

Ridgewood Community
Wildfire Protection Plan Update
January 2011



Update to Ridgewood Community Wildfire Protection Plan - January 2011

Two factors have influenced this update to the Ridgewood CWPP that was approved July 2008. The first and most important factor is the community's need to create new priorities for future projects and to re-evaluate previous priorities because the projects have either been completed or need to be amended. This community has made progress in all areas of the original plan as indicated in Appendix A. With the assistance of local professionals and cooperation of public land managers, the risk of catastrophic wildland fire to the Ridgewood community is being reduced and this effort needs to continue.

The second factor is the revised requirements for CWPP development released by Colorado State Forest Service in November 2009. This update includes the additional information required for current approval of this plan. The original plan can be viewed at the Colorado State Forest Service website: http://csfs.colostate.edu/pages/documents/RIDGEWOODCWPP-COMPLETE_000.pdf. Additionally, this community is included in the Woodland Park Healthy Forest Initiative CWPP, which can be viewed at: csfs.colostate.edu/pages/documents/WoodlandPark_HealthyForestCWPP.pdf.

Note: This document was prepared in good faith by the Ridgewood CWPP committee for the benefit of the Ridgewood POA. The CWPP committee assumes no liability in the preparation of this document. This document is intended only as a guide for the Ridgewood POA to continue to reduce fire risk and improve forest conditions for the next five years. The information provided has been obtained from local forest professionals, homeowners participating in this project and from past knowledge and history of projects in the community.

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date 01 / 04 / 2011

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Colorado State Forest Service	<u>[Signature]</u>	date	<u>12 / 07 / 10</u>

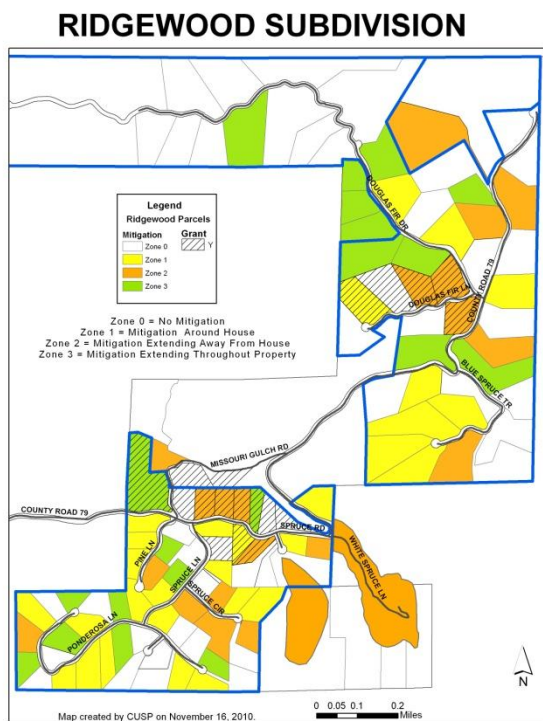
Introduction

Since the approval of the original CWPP in July of 2008, there have been remarkable changes in the Ridgewood subdivision. More residents are aware of the need to manage the area immediately surrounding their home and outward on their property to reduce the risk of high intensity wildland fire and to improve and maintain the health of the forest. Many residents are taking action on their own behalf and at their own expense as well as partnering with neighbors to produce on-the-ground results. Improved record keeping and mapping capabilities have made it easier to track our progress as we continue to implement projects throughout the community. Appendix A includes a chart outlining the progress on previous projects and the status of those priorities.

Suppression Capabilities

The Ridgewood community reasonably expects immediate Federal, State or local fire suppression response in the event of a wildland fire start that threatens the community. When possible, aggressive initial attack, including the use of aircraft, is generally the most cost effective approach for dealing with wildfires. Occasionally, due to reasons such as lack of resources, multiple fire starts, extreme burning conditions, or firefighter safety issues, initial attack may not be successful. Each fire suppression agency will take aggressive actions to contain, control, and fully extinguish wildfires during the initial attack period and thereafter, and agrees the primary concern is the extinguishing of wildland fires.

Northeast Teller Fire Department would have the responsibility to be first responder to a fire –wildland or structural -in the Ridgewood vicinity. As a paid and volunteer department, there are significant limits to the manpower, number of responding vehicles, and response time that can be anticipated in a fire emergency.



It is of critical importance that Ridgewood residents are aware of these limits and take steps to be personally responsible for the fire hazards on their private property.

Progress

As more properties undertake mitigation activities they are added to our on-going maps so that target “at risk” areas are more readily identified. The map illustrates properties that we know of that have begun mitigation around their homes and others that have expanded their projects to cover more of their privately owned acreage. More properties may be undertaking mitigation projects than we are aware of at this time.

This map draws attention to areas where the risk of fire impact is still very high as well as to areas where the threat has been reduced. As we become aware of individual or group mitigation projects, this map will be updated.

The overall success of these mitigation projects escalates when adjacent properties also participate. Currently a project funded by a grant from the American Recovery and Reinvestment Act is underway to reduce the fire risk on adjacent properties along Spruce Road to help protect a major community evacuation route. Completion is expected in the fall of 2011. Additionally, the various visible demonstration sites within the subdivision offer reassurance and encouragement to those who have been reluctant to remove trees and other vegetation.



To date, it is estimated that 160 acres of the subdivision have been inspected and treatments initiated within the subdivision boundaries. Two miles of right-of-way thinning involving 22 private properties along Spruce Road was completed in 2009 at a cost of \$1000 and 80 hours of volunteer labor. This provides additional safety to an important evacuation route used by all residents.

The public land managers adjacent to the community have been very responsive to requests for fuel mitigation projects outside of our boundaries. To date, over 1090 acres have been treated and there are plans underway to begin mitigation along Rampart Range Road, east of this subdivision. (See Appendix B)

Forest Health

Our focus is changing and expanding. Fire is not the only threat to our forests and community. The insect and disease threat is increasing in areas where the forest is overgrown and crowded. Trees stressed by extreme competition for light, nutrients and water are weakened and more susceptible to both insect infestation and potentially damaging diseases. As Ridgewood plans for the future, these must be taken into account. We have included a reference article for this subdivision for informational purposes. We encourage residents to seek professional advice before taking actions to address insect or disease problems on their property. (See Appendix C)

