

Balancing Act

Living with Fire in the Applegate

Applegate Communities' Collaborative Fire Protection Strategy



Coordinated by the Applegate Partnership
Sandy Shaffer and Jack Shipley, Project Coordinators
Diana Coogle, Editor

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About the

Applegate Communities' Collaborative Fire Protection Strategy

a.k.a.

THE APPLGATE FIRE PLAN

The Applegate Fire Plan is a collaborative effort, hatched from an idea that was developed jointly by local citizens and federal agency folks in the Spring of 2001. Due to wide-spread participation throughout the Applegate Valley, general project coordination was organized by the Applegate Partnership, a non-profit community-based group founded in 1992. Initial funding for this project was awarded via the National Fire Plan to the Applegate Partnership in October, 2001. This written plan is the result.

The Mission of the Applegate Partnership

The Applegate Partnership is a community-based, non-profit organization involving industry, conservation groups, natural resource agencies, and residents cooperating to encourage and facilitate the use of natural resource principles that promote ecosystem health and diversity. Through community involvement and education, this partnership supports management of all land within the watershed in a manner that sustains natural resources and that will, in turn, contribute to economic and community well-being and resilience.

The logo for the Applegate Fire Plan was designed by Greeley Wells.

List of Partners

The following local, state, and federal agencies and organizations participated in developing this plan:

Applegate Partnership
Applegate River Watershed Council
Applegate Valley Rural Fire District #9
Bureau of Land Management, Ashland Resource Area
Bureau of Land Management, Grants Pass Resource Area
Jackson County Building Department
Jackson County Department of Emergency Management
Jackson County GIS Services
Jackson County Planning Department
Jackson County Sheriff's Office
Josephine County Department of Building Safety
Josephine County Department of Forestry
Josephine County Planning Department
Josephine County Sheriff's Office
National Marine Fisheries Service
Oregon Department of Environmental Quality
Oregon Department of Fish and Wildlife
Oregon Department of Forestry, Central Point Unit
Oregon Department of Forestry, Grants Pass Unit
Oregon State University Extension Service
Rural Metro Fire Department
Siskiyou County Planning Department
US Fish and Wildlife Service
US Forest Service, Rogue River National Forest, Applegate Ranger District
US Forest Service, Siskiyou National Forest, Galice Ranger District
Williams Creek Watershed Council
Williams Rural Fire Department

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Between May and October, a Sense of Unease

Introduction by Diana Coogle

Every year around May or June a sense of unease settles over me. It stays there more or less subdued, depending on the temperature and the presence or absence of thunderclouds, until the rains begin again in October. In the meantime, the fear of fire looms over me.

Several times during the quarter century I have lived on the mountain, this fear has been realized - once in the deluge of lightning (the "fire from the dragon's tongue") of 1987, once last summer, three times by human carelessness, and several other times by lightning. Each fire has put me on tenterhooks, and each time the fire has been put out - suppressed - either by me and my terrified neighbors or, for the lightning fires, by air tankers, helicopters, and courageous fire crews. In spite of my fear and in spite of the terrifying aspect of lightning, I don't think I really (not really) thought that a fire would destroy my mountain, my home, my forests. Until Quartz Gulch. After the Quartz Gulch fire of 2001 I thought, "If there, then possibly here."

One day last January I hiked the Collings Mountain Trail with some friends, beginning in the lush riparian vegetation next to a full and gurgling Grouse Creek, then hiking through a grove of slender, red trunked madrones, then through an oak savannah, then into the Douglas fir forest on top of the ridge, where occasional breaks in the big trees offered views of Grayback, Sugarloaf, the Carberry Creek valley, Iron Mountain, the Red Buttes. The mountains were white with new snow that day; the sun was winter pale, the forest large, the walking invigorating, the company a delight. It was a beautiful day in a beautiful place.

On the descent, though, the forest turned to spindle. Thin, wobbly firs crowded the hillside like thickets. Once through the spindly trees and back in a real forest, I stopped to gaze down a steep slope just above the Carberry Creek swimming hole. Half of me filled with joy that this beauty was my home; the other half filled with dread because I knew that lightning knew no difference between Collings Mountain and Quartz Gulch.

