe, Antlers, Village at Bear Dance, Elk View Estates, and adjoining private landowners participated in the survey and 131 people responded.

Survey questions and responses are summarized below. The items in bold had the highest response.

Survey Questions/Responses:

Question 1: My Community Is:	**Response Percent**	**Response Count**
Perry Park East	2.3%	3
Sage Port	17.6%	23
Hidden Forest	38.2%	50
Sterling Pointe	38.2%	50
Antlers	0.8%	1
Village at Bear Dance	0.8%	1
Taylor Mountain at Bear Dance	0.0%	0
Elk View Estates	0.8%	1
Private landowners adjoin above communities	1.5%	2
		Total: 131

Question 2: How would you rate the wildfire danger in your area?	**Response Percent**	**Response Count**
None	0.8%	1
Low	9.9%	13
Moderate	**56.5%**	**74**
High	26.0%	34
Don't Know	6.9%	9
		Total: 131

Question 3: Are you considering wildfire mitigation (reduction of combustibles) on your own property?	**Response Percent**	**Response Count**
Yes	**75.6%**	**99**
No	24.4%	32
		Total: 131

Question 4: Which of the following statements reflect your views? (Select all applicable responses)	**Response Percent**	**Response Count**
Mitigation is not needed	3.8%	5
Mitigation means clear cutting	16.8%	22
Fire department will save properties	9.9%	13
State and/or Federal responsibility to protect properties	3.8%	5
Nothing can be done to save my property in a wildfire	1.5%	2
Worried about wildfire habitat if I mitigate my property	10.7%	14
I don't want to live here if wildfire strikes	12.2%	16
Insurance will rebuild	14.5%	19

Mitigation is important in this area	**84.0%**	**110**
Forest health is improved by mitigation	**79.4%**	**104**
Mitigation lowers insurance rates	**44.3%**	**58**
The value of property is increased by mitigation	**42.0%**	**55**
My community is well prepared for a wildfire	5.3%	7
My home and property is well prepared for a wildfire	26.7%	35
		Total: 131

Question 5: If an informational/educational meeting or demonstration of wildfire mitigation were held, what time would you be most likely to attend? (Select all applicable responses)	**Response Percent**	**Response Count**
Weeknight	**64.1%**	**84**
Weekday	9.9%	13
Saturday morning	28.2%	37
Saturday afternoon	22.9%	30
Sunday morning	5.3%	7
Sunday afternoon	15.3%	20
I would not attend at all	6.9%	9
		Total: 131

Question 6: Which of the following statements may keep you from mitigating your property? (Select all applicable responses)	**Response Percent**	**Response Count**
Already done	**28.2%**	**37**
Working on it now	**48.1%**	**63**
Don't want to lose the natural look of my property	**25.2%**	**33**
Neighboring properties not mitigated	**21.4%**	**28**
Don't know how to do it myself	13.0%	17
Don't have the equipment	15.3%	20
Physically unable to do it myself	8.4%	11
Don't know what to do	17.6%	23
Too costly to hire someone	**23.7%**	**31**
Don't know who to hire	6.1%	8
No way to get rid of the slash	18.3%	24
Worried about erosion	5.3%	7
Too costly to replace building materials with fire resistant ones	9.2%	12
		Total: 131

Question 7: Which of the following statements reflect your views on preparedness for a wildfire emergency?	**Response Percent**	**Response Count**
My family has an evacuation plan and a 72 hour emergency kit prepared	9.9%	13
My family has practiced our evacuation plan	4.6%	6
My community has wildfire evacuation routes preplanned	0.8%	1
My community has posted signs to designate evacuation routes	0.0%	0
My community has provided access to information about	1.5%	2

evacuation routes and where they go		
I will leave my home if Douglas County issues a wildfire evacuation order	**83.2%**	**109**
		Total: 131

****Note: The survey occurred while an evacuation brochure was being developed for the CWPP planning area. The brochure was distributed in the summer of 2012.**

Question 8: Do you have someone in your household who has special needs and would require special assistance in the event of an emergency situation?	**Response Percent**	**Response Count**
Yes	2.3%	3
No	**97.7%**	**128**
		Total: 131

Question 9: What is your preferred method of communication? (Select all applicable responses)	**Response Percent**	**Response Count**
E-mail	**90.8%**	**119**
Website	18.3%	24
Mail	23.7%	31
Community posters and signs	13.7%	18
Sentinel	32.1%	42
		Total: 131

Question 10: Do you have any concerns regarding the CWPP? If yes, please provide your comments. See Appendix VIII for comments.

Evacuation Planning

In the event of a disaster situation, including wildfire, the most important element in the protection of life is individual and family education and preparation. Attached at Appendix III is a summary, "Wildfire Evacuation Preparation Guidelines". These guidelines outline the fundamentals; however, to properly prepare for the emergency of a wildfire in this area, additional guidance should be sought by logging on to www.dcsheriff.net and clicking on two sites:

- Emergency Management http://www.dcsheriff.net/emergencymanagement/indes.html
- Emergency Mass Notification System http://www.dcsheriff.net/emergency_mass_notification.html

The former provides a detailed document entitled "The Emergency Preparedness and Prevention Guide", while the latter provides the means to self-register to be automatically contacted for emergency alerts by the Douglas County Sheriff's Office and access to the Special Needs Registry. Families should review and discuss these guidelines and source materials in preparing and practicing their evacuation plans. The preparation of the "72-Hour Family Emergency Kit" is recommended for each household. Log on to www.readycolorado.com or call 1-800-639-READY (7323) for your "Pack A Kit" checklist.

Three additional elements are essential to adequate evacuation planning:

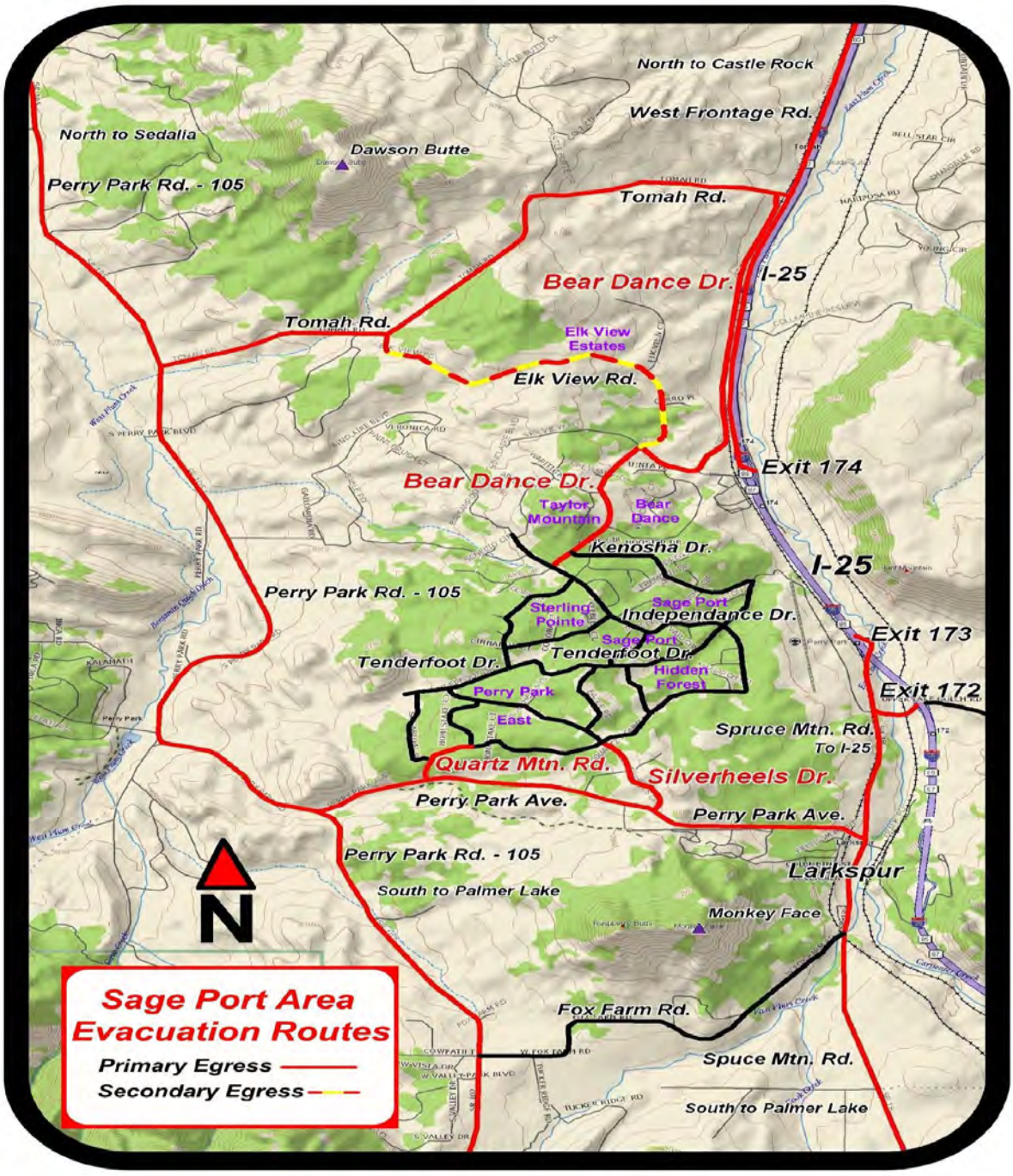
- Establish a family communication plan.
- Determine in advance where you will meet and stay in the event of an evacuation.
- Make plans to evacuate and care for pets and large animals. Information on this is available on www.readycolorado.com or by referring to the brochure “Plan for Pets”.

The Douglas County Sheriff’s Department is in charge during any emergency evacuation situation. Citizens listed in the county’s 9-1-1 database are automatically subscribed to alerts by phone. If your land-line home phone service is by any other provider than Century Link or if you utilize cellular phone service as your primary home phone service, you may need to contact your phone provider to determine if your phone number is registered within the 911 system. If you are not registered, you need to go to the Emergency Mass Notification System to register. Registering with the Emergency Mass Notification System all you to receive Douglas County issued emergency messages on your work phone, on your cell phone, by email and by other methods as you so determine. When an emergency occurs, you will be notified of the urgency of evacuation as immediate or planned (hours or days) and where to go for shelter.

The Sheriff’s Special Needs Registry is a voluntary data base containing information concerning individuals who may require assistance in the event of an evacuation. This information is kept confidential and will be forwarded to local emergency service agencies through the 911 Dispatch Center in the event of an evacuation. Individuals may self-enroll in this registry by contacting the Emergency Management Office at 303-660-7589.

Evacuation Routes are illustrated in the following map. It has been distributed to the community, available at the Larkspur Fire Station, distributed by each homeowner’s association and distributed to new residents via the HOA’s.

On the reverse side of the Evacuation Route map there are preparation and execution instructions


North to Castle Rock
West Frontage Rd.
North to Sedalia
Dawson Butte
Perry Park Rd. - 105
Tomah Rd.
Bear Dance Dr.
I-25
Tomah Rd.
Elk View Estates
Elk View Rd.
Exit 174
Bear Dance Dr.
Taylor Mountain
Bear Dance
Kenosha Dr.
I-25
Perry Park Rd. - 105
Sterling Pointe
Sage Port
Independance Dr.
Exit 173
Sage Port
Tenderfoot Dr.
Tenderfoot Dr.
Hidden Forest
Exit 172
Perry Park
East
Spruce Mtn. Rd.
To I-25
Quartz Mtn. Rd.
Silverheels Dr.
Perry Park Ave.
Perry Park Ave.
Perry Park Rd. - 105
Larkspur
South to Palmer Lake
Monkey Face
N
Sage Port Area
Evacuation Routes
Primary Egress
Secondary Egress
Fox Farm Rd.
Spuce Mtn. Rd.
South to Palmer Lake

WHEN TO LEAVE

Leave early enough to avoid being caught in the fire, smoke, or road congestion. **Don't wait to be told by authorities to leave.** If you feel threatened – leave. If you are advised to leave, don't hesitate! **Fires are fast moving events!!**

WHERE TO GO

Leave to a predetermined location (it should be a low-risk area, such as a well-prepared neighbor or relative's house, a Red Cross shelter or evacuation center, motel, etc.)

HOW TO GET THERE

Have several travel routes in case one route is blocked by the fire or by emergency vehicles and equipment.
Choose an escape route away from the fire.

WHAT TO TAKE

Take your emergency 72 hr. supply kit containing your family and pet's necessary items, such as cash, water, clothing, food, first aid kits, medications, and toys. Also, don't forget valuables, such as your computer files, photos, and important documents. Organize your family members, know where to meet if you are all not at home and make arrangements for your pets.

For More Evacuation Preparedness Info:
http://www.larkspurfire.org/
http://www.readycolorado.com/
http://www.wildlandfirersg.org/

Evacuation Exits

1. **Primary Southeast:**
   Silverheels Dr. to Perry Park Ave.
2. **Primary Southwest:**
   Quartz Mtn. Rd. to Perry Park Ave.
3. **Primary North:**
   Bear Dance Dr. to Tomah Rd.
4. **Secondary North:**
   Bear Dance Dr. to Elk View Rd. to Tomah Rd.

Choose an escape route away from the fire!

* **The route you take will depend on the fire location and direction by emergency service personnel.**

Keep the six "P's" ready in case an immediate evacuation is required:

- **P**eople and pets
- **P**apers, phone numbers, and important documents
- **P**rescriptions, vitamins, and eyeglasses
- **P**ictures and irreplaceable memorabilia
- **P**ersonal computers (information on hard drive and disks)
- **P**lastic - credit cards, ATM cards & cash

Be Calm-Be Courteous-Drive Safely!

Implementation Plan

The Greater Sage Port Community (GSPC) implementation plan is specific for each community and is found in Appendix V. There are general activities that the GSPC Core Team should participate in on an annual basis including: joint community educational event (meeting, clean-up day), annual review of the CWPP and accomplishment tracking, pursuing joint grant opportunities.

CWPP Review and Updates

The GSPC Core Team will be responsible for continued coordination of mitigation efforts, broad scale education programs and annual review of this plan to determine the need for revision. Community members are encouraged to provide ongoing feedback and input to their respective HOAs who can then take that information to the GSPC Core Team.

Conclusion

This plan provides the roadmap to continued mitigation and education activities for the Greater Sage Port Community that fits the needs of the community. This plan has assessed the community hazards, and prioritized future activities and projects based upon those hazards. Completion of this plan also makes the Greater Sage Port Community a competitive applicant for grant funding to complete projects identified in the Community Action Plan. The residents of Greater Sage Port remain committed to their mitigation efforts and activities. Greater Sage Port remains committed to continued coordination with the CSFS Franktown District, the Douglas County Wildfire Mitigation Staff and the Larkspur Fire Protection District.