Other values at risk

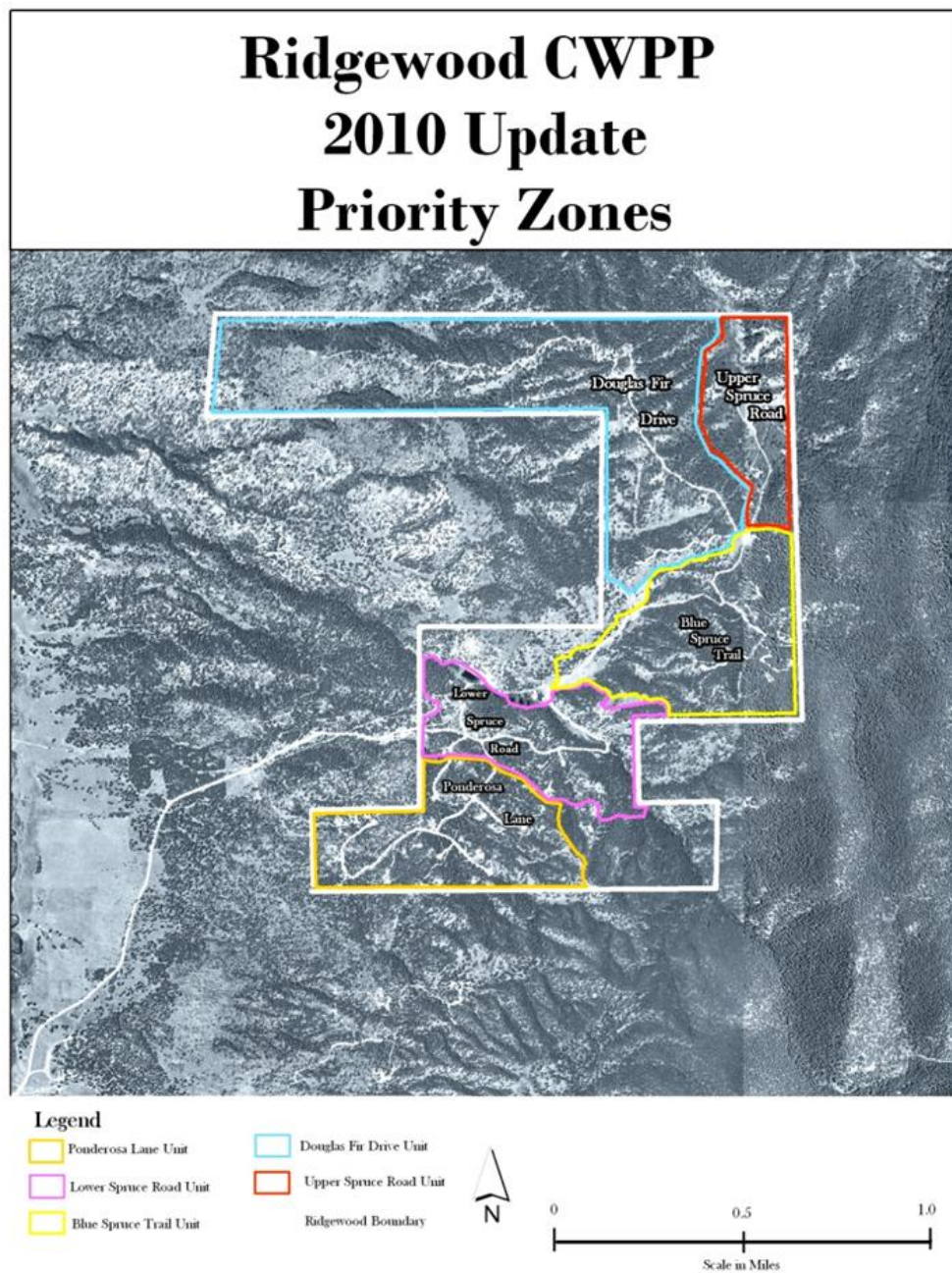
Residents have chosen to live in this subdivision because of the “natural” forested appearance and seclusion available for our homes. Fire is just one of many issues we need to consider in the planning for vegetative modification. We are realizing that the health of the existing trees, wildlife habitats, and surface water quality are other issues that may be affected by our activities to reduce wildfire risk. Ongoing education in these topics is necessary to reduce “unintended consequences” to other areas.



For example, the severe impact of soil erosion has been highlighted in the years following regional high intensity fires. Appendix E includes a map which indicates that over 75% of Ridgewood soils are at high risk for damage in the event of a wildfire. High intensity wildfire in Ridgewood has the potential to alter not only our subdivision, but water quality of people who live far downstream.

Future Projects

Colorado State Forest Service has provided a general fuel prescription for the Ridgewood subdivision that is included as Appendix D. Homeowners are encouraged to have a certified forester, such as Colorado State Forest Service, inspect their property and make specific recommendations for fuel mitigation and forest health treatments. Previously, the CWPP committee designated Priority Zones for future projects. Some of these projects have been completed or are currently in progress.



New or Amended Priorities

After review and discussion, the following are the revised goals for the Ridgewood CWPP for 2011-15. These are repeated in Appendix F

#1 Fuel Mitigation and Forest Health

- Encourage cross-boundary projects to create fuel breaks in areas identified.
- Continue bi-annual slash chipping project available to all residents.
- Continue mitigation on common areas and volunteer assisted projects.
- Pursue other funding and grant opportunities for cross-boundary mitigation projects.

#2 Education

- Provide information to residents regarding defensible space recommendations.
 - i. Have handouts available at community meetings.
 - ii. Include information in packet for new owners
 - iii. Include references to other websites on Ridgewood website
- Provide forest health information regarding insect and disease.
 - i. Include current status and information on website
 - ii. Have insect and disease handouts available at meetings and in new resident packets.
 - iii. Provide CSFS contact information in newsletter and on website.
- Host tours of completed projects and invite guest speakers.
 - i. Consider placing signs to draw attention to completed projects
 - ii. Continue drawing attention to demonstration sites where appropriate
 - iii. Select guest speakers with relevance to CWPP actions for community meetings.
- Use website and newsletter to keep residents aware of grant opportunities and related activities throughout the subdivision.
 - i. Assign committee member to coordinate website information.
 - ii. Regularly include information in any mailings to residents and on bulletin board.

#3 Leadership and Maintenance

- Retain CWPP committee and encourage community members to actively participate in fire mitigation and forest health committees.
 - i. Report annually to RHOA Board and residents and CSFS on prior years' accomplishments.
 - ii. At a minimum, meet monthly April through Oct annually
- Evaluate projects on common areas and road easements for necessary maintenance and any insect or disease outbreaks.
- Continue cooperative discussion with adjacent public land managers regarding biomass reduction in close proximity to Ridgewood.
- Encourage community members to actively participate in community forest health and fire mitigation committees.
- Become a "Firewise Community" and maintain this designation annually.

#4 Life Safety and Emergency Issues

- Encourage and educate owners to have adequate driveway dimensions for emergency vehicle access
- Encourage residents to post clearly visible address signs and develop personal family emergency procedures.
- Maintain Fire Danger sign at subdivision entrance.
- Maintain emergency calling tree for resident notification.

Project Implementation

Conditions such as slope, vegetation type and density, and access vary widely across the Ridgewood landscape. As specific areas or properties within the priority zones are identified for treatment, prescriptions for the individual project and selection of implementation method will be determined with the assistance of CSFS. Inspection for tree health, erosion potentials and consideration of wildlife sensitive areas can be brought into the decision by seeking professional advice.

Funding

Projects that have mitigated more than 30 acres within Ridgewood have been funded by individual homeowners and through matching grant participation. More than 560 hours of labor have been donated by the many volunteers who help their neighbors and those who are unable physically or financially to take part. Plans are underway to set up a CWPP Implementation Fund to assist in matching dollars where required by cross boundary or common land projects such as the protection of well sites and water supply tanks. Various projects to raise these dollars are under discussion or in the initial planning stages.

Note: Colorado currently has a state tax deduction available concerning payments made for fuel mitigation on private property through 2013. An informational brochure is included in Appendix G. Advice and direction from your tax preparer is recommended.

Looking Ahead

The Ridgewood CWPP committee is an ongoing volunteer organization. Regular monthly meetings are held April through October. All residents are invited to participate on the committee or to request information and assistance. Please contact any CWPP committee member for more information.

As Ridgewood moves forward into the next decade, this plan is intended to provide guidance to continue to keep our residents informed, maintain our forest in healthy condition, and reduce the threat of high intensity wildfire to the subdivision.