Nor does lightning know the difference between Quartz Gulch and the mountains around my own house. A fire that got started here could be in it for the home stretch, and that could be a long, long stretch - a catastrophic stretch. For fire, the steep hillsides are like freeways, the dead branches of big trees like rungs of a ladder, the preponderance of brush like a candy store. I can see how we got into this mess - unwise timber harvesting, short-sighted forest management, increased populations in forested areas, all combined with decades of fire exclusion - and I can see what would help: cutting the dead limbs and the thin umbrella trees, thinning the thickets of spindly firs, removing the brush. But how much can we do and still retain healthy forests, still keep the ecosystem intact? How much would it take to prevent catastrophic fire? How big a price am I willing to pay for what degree of safety?

At one of the public meetings for the Applegate Fire Plan last fall, someone said there was no doubt that the people who live near the Quartz Gulch fire wish now they had cut their trees - meaning that we should all learn a lesson and cut our trees so we don't end up like Quartz Gulch. But that's a

false dilemma. There are other variables. Maybe the fire won't be just here. Maybe these particular trees would survive. Maybe the fire that started here would be suppressed. Maybe I don't want to live in a field. Maybe there are other ways to mitigate the possibilities or the strength of fire. A comfortable level of risk is a gambler's game, a continuum along which anyone could say at any point, "I'll stop here. I'm not willing to pay a higher price for a lower risk."

This document takes a look at that price against those risks. It's about understanding what we mean when we talk about fire safety, the role of fire in the forests, and our relationship with fire. It's about our watershed - its trees and rivers, its fish and wildlife, its soils and plants, and its history. It's about the decisions we want to make - individually and as a community - concerning our relationship with fire. It's about community - the human community living here in the larger biotic community. It's about our place in the ecosystems, our interactions with the larger world around us.

My job as editor, I was told as I was handed a sheaf of papers from various agencies and individuals, was to make these papers readable - that is, to translate scientific jargon and the occasional bureaucratese, without doing disservice to the accuracy of the information, into language the public - and the agency people - would enjoy reading. In the process of doing that I have developed a great respect for the writing of these scientists. Their language may have been dense, full of technical terms, and hard to understand, but it said exactly, precisely what was meant. From that point of view, in many cases the writing couldn't be improved. The problem was that it also couldn't be read, at least not easily, not by nonscientists like me. As I worked, I realized that the precision of these writers had come at the expense of fluidity, and I hope that if I have sacrificed some precision of vocabulary for the sake of clarity and fluidity of language, I haven't done any disservice to accuracy. If a technical term simply could not be translated easily into ordinary language, I put it in the glossary, though I minimized the glossary by excluding terms with self-explanatory meanings or terms that were used only once and were clearly explained at the time they were used.

In organizing this material, I chose to begin, naturally enough, with some introductory material (the goals of the plan, some general information about fire in the Applegate) and to follow it with the chapters that tell us about the area we live in - its historical background and the current conditions of various aspects of our environment. After that come the essential bits - strategies for fuel reduction and other techniques for making our homes more fire safe and our surroundings more fire resilient; laws and guidelines; emergency procedures. Some readers might want to go directly to those sections, right to the nitty-gritty, the how-to for increasing fire safety in the Applegate.

But I hope you'll want to read the whole thing. I learned so much about the land we live in and on and with by doing this work that as I read and revised, my goal shifted slightly, not just to make these pages readable but to make my fellow Applegaters want to read them so they would learn what I was learning, too. After all, we are talking about the homeland we love, and the more we know and understand, the better we'll be able to make our decisions. Just as important, the more we know, the better we will see the land we walk on and the woods we walk through. I see our watershed with different eyes for having read these pages.

I don't agree with everything that is said here, but that doesn't matter. It all deserves to be said, and all these points of view deserve to be listened to. Anyway, most of what is here is fact rather than opinion. Our interpretation of the facts along with the priorities we place on the values in our lives will determine how much of a price we want to pay for what level of risk.

Taking Aim

The Goals of the Applegate Fire Plan

HOW THE PLAN CAME INTO BEING

The Applegate Fire Plan began as an idea in the spring of 2001, when folks from the Applegate Partnership, the US Forest Service, and the Bureau of Land Management were discussing the high fire danger throughout the Applegate Valley and what might be done about it. It was a question without an easy answer. The checkerboard patterns of land ownership in our valley that make land management difficult equally make fire issues a challenge. Nevertheless, we became excited about the possibility of answering this challenge. With millions of federal dollars being made available for localized fire planning, this group decided to submit for funds to write one cohesive fire plan for the entire Applegate watershed. A National Fire Plan grant for this project, which would be developed under the auspices of the Applegate Partnership, was awarded in September, 2001.