Greater Sage Port CWPP
Appendix I
Maps

I -1 Greater Sage Port Community Wild-land Urban Interface Base Map

I -2 Greater Sage Port Hazard Map

I -3 Greater Sage Port Vegetation Types

I -4 Greater Sage Port Slope Analysis

I -5 Greater Sage Port Area Aspect Map

I -6 Greater Sageport Fuel Model Map

I -7 Perry Park East Area Map

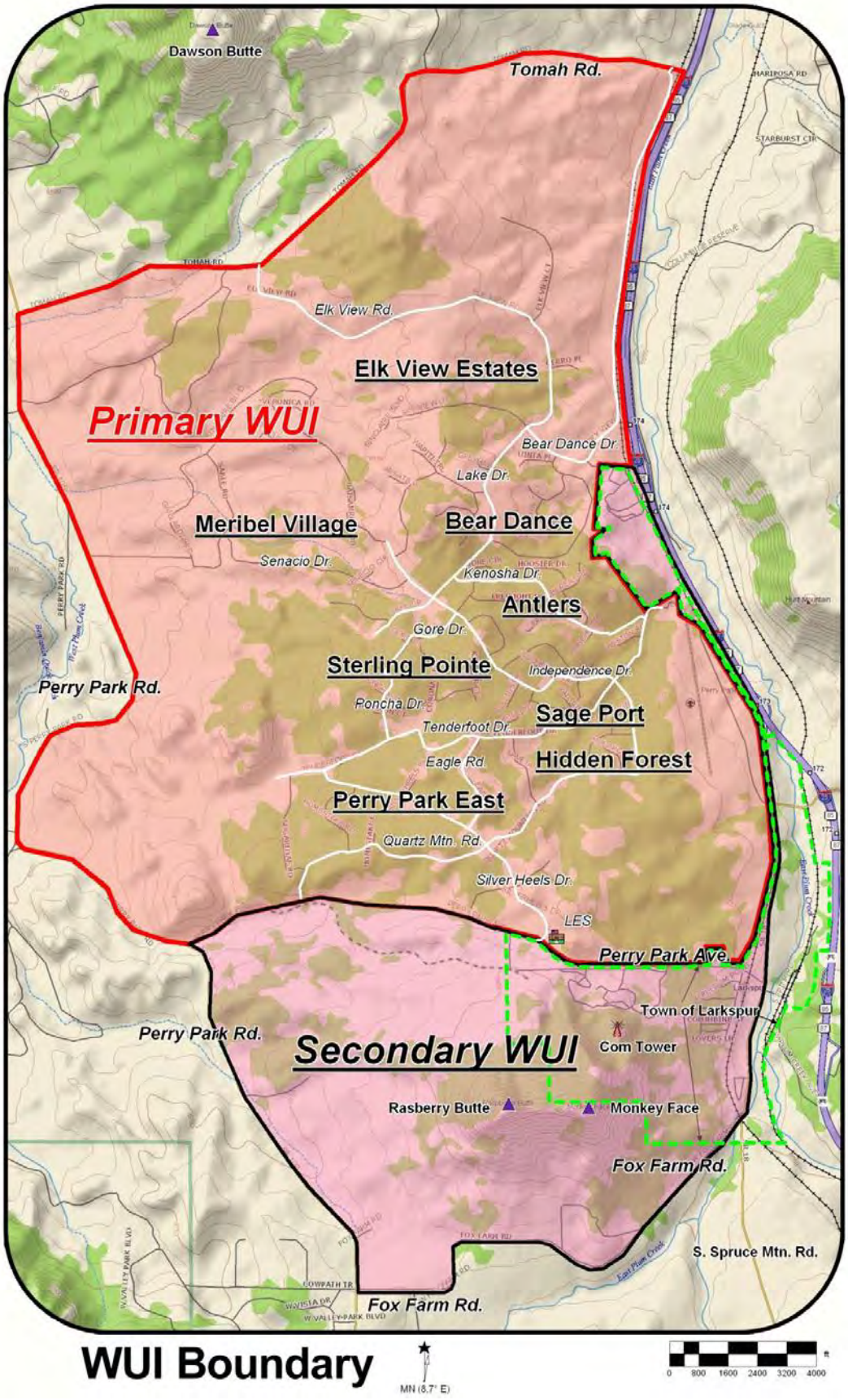
I -8 Sterling Point Area Map

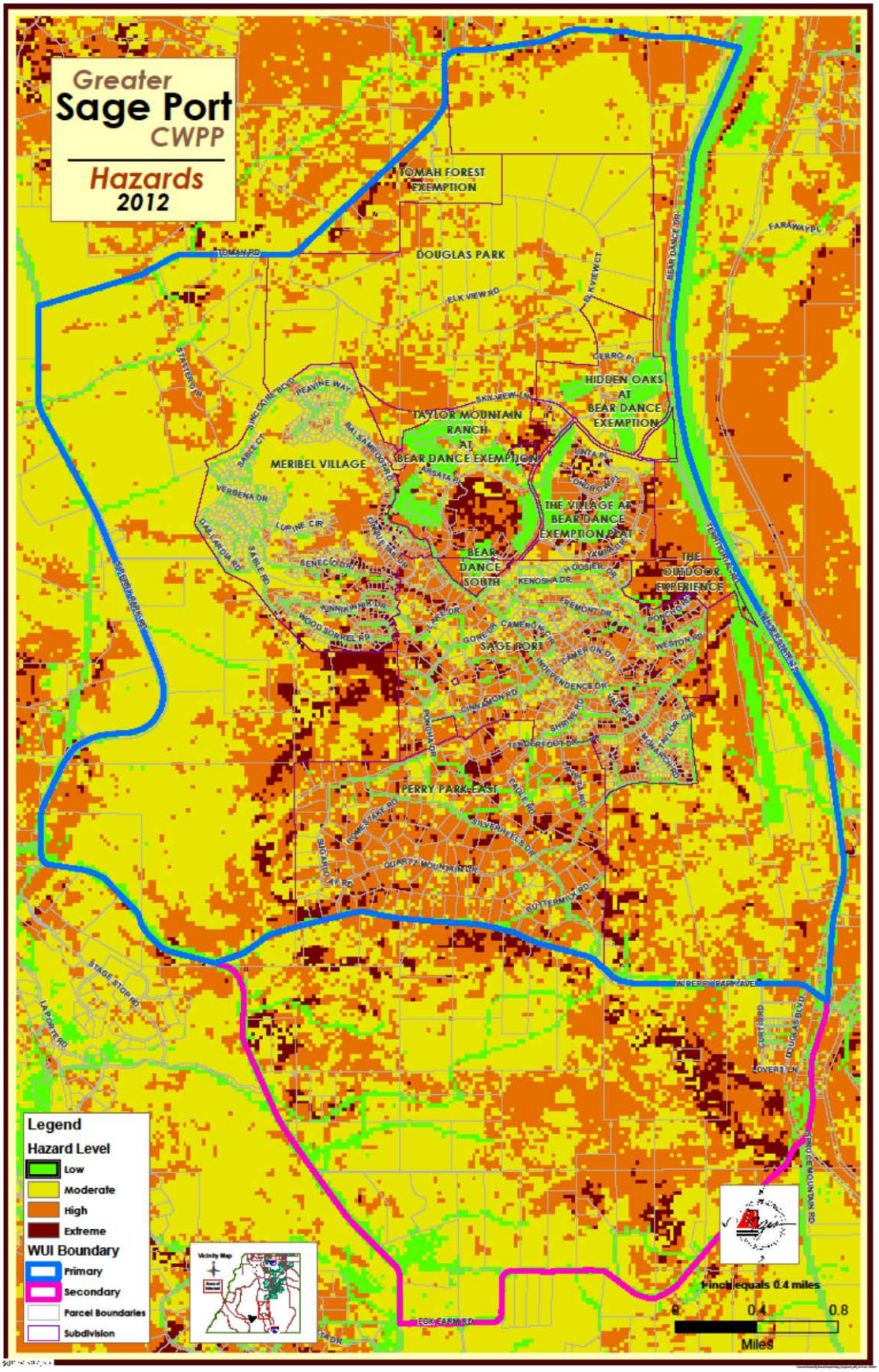
I -9 Sage Port HOA and Hidden Forest Area Map

I -10 Hidden Oaks at Bear Dance & The Village at Bear Dance Area Map

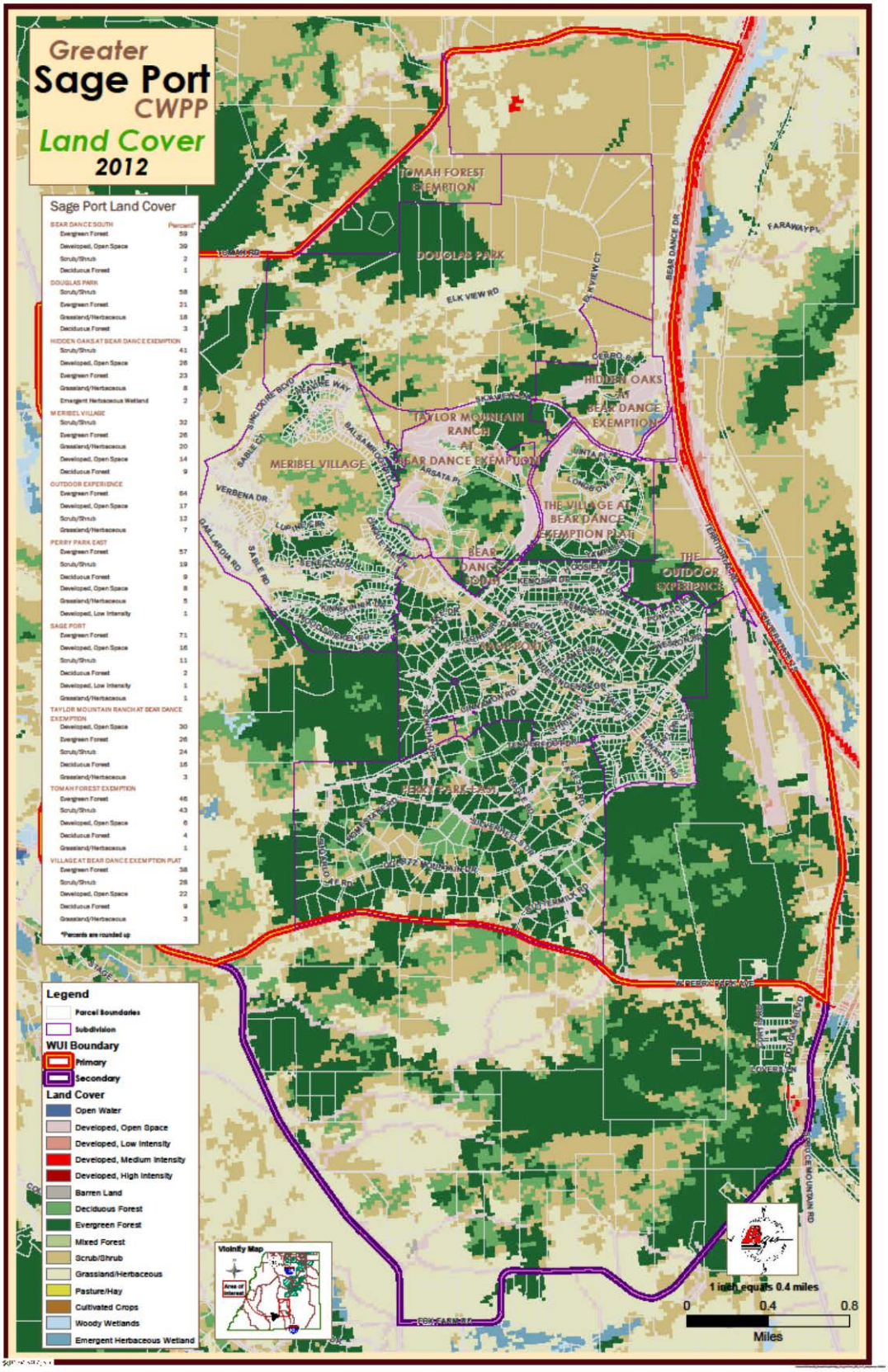
I -11 Antlers at Sageport Area Map

I -1 Greater Sage Port Community Wildland Urban Interface (WUI) Base Map



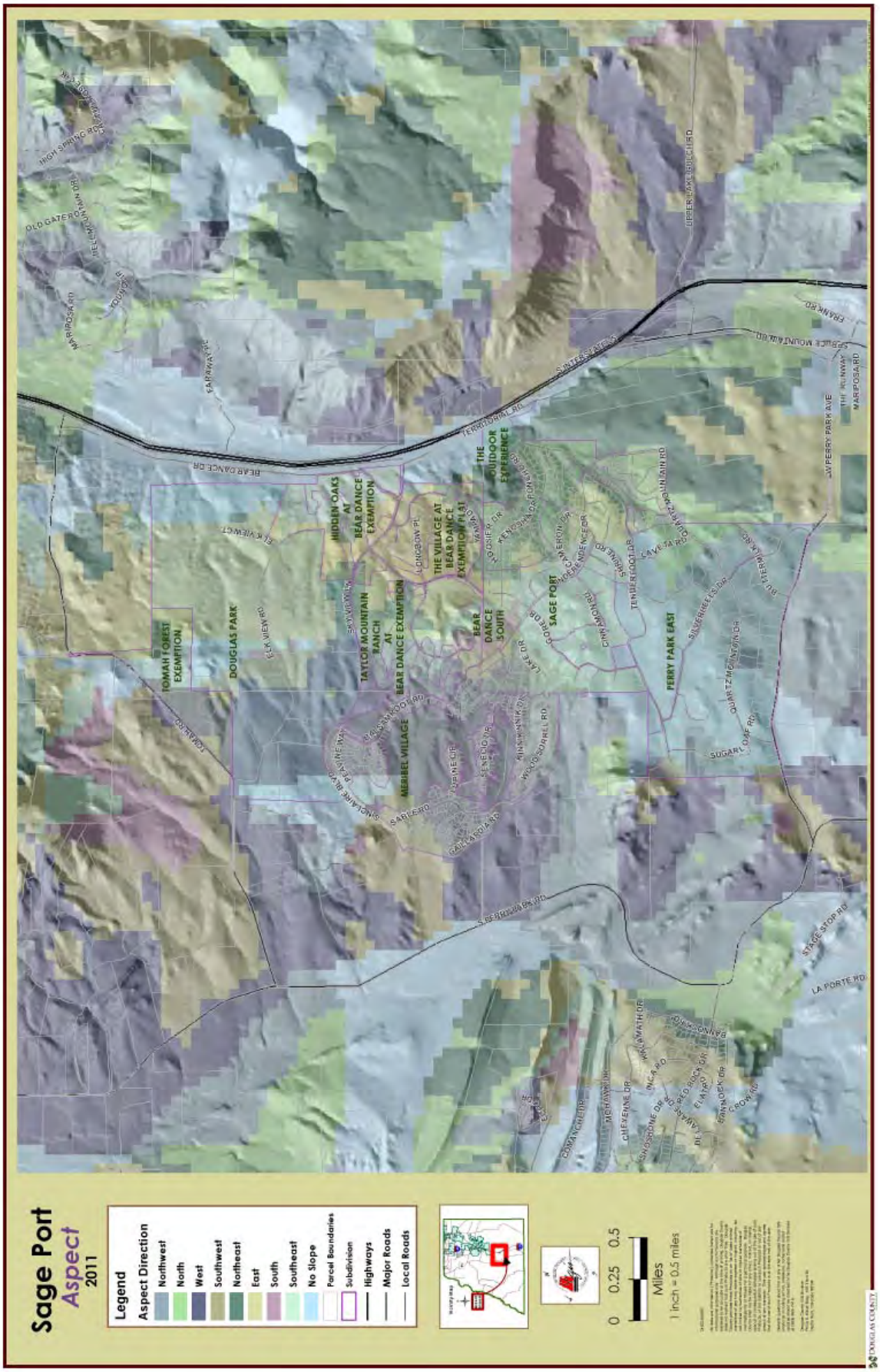

Greater
Sage Port
CWPP
Hazards
2012
TOMAH FOREST EXEMPTION
DOUGLAS PARK
HIDDEN OAKS AT BEAR DANCE EXEMPTION
TAYLOR MOUNTAIN RANCH AT BEAR DANCE EXEMPTION
MERIBEL VILLAGE
THE VILLAGE AT BEAR DANCE EXEMPTION PLAT
BEAR DANCE SOUTH
THE OUTDOOR EXPERIENCE
SAGE PORT
PERRY PARK EAST
Legend
Hazard Level
Low
Moderate
High
Extreme
WUI Boundary
Primary
Secondary
Parcel Boundaries
Subdivision
1 inch equals 0.4 miles
0
0.4
0.8
Miles

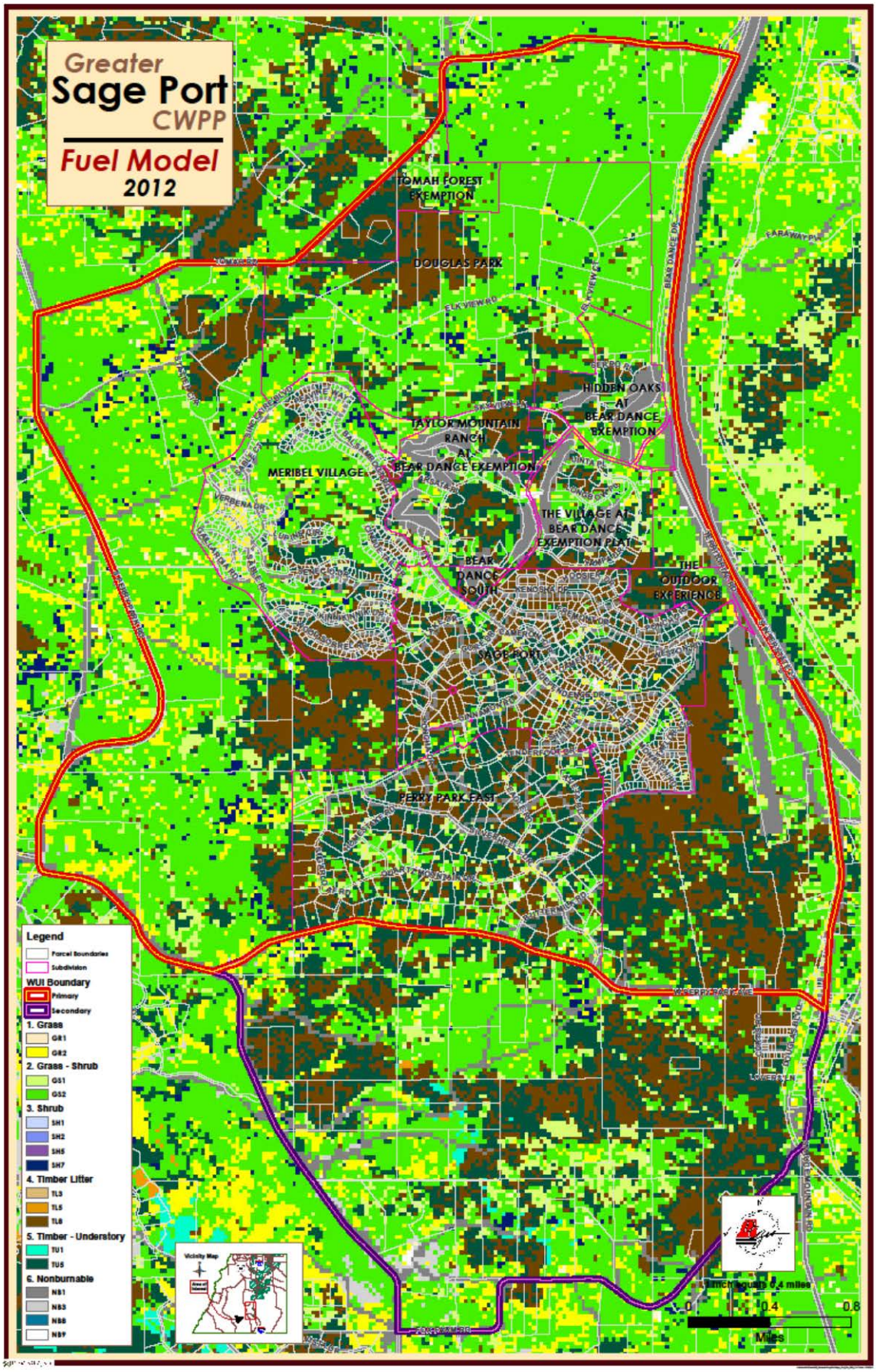
I -3 Greater Sage Port Vegetation Types



I -4 Greater Sage Port Slope Analysis

I -5 Greater Sage Port Area Aspect Map




Greater
Sage Port
CWPP
Fuel Model
2012
TOMAH FOREST EXEMPTION
DOUGLAS PARK
HIDDEN OAKS AT BEAR DANCE EXEMPTION
TAYLOR MOUNTAIN RANCH AT BEAR DANCE EXEMPTION
MERIBEL VILLAGE
THE VILLAGE AT BEAR DANCE EXEMPTION PLAT
BEAR DANCE SOUTH
THE OUTDOOR EXPERIENCE
SAGE PORT
PERRY PARK EAST
Legend
Parcel Boundaries
Subdivision
WUI Boundary
Primary
Secondary
1. Grass
GR1
GR2
2. Grass - Shrub
GS1
GS2
3. Shrub
SH1
SH2
SH5
SH7
4. Timber Litter
TL3
TL5
TL8
5. Timber - Understory
TU1
TU5
6. Nonburnable
NB1
NB3
NB8
NB9
0
0.4
0.8
Miles

Fuel Model Map Information

The Fuel Model Map breaks the vegetation down into standard fire behavior models that are then used with Rothermel's (1972) surface fire spread model. These are surface fire spread models, the vegetation that will carry a surface fire and not a crown fire. The fire behavior model is broken into Grass, Grass-Shrub, Shrub, Timber Litter, and Timber- Understory. These categories are then further broken down by increasing complexity.