Appendices

Ridgewood Subdivision

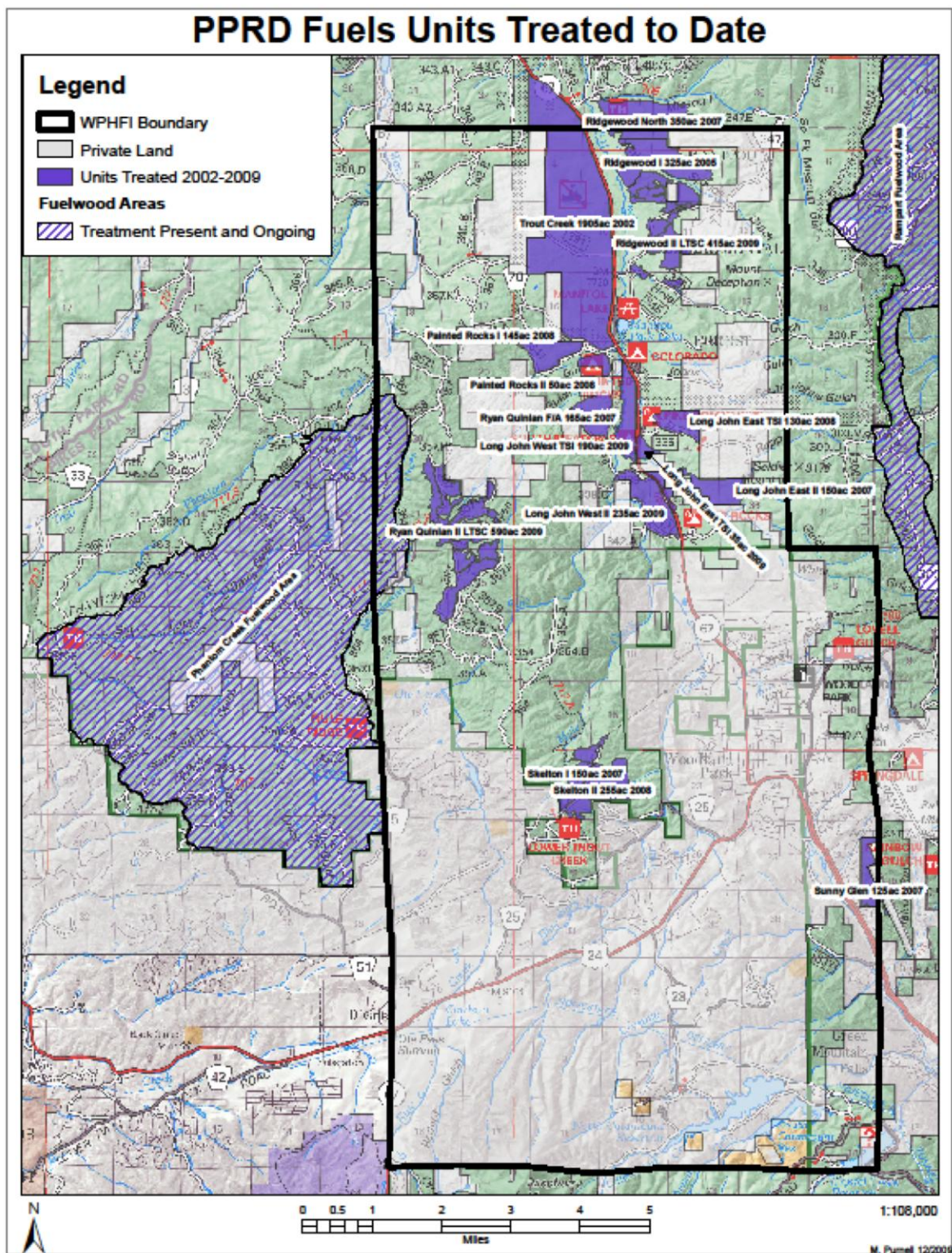
CWPP Update

January, 2011

Appendix A – Progress Report

2010 Progress Report on Ridgewood 2008 CWPP Priorities	Status	Action	Responsibility
Priority 1. Roadside thinning along Spruce Road as identified by NETCFPD Chief Lauria. This includes areas in Manitou Experimental Forest and Ridgewood Subdivision.	Completed	Ridgewood: Two miles of Right of Way thinning was completed in 2009, mitigating 22 private properties along both sides of the road. Ridgewood POA paid for the mitigation. Manitou Experimental Forest: 415 acre mitigating project was completed by the USFS in 2010 that reduced forest density on both sides of the road leading to the subdivision.	Ridgewood CWPP Community and USFS.
Priority 2. Educate community home owners about defensible space and provide options for removal of slash materials. Establish a committee to develop the FIREWISE Community designation for Ridgewood and set up tours to homes having site work.	Continuing	Information on defensible space (Pamphlet #6.302 “Creating Wildfire Defensible Zones”) is presented at the Annual POA meeting and provided to each newcomer. Also informational presentations by: NETCFPD, CSFS, CUSP and the Office of Emergency Management have been presented at the Annual POA meeting. Slash chipping is scheduled with CUSP twice yearly. FIREWISE designation is being perused. Property mitigation tour possibilities are being developed.	RCWPP Committee CUSP
Priority 3. Reduce biomass in Ridgewood’s outer buffer zone. (Manitou Experimental Forest)	Continuing	The USFS has completed 1090 acres of mitigation in Ridgewood buffer zone: 325 acres in 2005, 350 acres in 2007, 415 acres in 2010. The 415 acre project mitigated on either side of Spruce Rd., the exit road for Ridgewood. No further mitigation around Ridgewood is planned at this time. However, to the east of Ridgewood along Rampart Range road “Treatment is present and ongoing.” (PPRD Fuels Units Treated to Date and Planned for Future Treatment, WPHFI map.)	USFS RCWPP Committee
Priority 4. Create defensible space for well housing areas and utilities.	Continuing	Ridgewood water system is comprised of 3 well housing areas and two storage tanks. The water system has limited easement for each well. Well # 1 has adequate defensible space and is adjacent to the ARRA grant project, Well # 2 easement has been mitigated and Well # 3 mitigation is pending. Storage tank mitigation is being planned.	RCWPP Committee Volunteer mitigating team.

Priority 5. Create fuel breaks in areas identified by CSFS and shown on the following map. The 5 fuel break zones are prioritized to complement the thinning along the main access road, Spruce Rd. Zone One is Lower Spruce, Zone Two is Blue Spruce, Zone Three is Ponderosa, Zone Four is Douglas Fir, and Zone 5 is Upper Spruce. The names correspond to the road names.	Continuing	Zone 1, Lower Spruce, fuel break was selected for an ARRA Grant and scheduled for completion of mitigation by 2011. 20 acres is the estimated acreage to be mitigated. Zone 2, Blue Spruce, contains the upper switchback and was mitigated by CUSP in 2009. 5 acres mitigated. The remaining private properties in this zone have either been mitigated or have been identified for special personal contact and education. Zones 3, 4 & 5 remain continuing.	RCWPP Committee Private Landowners
Priority 6. Continue chipping program with CUSP; Twice annually.	Continuing	Community chipping in 2009 occurred in June & October for 23 acres. In the 2010 chipping 31 5/8 acres were mitigated.	RCWPP Committee Chipping Chair
Priority 7. Work with homeowners on thinning program across property lines.	Continuing	Seven properties agreed to the ARRA Grant proposed mitigation in the Zone 1 area, Lower Spruce zone, 20 acres are proposed. Two additional properties adjacent to the ARRA Grant area have also agreed to mitigation, 6 acres are proposed. Zone 2 area, Blue Spruce zone, currently has 4 properties joined for proposed mitigation, 11 acres are proposed.	RCWPP Committee Private Landowners
Priority 8. Engage community leaders to join CWPP Board to enhance community involvement and celebrate accomplishments.	Continuing	Four new members have joined the CWPP Board. Opportunities to recruit new members continue.	RCWPP Committee
Priority 9. Develop informational conduits to communicate the CWPP to all residents. Post the CWPP on the Ridgewood site, http://www.ridgewoodhoa.org	Continuing	The RCWPP is being posted on the web site; copies were distributed to those present at the 2008 Annual Meeting, and are distributed to newcomers. Information is presented at Annual Meetings, and CWPP articles are published biannually in the Ridgewood Newsletter	RCWPP Committee
Priority 10. Continue to evaluate CWPP progress and add new goals and projects. Annually.	Continuing	Progress is recorded in the Actions itemized above. New goals and projects are addressed on the Revised and New Goals document attached.	RCWPP Committee