This Applegate Fire Plan is not meant to be a typical “management” plan; in fact many members of our project team suggested that we either not use the word “plan” or, if we did, to spell it with a small “p.” This plan, then, is about strategies, not specifics. How could we get site-specific about what to do on any one particular piece of land when we have over twenty partners and a very active community involved in the planning process, nine fire suppression agencies working in the Applegate, land management and ownership almost equally divided between the Forest Service, BLM, and the private sector, numerous land management plans already in existence, and over 12,000 people living in the valley?

We did find that we could agree upon concepts, strategies, and goals, and that’s what this Applegate Fire Plan is all about. It provides an overall view of the watershed and its relationship with fire, historically and presently, and it suggests ways we can improve that relationship, personally and as a community. It also provides direction to local agency land managers and identifies high risk areas, items of value to the community, and enthusiastic and concerned landowners who wish to work with their state or federal neighbors in developing fuel reduction strategies. It gives us a plan for emergency procedures, useful in fire, flood, or other emergency. The Applegate Communities’ Collaborative Fire Protection Strategy, often shortened to the Applegate Fire Plan, addresses the main components of wildfire: fire protection and suppression, fuel hazard reduction, and emergency communications. Neighbors cooperating with neighbors is its foundation.

THE GOALS OF THE APPLGATE FIRE PLAN

1. To improve community awareness of our stewardship of the land and foster a respect for ecosystems and the processes that maintain them
2. To develop a wide array of strategies for fuel reduction and fire suppression that Applegate residents can accept as sensible precautions against catastrophic fire and that the agencies that manage lands in the Applegate can incorporate into their current management practices
3. To develop a system of emergency communications for Applegate neighborhoods.
4. To restore fire-adaptive species in the ecosystems, thereby encouraging more fire-resilient forests

But Why?

Justifying the Idea of an Applegate Fire Plan

Why do we need this project? Why do we want another fire plan? In a nutshell, people don't like to have their loved ones, homes, livestock, or property burned up in a wildfire. Despite these concerns, however, the potential for a catastrophic fire that will result in these effects is dramatically increasing in the Applegate because of increasing human-caused wildfire ignitions, increased vegetation density (fuel for fire), and greater numbers of people and homes. To lower the risk and hazard of wildfire – to prevent catastrophic fire – we need an effective, coordinated effort by all neighbors.

Primarily, we have a significant opportunity to address four aspects of this problem: human-caused wildfires, hazardous fuels, access for fire suppression, and emergency communications. As indicated below, each of these plays a role in the overall problem.

- (1) People start the majority of the wildfires occurring within the Applegate watershed.
Reducing the number of such ignitions will reduce the potential for a catastrophic wildfire.
- (2) Years of successful fire suppression have resulted in thousands upon thousands of acres of overly dense brush and forest areas that are 'ripe' to burn if an ignition occurs. In many of these areas, a wildfire would be difficult or impossible to stop under extreme conditions.
- (3) Hundreds of homes have been built in the rural *interface*. Many have narrow or steep access roads or driveways with dense encroaching or overhanging vegetation, inadequate clearances for fire engines, and a lack of suitable turnaround sites. Many homes are located in densely vegetated areas with such vegetation literally coming up to the front door. In a wildfire situation, most fire fighters would be reluctant to drive up such roads with a fire engine or attempt to save such a home for fear of being overrun by the wildfire. Their efforts to save a home are often futile if the landowner has not provided space for them to work safely. Lost homes and lives (of residents, fire fighters, pets, or livestock) could be the result.
- (4) Finally, many homes have been built in areas with no capacity for alternative electronic communication, particularly if power were interrupted in an emergency. Nevertheless, at such times only an established process of good communication will allow us to participate in sharing vital information.

Because of the large number of individuals and organizations that own or manage land within this watershed, cooperation and coordination of individual efforts addressing one or more of these problems are essential. With cooperation, coordination, and sharing of information, individual and group efforts to reduce the potential for a catastrophic wildfire can be significantly more effective.

In order to accomplish this, a 'road map' – a strategic Applegate Fire Plan – is necessary. Such a document will identify both broad-scale and site-specific goals and objectives, identify areas with similar levels of risk of catastrophic fire, describe techniques and tools available to help resolve these issues, and identify resources that can provide advice or financial or technical assistance. It will provide the information, guidance, and coordination necessary to ensure that our efforts to reduce the potential for a catastrophic fire within this watershed are successful.