Grass models are for an arid to semiarid climate that is rainfall deficient in the summer and the extinction moisture content (dead moisture content) is 15 percent. Grasses are dynamic as their moisture contents change during the season and they can exhibit different fire behavior.
Fire moves quickly through grass and can easily spread to adjacent more complex fuel types making suppression operations more difficult and complex.

GR1 - Grass is short, patchy, and possibly heavily grazed. Spread rate is moderate; flame length low. Grasses in this category may not carry a fire as rapidly as grasses in the other grass models.

GR2 - Moderately coarse continuous grass, average depth about 1 foot. Spread rate high; flame length moderate. In this type of grass fuel model fire will move more quickly and burn more intensely.

The **Grass-Shrub** category is a mixture of grass and shrubs up to 50 percent shrub cover. The models are for an arid to semiarid climate that is rainfall deficient in the summer and carries an extinction moisture content of 15 percent. In this case it is the grass-shrub model combined that contributes to fire spread. Grass-Shrub fuel models are dynamic with the function of moisture content.

Fire may burn quickly through the Grass-Shrub models with varying intensity and increase spreading, making suppression operations more complex. This type of model contributes to fire spreading into ladder fuels, and adjacent to a significant amount of crown fuels (trees) in the communities modeled.

GS1- Shrubs are about a foot high, low grass load, Spread rate moderate; flame length low.

GS2- Shrubs are 1-3 feet high, moderate grass load. Spread rate high; flame length moderate.
For the Shrub category shrubs cover at least 50 percent of the site; grasses are sparse to nonexistent. The models are for an arid to semiarid climate that is rainfall deficient in the summer with an extinction moisture content of 15 percent.

SH1 - Low shrub fuel load, fuelbed depth about 1 foot; some grass may be present. Spread rate very low; flame length very low.

SH2- Moderate fuel load (higher than SH1), depth about 1 foot, no grass fuel present. Spread rate low; flame length low.

SH5- Heavy shrub load, depth 4 to 6 feet. Spread rate very high; flame length very high.

SH7- Very heavy shrub load, depth 4 to 6 feet. Spread rate lower that SH5, but flame length similar. Spread rate high; flame length very high.

Areas of heavier shrub loads may tend to experience higher burning intensities and may be more difficult to control.

Timber Litter can be described as dead and down woody fuel (litter) beneath the forest canopy.

TL3- Moderate load conifer litter. Spread rate very low; flame length low. The fuel bed is not composed of broadleaf or long-needle pine litter and does not include coarse fuels.

TL5-High load conifer litter, light slash or mortality fuel. Spread rate low; flame length low. The fuelbed is not composed of broadleaf or long-needle pine litter and does not include coarse fuels.

TL8-Moderate load and compactness may include small amounts of herbaceous load. Spread rate moderate; flame length low. The fuelbed is composed of long needle pine litter.

Timber Understory can be described as grass or shrub mixed with litter from the forest canopy.

Models are fir a semiarid to subhumid climate with a moisture extinction of 20 percent.

Timber Understory models are those that pose a significant threat of a ground fire spreading to a crown fire.

TU1-Fuelbed is low load of grass and/or shrub with litter. Spread rate low; flame length low.

TU5-Fuelbed is high load conifer litter with shrub understory. Spread rate moderate; flame length moderate.

Nonburnable areas are those that are insufficient to carry wildland fire under any condition.

NB1-Urban or suburban development; insufficient wildland fuel to carry wildland fire.

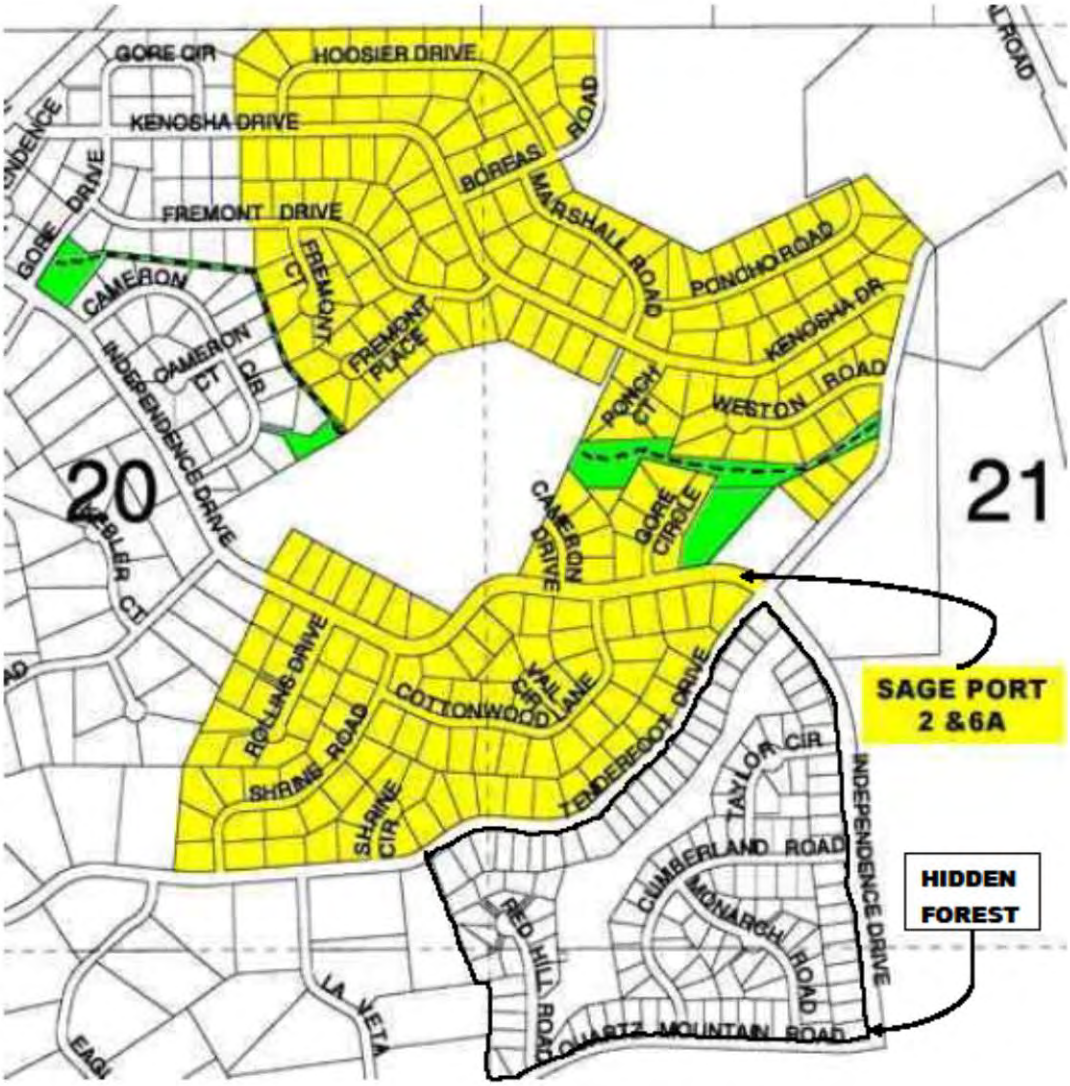
NB3-Agricultural field, maintained in nonburnable condition.

NB8-Open water
NB9-Bare ground

Nonburnable areas can serve as potential anchors for fuel breaks.

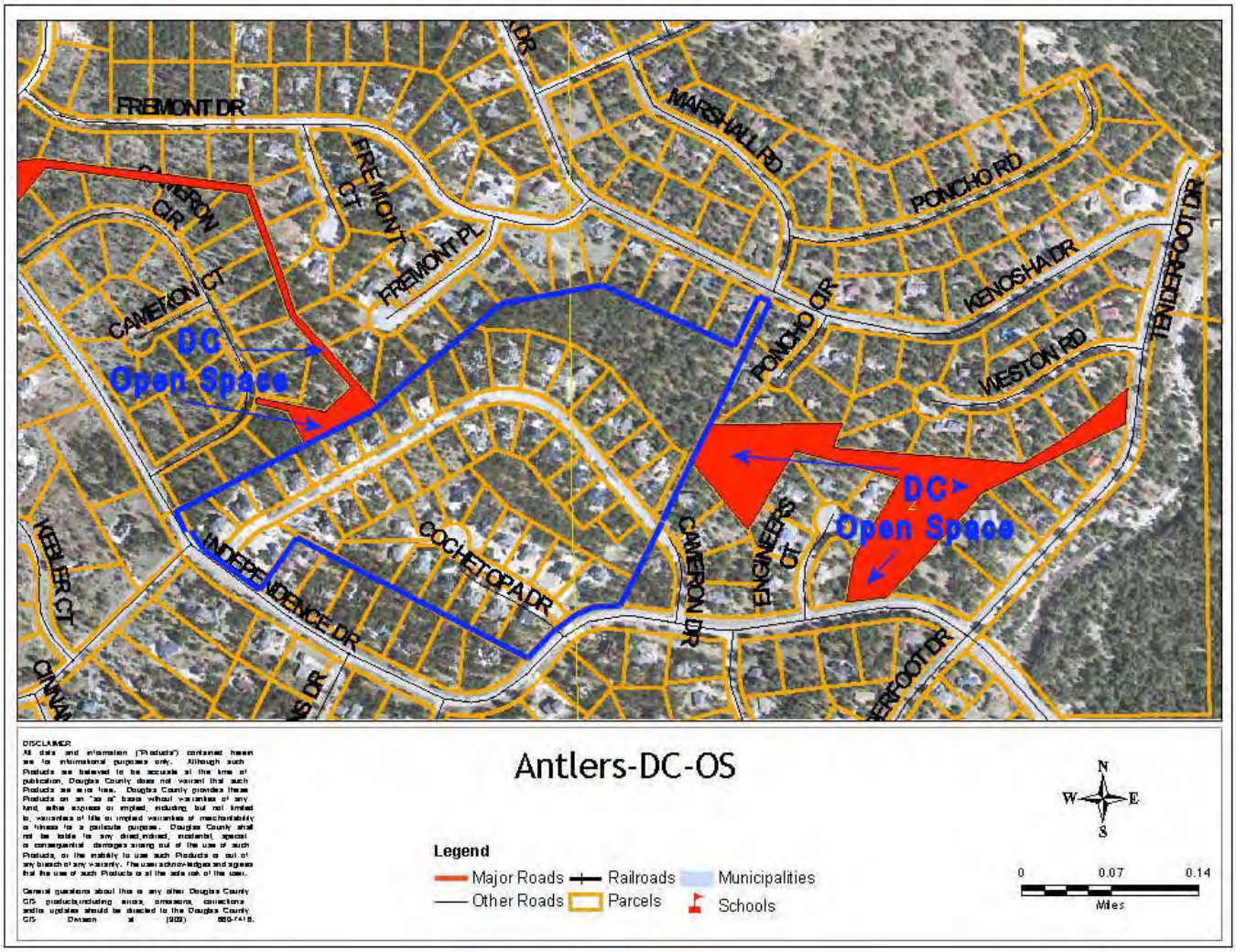
TENDERFOOT DRIVE
SUGARLOAF ROAD
HOMESTAKE RD
SILVERHEELS DRIVE
EAGLE ROAD
LA VETA ROAD
QUARTZ MTN ROAD
BUTTERMILK ROAD
PERRY PARK ROAD

I -8 Sterling Point Area Map


GORE CIR
HOOSIER DRIVE
KENOSHA DRIVE
BOREAS ROAD
GORE DRIVE
FREMONT DRIVE
FREMONT CT
FREMONT PLACE
MARSHALL ROAD
PONCHO ROAD
KENOSHA DR
CAMERON CT
CAMERON CIR
INDEPENDENCE DRIVE
PONCH CT
WESTON ROAD
20
21
CAMERON DRIVE
GORE CIRCLE
SAGE PORT 2 &6A
ROLLINS DRIVE
COTTONWOOD LANE
VAIL CIR
TENDERFOOT DRIVE
SHRINE ROAD
SHRINE CIR
TAYLOR CIR
CUMBERLAND ROAD
MONARCH ROAD
INDEPENDENCE DRIVE
HIDDEN FOREST
RED HILL ROAD
QUARTZ MOUNTAIN ROAD
LA VETA

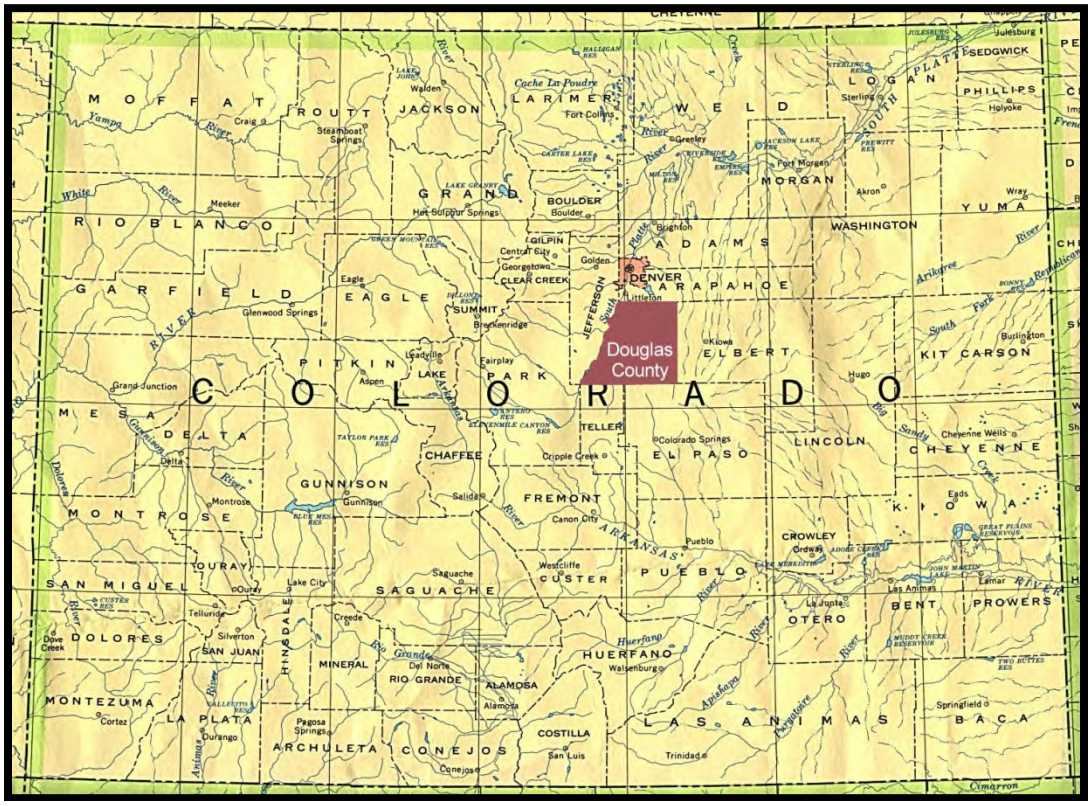
I -10 Hidden Oaks at Bear Dance & The Village at Bear Dance Area Map & Taylor Mountain at Bear Dance