Appendix C – Ridgewood Insect and Disease Conditions

Literally thousands of insect and diseases are present in the forests surrounding Ridgewood--or any other forested area. Fortunately, like the common cold, most do no serious or lasting damage. But when in poor health, trees, like humans, are more prone to infection from other causes; the concept of preventive medicine applies to forests, as well. Maintaining forests in good health will prevent problems in the future. For the most part, forest insect and disease issues in Ridgewood are typical for the region.

Every summer, insect and disease specialists from the USDA Forest Service and Colorado State Forest Service (CSFS) survey Colorado's forests from the air to monitor insect and disease outbreaks. These flights are an excellent means of

finding new areas of insect and disease activity and monitoring trends in existing outbreaks. Maps of the previous year's findings are published in January and can be found on the CSFS website at <http://csfs.colostate.edu/pages/common-insects.html>. This link also contains more detailed information on the insect and disease issues presented here.

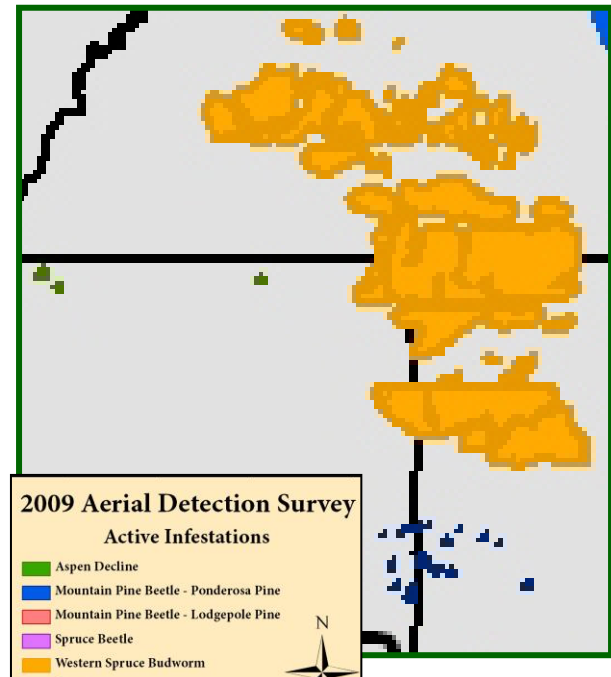


Figure C-1 : Aerial detection of insect and disease conditions in northeast Teller County from the 2009 flight. Courtesy of Colorado State Forest Service

The unnaturally dense forest conditions that cause the potential for hazardous fire in Ridgewood also create the potential for cyclical insect and disease outbreaks. Trees weakened by overcrowding and severe competition for water and sunlight are susceptible to invasion by insects and disease. When planning wildfire hazard mitigation projects, it is important to address current insect or disease issues and prevent those that are likely to become a problem. Following is information on some of the common forest insect and disease problems that have been identified in and near Ridgewood.

Western Spruce Budworm

The western spruce budworm (WSBW), a defoliating insect of Douglas-fir and spruce, is a growing threat in Ridgewood. Depending on the intensity of defoliation, budworm may damage or kill the host tree.

A severe outbreak of WSBW in the late 1980s damaged or killed large areas of Douglas-fir throughout the region. Trees with dead branch tips or those



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with forked or dead tops are legacies of the previous epidemic. Many of the dead Douglas-fir were first weakened by budworm and then killed by Douglas-fir beetles. (see the section on Douglas-fir beetle).

The grayish, mottled adult moths are active in July and August when females lay eggs on the underside of needles. Eggs hatch within days and the larvae migrate to bark scales where they overwinter. The following spring, larvae invade the new buds and feed on the emerging needles. Webbing around the new growth is an obvious sign of budworm activity and if heavy defoliation continues for three to five years, the tree will die. If shorter-term defoliation occurs, the branch tips or the entire top of the tree could die.

Natural predators or severe winter weather helps control budworm populations, which keeps them at non-threatening levels. Spraying with *Bacillus thuringiensis* may be useful to protect high value trees, but is not practical on a large scale.

Mountain pine beetle

Unlike the Western Slope, mountain pine beetle (MPB) is at normal levels in the Ridgewood area. The beetles have crossed the Continental Divide in northern Park County and northern Larimer County, and activity currently is confined mostly to higher altitude lodgepole pine. It presently is not known if or when the beetles will reach into the lower-elevation ponderosa forests, but where they have reached ponderosa, heavy mortality has occurred.

Adult beetles fly from midsummer through the first frost, although the vast majority fly between mid-July through the middle of September. Females seek a large, weak tree in which to mate and lay eggs. Vigorous trees generate enough pitch to prevent the female from burrowing through the bark, and this attempt by the tree to prevent entry creates the pitch tubes symptomatic of beetle attack. Pitch tubes are **not** a particularly reliable indicator of a successful attack. If pitch tubes are seen, check for reddish boring dust (fine sawdust) at the base of the tree and in the bark crevices. Boring dust is a more reliable indicator of successful attack.



Figure C-2: WSBW larva feeding on the needles of Douglas-fir. Note the typical webbing in the bottom of the photo. (Colorado State Forest Service photo by David Leatherman.)



Figure C-3: Mountain pine beetle galleries under the bark. The maternal beetle burrowed straight up the tree, creating the darker central gallery. Larval beetles feed horizontally, creating the smaller galleries. A larva is in the upper right and pupae in the lower left. Note the bluestain in the wood. (Colorado State Forest Service photo by David Leatherman.)

Once a female penetrates the bark, she hollows out a circular mating chamber between the bark and the wood, releasing a pheromone (scent) to attract a mate. The pheromone also attracts additional females to the tree and the tree is attacked en masse. After mating, the female burrows up the trunk between the bark and wood laying eggs. She inoculates the tree with spores of bluestain fungus, which provides food for the larvae. The fungus clogs the tissues that conduct water throughout the tree, leading to death within a few weeks.

Eggs hatch within a few days. The developing larvae feed horizontally from the maternal gallery over winter. The vertical maternal gallery and horizontal larval galleries are characteristic of the mountain pine beetle. The feeding larvae spread the bluestain fungus horizontally through the tree, and it becomes visible in the wood around February. The presence of bluestain is absolute confirmation that beetles have successfully attacked a tree.