I -11 Antlers Area Map

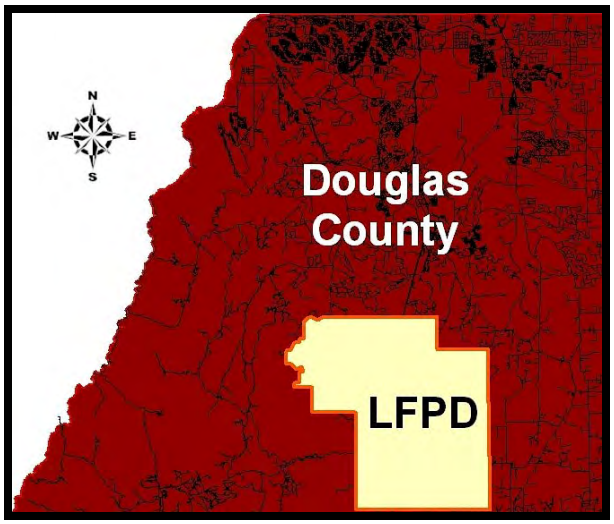


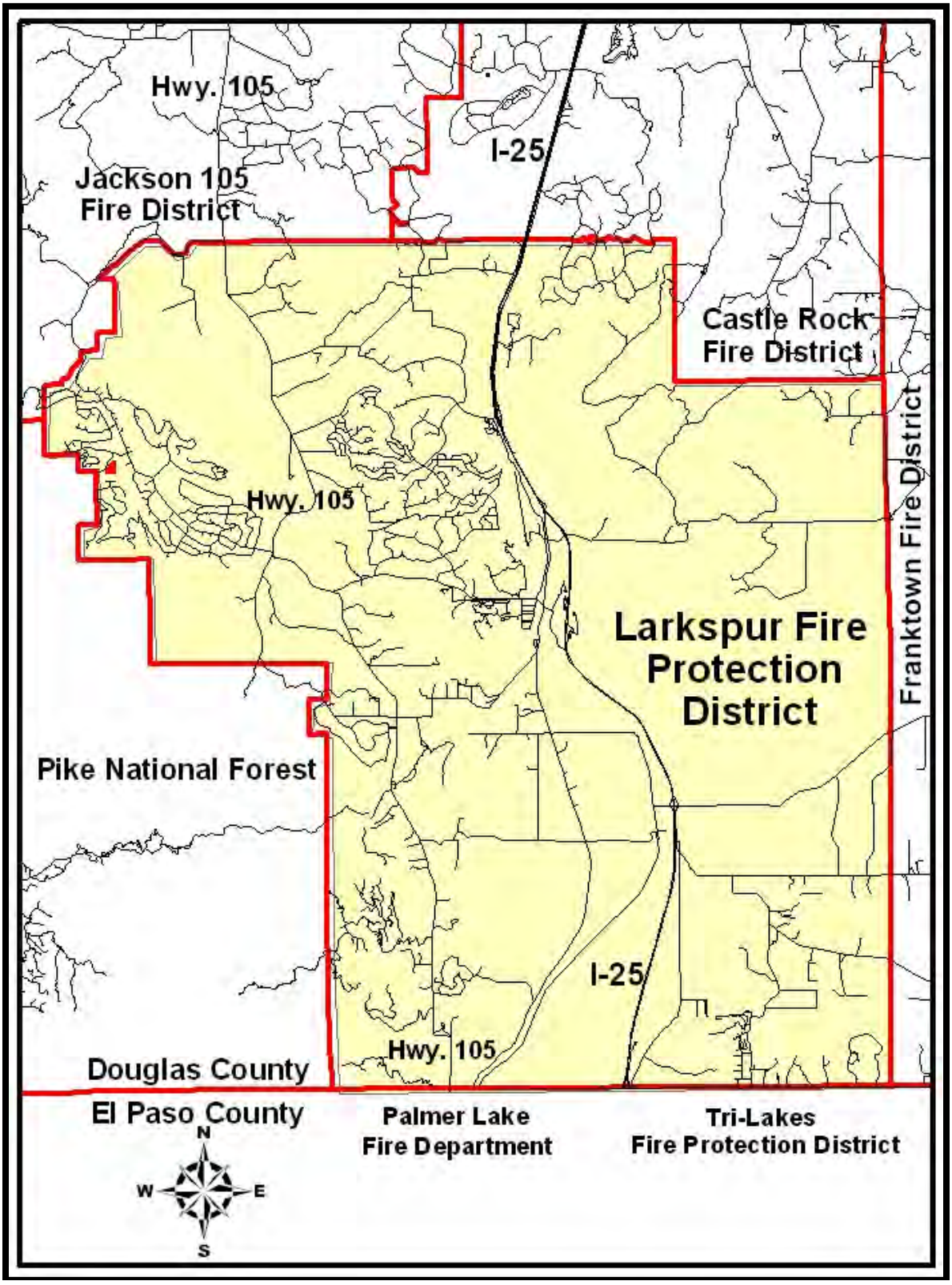
Larkspur Fire Protection District Analysis

Response Area



The Larkspur Fire Protection District (LFPD) encompasses approximately 110 square miles of land in south-central Douglas County which is located about one-half way between the Denver metropolitan area and the Colorado Springs metropolitan area.





The west boundary of the LFPD is shared with approximately thirteen miles of the eastern boundary of the Pike National Forest and the east boundary of the District lies three to five miles east of I-25. The southern line of Douglas County is the south boundary of the District while the north boundary of the District follows along Dakan Road and crosses I-25 at the 176.5 mile marker. Thirteen miles of Interstate-25 bisects the District north to south.

Stations

The Larkspur Fire Protection District (LFPD) operates a total of three fire stations. Station 161 is the main station and is located at 9414 S. Spruce Mountain Road and is within the Town of Larkspur. Station 162 is located within the Perry Park subdivision at 5672 Red Rock Drive. Both of these stations are manned by career staff 24 hours per day, seven days a week. Station 164 is located in the southeastern part of the District at 15205 Furrow Road and is a volunteer response station.

Personnel

The LFPD has a total of 22 career staff and 39-44 volunteer fire fighters.

The LFPD administrative staff includes:

- Chief -1
- EMS Division Chief - 1
- Fire Marshal - 1
- Training Lt. - 1
- Administrative Assistant - 1

The LFPD utilizes 3 shifts to provide fire fighting and medical coverage for the district 24 hours per day, 7 days per week.

Each LFPD career shift staff includes:

- On duty Lt. – 1
- Full time Fire Fighters – 4 (Includes 2 paramedic/firefighters)
- Part time Fire Fighters – 1

The LFPD volunteers include:

- Volunteer Division Chief - 1
- Volunteer Lt. – 3
- Volunteer Fire Fighters – 35-40
- Volunteer fire fighters are required to work shifts with the career staff for a total of 24 hours per month.

Wildland Qualifications

All wildland fire positions within the LFPD are qualified per NWCG standards, including prerequisite NWCG courses and the completion of an NWCG task book as appropriate for the position.

The following is a listing of NWCG positions held by LFPD personnel:

- **LFPD Personnel Qualified Wildland Fire Positions:**
  - ICT4 – 1
  - ENGB – 4
  - CRWB - 1
  - FFT1 –3
  - FFT2 – 12
  - TNSP – 1
- **LFPD Personnel Trainee Wildland Fire Positions:**
  - STEN – 3
  - ENGB – 2
  - DOZB – 3
  - FFT1 – 4
  - FOBS - 2
  - FIRB - 1

All LFPD career and volunteer fire fighting personnel (whether they have achieved an NWCG qualified position or not) have taken the NWCG courses; S-130, Firefighter Training and S-190, Introduction to Wildland Fire Behavior. These are a mandatory part of the curriculum to become a fire fighter at the LFPD. All fire fighting personnel are also required to take the annual wildland fire refresher course. This is mandatory every year prior to the start of the wildland fire season. All fire personnel that desire to listed within the federal ROSS system and be eligible for fire deployments, must also successfully complete the appropriate NWCG Work Capacity test each year.

In addition, the LFPD is a cooperating agency with the Colorado State Forest Service and as such is listed within the federal dispatch system for deployment to wildland fires outside of the LFPD. When requested by the Interagency Dispatch Center in Pueblo, Colorado, the LFPD will send engines and personnel to wildland fires in areas outside of the LFPD. Often this is to fires in other states. The LFPD has been deployed to Florida, Texas, California, Utah, Nevada, Montana, Oregon, and Wyoming as well as to various locations within Colorado. These experiences are brought back to the LFPD and enhance the ability of the LFPD to fight wildland fire within our District.

During the 2010 and 2011 fire seasons, the LFPD also has a ten person hand crew that is performing fuel mitigation work within the Perry Park sub-division under the ARRA grant program and is available for initial attack on wildland fire within the District and Douglas County. The hand crew members are all NWCG qualified at FFT2 and above.

Apparatus & Equipment

The LFPD has a variety of apparatus and equipment well suited to the task of engaging wildland fire. Depending on the location and tactics employed, the LFPD will make use of the apparatus best suited for the task at hand. The following is a listing of the various apparatus and equipment that the LFPD has available.

- Type I Engines – 4
- Type 6 Engines – 4
- Type T1 Tactical Water Tenders – 1
- Type S2 Support Water Tenders – 2
- ALS Medic Units – 3
- Administrative Vehicles – 2
- Support Vehicles – 2
- ATVs – 3
- Portable Water Tanks – 4 @ 2500 gallons to 3000 gallons each.
- Mark 3 Portable Pump – 1
- Small portable pumps – 2
- Drip torches – 7
- Engines are equipped with wildland fire hand tools and hose as required per typing, at a minimum.
- All LFPD personnel are equipped with appropriate personal protective equipment (PPE) for fighting wildland fire.

Response Statistics

Year / Incident Type	2006	2007	2008	2009
Structure Fires	2	6	4	2
Vehicle Fires Highway Vehicles	4	9	3	3
Vehicle Fires Other	0	1	0	2
Outside Fires – Not Wildland	1	0	1	0
Wildland Fires	**16**	**5**	**2**	**9**
Rubbish Fires	5	2	0	1
All Other Fires	0	0	1	0
All Fires - Total	**28**	**23**	**11**	**17**
EMS Calls	289	327	276	281
False Alarms	38	44	39	55
Mutual Aid Responses	112	175	183	79
Hazardous Materials Spill Responses	12	14	14	16
Hazardous Materials Other Responses	162	129	91	95
All Other Responses	189	170	162	167
Totals for all Incidents	**830**	**882**	**776**	**710**

Education

Public Education

The LFPD presents wildland fire information to district residents in several fashions:

- Annual Fire Safety presentation to the children at Larkspur Elementary School
- Presentations at HOA meetings
- Onsite consultations with home owners for wildland fire mitigation assessments
- Onsite inspections of campfire locations for the LFPD campfire permit process
- Participation in the creation of wildland fire mitigation demonstration projects
- Participation in Community Wildfire Protection Plan development
- Provision of Smokey Bear fire danger signs displayed within the District
- LFPD participation on Perry Park FireWise Committee and their public events

Fire Fighter Education and Training

- The LFPD offers multiple training opportunities within the organization throughout the year for wildland fire fighting
- The LFPD conducts prescribed fire burns within the district to provide hands-on live fire training
- The LFPD participates in prescribed fire burns in other locations
- LFPD fire fighters also attend wildland fire trainings with the Multi-Jurisdictional Training Consortium which includes the LFPD, Castle Rock Fire, Jackson 105 Fire, Franktown Fire, West Douglas Fire, Elizabeth Fire, and Palmer Lake Fire.
- LFPD fire fighters also train on wildland fire fighting with the El Paso County North Group fire departments
- LFPD fire fighters attend the winter and summer sessions of the Colorado Wildland Fire & Incident Management Academy, or CWFIMA
- LFPD fire fighters deploy to wildland fires in other areas of Colorado and to other states exposing them to new ideas, techniques, fuel models and other conditions and allows additional opportunities to have hands-on experience with wildland fire.

Needs Assessment

The LFPD has identified the following needs within its wildland fire and mitigation programs:

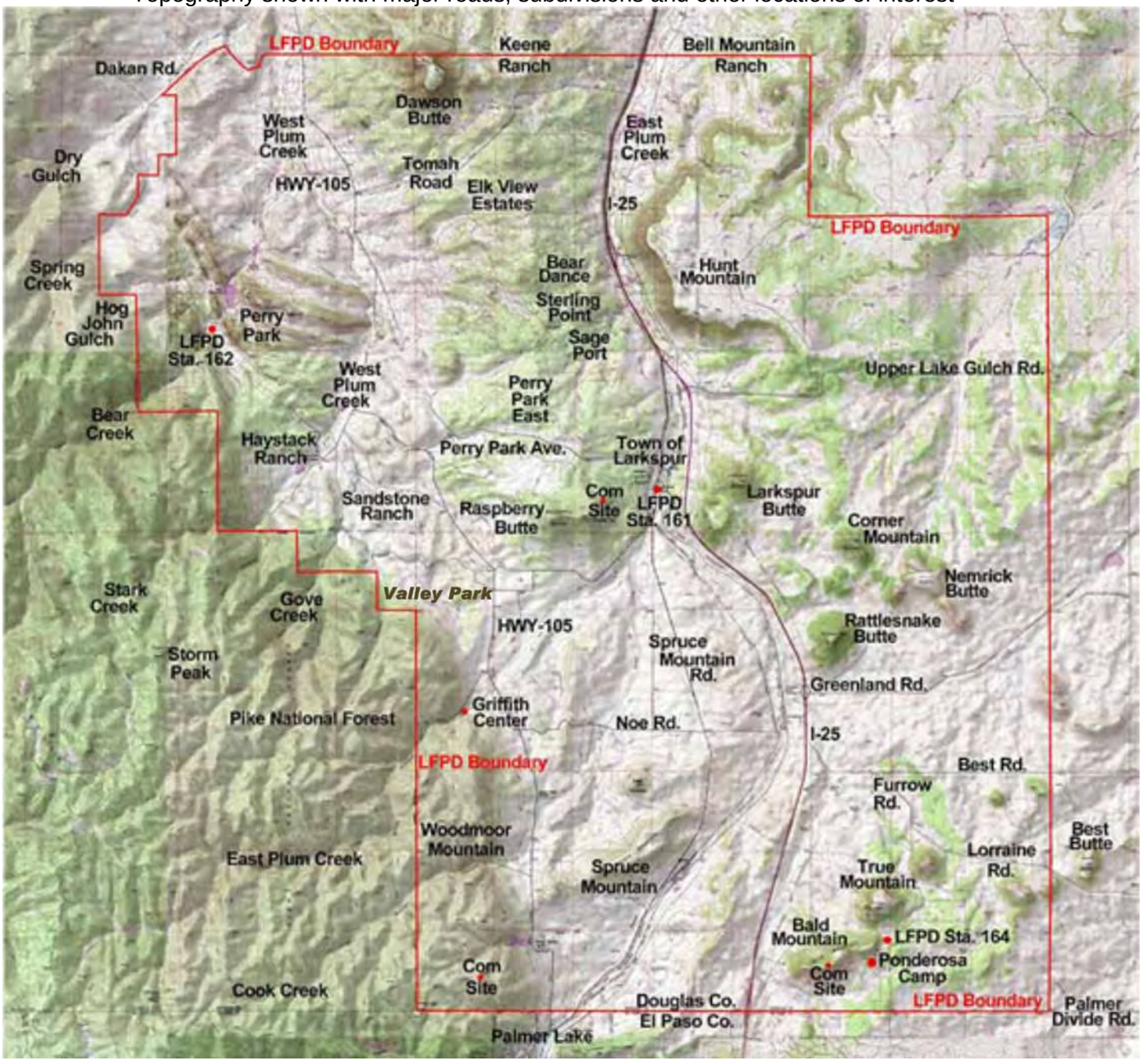
- Procurement of a Type 3 engine
- Replacement of a Type 2 Tender
- Additional specialized training for prescribed fire program positions
- Funding for CWPP development and implementation
- Funding for wildland fire mitigation work in non CWPP areas
- Funding for wildland fire mitigation work on private lands
- Wildland fire mitigation projects on the Pike National Forest lands adjacent to the LFPD
- Wildland fire mitigation projects on County Open Space lands within the LFPD

Fire Behavior and Response

Topography, weather, and fuels are the three major factors influencing fire behavior. It is these characteristics of the LFPD that must be examined in order to understand the options and capacity for response to wildland fire within the LFPD.

Topography:

Topography shown with major roads, subdivisions and other locations of interest



Topography within the LFPD is varied with elevations ranging from 6200 – 7800 feet above sea level. On the eastern edge of the LFPD, numerous buttes dot the rolling grasslands of the high plains which abut the steep and dramatic terrain of the Rampart Range - the base of which lies along the western edge of the LFPD. Slopes of up to and exceeding 100% are found within the Rampart Range formations. Several creeks and gulches provide for riparian ecosystems that transform in character as they flow from the upper elevations of Rampart Range down through the grasslands below.

The LFPD has many areas of terrain with steep slopes that can support the rapid development of wildland fire and promote extreme fire behavior. Dramatic changes in topography also influence the weather and can play a role in where precipitation will fall and in what quantities, influence the development of thunderstorms with the resulting lightning activity, result in variations in local humidity and affect the strength and direction of wind flow.

Topography can also impede the detection of fires by restricting visibility to and from some locations allowing the fire to expand substantially prior to being reported. Topography is also a major factor in defining the location of roadways, which can increase the response time to some locations due to circuitous routes around terrain features. Steep terrain with a substantial elevation increase can also reduce the capacity and increase the time frame to deliver water to a fire via hose conveyance or to totally preclude that tactic. The type, location and density of vegetation are affected by the steepness of terrain and the existence and type of soils that may be present.

Topography plays an important role in the prevalence of wildland fire, the detection and response times to wildland fire, and shades the palette of tactical options available for suppressing wildland fires or influencing the severity of wildland fire behavior. The ability of anyone to alter the topography is limited to very small changes in very limited areas and is generally not an effective method for wildland fire mitigation. However, due to its influence on wildland fire behavior, topography must be a primary consideration when planning wildland fire fighting strategy and tactics.

Weather:

Weather is the most variable and unpredictable element affecting wildland fire behavior. As such, it deserves an in depth discussion in order to gain an understanding of its influence on wildland fire and how it affects the ability to suppress a wildland fire event.

The following description of Colorado weather and climate is from the "**Climatography of the United States No. 60**" (updated January of 2003) by Nolan J. Doesken, Roger A. Pielke, Sr. and Odilia A.P. Bliss., shown below in quotes and italics. This information has been supplemented with additional material from the LFPD regarding the implication of various weather and climate elements to wildland fire and weather information regarding the local environment.

"TOPOGRAPHIC FEATURES

To understand the regional and local climates of Colorado, you must begin with a basic knowledge of Colorado's topography. Colorado lies astride the highest mountains of the Continental Divide. Nearly rectangular, its north and south boundaries are the 41° and 37° N. parallels, and the east and went boundaries are the 102° and 109° W. meridians. It is eighth in size among the 50 states, with an area of over 104,000 square miles. Although known for its

mountains, nearly 40 percent of its area is taken up by the eastern high plains.

Of particular importance to the climate are Colorado's interior continental location in the middle latitudes, the high elevation of the entire region, and the mountains and ranges extending north and south approximately through the middle of the State. With an average altitude of about 6,800 feet above sea level, Colorado is the highest contiguous State in the Union. Roughly three-quarters of the Nation's land above 10,000 feet altitude lies within its borders. The State has 59 mountains 14,000 feet or higher, and about 830 mountains between 11,000 and 14,000 feet in elevation.

Emerging gradually from the plains of Kansas and Nebraska, the high plains of Colorado slope gently upward for a distance of some 200 miles from the eastern border to the base of the foothills of the Rocky Mountains. The eastern portion of the State is generally level to rolling prairie broken by occasional hills and bluffs. Although subtle when compared to the high mountains of the Rockies, there are also important topographic features across eastern Colorado. Two major river valleys dissect eastern Colorado - the South Platte River in northeastern Colorado and the Arkansas River to the southeast. Higher ground extends eastward from the Rockies between the river valleys. High ground also extends eastward along the New Mexico border to the south and along the Wyoming and Nebraska borders to the north. These features have an impact on temperatures, wind patterns and storm tracks in all season of the year.

Elevations along the eastern border of Colorado range from about 3,350 feet at the lowest point in the State where the Arkansas River crosses into Kansas to near 4,000 feet. Elevations increase towards the west to between 5,000 and 6,500 feet where the plains meet the Front Range of the Rocky Mountain chain. Here elevations rise abruptly to 7,000 to 9,000 feet. Backing the foothills are the mountain ranges above 9,000 feet with the higher peaks over 14,000 feet. The most dramatic feature is Pike's Peak near Colorado Springs where elevations rise abruptly from less than 5,000 feet near Pueblo in the Arkansas Valley to over 14,000 feet at the top of the mountain. During the summer months, this topographic feature becomes a "thunderstorm machine" as thunderstorms develop almost any day that humidity is sufficiently high.

West of these "front ranges" are additional ranges, generally extending north and south, but with many spurs and extensions in other directions. These ranges enclose numerous high mountain parks and valleys. Farther westward the mountains give way to rugged plateau country in the form of high mesas (some more than 10,000 feet in elevation) which extends to the western border of the State. This land is often cut by rugged canyons, the work of the many streams fed by accumulations of winter snow.

Colorado is a headwater state. All rivers in Colorado rise within its borders and flow outward, with the exception of the Green River, which flows diagonally across the extreme northwestern corner of the State. Four of the Nation's major rivers have their source in Colorado: the Colorado, the Rio Grande, the Arkansas, and the Platte.

GENERAL CLIMATE

The combination of high elevation, mid latitude interior continent geography results in a cool, dry but invigorating climate. There are large seasonal swings in temperature and large day to night changes. During summer there are hot days in the plains, but these are often relieved by afternoon thundershowers. Mountain regions are nearly always cool. Humidity is generally quite low; this favors rapid evaporation and a relatively comfortable feeling even on hot days. The thin

atmosphere allows greater penetration of solar radiation and results in pleasant daytime conditions even during the winter. Outdoor work and recreation can often be carried out in relative comfort year round, but sunburn and skin cancer is a problem due to the intense high-elevation sunlight. At night, temperatures drop quickly, and freezing temperatures are possible in some mountain locations every month of the year.

The climate of local areas is profoundly affected by differences in elevation, and to a lesser degree, by the orientation of mountain ranges and valleys with respect to general air movements. Wide variations occur within short distances. The difference (35 degrees F) in annual mean temperature between Pikes Peak and Las Animas, 90 miles to the southeast, is about the same as that between southern Florida and Iceland. The annual snowfall at Wolf Creek Pass (elevation 10,850 feet) in the southern mountains averages nearly 400 inches and sometimes exceeds 600 inches while at Manassa in the San Luis Valley just east of Wolf Creek Pass annual snowfall is barely 40 inches. Statewide average annual precipitation is 17 inches but ranges from only 7 inches in the middle of the San Luis Valley in south central Colorado to over 60 inches in a few mountain locations. While temperature decreases, and precipitation generally increases with altitude, these patterns are modified by the orientation of mountain slopes with respect to the prevailing winds and by the effect of topographical features in creating local air movements.

As a result of the State's distance from major sources of moisture (the Pacific Ocean and the Gulf of Mexico), precipitation is generally light in the lower elevations. Prevailing air currents reach Colorado from westerly directions. Eastward-moving storms originating in the Pacific Ocean lose much of their moisture falling as rain or snow on the mountaintops and westward-facing slopes. Eastern slope areas receive relatively small amounts of precipitation from these storms, particularly in mid-winter.

Storms moving from the north usually carry little moisture. The frequency of such storms increases during the fall and winter months, and decreases rapidly in the spring. The accompanying outbreaks of polar air are responsible for the sudden drops in temperature often experienced in the plains sections of the State. Occasionally these outbreaks are attended by strong northerly winds which come in contact with moist air from the south; the interaction of these air masses can cause a heavy fall of snow and the most severe of all weather conditions of the high plains, the blizzard. This cold air is frequently too shallow to cross the mountains to the western portion of the State so while the plains are in the grip of a very severe storm, the weather in the mountains and western valleys may be mild.

Occasionally, when the plains are covered with a shallow layer of cold air, strong westerly winds aloft work their way to the surface. Warmed by rapid descent from higher levels, these winds bring large and sudden temperature rises. This phenomenon is the "chinook" of the high plains and temperature rises of 25 to 35°F within a short time are not uncommon. Chinook winds greatly moderate average winter temperatures in areas near enough to the mountains to experience them frequently. Due to these wind patterns, some locations in the eastern foothills are warmer than adjacent areas on the eastern plains on many days during the winter.

Warm, moist air from the south moves into Colorado infrequently, but most often in the spring, summer and early autumn. As this air is carried northward and westward to higher elevations, the heaviest and most general rainfalls (and sometimes wet snows) occur over the eastern portions of the State from April through early September. For southern and western Colorado, the intrusions of moist air are most common from mid-July into September associated with wind patterns sometimes called the Southwest Monsoon. Frequent showers and thunderstorms continue well into the summer. At times during the summer, winds shift to the southwest and

bring hot, dry air from the desert Southwest over the State. Such hot spells are usually of short duration.

CLIMATE OF THE EASTERN PLAINS

The climate of the plains is comparatively uniform from place to place, with characteristic features of low relative humidity, abundant sunshine, infrequent rains and snow, moderate to high wind movement, and a large daily and seasonal range in temperature. Summer daily maximum temperatures are often 95°F or above, and 100°F temperatures have been observed at all plain stations. Such temperatures are not infrequent at altitudes below 5,000 feet; above that elevation they are comparatively rare. The highest temperatures in Colorado occur in the Arkansas Valley and lower elevations of South Platte and Republican Rivers. The hottest temperature ever recorded in Colorado was 114°F at Las Animas in July 1, 1933 and at Sedgwick on July 11, 1954. Because of the very low relative humidity accompanying these high temperatures, hot days cause less discomfort than in more humid areas. The usual winter extremes in the plains are from zero to -10°F to -15°F but have reached extraordinarily low readings of -30 to -40°F during some of the most extreme cold waves.

An important feature of the precipitation in the plains is the seasonal cycle. A very large proportion (70 to 80 percent of the annual total) falls during the growing season from April through September. Cool season precipitation can be important for soil moisture recharge, but midwinter precipitation is light and infrequent. More often, winter brings dry air and strong winds contributing to the aridity of the area. From early March through early June, periodic widespread storms bring soaking beneficial moisture that helps crops and grasslands. Summer precipitation over the plains comes largely from thunderstorm activity and is sometimes extremely heavy. Localized rains in excess of 4" sometimes fall in just a few hours contributing to local flooding. In late May 1935, nearly two feet of rain fell along the Republican River in eastern Colorado causing one of the worst floods in state history. June flash floods in 1965 were also devastating. The weather station at Holly in southeast Colorado measured 18.81" of rainfall in that extraordinarily wet month. It is more common, however, to be too dry. Annual average precipitation ranges from less than 12 inches in the Arkansas Valley between Pueblo and Las Animas to almost 18 inches in extreme northeastern and southeastern corners of the state. Many years are drier than average, and some years receive only half or less the long-term average. The region seems almost always in or on the verge of drought. Multi-year drought is common to the area such as the decade-long drought of the 1930s, the severe drought of the mid 1950s and 1970s and the recent intense widespread drought of the early 2000s.

At the western edge of the plains and near the foothills of the mountains, there are a number of significant changes in climate. Average wind movement is less, but areas very near the mountains are subject to periodic, severe turbulent winds from the effects of high westerly winds over the mountain barrier. These winds are sometimes referred to as "chinook winds" when they warm, and "bora winds" when they are associated with a strong cold frontal passage downslope off of the mountains. Temperature changes from day to day are not quite as great; summer temperatures are lower, and winter temperatures are higher. Not surprisingly, this milder corridor close to the mountains is where the majority of Colorado's population now lives. Precipitation, which decreases gradually from the eastern border to a minimum near the mountains, increases rapidly with the increasing elevation of the foothills and proximity to higher ranges. The decrease in temperature from the eastern boundary westward to the foothills is less than might be expected with increasing altitude. This results from mountain and valley winds and greater frequency of the chinook. Below the Royal Gorge of the Arkansas River, the mountain and valley winds are persistent enough to modify the climate over a considerable area. Descending air currents frequently prevent the stratification of air necessary for the

occurrence of excessive cold. As a consequence, the winter climate is milder near Canon City and Penrose than anywhere else in the State.

SEVERE STORMS

Thunderstorms are quite prevalent in the eastern plains and along the eastern slopes of the mountains during the spring and summer. These often become quite severe, and the frequency of hail damage to crops in northeastern Colorado is quite high. With an average frequency of 6 or more hail days per year, some counties of eastern Colorado are among the most hail prone areas in the entire country.

Tornadoes, once thought to be only a small threat to the residents of eastern Colorado, have been found to be quite common with the improvement in severe storm detection in recent decades. Tornadoes are relatively rare in the mountains and western valleys but do occur. In most years, at least 40 tornadoes are confirmed. Most of these tornadoes are small and short lived, usually classified in intensity as F0 or F1. However, occasional strong tornadoes have been reported. The number of tornado fatalities remains very low for Colorado, but much of this is due to the low population density of some of the most tornado prone areas of eastern Colorado.

Lightning has emerged as one of the greatest weather hazards in Colorado. Each year there are typically several fatalities and injuries. Unlike tornadoes that are most common in selected areas of the state, lightning can and does occur everywhere. Lightning strike statistics indicate that the most lightning prone areas of Colorado are the high ground above tree line between Denver and Colorado Springs and the Raton Plateau south and southeast of Trinidad near the New Mexico border.

Fall, winter and spring blizzards on the eastern high plains are another weather hazard deserving attention. While Colorado blizzards are less frequent and drop less snow than in areas further east and north, they can still be devastating. As recently as 1997 several fatalities were directly attributable to an October blizzard which caught many travelers unprepared.

Heavy snows in the high mountains are much more common. Each year several lives are lost due to avalanches. Avalanches pose a serious problem to residents, road maintenance crews and back country travelers. Considerable effort is made each year to predict and manage avalanches.

A spring flood potential results from the melting of the snow pack at the higher elevations. In a year of near-normal snow accumulations in the mountains and normal spring temperatures, river stages become high, but there is no general flooding. In years when snow cover is heavy, or when there is widespread lower elevation snow accumulation and a sudden warming in the spring, there may be extensive flooding.

The greatest threat of flooding in Colorado is not snowmelt, however. It is flash flooding from localized intense thunderstorms. The most flash-flood prone regions of Colorado are found along the base of the lower foothills east of the mountains. Several extreme floods such as the infamous Big Thompson Canyon flood of July 31, 1976 have occurred in this vulnerable area. Flash floods occur on the western slopes as well, but with somewhat lower frequency and intensity due to a reduced supply of low level moisture to fuel such storms."

Within the LFPD the general weather pattern is similar to the weather pattern in the Denver area but, is influenced by a slightly higher elevation and prominent topographical features. The LFPD abuts the eastern base of Rampart Range and lies on the north side of the Palmer Divide. These topographic formations affect the general weather patterns and they influence the generation of micro-climates within the LFPD. Micro-climates in the LFPD can alter the humidity, precipitation and winds that may be present thereby changing the immediate surroundings of specific areas from the general weather conditions. These changes can be slight or dramatic, depending on location, season, time of day and perspective, but certainly have the ability to influence a wildland fire in a manner that is different from the surrounding general weather conditions. Awareness of these micro-climates and recognition of their potential to alter fire behavior are key to employing effective fire fighting tactics, ensuring fire fighter safety and should be considered when developing and implementing fire mitigation techniques in order to optimize their effectiveness.

The generally low (and sometimes extremely low) humidity level of the area is a key weather factor affecting the fuel moisture content of fuels and their susceptibility to ignition and ability to affect the rate of spread of fire. When humidity levels are very low and stay low for an extended period of time, the fuels quickly dry out, which results in a higher potential for ignition and promotes rapid rate of fire spread.

The climate and the day-to-day weather are very volatile factors impacting wildland fire. In general, the climate determines the broad scope weather patterns, temperature ranges, and precipitation amounts for a given area. Over time, this is a factor in determining what types of soils will develop and what native plant materials that will grow at a location. It is the combination of climate, resulting seasonal weather patterns, and vegetation that is the major influence in establishing the fire regime for a particular area.

Fuels (Vegetation):

Due to the variation in elevation within the LFPD and the abrupt change in topography at the eastern base of the Rampart Range and around the various buttes, there are a variety of ecological life zones (elevation dependent biomes) that support different vegetation types. It is prudent to assess the basic nature of the zones, the variety in vegetation types and density (fuel models), and how this relates to wildland fire behavior and our ability to successfully intervene during fire events.

In a landscape scale context, the character of these ecological life zones is affected by: elevation, latitude, climate, geographical position relative to predominate weather patterns, and regional topological influences such as high mountain ranges. These ecological life zones generally occur within ranges of elevation particular to the latitude of the location, however, terrain generated micro-climates exist that allow vegetation elements of a life zone to occur within lower or higher elevations than they might normally be found. Generally, latitude and elevation are inversely related when it comes to the location of life zones. At higher latitudes, a life zone will occur at lower elevations than it will at lower latitudes. Elements such as slope steepness and aspect, soil type, terrain generated micro-climates, riparian corridors and major topographical features influence the character and composition of the life zones on the local level. In many locations, two or more of these zones merge within a transition environment and exhibit many or all of the vegetation characteristics of the zones involved. These areas often contain the highest degree of vegetation diversity and form some of the most complicated and intense wildland fire behavior environments.

The Plains Ecological Life Zone:

The high plains short grass prairie is found throughout the eastern third of Colorado and comprises the Plains ecological life zone within the LFPD. It is also found as isolated elements and as understory in portions of the Foothills and lower Montane zones as well, with the vegetation species mix transforming as elevation increases. Historically, it was a more common component within the Foothills and lower Montane zones when wildland fire was unregulated within these zones. It is characterized by short, relatively sparse vegetation cover. Grasses and forbs are the most common plant life found in the high prairie and are known as fine or light fuels within the context of wildland fire. Woody plants such as sagebrush and rabbit brush are also common as are various species of cactus in more mature or climax prairie environments. These woody plant materials will increase the intensity and flame lengths of wildland fire and complicate fire control and suppression efforts.