Woodpeckers feed on the larvae through the fall and winter. The holes made by the woodpeckers are a visual clue to an infested tree. Untrained observers often are confused by the holes woodpeckers make when they feed on beetle larvae and sapsuckers feed on the sap. Woodpecker feeding is characterized by random holes about one-half inch in diameter that make it appear as though the tree was peppered with a shotgun. Sapsuckers, on the other hand, make a small hole about one-eighth inch in diameter, and the holes are in straight lines or a grid pattern. Sapsuckers do not indicate the presence of beetles in the tree.

Although the tree is dead within a few weeks of successful attack, needles remain green until the following spring. Within the space of a few weeks, in late May or early June the tree will turn straw-yellow and then reddish-brown. Once beetles invade a tree, nothing can be done to save it; the tree must be cut and disposed of in a way that will kill the beetles. No insecticide is available to kill beetles under the bark; thus, some sort of mechanical treatment is necessary. Any wood greater than four inches in diameter may harbor beetles and must be treated.



Figure C-4: Boring dust on a ponderosa pine after bark beetle attack. The reddish brown sawdust at the base of the tree and in the bark crevasses is a strong indication of successful beetle attack. Colorado State Forest Service photo by David Leatherman.

Following are treatment options for beetle-infested trees:

- Cut the tree and move all wood greater than four inches in diameter to a designated mountain pine beetle-safe site – usually an area at least one mile away from the nearest pine tree.
- Move all wood to a landfill or bury it under at least eight inches of dirt.
- Completely debark any wood that is larger than four inches in diameter.

- Chip the tree. Many tree services have chippers capable of chipping large diameter trees. The beetles are killed when the wood is chipped.
- Cover wood with at least six-mill clear plastic. This method, known as solar treatment, warms the wood to lethal temperatures and increases moisture, encouraging mold growth in the logs, which kills the beetles. Treat the wood properly for successful control. Cut into firewood lengths and stack no more than two logs high. Be sure there are no exposed stubs or sharp edges that might tear the plastic. Trench around the pile and, if possible, wet down the pile to encourage mold growth. Cover the pile with plastic, push the edges of the plastic into the trenches, and seal the edges with dirt. Check periodically to be sure the plastic has not torn. If torn, it can be repaired with duct tape.

It is best to check for infested trees in October of each year – remember that infested trees, although dead, are still green at this time. Pitch tubes and boring dust will be the most obvious clues. If infested trees are located early, there is adequate time to treat them.

While no insecticide effectively treats infested trees, spraying with insecticides such as carbaryl or permethrin prevents attack. Preventive sprays will not kill beetles under the bark. Spray trees between May 1st and July 1st each year for maximum effectiveness. It is not practical to spray every tree on a large tract of land, so choosing which trees to spray depends on the landowner's budget and the value of individual trees to the landowner. It is advisable to solicit bids from several different spray companies, as prices can vary widely. It also is wise to request and check references.

Thinning forests for increased health and vigor by far is the best preventive measure for mountain pine beetle. Because trees require several years to respond to thinning, it is best done before beetles reach epidemic levels. Follow thinning guidelines for wildfire mitigation to reduce susceptibility to MPB.

Ips (engraver) Beetles

Ips beetles, relatives of the mountain pine beetle, usually attack trees less than four inches in diameter and, in such circumstances, may be useful in thinning dense stands of young trees. Thus, it usually is not considered as threatening as its larger cousin. Ips will attack larger trees if they are severely weakened by disease (most often dwarf mistletoe), or are damaged by construction, lightning strikes or in horse corrals where soil compaction injures the roots. Like the mountain pine beetle, ips burrow beneath



FigureC-5: The reddish-brown sawdust on this freshly cut ponderosa pine slash indicates it has been invaded by ips beetles. Adult beetles will emerge in less than eight weeks if the slash is not properly treated. Colorado State Forest Service photo by Dave Root.

the bark and inoculate the tree with bluestain fungus, often following mountain pine beetles into larger trees.

The differences between mountain pine beetle and ips are significant to anyone implementing a forest management program. In contrast to MPB, which produce one generation per year, ips may produce up to four. Ips become active in spring when the weather exceeds 50 degrees F, developing from egg to adult within eight weeks. They continue to attack trees until the first fall frosts.

For this reason, preventive spraying should be done with permethrine or carbaryl in April and repeated in July. When spraying preventively for ips, it is important to spray the branches, as well as the trunk.

Ips attack causes no pitch tubes to form on live trees, so the only visual clue is boring dust or woodpecker holes in the trunk. Smaller trees quickly turn reddish-brown, but when they attack larger trees, ips often infest only the upper portion of the tree. The first symptom is browning of the top, but subsequent generations emerge and continue down the tree.

Ips will infest green slash and downed logs from forest management projects. If slash is not promptly treated, ips will emerge to attack living trees; treat slash within four to six weeks after cutting. If weather conditions permit, thinning trees in winter when ips are dormant will prevent problems with beetles in slash. However, slash cut after March 1 may still be green enough to attract ips when the weather warms.

Chipping slash will kill ips beetles. Lopping and scattering slash into lengths less than 24 inches promotes rapid drying and prevents infestation. Slash cut late in fall that is subsequently infested can be treated or piled and burned over the winter, but untreated slash left over the winter will produce live broods the following April. Due to their short lifecycle, solar treatment of ips-infested logs is ineffective. Bucking larger diameter logs and promptly splitting them into firewood accelerates the drying process and usually is effective in preventing ips infestations.

Many high value trees have been lost as a result of the common, and ultimately costly, practice of stacking firewood against green trees. Ips beetles will burrow out of infested firewood directly into standing trees.

Douglas-fir Beetle

Douglas-fir beetles also are present in the Ridgewood area, but are not killing large numbers of trees. If the current western spruce budworm defoliation seriously harms trees in the area, this will change. Some similarities exist between Douglas-fir beetle and MPB, but there are important differences that require different treatment strategies for infested trees.

Both species burrow under the bark to lay eggs and both carry blue stain fungus that kills the tree within a few weeks of infestation. Each beetle prefers dense stands with large diameter, low vigor trees; thus, thinning Douglas-fir for wildfire mitigation also reduces susceptibility to beetles’.

Adult Douglas-fir beetles emerge in mid-June, and a few adults may overwinter in trees and emerge as early as April. There are no insecticides available for treatment of beetle infested trees. Infested trees should be treated prior to April of each year to prevent emergence of overwintering adults.

Colorado State Forest Service photo by Dave Root.



Figure C-6: Pitch running down the bark of a beetle-infested Douglas-fir. Not all infested trees will exhibit pitch. Trees should be checked for boring dust in the early fall. < Colorado State Forest Service photo by Dave Root.

Effective treatments are whole tree chipping, debarking of all wood greater than four inches in diameter, transportation to a safe site or landfill, and burying under eight inches of dirt. Solar treatments should begin in the fall, preferably early fall.

Preventative spraying is an option for high value trees. Permethrine or carbaryl are effective as Douglas-fir beetle preventatives, but, because of the earlier emergence of overwintering adults, spraying should be done in April. Preventative sprays are not an effective treatment for infested wood.

Unlike MPB-infested trees, Douglas-fir trees do not form pitch tubes when attacked, so there may not be an obvious visual indication of infestation. Some Douglas-fir bleed sap when attacked, resulting in rivulets of sap on the trunk; however, this does not occur in all infested trees. Trees should be checked carefully for boring dust in early October. Later in the year, woodpecker holes may provide a visual clue that trees are infested.

Trees partially defoliated by western spruce budworm are particularly susceptible to attack by Douglas-fir beetles. Injury, overcrowding or any conditions that adversely affect the vigor of the tree will make it more susceptible. Managing the forest for open, vigorous stands of Douglas-fir is the best prevention.