Riparian ribbons that thread through the high plains add a variety of plant materials that depend on the greater availability of water and include many more woody plants such as cottonwood trees, willows and a diversity of brushy vegetation. In general, the plant materials found within the riparian corridors have higher moisture content then those outside the corridors, due to the increased available water supply. The higher moisture content of the fuels lessens the likelihood of ignition and can even function as a fire break under certain conditions. However, in severe drought times, the concentration of woody fuels within riparian environments will add substantial available fuel to a wildland fire.

The fine fuels and open environment of the Plains zone make for readily ignited and fast moving wildland fires that are generally weather driven during periods of low relative humidity and strong winds. Fires in this ecosystem generally occur more frequently, are of a shorter duration, exhibit less intense fire behavior and respond to control measures more readily than wildland fires in heavy brush or timber environments. However, it is the speed at which these fire events can progress that poses the greatest threat, due to a short or non-existent notification time to prepare for the event or to move out of harm's way. In addition, the rapid rate of fire spread in this environment can contribute to many acres being burned in a single fire event. Notification and response times to these fire events, is a critical aspect of the fire suppression effort for fires in this environment.

The Foothills Ecological Life Zone:

The Foothills zone is generally characterized by shrubs such as Mountain Mahogany, Gambel Oak, Three-leaf Sumac, American Plum, and Choke Cherry, although species composition can be highly diverse. In the north to central portions of the Front Range of Colorado, the species mentioned above generally dominate. Further south, juniper becomes more common as the annual precipitation is less and provides a climate more favorable for junipers and less favorable for some other species. The LFPD is within a transition zone of these vegetation types and has elements of both. Within the LFPD, the juniper variety is the Rocky Mountain juniper which generally occurs in rocky outcrop areas and can be found as secondary growth under Ponderosa and Douglas fir stands within rugged and exposed sites. At the higher elevations in the foothills region, forest vegetation becomes more predominate and Ponderosa pine becomes more common. The grasslands within the Foothills environment are infected with massive invasions of Gambel oak which also intrudes into the understory of the Ponderosa pine and Douglas fir forests of the higher elevations. This is primarily due to the suppression of wildland fire over the last one hundred or more years. There are locations where the forests are choked with a mix of Ponderosa pine, Douglas fir, Gambel oak and Rocky Mountain juniper.

These areas are some of the most volatile natural venues for wildland fire behavior due to the density of the fuels and their ground to crown ladder fuel arrangement. The extensive, unbroken continuity of these fuels is also a factor that promotes large fire growth and complicates suppression strategy and tactics. Under very dry weather and fuel conditions along with high sustained winds, fires in this environment have the ability to grow large quickly and escape initial attack efforts.

The Montane Ecological Life Zone:

The Montane zone is the highest elevation ecological life zone within the LFPD. The Montane zone can be divided into an upper and lower zone and it is the lower portion of this zone that is most prevalent where the Montane zone exists within the LFPD. Historically, the identifying characteristic of this zone was the open canopy Ponderosa pine woodlands. Within the LFPD, there are currently few examples of an open Ponderosa stand. Fire was and is an important component in maintaining the open canopy and grassy understory of these Ponderosa pine woodlands and the long-time suppression of low intensity ground fires have allowed a buildup of debris and an increased density of trees and shrubs within formerly open Ponderosa pine stands. On some sites, Ponderosa pine co-dominates with Douglas fir and in these areas a closed canopy forest is generally formed. This type of forest is more prone to high intensity crown fires due to the close spacing of the tree crowns.

Higher in the Montane zone, Douglas fir becomes the more dominant species due to an increase in precipitation and available water and generally forms a very dense forest. Douglas fir concentrations can also be seen on north aspect slopes of lesser elevations and in narrow canyon riparian environments with the largest specimens occurring there. The majority of the area burned in the 2002 Hayman Fire occurred in the Montane ecological life zone and burned in fuel types and fuel loading that is typically found within areas of the LFPD. This should be noted and is of concern. It is the amount and condition of the fuels in this environment, combined with the often very steep terrain inhibiting access that pose the fire suppression challenge here.

Change within the Life Zones:

Historically, the composition and more importantly, the density of the vegetation were much different along the Front Range of Colorado than they are today. Time, fire events, damaging insects, plant diseases, and human activities are the major factors for changes in character within the ecological life zones. Over the course of years, decades, and centuries, the composition, extent, and range of various ecologic life zones have changed and it is the consequences of this change that must be addressed when contemplating wildland fire fighting and mitigation strategies.

Climate modification is the major agent of change over the centuries for life zones. As temperature and precipitation shift gradually over time, it can affect the plant species composition and density of vegetation. These climate shifts may also influence the fire regime of the life zone and impact the local weather patterns affecting the frequency of lightning strikes and therefore fire starts.

Fire events, insects and plant disease can cause modifications that are very wide in geographic scope and have impacts that last for decades. These changes will alter the balance of species composition and increase vegetative diversity as new growth that replaces the destroyed

vegetation will likely be of different species and grow in different densities. This has implications for the fire regime of the affected areas, at least for a period of many decades.

Along the Front Range within the lower Montane zone, it is estimated that the historic fire regime had a cycle of occurrence of approximately 60 years in Ponderosa pine /Douglas fir forests, depending on the location. There is research to support that there were more low-intensity ground fires and less stand replacement, high-intensity fires than what is seen today. Historically, there were fewer areas and acreage of dense forest susceptible to high-intensity stand replacement fire events, and larger areas comprised of less dense fuels than what is the reality today.

Fires are started primarily due to lightning and the influences of humans, in both an anthropological and post-European settlement context. The incidence of lightning strikes that start fires is likely to be very similar today as compared to pre-European settlement times. Within the LFPD, this is the primary source of ignition for wildland fires. In pre-European settlement times, there is evidence that indigenous humans started wildland fires in some areas to manage the vegetation for food production, in hunting techniques and as a battle tactic. Although it is confirmed that fire was used as a survival tool for aboriginal peoples, it must be supposed that there were some fires in pre-European settlement times that could also be attributed to escape of controlled fire and to arson.

In pre-European settlement times, fires were probably not suppressed at any effective level by humans. Suppression of wildland fires would have been a natural process involving: time, location, weather, topography, and dispersion and state of the fuels. Therefore, it is likely that low intensity fires could have burned substantial acreage in any given fire event. Whereas today, low intensity wildland fires are more easily suppressed by fire crews than high intensity fire events and this generally results in a lower acreage of consumption per event than with high intensity fires. High intensity, stand replacement fires are far more difficult to control and suppress and generally consume the most acreage on a per event basis.

Threatened and Endangered Species and Species of Concern

The planning area is within the historic range of the Mexican spotted owl (*Strix occidentalis lucida*) and includes potential habitat areas. In connection with a USFS mitigation project, the western boundary of Perry Park around Bear Creek has been surveyed twice in the last decade for the Mexican spotted owl. Both surveys returned negative findings for that species. The Mexican spotted owl is listed as a Federally Threatened and State Threatened species. The Preble's Meadow Jumping Mouse (Zapus hudsonius preblei) has substantial areas of habitat along riparian corridors within the LFPD. The Preble's mouse is listed as a Federally Threatened and State Threatened species. The Bald eagle (*Haliaeetus leucocephalus*) has been witnessed by residents on rare occasions within the LFPD and is listed as a State Threatened species. The Ferruginous hawk (*Buteo regalis*) has also been sighted by district residents and is listed as State Special Concern status (not a statutory category). The Swift Fox has been sited within the district and is of State Special Concern status (not a statutory category). The American Peregrine Falcon (Falco peregrinus anatum) has also been sited within the district and is of State Special Concern status (not a statutory category). Although it has no special status, Abert's squirrel (*Sciurus aberti*) is classed as a Species of Interest by the State and is a widespread resident within the LFPD. It is possible that the habitat for these threatened species may impact the strategy and tactics that can be employed on a wildland fire in certain locations, especially within the Pike National forest adjacent to the LFPD.

Summary

Overall, the capacity of the LFPD to successfully contain and control wildland fire upon initial attack is very good. The LFPD response is enhanced through mutual aid from adjoining fire districts which respond on the initial call out for wildland fire events. Throughout the years, there have only been a couple of wildland fires that have moved into the extended attack mode and covered more than one operational period for total suppression. No homes or major structures have been lost due to ignition from wildland fire within the LFPD.
However, given the natural fuels, weather and topography within the LFPD, the potential for a wildland fire event that escapes initial and extended attack and/or that will threaten lives or consume homes and other structures remains high within the LFPD.

The LFPD views that continued efforts with wildland fire mitigation are key to the defense of homes during a fire event. Many residents within the District have made great strides in making their homes and properties more resistant to the effects of wildland fire through appropriate mitigation measures including fuel reduction. The primary focus of wildfire mitigation efforts is to reduce the likely hood that life or property loss will occur during a wildland fire and should be viewed as a hand-in-hand effort with the LFPD wildland fire response to ensure that they do not.

Appendix III
Wildfire Evacuation Preparation Guidelines

Personal Preparation for Evacuation:

- The first priority in an emergency is to save your life and the lives of your family members. Second priority is to save pets, vital records and valuable possessions.

- Automatic notification of mandatory evacuation in the event of wildfire will be made by the Douglas County Sheriffs' Department through the Douglas County Citizen Alert System and by media releases. Pay attention to information about how quickly you must evacuate as well as shelter information. Make sure that you are registered for the Emergency Mass Notification System.

- Established Evacuation Routes and signs should be followed in addition to obeying the authorities and volunteers who are directing traffic. The routes are:

  Primary Southeast: Silverheels Dr. to Perry Park Ave
  Primary Southwest: Quartz Mtn. Rd. to Perry Park Ave.
  Primary North: Bear Dance Dr. to Tomah Rd.
  Secondary North: Bear Dance Dr. to Elk View Rd. to Tomah Rd.

- Create and keep handy a grab and go bag(s) or box (es) in case of an "immediate" evacuation order. This "72 Hour Family Emergency Kit" is outlined in detail on page 4 of the Douglas County manual, "The Emergency Preparedness and Prevention Guide" found at the www.dcsheriff.net website.

- Establish and discuss a Family Evacuation Plan.

- Practice your Family Evacuation Plan with all concerned, including out-of-state contacts. All relatives should be informed on procedures to call the out-of-state phone contact for information.

- Plan how your family will stay in contact if separated by a disaster (evacuation).

  Phone contact information for each family member.
  Meeting place a safe distance from home in case of fire.
  A place to meet outside your neighborhood in case you can't return home.

- Make copies in advance of all legal papers and other important documents and store them in a safe location (i.e. safe deposit box).

- Pack for a trip and then some (when time permits). In addition to the "72 Hour Family Emergency Kit", prepare grab and go (easy to carry) boxes to include:

  + Must have Medications
  + Important papers & files (i.e. Insurance, tax returns, deeds, financial files)
  + Bank books and Identification records (i.e. Passports, Social Security Cards, etc.)
  + Safe Deposit Box Keys
  + Cell Phones
  + Rare coins, Jewelry, Precious Metals (gold, silver, etc.)

+ Personal Phone Books and Calendars
+ CPU's, Laptop Computers, etc.
+ House Plans (to rebuild if house is destroyed)
+ Photo Albums & Pictures off walls
+ China and Collectibles
+ Food and Medications for Pets
+ Emergency Water
+ Artwork, statues – valuable pieces (things that are not replaceable)

- Other Considerations

+ Stock supplies to last several days to a week for each family member.
+ Be prepared to relocate to a shelter during a prolonged power outage.
+ If you don't want to stay at a shelter, arrange another option (hotel, friend's home).
+ Have extra cash on hand in case electronic transactions cannot be processed.

Preparation of Property Prior to any Fire Incident:

- Ensure all vents (attic, exhaust and fresh air intake) have screens over them
- Keep roofs and gutters free of debris (leaves, pine needles, etc.)
- Keep fire wood stacked at least 30 feet away from any structure
- Clean out any areas that would collect leaves, needles or debris
- Follow Colorado State Fire Service standards for defensible space and vegetation mitigation
- Ensure all driveways and access trails are unobstructed

Preparation of Property in the Event of Evacuation, (if time allows) listed in order of Priority:

- Turn off natural gas service at the meter
- Leave all interior and exterior lights on
- Remove all light weight curtains and shades
- Close all windows, exterior doors, heavy weight curtains/shades
- Close all interior doors
- Turn off any fans or blowers (Central HVAC, attic fans, etc.)
- Leave garden hoses attached to exterior hose bibs
- Leave ladders out and accessible to firefighters
- Remove pets and livestock
- Remove vehicles from the property or park in garage facing out, windows closed and keys in ignition
- Leave main doors into structures unlocked
- Mechanically disengage automatic garage door openers so that doors may be manually opened from the outside
- Leave all gates open
- Remove any combustible exterior furnishings from decks and patios; move them to a safe inside location.
- Remove all bulk flammable materials (propane tanks, fuel cans, etc.) from the property or move them to a safe inside location.
- Remove keepsakes and valuables

Appendix IV
Wildfire Mitigation Publications

http://csfs.colostate.edu/pages/wf-protection.html

- FireWise Construction: Site Design & Building Materials
- Protecting Your Home from Wildfire: Creating Wildfire-Defensible Zones
- FireWise Plant Materials (Fact Sheet 6.305)
- Fire-Resistant Landscaping (Fact Sheet 6.303)
- Wildfire and Insurance
- Gambel Oak Management (Fact Sheet 6.311)

Appendix V
Implementation Plans

GSP Community Outreach/Implementation Plan Worksheet
Community Name: Perry Park East

- **Community will decrease fuels within the community to reduce wildfire intensity and impact in and around community.**

Actions	Timeline	Responsible Party	Priority
Individual lot clean up and creation of defensible space	Ongoing	Homeowners	High
Continue community chipping program	Annually (June/Oct)	Homeowners/HOA/Firewise Committee	High
Perry Park Water and Sanitation District Demo Site	TBD	HOA/PPWSD/Firewise Committee	Medium
Alter HOA Covenants (Rules and Regulations) to encourage "Forest Management and Fire Management" by each property owner	Summer 2014	HOA	Medium

Other examples: chipping program, community clean up day (s), demonstration sites, home assessments, treating common areas, creating fuelbreak

- **Community will help educate community members to prepare for and respond to wildfire.**

Actions	Timeline	Responsible Party	Priority
Become a Firewise Community	2014/2015	HOA/Firewise Committee	High
Community meeting focused on wildfire mitigation and preparedness issues	Annually (spring)	HOA/Firewise Committee/Larkspur Fire/CSFS/Douglas County	High
Keep website updated with CWPP, mitigation and preparedness information.	Ongoing	HOA/Firewise committee	High
Distribute mitigation education materials to PPE residents	July 2014, ongoing	HOA/Firewise committee	High

Other examples: annual meetings of HOA addressing mitigation/forest health topics, annual wildfire awareness meeting, articles/tips in local newsletter, website updates, form a firewise committee within HOA, community library with information on fire mitigation/fire prevention/landscaping/building materials,etc.

- **Community will develop and implement a comprehensive emergency response plan.**

Actions	Timeline	Responsible Party	Priority
Utilize Evacuation Plan from CWPP-distribute to landowners, post on website	Ongoing	HOA	High

Other examples: evacuation planning/drills, promotion of 72 hour kits, family evacuation planning-where families will meet, etc.

- **Community will regularly evaluate, update and maintain planning commitments.**

Actions	Timeline	Responsible Party	Priority
Form a Firewise committee to manage the CWPP, establish goals/timelines	Summer 2014	HOA	High
Annual meeting to review CWPP accomplishments and plans for next year	Fall	Firewise committee/HOA	High
Supply historical chipping numbers and records	Ongoing	HOA	

GSP Community Outreach/Implementation Plan Worksheet
Community Name: Antlers HOA

- **Community will decrease fuels within the community to reduce wildfire intensity and impact in and around community.**

Actions	Timeline	Responsible Party	Priority
Individual lot clean up and creation of defensible space	Ongoing	Homeowners	High
Promote participation in Sage Port annual slash chipping program	Summer	Homeowners & HOA	High
Mitigate 7.5 acre HOA open space tract	2014	HOA	High
Maintain oak in 7.5 acre HOA open space tract	Annually	HOA	High
Maintain 2.5 acre HOA open space tract	Annually	HOA	High

- **Community will work with county to decrease fuels on adjacent county-owned lands to reduce wildfire intensity and impact in and around the community.**

Actions	Timeline	Responsible Party	Priority
Joint project with DCOS to treat adjoining open space properties (Douglas County and Antlers HOA)	2014	HOA/Douglas County Open Space/CSFS	High

*DCOS – Douglas County Open Space

- **Community will help educate community members to prepare for and respond to wildfire.**

Actions	Timeline	Responsible Party	Priority
Community fire mitigation and preparedness meeting	Annual (spring)	HOA/Larkspur Fire, CSFS, Douglas County	High
Become a Firewise Community	2014/2015	HOA	Medium
Distribute wildfire mitigation and preparedness information to residents via email lists	Ongoing	HOA	High

Other examples: annual meetings of HOA addressing mitigation/forest health topics, annual wildfire awareness meeting, articles/tips in local newsletter, website updates, form a firewise committee within HOA, community library with information on fire mitigation/fire prevention/landscaping/building materials,etc.

- **Community will develop and implement a comprehensive emergency response plan.**

Actions	Timeline	Responsible Party	Priority
Utilize Evacuation Plan from CWPP-distribute to landowners, post on website	Ongoing	HOA	High

Other examples: evacuation planning/drills, promotion of 72 hour kits, family evacuation planning-where families will meet, etc.

- **Community will regularly evaluate, update and maintain planning commitments.**

Actions	Timeline	Responsible Party	Priority
Form a Firewise committee to manage the CWPP, establish goals/timelines	Summer 2014	HOA/Firewise Committee	High
Annual meeting to review CWPP accomplishments and plans for next year	Fall	Firewise committee/HOA	High

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GSP Community Outreach/Implementation Plan Worksheet
Community Name: Sterling Pointe Owners Association

- **Community will decrease fuels within the community to reduce wildfire intensity and impact in and around community.**

Actions	Timeline	Responsible Party	Priority
1. Conduct annual lot cleanup (mitigation) with a support chipping program	Ongoing Summer Program	Sterling Pointe HOA/Sage Port HOA joint program	High
2. Establish volunteer teams to assist homeowners with property cleanup	Fall 2012/Winter 2013	Sterling Pointe HOA	Medium
3. Enforce established HOA Covenants on minimum defensible space	By 8/01/2013	Sterling Pointe HOA	High
4. Establish perimeter defensible space around Sterling Pointe development	9/01/2014	Sterling Pointe HOA & neighbors (HOAs and land owners)	Medium

- **Community will work with county to decrease fuels on adjacent county-owned lands to reduce wildfire intensity and impact in and around the community.**

Actions	Timeline	Responsible Party	Priority
1. Complete DCOS demonstration area and conduct community orientation/training on site	7/15/2013	Sterling Pointe HOA, Sage Port HOA, GSP Core Team, DCOS, Wildfire Mitigation Specialist	High
2. Conduct field tours/seminars to demonstrate proper wildfire fuel mitigation	Summer 2013	Sterling Pointe HOA, DCOS, Colorado State Forest Service	High
3. Complete DCSD lot cleanup	8/01/2014	DCSD, Sterling Pointe HOA	Medium

- **Community will help educate community members to prepare for and respond to wildfire.**

Actions	Timeline	Responsible Party	Priority
1. Enact a Wildfire Emergency Evacuation program	7/15/2012	GSP Core Team, HOAs (including Sterling Pointe)	High
2. Evaluate address signage in community (for emergency ID)	Fall/Winter 2012/2013	Sterling Pointe HOA	Medium

- **Community will develop and implement a comprehensive emergency response plan.**

Actions	Timeline	Responsible Party	Priority
1. Distribute Sage Port Area Wildfire Evacuation Plan	July 2012	HOAs	High
2. Establish and train a volunteer Community Emergency Response Team	Fall 2013	HOAs, GSP Core Team, DCOEM	Medium

- **Community will evaluate, upgrade and maintain community wildfire preparation**

Actions	Timeline	Responsible Party	Priority
1. Evaluate address signage in community	Fall/Winter 2012/13	HOAs	Medium
2. Place and maintain "Fire Danger Signs" at key entry points to the Greater Sage Port area	By 9/01/2014	HOAs, GSP Team, DC Road Department, Larkspur Fire Department	Medium

- **Community will regularly evaluate, update and maintain planning commitments.**

Actions	Timeline	Responsible Party	Priority
1. Annual meeting to review CWPP accomplishments and plans for next year	Fall 2012	GSP Core Team	High
2. Visit HOA annual meeting to review CWPP status, evaluate commitment to CWPP and gain input to update plans	Annual starting in 2013	GSP Core Team	High

Kristi Garrison, District Forester

Franktown District

PO Box 485

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Here is a copy of the Sterling Pointe action plan as submitted to the CWPP committee.

An update of accomplishment will provide a status for your completion of the CWPP as follows:

1. Community reduction of fuels has been accomplished within the community where homeowners have been cooperative. Randy Johnson, of Larkspur Fire District is working with homeowners on their mitigation plans. Some are in maintenance mode and some have more work to do to get fuel levels down. We have not had good cooperation from neighboring property owners to establish the defensible perimeter around the Sterling Pointe Development. This last item has a target date of 9/01/2014, but completion is not likely. Community chipping programs are ongoing with June 21st being the next Greater Sage Port chipping date.

2. The DCOS demonstration area has been done and clean up of DCSD property will be completed by 8/01/2014. As a result of the DCSD project, several homeowners will be scheduling Seedmasters to complete mastication of their properties.

3. Community education is ongoing and an optional address signage package (with HOA acceptable house signage) has been put together to improve identification by emergency responders.

4. The evacuation plan has been distributed. No volunteer team has been formed or trained.

5. We have an address signage program in Sterling Pointe (voluntary). "Fire Danger " signs (small ones) have been located at key entry points.

6. We are actively encouraging residents to attend informational meetings.

That's about it.

Don Deyoe

GSP Community Outreach/Implementation Plan Worksheet
Community Name: Sage Port HOA

- **Community will decrease fuels within the community to reduce wildfire intensity and impact in and around community.**

Actions	Timeline	Responsible Party	Priority
Individual lot clean up and creation of defensible space	Ongoing	Homeowners	High
Annual Slash Chipping (one time per year)	Summer	Homeowners & HOA	High

- **Community will work with county to decrease fuels on adjacent county-owned lands to reduce wildfire intensity and impact in and around the community.**

Actions	Timeline	Responsible Party	Priority
Meeting with DCOS on demonstration area	Sept 2012	Sageport HOA, GSP Core Team, DCOS*, Wildfire Mitigation Specialist	High
Promote demo site to homeowners	Ongoing	HOA	Medium

*DCOS – Douglas County Open Space

- **Community will help educate community members to prepare for and respond to wildfire.**

Actions	Timeline	Responsible Party	Priority
Community fire mitigation and preparedness meeting	Annual (spring)	HOA/Larkspur Fire, CSFS, Douglas County	High
Become a Firewise Community	2014/2015	HOA	Medium
Keep mitigation and preparedness information up to date on website	Ongoing	HOA	Medium
Sentinel articles on mitigation, educational events, etc.	Monthly	HOA	Medium

Other examples: annual meetings of HOA addressing mitigation/forest health topics, annual wildfire awareness meeting, articles/tips in local newsletter, website updates, form a firewise committee within HOA, community library with information on fire mitigation/fire prevention/landscaping/building materials,etc.

- **Community will develop and implement a comprehensive emergency response plan.**

Actions	Timeline	Responsible Party	Priority
Utilize Evacuation Plan from CWPP-distribute to landowners, post on website	Ongoing	HOA	High

Other examples: evacuation planning/drills, promotion of 72 hour kits, family evacuation planning-where families will meet, etc.

- **Community will regularly evaluate, update and maintain planning commitments.**

Actions	Timeline	Responsible Party	Priority
Form a Firewise committee to manage the CWPP, establish goals/timelines	Summer 2014	HOA	High
Annual meeting to review CWPP accomplishments and plans for next year	Fall	Firewise committee/HOA	High

GSP Community Outreach/Implementation Plan Worksheet
Community Name: The Hidden Forest Implementation Plan

- **Community will decrease fuels within the community to reduce wildfire intensity and impact in and around community.**

Actions	Timeline	Responsible Party	Priority
Individual lot clean up and creation of defensible space	Ongoing	Homeowners/HOAs/firewise committee	High
Annual tree inspection and treatment spraying for IPS and Mountain Pine Beetle	Ongoing – Formal Assessment Bi-annually	HOA	High
Do brush clean up and fire mitigation on HOA properties	Ongoing – Formal Assessment Bi-annually	HOA	Moderate
Encourage owners of lots without homes to do brush clean up and fire mitigation	Ongoing	HOA/Lot owners	Moderate
Encourage homeowners to have free fire assessment performed by fire marshal	Ongoing	Homeowners	Moderate
New construction will meet standards to lower fire risk as stated in our covenants and by-laws	Ongoing	HF HOA and Design and Review Committee	High

- **Community will work with county to decrease fuels on adjacent county-owned lands to reduce wildfire intensity and impact in and around the community.**

Actions	Timeline	Responsible Party	Priority
Meeting with DCOS on demonstration area	Initial Meeting September 2012 – Current Status Meeting bi-annually as needed	Sageport HOA, GSP Core Team, DCOS, Wildfire Mitigation Specialist	High
Meet with DCOS about fire mitigation in the Open Space area	Initial Meeting Spring 2013 – Current Assessment will be done Fall 2014 to include Forestry Consultant	HF HOA, GSP Core Team,	High

- **Community will help educate community members to prepare for and respond to wildfire.**

Actions	Timeline	Responsible Party	Priority
Spring fire mitigation awareness meeting	Initial Meeting April 2013 – Next Meeting April 2014	GSP Core Team, HOAs	High
Continue Fire Mitigation Awareness at annual HOA meeting	Initial Meeting January 2013 & January 2014 – Next Meeting 2015	HF HOA	High
Distribution of Evacuation Brochure	July 2012	Larry Horowitz	High

- **Community will develop and implement a comprehensive emergency response plan.**

Actions	Timeline	Responsible Party	Priority
Distribute Ready Colorado 72 hour kit information	July 2012	HOAs	High
Review Evacuation Plan at annual HOA meeting	January 2013	HF HOA	High

- **Community will evaluate, upgrade and maintain community wildfire preparation**

Actions	Timeline	Responsible Party	Priority
Evaluate address signage in community	Fall/Winter 2012/13 – Next Assessment Fall of 2014	Firewise committee, HOAs	Medium

- **Community will regularly evaluate, update and maintain planning commitments.**

Actions	Timeline	Responsible Party	Priority
Annual meeting to review CWPP accomplishments and plans for next year	Ongoing	Firewise committee/HOA/GSP Core Team	High

- **Execution of Community Educational Plan to raise wildfire awareness in the community.**

Actions	Timeline	Responsible Party	Priority
Set a date for an educational/informational meeting with the community.	Fall annually	Homeowners/HOA/firewise committee	High
Set up a cleanup that will include fire mitigation and pickup of cuttings by the Association's contractor at the owner's expense utilizing recommendations from the Association's Forestry Consultant prior to mitigation.	Annually within one week of mitigation	Homeowners/HOA	High
Provide information to all owners on steps they can take to reduce their wildfire risks. This will be done using existing information outlets such as website, mailers, and flyers.	Fall Annually	HOA	High
Set up at least one class in the community based on the assessment identified issues are needed for fire wise landscaping, Gamble Oak treatments, structural hardening (ember proofing).	Fall Annually	Firewise Committee	High
Provide training to design review/architectural control committee and all other boards/committees in order to promote fire wise landscaping and construction techniques.	9/15/14	Firewise Committee	High
Make formal application as a fire wise community and utilize any materials available through the program, such as community signage.	Fall 2014	Association	Moderate
Develop a community notification system for alerting residents of extreme conditions such as "Red Flag Days". Notification by email if a reliable source is available	Ongoing	Association	High
The Hidden Forest Fire Wise Committee is established and will participate in a local Fire Wise board, task force, committee, commission, department, or Douglas County effort that maintains the Fire Wise Community program and status.	Ongoing	Fire Wise Committee	Moderate
Enlist and continually engage a WUI specialist to complete an assessment and create a plan from which it identifies agreed upon, achievable local solutions.	Ongoing	Association	High
Invest a minimum of $2 annually per capita in its Fire Wise Communities/USA program. (Work done by municipal employees or volunteers using municipal or other equipment, can be included, as can state/federal grants dedicated to that purpose).	Ongoing	HOA	Moderate

Observe a Fire Wise Communities/USA Day each spring that is dedicated to a local Fire Wise project.	Ongoing	HOA	Moderate
Submit an annual report to Fire Wise Communities/USA. This report documents continuing participation in the program.	Ongoing	Fire Wise Committee	Moderate

Appendix VI
Dwarf Mistletoe

Colorado State University Extension

Mistletoes in Colorado Conifers

Fact Sheet No. 2.925 Gardening Series | Diseases

by R.D. Koski, W.R. Jacobi and C.E. Swift*

Dwarf mistletoes (*Arceuthobium* species) are leafless parasitic plants that infect several species of conifers (evergreen trees) in Colorado forests. Dwarf mistletoes produce rootlike structures that grow in the living tissue just under the bark (phloem) and in the wood (xylem), where they extract both nutrients and water from their host plants. Germinating seeds of mistletoes produce specialized structures called holdfasts that allow newly emerged parasitic plants to penetrate the tissues of host plants, thus infecting the host plant.

There are five species of dwarf mistletoes that infect conifers in Colorado (Table 1). While some dwarf mistletoes are relatively host-specific and generally do not infect other tree species, other species infect a wide range of coniferous tree species (Table 1). In addition, juniper mistletoe (*Phoradendron juniperinum*) is also present in Colorado and is a different type of mistletoe that is less damaging compared to dwarf mistletoes, in that it primarily acquires only water from the host tree. Juniper mistletoe is found in western Colorado and can infect several juniper species (*Juniperus* species) in many western states (Table 1).

The dwarf mistletoes and juniper mistletoe are dioecious plants with male flowers and female flowers produced on separate plants. The flowers produced by these mistletoes are small and inconspicuous.

Symptoms and Signs

When viewed from a distance, coniferous trees infected with dwarf mistletoes may appear to have yellow foliage, reduced foliage, abnormally dense green and distorted foliage or witches' brooms, and mortality of the upper portion of the affected tree (Figures 1, 2, and 3).

Figure 1: Lodgepole pine infected with dwarf mistletoe display witches' brooms and dead branches.

Figure 2: Witches' brooms – dense, multiple branches on lodgepole pine infected with dwarf mistletoe.

Closer examination of branches of affected trees will reveal the yellowish green, olive green, or reddish brown segmented shoots of the parasitic plant (Figures 4 and 5).

The first symptom of dwarf mistletoe infection is a slight swelling of the bark at the infection site. The parasite is identifiable when shoots protrude two to three years after infection. Dwarf mistletoe shoots are 1/2 to 6 inches long and 1/8 to 1/4 inch in diameter (Figures 4 and 5). Douglas-fir dwarf mistletoe shoots are hard to see because they are only about 1/2 inch long. When shoots

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Quick Facts

- Mistletoes are parasitic flowering plants that can infect and damage many species of trees.
- Dwarf mistletoes are leafless parasitic plants that infect several coniferous or evergreen tree species in many western states.
- Ponderosa, lodgepole, limber, and pinyon pines and Douglas-fir are the most common trees affected by dwarf mistletoes in Colorado.
- Juniper mistletoe is another type of mistletoe that can infect several juniper species in many western states.
- Damage caused by mistletoes includes growth reduction, loss of wood quality, poor tree form, predisposition to insect infestation and diseases, premature death, and reduction in seed crops.

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Table 1. Mistletoes of Colorado conifers.

Mistletoe species	Common name	Host plant species	Common name of host	Description
Arceuthobium americanum	Lodgepole pine dwarf mistletoe	Primary Host: *Pinus contorta* var. *latifolia* Occasional hosts: Pinus ponderosa var. scopulorum, Pinus albicaulis, Pinus aristata, Pinus flexilis, Pinus mugo, Pinus sylvestris, Picea engelmanii, Picea pungens, Abies lasiocarpa	**Lodgepole pine** ponderosa pine, whitebark pine, bristlecone pine, limber pine, mugo or mountain pine, scots or scotch pine, Engelmann spruce, blue spruce, subalpine fir	Shoots are yellowish to olive green, mean shoot height 5-9 cm, with whorl-like branching; fruit is an ovoid berry, olive green and 3.5-4.5 mm long and 1.5-2.5 mm wide
Arceuthobium cyanocarpum	Limber pine dwarf mistletoe	Primary Host: *Pinus flexilis* Occasional hosts: *Pinus albicaulis, Pinus aristata, Pinus contorta* var. *latifolia, Pinus ponderosa, Pinus strobiformis*	**Limber pine** whitebark pine, bristlecone pine, lodgepole pine, ponderosa pine, southwestern white pine	Shoots are yellowish green, mean shoot height 3 cm, with fan-like branching; fruit is a bluish (cyan)-ovoid berry and 3.5 mm long and 2.0 mm wide
Arceuthobium divaricatum	Pinyon dwarf mistletoe	Primary Host: *Pinus edulis*	**Pinyon pine**	Shoots are olive green to brown, mean shoot height 8 cm, with fan-like branching; fruit is an ovoid berry, green/white and 3.5 mm long and 2.0 mm wide
Arceuthobium douglasii	Douglas-fir dwarf mistletoe	Primary Host: *Pseudotsuga menziesii* Occasional Hosts: *Abies concolor, Abies lasiocarpa, Picea engelmannii, Picea pungens*	**Douglas-fir** white fir, subalpine fir, Engelmann spruce, blue spruce	Shoots are olive green, mean shoot height 2 cm, with fan-like branching, fruit is an ovoid berry, olive green/ white, and 3.5-4.5 mm long and 1.5-2.0 mm wide
Arceuthobium vaginatum subsp. *cryptopodum*	Southwest dwarf mistletoe	Primary Host: *Pinus ponderosa* Occasional Host: *Pinus aristata, Pinus contorta* var. *latifolia, Pinus flexilis, Pinus strobiformis, Pinus sylvestris*	**Ponderosa pine**	Shoots are orange to reddish brown (sometimes very dark brown), mean shoot height 10 cm, with extensive branching; fruit is an ovoid berry, bi-colored, and 4.5-5.5 mm long and 2.0-3.0 mm wide
Phoradendron juniperinum	Juniper mistletoe	Primary Hosts: *Juniperus scopulorum, Juniperus osteosperma, Juniperus monosperma*	**Rocky Mountain juniper,** Utah juniper, oneseed juniper	Shoots are green to yellow green, leafless, mean shoot height 20-40 cm; plants globose, with extensive branching; fruit is an ovoid berry, pinkish-white, and 4 mm in diameter

have fallen off, look for the remnants of basal cups on branches.