Dwarf Mistletoe

Dwarf mistletoe is a parasitic plant that robs moisture and nutrients from the host tree. Over many years, it causes the tree to decline in vigor and eventually may cause death. More commonly, the tree declines to the point where bark beetles attack and kill it.

Three common species of dwarf mistletoe are found in the region, each named after its principle host – ponderosa pine, lodgepole pine and Douglas-fir. Locally, ponderosa and

lodgepole varieties grow on any pine species, but Douglas-fir dwarf mistletoe is exclusive to Douglas-fir trees. Spruce, true firs and deciduous trees are immune to all three species of dwarf mistletoe.

The most obvious symptom of dwarf mistletoe infection is the dense, distorted growth of the branches, called witch's brooms because they appear to be twisted or tied in knots. The shoots of ponderosa and lodgepole dwarf mistletoe are visible on the branch as thick fingerlike growths extending out of the branch or trunk. The shoots of ponderosa and lodgepole dwarf mistletoe are long and obvious to casual observation, but Douglas-fir dwarf mistletoe shoots are shorter than the needles and are not easy to see.

Mistletoe shoots are only reproductive structures with no photosynthetic function. Removing the shoots from a branch does not control dwarf mistletoe, except to temporarily halt seed production. Structures called sinkers, (analogous to roots in plants) embedded in the wood cause the damage, and the mistletoe plant continues to absorb the host tree's water and nutrients. Shoots that are removed grow back in two or three years.

During the growing season, dwarf mistletoe shoots develop berries containing a seed. In August, the berries fill with water and explode, shooting the seed as far as 40 feet. Most seeds strike branches of the host tree and do not travel the full 40 feet, so the expansion of dwarf mistletoe pockets averages two feet per year. When the seed strikes a branch, it germinates and the sinkers penetrate the bark into the tree's conductive tissues. The growing mistletoe begins to steal the tree's food and water. The first visible symptom of infection is swelling in the branch at the site of the growing mistletoe plant, but nubs of the emerging shoots won't be visible for three years and a shoot won't bear its first seeds until seven years after. As seeds spread, all susceptible trees in the vicinity may become infected; it is extremely rare to find an isolated infected tree in the forest.



Figure C-8: A ponderosa pine with advanced dwarf mistletoe infection. Note the heavy contorted "witch's brooms" in the lower branches. After long periods of infection, the needles at the top of the tree become sparse and shorter. Colorado State Forest Service photo by Dave Root.

The tendency of mistletoe to infect all trees in a stand makes eradication difficult. No effective chemical treatment exists for mistletoe, and the only way to kill the parasite is to kill the host. In stands where only the susceptible species of tree exists, total eradication of the mistletoe would require a clearcut, which is unacceptable to most landowners.

Fortunately, mistletoe kills trees slowly, so it is not necessary to eradicate the parasite. The disease can be controlled by a program of thinning to increase tree vigor. Pruning the more heavily infected branches also helps, even if not all the mistletoe is eliminated. The final step in

the process is to replant with non-susceptible species so that new trees will grow before the mistletoe kills the remaining trees.

The spread of mistletoe can be halted by a minimum 40-foot buffer zone between infected and non-infected trees. In this situation, cut 20 feet into non-infected trees to remove any mistletoe that is not yet visible; cut the remaining 20 feet into the infected stand. Non-infected trees outside the buffer should be checked each spring for mistletoe and any infected branches should be immediately pruned before seeds develop.

In forest stands with mixed tree species, it may be possible to eliminate all mistletoe by retaining only non-susceptible trees if they are in good health. For example, in a mixed stand of ponderosa and Douglas-fir, if the ponderosa are infected, leave only Douglas-fir. Aspen are always desirable trees in situations where fire mitigation and mistletoe control are objectives, as aspen are not prone to crown fires and are immune to all species of dwarf mistletoe.

Dwarf mistletoe treatment is a complicated process that depends on the site conditions and the landowner's tolerance for cutting trees. In most cases, a combination of treatment methods will best suit the landowner's objectives. Consultation with a qualified forester is recommended to develop an effective and acceptable treatment plan.

Aspen Diseases

Many diseases affect aspen trees – far more than can be covered in the scope of a Community Wildfire Protection Plan. The common thread among aspen diseases is that landowners can do little about any of them. Treatments are always costly and usually ineffective.

A rather cynical forester once described aspen this way: “New aspen sprout from the roots. The tree grows. A deer rubs his antlers on the bark, and a fungus invades the wound. The tree dies. New sprouts come up from the roots.”

The quote reflects aspen's role as a short-lived species that colonizes a site after fire or other disturbances remove existing conifers. Sun-loving aspen do not grow well in the shade. After a fire kills the existing trees, aspen roots resprout vigorously in the full sunlight. As aspen shade the site, shade-tolerant conifers sprout in the aspen understory. Eventually, the conifers will over-top and shade out the aspen; thus, disturbance – usually fire – is necessary to maintain pure aspen stands.

Aspen are prized by most landowners and, as noted earlier, are valuable trees for fuelbreaks and wildlife. Diseased aspen are a serious concern for most residents. The most logical way to consider aspen diseases within the scope of this plan is to divide them into diseases of the stem and diseases of the leaves.

Most fungal diseases of aspen stems are the result of wounds to the bark. The thin bark is easily wounded; when it is, several species of fungi may invade the tree. If the tree is healthy, it will tolerate the fungus for many years, but unhealthy trees usually will succumb within a short

time. As noted earlier, little can be done to treat an aspen invaded by fungus. The tree will die and resprout. It is impossible to prevent deer and elk from wounding aspen, but it is possible to prevent human wounding of the tree. Avoid any practice that will injure the bark. Managing the forest to give aspen adequate sunlight will improve their vigor and tolerance to disease.

Fungal diseases of the leaves are a concern to landowners, but they rarely cause any real harm. Several fungi attack aspen leaves and usually are recognized by yellow or brown spots on the leaves. Leaf diseases are more common in wet years, as humid conditions are favorable for the fungi. Treatment is not necessary, but raking up dead leaves to reduce the number of fungal spores may reduce the infection of new leaves. If the following year is drier, there will be less fungus. The CSFS website at <http://csfs.colostate.edu/pages/forest-types-aspen.html> has detailed information about the many insect and disease problems of aspen.

A new phenomenon observed in recent years is “sudden aspen decline,” and several areas of this decline have been noted in the Ridgewood vicinity. Aspen stands that appear to be healthy undergo rapid dieback and decline. A lack of resprouting after the older aspen die is the most disconcerting aspect of sudden aspen decline.

The causes of sudden aspen decline are not completely understood and are a subject of debate among researchers studying the phenomenon. The stress of the recent drought followed by invasion of insects and disease are cited by most researchers as likely causes. Lack of aspen regeneration due to fire suppression also has been cited as a contributing cause by some scholars. Low elevation, open aspen stands on south and west facing slopes are most often affected. Tree age does not appear to be a factor.

Given the uncertain cause of sudden aspen decline, the best method of prevention also is unclear. Encouraging regeneration of aspen clones by clearcutting or burning while they are healthy seems to hold the most promise. Because sudden aspen decline is a landscape level phenomenon, landowners with small lots may not be able to address the problem. Currently, the best option is to manage for healthy aspen stands.

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Appendix D – Ridgewood Fuel Break Prescription

GOALS:

- Create a fuel break adhering closely to CSFS guidelines as on the ground conditions will allow.
- Improve the safety of lower Spruce Road as an ingress and egress route during a wildfire.
- Reduce the fire hazard for the participating property owners and the Ridgewood community.
- Improve overall forest health by considering insect and disease conditions in the fuel break prescriptions.
- Include landowner objectives in the overall project design.

GENERAL FOREST STAND CONDITIONS:

The forest stands considered in this prescription are a mixed conifer stand along a steep north facing slope. The dominant conifer is Douglas-fir, and there are smaller components of ponderosa pine, Engelmann spruce, and small pockets of aspen. Canopy is closed and there is a large component of Douglas-fir regeneration ladder fuel.

The hillside borders an open meadow on the north, and there is an intermittent stream to the north of the stand at the bottom of the hill.

Over the last several years western spruce budworm activity has increased in the area, and this may be the paramount insect threat at the present time. Some pockets of ponderosa pine DMT are known to exist, and there has been normal activity of mountain pine beetle. Aspen is declining in the project area as a result of competition from Douglas-fir.

GENERALIZED PRESCRIPTION OF FUEL BREAKS:

Thinning and Fuel Reduction

Foresters use many methods of thinning depending on the specific objectives of the landowner. Fuel break thinning is most often accomplished by a process called thinning from below. This method usually retains the largest trees while removing the smaller trees in the lower forest stand.

For simplicity, trees can be divided in three levels in the forest canopy. The largest trees at the highest level of the canopy are called dominants. These are usually the most vigorous since they have the largest root systems, most leaf area and receive the most sunlight. Next are the co-dominant or intermediate trees. These trees occupy the middle level of the canopy, but tend to be crowded and of smaller diameter. They are less vigorous with smaller root systems and fewer leaves as the result of crowding by the dominant trees. At the lowest level of the forest canopy are the overtopped trees. These are completely shaded by the dominant and co-dominant trees.

Thinning from below removes all of the overtopped and most of the co-dominant trees. It is essential when thinning for fuel breaks to remove ladder fuels and create enough openings in the forest canopy to reduce the crown fire risk. Thinning from below is desirable in fuel reduction projects because it 1) leaves the most vigorous trees on the site, 2) creates openings in the forest canopy by removing the less vigorous co-dominants, and 3) eliminates ladder fuels by removing the overtopped trees, shrubs, and pruning lower limbs of remaining trees.



Treated homesite in Ridgewood Subdivision – CUSP photo

On flat terrain, a fuel break should have a minimum width of 300 feet. Wider fuel breaks are always superior, and where they are located on slopes, width should be increased. As the steepness of a slope increases, the width of the fuel break should also increase. On steeper slopes the distance between tree crowns should also increase. The Ridgewood fuel break is enhanced by its location at the edge of the meadow and stream which will effectively increase the width. Still a 300 to 350 foot width should be the objective except where modified by other objectives.

One objective of any mitigation project should be to enhance the diversity of forest stands. Bitter experience has shown that when all trees are the same species and the same age, catastrophic losses to insects or disease are sure to follow. Most insects or diseases are specific to certain species of tree at a certain age. Thus diverse forest stands are less prone to complete mortality from one cause. If a forest stand consists of one species attempt to leave trees of different ages, or thin in such a way that regeneration of new trees is promoted.

In most areas the favored leave trees should be aspen and ponderosa pine of good form and vigor. Douglas-fir will remain to maintain the forested canopy but special attention should be paid to maintaining adequate space around Douglas-fir, and pruning lower branches to reduce ladder fuel.

Another consideration which will often modify the standard fuel break prescription is dwarf mistletoe in the ponderosa pine. The actual prescription should vary with conditions on the ground, and the following is a general modification. Where mistletoe is present in the ponderosa, aspen and Douglas-fir should be favored for retention. Aspen stands will not carry a fire through the crown, and is immune to the all species of dwarf mistletoe. Douglas-fir is somewhat less fire resistant than ponderosa but is also immune to the ponderosa pine dwarf mistletoe. When Douglas-fir is properly spaced and pruned the slightly increased fire risk is well worth the opportunity to control the ponderosa dwarf mistletoe.

When thinning for fuel breaks it is not necessary, or even desirable, to remove all dead trees or pick up all dead wood from the forest floor. Some standing dead trees, or snags, should remain as habitat for wildlife. The most desirable snags are trees larger than ten inches in diameter that are widely spaced. Avoid leaving more than three snags per acre. Do not leave dead trees in zones one and two of survivable space or where they might fall across roads, power lines, or other improvements.

Likewise, some down wood is desirable. Large concentrations of down woody material should be removed, but isolated down logs in varying degrees of decay can remain as cover and habitat for small mammals.

Maintenance

Any type of forest management does not end when the initial project is finished. Continual maintenance is an essential part of any forest management program. Even in well managed forests trees will die, storms and wind will damage trees, and new trees will germinate.

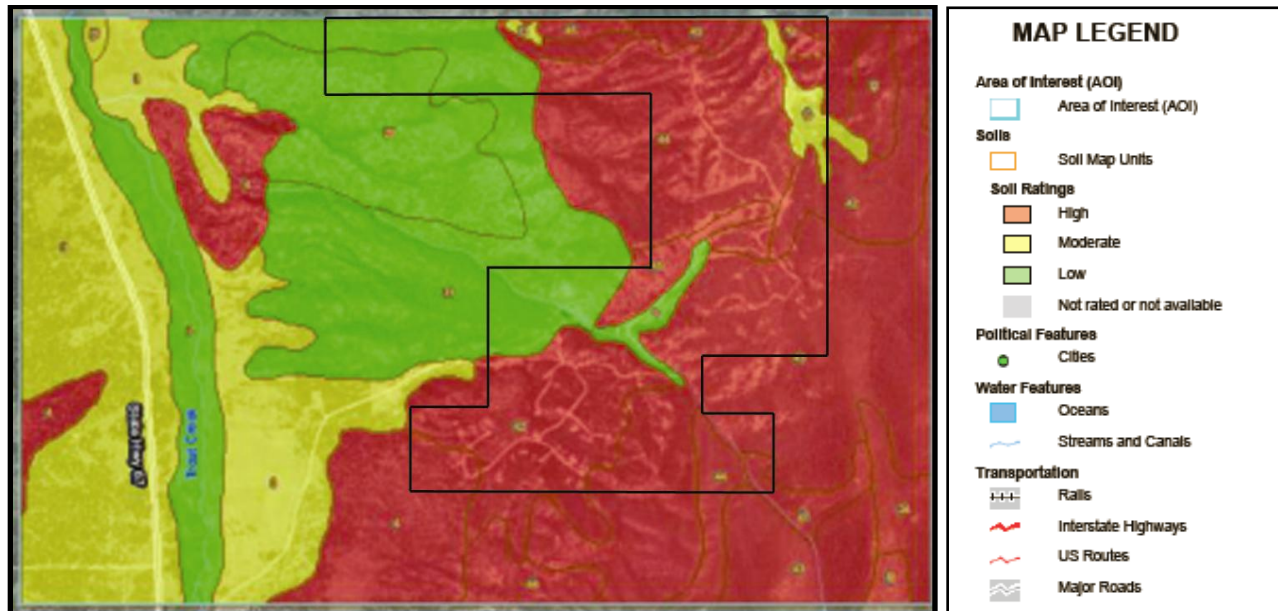
Trees should be inspected every spring for any sign of damage from winter or spring snows or wind. Prune any broken branches if they are not too high in the tree, and trees bent by heavy winter snows should be removed. Check for any signs of insect activity or disease.