After initial infection, mistletoes can cause distorted branching or witches' brooms in the host tree (Figure 2). When dwarf mistletoes infect occasional hosts – hosts other than the primary host – different and unique symptoms may occur. For example, lodgepole pine dwarf mistletoe causes very large and dense witches' brooms when it infects ponderosa pine (Figure 7). Lodgepole pine dwarf mistletoe also induces on limber pine large elongate galls with rarely any shoots present.

Juniper mistletoe plants are usually seen as large yellowish-green round masses of small branches in the crown of junipers (Figure 6). Juniper mistletoe does not induce the juniper to make witches' brooms.

Damage to Host Trees

Dwarf mistletoe witches' brooms extract nutrients from uninfected parts of the tree, gradually reducing host tree vigor and eventually causing premature death. Dwarf mistletoe infested trees decline and die from the top down as witches' brooms on lower branches extract more nutrients and water (Figures 1 and 3). Death of the host tree occurs slowly in most cases and depends on the severity of infection and on the vigor and size of the tree.

A measure of dwarf mistletoe infection severity is based on a two-part rating system (Tables 2a and 2b). First, a tree's crown is divided into thirds, and each third is rated. If there are no visible infections, that third of the crown gets a 0; if 1 to 50 percent of the branches are infected in that third, the rating is 1; and if more than 50 percent of the branches are infected, the rating is 2 (Table 2a). Add the rating of each third to get a total dwarf mistletoe rating (Table 2b). Life expectancy information for trees afflicted with dwarf mistletoe is provided in Table 3.

Witches' brooms develop over many years. Dwarf mistletoe witches' brooms extract nutrients and water from uninfected parts of the tree, gradually reducing host tree vigor and eventually causing premature death. Junipers infested with juniper mistletoe will have clusters of the yellowish

Figure 3: Lodgepole pine with dead top and dense dwarf mistletoe-induced brooms on the lower stem.

Table 2a. Rating scale for dwarf mistletoe infection severity.

Percent of branches infected in each crown section[1]	Tree crown section rating
0	0
1-50	1
51-100	2
[1]top third, middle third, and bottom third of tree crown.	

Table 2b. Dwarf mistletoe rating system (DMR).

Sum of rating of each of the three crown sections	Infection severity
2-3	Light
4-5	Moderate
6	Heavy

Table 3: Approximate number of years needed to kill 50 percent of Ponderosa pine trees infected with dwarf mistletoe.[1]

Tree diameter	Infection severity[2]		
	Light	Moderate	Heavy
4-9 inches	30	17	7
Greater than 9 inches	60	25	10
[1]Based on ponderosa pine in open, multi-aged stands. [2]Infection severity based on the following: light = a rating of 2 or 3; moderate = a rating of 4 or 5; heavy = a rating of 6.			

green parasitic plant growing amongst the juniper foliage (Figure 6).

Juniper mistletoe witches' brooms extract only water from the host plant. On heavily infested trees, the parasite can cause death of portions of the tree during prolonged periods of below normal precipitation.

Spread

Dwarf mistletoes spread slowly from tree to tree. In closely spaced trees of about the same height, this spread is one to two feet per year. The spread from large to small trees can extend 60 feet, but the average usually is less than 30 feet.

The sticky seeds of *Arceuthobium* species are explosively discharged from the fruit at almost 60 miles per hour, adhering to any surface they strike. Seeds that adhere to young branches of susceptible trees germinate, and the mistletoe rootlet penetrates the bark. Dwarf mistletoe seeds generally are dispersed in August and early September. Birds can, but only occasionally, spread the seeds some distance to uninfected trees. Dwarf mistletoes have a relatively long life cycle between infection and seed production (six to eight years). This long life cycle allows for long-term disease management. Mistletoes are not common in nursery and ornamental plantings, but the parasites can be introduced into an area by planting trees unknowingly infected with mistletoe.

The fruits and seeds of *Phoradendron juniperinum* are spread by birds and consequently can be spread great distance in a single season. A number of bird species feed on the juniper mistletoe fruits and disperse the seeds by excreting or regurgitating them. Seeds are deposited on the top side of branches of juniper hosts. Germinating seeds produce a holdfast that penetrates the host plant.

Management

Mistletoes cause a gradual decline of plant health and do not quickly cause serious injury, thus long-term management options are feasible. However, mistletoe-infected trees may become sufficiently stressed as to attract mountain pine bark beetle (MPBB), *Ips* bark beetles, and twig beetles that may breed and kill parts (twig and *Ips*) of or the whole tree (MPBB, *Ips*). Mistletoe management options include branch pruning, tree removal, and planting resistant tree species.

Branch Pruning and Tree Removal

Pruning out the witches' brooms and removing infected trees is the best management measure available to reduce or eliminate dwarf mistletoe infestations in stands of high-value trees. First, remove severely infected trees (trees rated 5 and 6) or those with only a few live branches. Trees with high, unreachable mistletoe infections will continue to shower seeds on nearby trees if not cut down. However, it is not necessary to completely eradicate the mistletoe, as this may require removal of all trees. Pruning infected branches and removal of a few heavily infected trees can keep a green forest on the property.

Figure 4: Ponderosa pine dwarf mistletoe plants.

Figure 5: Lodgepole pine dwarf mistletoe plants. Note thin green-yellow shoots.

Management Options:

1. Pruning and removing trees is the best management measure available to reduce or eliminate dwarf mistletoe infestations in ornamental trees or urban forests.
2. Plant resistant trees under infected trees to replace trees when infected ones are removed.
3. Use ethephon sprays in high-value areas where planting with the same species under infected trees is the only option.

Figure 6: Juniper mistletoe. Note the globose growth in this juniper.

Figure 7: Dense dark green brooms on ponderosa pine infected with lodgepole pine dwarf mistletoe.

Pruning off the lower and the largest witches' brooms from lightly to moderately infected trees (trees rated 1 to 4) can improve the health and allow these trees to survive for decades. When removing a witches' broom, prune the entire branch at the branch collar near the trunk. Examine trees every two or three years, and remove any newly infected branches. When pruning, keep 30 percent to 40 percent of the branches on the tree (from the top down), even if that means leaving some infected branches. Mistletoe shoots die as soon as the tree branch is cut, so no special disposal of pruning debris is needed. Trunk infections are not as detrimental as branch infections, so their removal is not necessary. If space allows, create 50-foot buffer zones between infected trees and healthy trees by cutting or by planting resistant trees. Contact a professional forester, the Colorado State Forest Service, or other professionals to obtain help in these decisions.

Planting Resistant Tree Species

Planting resistant or non-host tree species in areas with infected trees will ensure that trees will be in the area even after the infected trees are removed (Table 4).

NOTE: Scotch or Scots pine (*Pinus sylvestris*) is susceptible to both southwest and lodgepole pine dwarf mistletoes.

Table 4. Recommended species to replant in mistletoe affected areas.

Mistletoe-infected species	Recommended replacement species
ponderosa pine	white fir, blue spruce, bristlecone pine, pinyon pine, limber pine, Douglas-fir, and/or Rocky Mountain juniper
lodgepole pine	subalpine fir, Engelmann spruce, bristlecone pine, limber pine, and/or Douglas-fir
Douglas-fir	Engelmann spruce, lodgepole pine, and/or ponderosa pine
juniper	ponderosa pine and/or pinyon pine

Deciduous trees and shrubs, such as birch, peashrub, ash, aspen, cottonwoods, and Gambel oak also can be planted in affected areas because dwarf and juniper mistletoe do not attack these plants. Keep in mind that site conditions and moisture availability will determine what trees and shrubs can be planted in a particular area.

Chemical Sprays

Ethephon (2-chloroethanephosphonic acid) is a growth regulating chemical that can be used to remove mistletoe shoots and reduce seed production. Ethephon is usually only used in high value areas where young trees should be protected until infected overstory trees are removed. This treatment does not kill the entire mistletoe plant, just the shoot. Retreatment is necessary until infected trees are removed, mistletoe infections are pruned from the tree, or new non-host trees are planted.

Additional Information

Colorado Master Gardener Garden Notes (available from the Colorado Master Gardener Program website, http://cmg.colostate.edu/pubs.htm)

- GardenNotes #618, Pruning Evergreens
- GardenNotes #633, The Science of Planting trees

Fact Sheets (available from the CSU Extension website, http://www.ext.colostate.edu/pubs/pubs.html)

- Fact Sheet 5.558, *Ips Beetles*
- Fact Sheet 5.528, *Mountain Pine Beetle*

Geils, B.W., Tovar, J.C., and Moody, B. 2002. Mistletoes of North American Conifers. Gen. Tech. Rep. RMRS-GTR-98. Ogden, UT: USDA, Forest Service, Rocky Mountain Research Station. 123p.

Colorado State University, U.S. Department of Agriculture and Colorado counties cooperating. CSU Extension programs are available to all without discrimination. No endorsement of products mentioned is intended nor is criticism implied of products not mentioned.

Appendix VII
Survey Comments

General CWPP comments:

- Would like updates.
- Is there a draft of the CWPP available to review? **Core Team Response: please visit the following website for a draft of the CWPP http://www.larkspurfire.org/communities-of-greater-sage-port-cwpp/**
- Getting everyone to participate
- I do not want outside parties or govt agencies imposing requirements on property owners or issuing unsolicited reports.
- I do not want a government or quasi-government entity dictating with regard to this issue. Information and education is fine.
- **Core Team Response: The recommendations described in this plan are provided as a resource to homeowners who voluntarily take an active role in reducing fire hazards on their property. The plan does not require homeowners or agencies to implement the recommendations on their respective properties.**

Comments about mitigation recommendations:

- Concerned about erosion and disturbing the natural aquifer that exists by overly aggressive fire mitigation and clear cutting. Would like to understand the plan/method for re-vegetation, if one exists. We have great water quality, I'd like to keep it that way. **Core Team Response: The recommendations listed in the CWPP include the proper methods of wildfire mitigation and general forest thinning, which when implemented, reduce the impacts of erosion.**
- **Vacant lots**
    - Too much emphasis on homeowners and not enough on larger unmitigated property owners and BNSF train which has started several fires in the past.
    - There are still several heavily treed vacant lots that could use mitigation. People tend to dump trash, possibly flammable as well as dumping their slash in the undeveloped areas. People also tend to ride their gas powered 4 x 4 and motorcycles in the undeveloped areas.
    - I'd like to see owners of vacant lots be held accountable for fire mitigation. Same for Douglas County being asked to do mitigation on open spaces.
    - I would like to see the owners of empty lots forced into some type of mitigation.
    - Concerned that, while I am doing all I can to reduce my fire risk, my neighbors are not doing their part.
    - **Core Team Response: Douglas County Open Space has proposed demonstration areas on their lands within the CWPP area and those areas are captured in the plan. Each HOA determines how to address vacant lots and concerns should be directed to the respective HOA.**
- To be most effective surrounding area of a neighborhood must also practice reasonable fire prevention and mitigation techniques.
- Question 4 is a push - I resent that. A balanced approach to fire concern needs to be to goal - not clear cutting, not nothing at all, something in between, balanced.

- How soon can we receive help with mitigation?
- I'm would like to know more about what things should be done to make my property more fire safe. **Core Team Response: Contact Larkspur Fire, Douglas County Wildfire Mitigation Specialist, or Colorado State Forest Service, Franktown District.**
- I have been able to take slash to Castle Rock in the past at no charge. A scheduled local drop off once in a while would be nice, even with a reasonable fee, However if the fee was not reasonable I would haul the slash to Castle Rock myself. **Core Team Response: Most communities in the planning area have annual chipping programs. Contact your HOA representative for more information.**
- I need someone to tell me if I'm doing mitigation correctly
- Fear the recommended mitigation is more aggressive than what I would want? Is the mitigation a recommendation only? **Core Team Response: The CWPP is just a planning/information document and nothing in the plan is required. The mitigation recommendations are what needs to be done to give your property and home the best chance to survive a wildfire.**

Comment about evacuations/preparedness:

- After the recent Lower North Fork fire, where through a mistake in the system, citizens quite far away (in Littleton) were notified to unnecessarily evacuate while residents several miles from the fire were not, I am concerned with our communication and reverse 911 system. Just because they experienced an unfortunate glitch in their system doesn't mean we will experience that here, as well. But it would be comforting to know that our system has been tested and is ready for accurate calling if it is unfortunately needed. Thank you.
- a robo call system in case of dire emergency
- I do have pets any sometimes concerned about leaving them home alone.

General Comments:

- I haven't built on my property so some of these questions don't apply.
- Believe it is the responsibility of each homeowner to remove as much risk as possible i.e. overgrown scrub oak close to the home, clearing dead branches removing unhealthy trees and thinning in incremental distances from home, removing ladder fuel. Appreciate the information but feel each homeowner should be responsible and accountable for improving the health of their property.
- THANKS to all who are working on this. V-e-r-y helpful to the community!
- Great job to Larry on putting this together
- Some home owners are going way over board on mitigating their lots
- Will strongly support any Wildfire mitigation effort
- I am glad our community is taking strong action in this matter. Waiting to hear about evacuation plans & more info on what to do if there is a fire! Thanks for all your hard work Ladies!

Appendix IX
Signature Pages

The Greater Sageport Community Wildfire Protection Plan was collaboratively developed. Interested parties, including the communities of Antlers at Sageport, Hidden Forest, Perry Park East, Sageport, and Sterling Pointe, various homeowners, Larkspur Fire Protection District, Douglas County Public Works, Douglas County Wildfire Mitigation Staff, Douglas County Emergency Management, Douglas County Open Space and Natural Resources, and the Colorado State Forest Service, participated and provided input to the process.

The CWPP identifies and prioritizes areas for hazardous fuel reduction treatments and recommends the types and methods of treatment that will protect the Greater Sageport CWPP area. It also recommends measures to reduce the ignitability of structures throughout the area.

The following community representatives/agencies have reviewed and support this Community Wildfire Protection Plan.

Janine Kasper

Janine Kasper

Hidden Forest HOA

Randy Johnson, Fire Marshall

Larkspur Fire Protection District

10-2-14

Kristin Garrison, District Forester

Colorado State Forest Service, Franktown District

The Greater Sage Port Community Wildfire Protection Plan was collaboratively developed. Interested parties, including the communities of Antlers at Sageport, Hidden Forest, Perry Park East, Sage Port, and Sterling Pointe, various homeowners, Larkspur Fire Protection District, Douglas County Public Works, Douglas County Wildfire Mitigation Staff, Douglas County Emergency Management, Douglas County Open Space and Natural Resources, and the Colorado State Forest Service, participated and provided input to the process.

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The following community representatives/agencies have reviewed and support this Community Wildfire Protection Plan.

A.J. Kirkpatrick, President
On behalf of Sage Port HOA

Randy Johnson, Fire Marshall
Larkspur Fire Protection District

12-5-14
Kristin Garrison, District Forester
Colorado State Forest Service, Franktown District

The Greater Sage Port Community Wildfire Protection Plan was collaboratively developed. Interested parties, including the communities of Antlers at Sageport, Hidden Forest, Perry Park East, Sage Port, and Sterling Pointe, various homeowners, Larkspur Fire Protection District, Douglas County Public Works, Douglas County Wildfire Mitigation Staff, Douglas County Emergency Management, Douglas County Open Space and Natural Resources, and the Colorado State Forest Service, participated and provided input to the process.

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The following community representatives/agencies have reviewed and support this Community Wildfire Protection Plan.

Chuck Hutton
Perry Park East HOA

Randy Johnson, Fire Marshall
Larkspur Fire Protection District

10-2-14

Kristin Garrison, District Forester
Colorado State Forest Service, Franktown District

The Greater Sage Port Community Wildfire Protection Plan was collaboratively developed. Interested parties, including the communities of Antlers at Sageport, Hidden Forest, Perry Park East, Sage Port, and Sterling Pointe, various homeowners, Larkspur Fire Protection District, Douglas County Public Works, Douglas County Wildfire Mitigation Staff, Douglas County Emergency Management, Douglas County Open Space and Natural Resources, and the Colorado State Forest Service, participated and provided input to the process.

The CWPP identifies and prioritizes areas for hazardous fuel reduction treatments and recommends the types and methods of treatment that will protect the Greater Sage Port CWPP area. It also recommends measures to reduce the ignitability of structures throughout the area.

The following community representatives/agencies have reviewed and support this Community Wildfire Protection Plan.

Barb Harbach
Antlers at Sageport HOA

Randy Johnson, Fire Marshall
Larkspur Fire Protection District

10-2-14
Kristin Garrison, District Forester
Colorado State Forest Service, Franktown District