Late October is the best time to inspect trees for attack by mountain pine beetles. Beetles have finished attacking trees at this time, and there is adequate time to cut and treat the tree before the adult beetles fly the next July.

At five years check the canopy closure, especially in zones one and two. Remove any trees necessary to maintain openings in the canopy. Do any additional pruning or removal of trees and shrubs to eliminate ladder fuels.

After ten years, dense thickets of young trees (regeneration) may have become established, and these will need to be thinned. Not all regeneration should be cut since trees of various ages are important for forest diversity. Young trees in openings with adequate room to grow should remain. Regeneration that is likely to become ladder fuel or crowded by other trees should be cut. Depending on their objectives, landowners may want to consider removing some of the larger trees to make room for the younger ones.

Appendix E – Ridgewood Potential Soil Damage



Map Information

Map Scale: 1:27100 if printed on 8.5x11 sheet.

The soil surveys that comprise this area of interest were mapped at 1:24,000

Source of Map: Natural Resource Conservation Service Web Soil Survey URL: <http://websoilsurvey.nrcs.usda.gov>

Coordinate System: UTM Zone 13N NAD83

This product is generated from the USDA-NRCS certified data as of the Version 1, Apr 27, 2009,

Aerial images photographed 6/17/2005, 7/30/2005

Soil Survey Area: Pike National Forest, Eastern Part, Colorado/ Parts of Douglas, El Paso, Jefferson and Teller Counties

The orthophoto or other base map on which the soil likes were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Ridgewood Subdivision Potential Damage by Fire—Summary Rating Value		
Rating	Acres of Potential Damage	Percent of Area
High	750.9	77.9%
Moderate	27.3	2.8%
Low	185.1	19.3%
TOTALS	963.3	100%

Regional Potential Damage by Fire—Summary Rating Value (colored area of map)		
Rating	Acres of Potential Damage	Percent of Area
High	2,004.2	51.9%
Moderate	866.3	22.4%
Low	994.0	25.7%
TOTALS	3,884.6	100.0%

Appendix F – Ridgewood Priorities 2011-2015

RIDGEWOOD PRIORITIES			2011	2012	2013	2014	2015
#1 Fuel Mitigation and Forest Health	Encourage cross-boundary projects to create fuel breaks in areas identified by CSFS.	Review priority zones for project area selection					
	Continue bi-annual slash chipping project available to all residents.						
	Continue mitigation on common areas and volunteer assisted projects.						
	Pursue other funding and grant opportunities for cross-boundary mitigation projects.						
	Provide information to residents regarding defensible space recommendations and maintenance of projects.	i. Have handouts available at community meetings.					
		ii. Include information in packet for new owners					
		iii. Include references to other websites on Ridgewood website					
#2 Education	Provide forest health information regarding insect and disease.	i. Include current status and information on website					
		ii. Have insect and disease handouts available at meetings and in new resident packets.					
		iii. Provide CSFS contact information in newsletter and on website.					
	Host tours of completed projects and guest speakers.	i. Consider placing signs to draw attention to completed projects					
		ii. Continue drawing attention to demonstration sites where appropriate					
		iii. Select guest speakers with relevance to CWPP actions for community meetings.					
	Use website and newsletter to keep residents aware of grant opportunities and related activities throughout the subdivision.	i. Assign committee member to coordinate website information.					
		ii. Regularly include information in any mailings to residents and on bulletin board.					

RIDGEWOOD PRIORITIES			2011	2012	2013	2014	2015
#3 Leadership and Maintenance	Retain CWPP committee and encourage community members to actively participate in fire mitigation and forest health committees.	Report annually to RPOA Board and residents and CSFS on prior years' accomplishments.					
		At a minimum, meet monthly April through Oct annually					
		Evaluate projects on common areas and road easements for necessary maintenance and any insect or disease outbreaks.					
	Continue cooperative discussion with adjacent public land managers regarding biomass reduction in close proximity to Ridgewood.						
	Become a "Firewise Community" and maintain this designation annually.						
#4 Life Safety and Emergency Issues	Encourage and educate owners to have adequate driveway dimensions for emergency vehicle access						
	Encourage residents to post clearly visible address signs and develop personal family emergency procedures.						
	Maintain Fire Danger sign at subdivision entrance.						
	Maintain emergency calling tree for resident notification.						

FYI – For Your Information

Wildfire Mitigation Measures Subtraction

GENERAL INFORMATION

As authorized by §39-22-104(4)(n), C.R.S., for income tax years 2009 through 2013 individuals, estates and trusts may subtract from federal taxable income 50% of the costs incurred in performing wildfire mitigation measures that meet the following qualifications and limitations:

- The taxpayer must own the property upon which the wildfire mitigation measures are performed.
- The property upon which the wildfire mitigation measures are performed must be located in Colorado.
- The property upon which the wildfire mitigation measures are performed must be located in a wild land-urban interface area.
- The wildfire mitigation measures must be authorized by a community wildfire protection plan adopted by a local government within the interface area.
- The total amount of the subtraction may not exceed \$2,500.

MARRIED TAXPAYERS

In the case of two individuals filing a joint return, the amount subtracted from federal taxable income shall not exceed \$2,500 in any taxable year. In the case of two married individuals who file separate returns, only one of the individuals may take a subtraction for wildfire mitigation expenses.

TENANTS IN COMMON

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

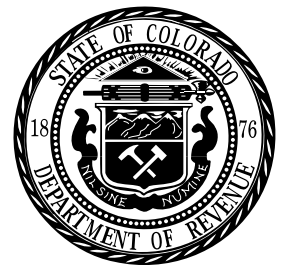
DEFINITIONS

Community Wildfire Protection Plan

Community wildfire protection plan means a plan that meets the following requirements:

- It must be approved by a local government entity, local fire department and the Colorado State Forest Service in accordance with guidance established by the Wildland Fire Leadership Council.
- It must identify and prioritize areas for hazardous fuel reduction treatments and recommend the types and methods of treatments.
- It must recommend measures to reduce structural ignitability.

Additional information regarding community wildfire protection plans can be found online at <http://www.csfs.colostate.edu/>



Colorado Department
of Revenue
Taxpayer Service Division
1375 Sherman St.
Denver, Colorado 80261

Forms and other services:
(303) 238-FAST (3278)
Assistance:
(303) 238-SERV (7378)
Fuel Tax: (303) 205-5602
www.taxcolorado.com

Costs

Costs means any actual out-of-pocket expense incurred and paid by the landowner and documented by receipt for performing wildfire mitigation measures. The following expenses are specifically excluded within statute and do not qualify for this subtraction:

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

Landowner

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

Wildfire Mitigation Measures

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

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

Additional information regarding wildfire mitigation measures can be found online at <http://www.csfs.colostate.edu/>

FURTHER INFORMATION

FYIs and commonly used forms are available on the Web at www.taxcolorado.com

For additional income tax information visit the “Tax Information Index” which covers a variety of topics including links to forms, publications, regulations, statutes and general questions and answers. The “Tax Information Index” is located at www.taxcolorado.com

FYIs provide general information concerning a variety of Colorado tax topics in simple and straightforward language. Although the FYIs represent a good faith effort to provide accurate and complete tax information, the information is not binding on the Colorado Department of Revenue, nor does it replace, alter, or supersede Colorado law and regulations. The Executive Director, who by statute is the only person having authority to bind the Department, has not formally reviewed and/or approved these FYIs.