We All Need Fire

Understanding the Presence of Fire in the Ecosystem

It's not the structures but the processes that keep our community healthy. It's not roads but travel. It's not stores but purchasing. It's not the stream but the flow. Although structure relates to function, our focus should be on process, which provides a dynamic picture of how well our systems are working.

Succession, the process of plant community development, is a drama of chronic competition for site resources. Species, or individuals within a species, that are best adapted to capture and use site resources (water, nutrients, and light) tend to survive, grow, and reproduce. Successional processes provide slow chronic stress that allows the pressure of selection to steadily eliminate inefficiency. Disturbance processes such as fire, on the other hand, work quickly and create acute stress, but are no less important. In fact, fire is considered to be an essential selection process, particularly where fire is a frequent occurrence. Totally eliminating fire, as we once desired, decreases diversity, viability, and resilience.

Alterations of the natural fire process have played a major role in reshaping natural ecosystems throughout the northwest. A decrease in fire frequency results in changes in forest structure (tree crowns, limbs, *species composition*, understory vegetation, etc.) and in the function of the forest (habitat type, soil nutrient cycling, micro-climate etc.). Although we realize now that fire is a natural and necessary part of southwestern Oregon's ecosystems, it was not until after the devastating fires of Yellowstone National Park that the general public was alerted to the benefits of more frequent but less intense fires.

Throughout the northwest, an effective fire-suppression program has allowed for the accumulation of dead organic material such as branches, logs, leaves, brush, and thickets of young trees. If this material is not consumed periodically by small fires burning along the forest floor, it will accumulate to the point of providing the raw material for an exceptionally intense fire that can destroy forests, burn homes, and diminish our quality of life. Carefully planned, the use of prescribed fire offers managers an alternative to the threat of imminent catastrophic wildfire.

This fire plan is not intended to eliminate fire as an ecological process; our intent is to understand the process and work with it to keep our ecosystems healthy. We believe we can exert some control to keep our community safe but ecologically viable.

How Frequent, How Hot, How Big Fire in the Applegate

Ecosystem health is dependent on change. Suppressing change, like suppressing fire or freedom, is a short-term solution. As we are witnessing, fire may be temporarily suppressed, but it will return even stronger than before. Fire suppression can also open the way for disease or infestations. Rather than being passive observers of this process, however, we can collectively work to help select the agent(s) of change, be it us, fire, diseases, insects, or some acceptable combination of them all.

The basic patterns and processes of ecosystems are shaped not only by life cycles of plants and animals but also by nonliving disturbances such as fire, drought, and wind. The place and time of such forces are often unpredictable, but all these forces help maintain the differences in the natural communities and increase the natural variability of ecosystem structure, composition, and function (Kaufmann, et. al. 1994). Fire as one of these forces is not only unpredictable; its results are often not repeatable (Lavern 1996).

Fire has played an integral part in creating the forest environment of the Pacific Northwest (Agee 1981) and a particularly significant function in shaping plant communities in southwestern Oregon (Atzet and Wheeler 1982). Overall, the Applegate watershed should be considered a fire-dependent ecosystem with numerous fire-adapted species of plants and animals dependent on fire to recycle nutrients, regulate plant *succession* and wildlife habitat, maintain biological diversity, reduce *biomass*, and control insects and diseases.

As we take a new and closer look at our relationship with fire here in southwestern Oregon, we need to consider the following elements:

- * Historic fire regimes: a term used to refer to the frequency, intensity, seasonality, duration, and extent of fire
- * Condition classes: a classification system using key components of the ecosystem to describe the degree of departure from historic fire regimes
- * Fire hazard: the likelihood of a specific area to have a catastrophic wildfire, based upon five physical elements (vegetation, *canopy cover*, slope, *aspect*, and elevation)
- * Fire risk: the chance of fire starting as determined by the presence and activity of causative agents
- * Fire occurrence: the average number of fires in a specified area during a specified time.

All of these elements play a role in determining a fire plan for any given piece of land. What follows is a discussion of each of them.

Fire Regimes

The behavior of fire – how often it occurs, how hot it burns, how big it is, in which season it occurs, and whether it is a crown, surface, or ground fire – defines the fire regime. The fire regime depends on the physical, climatic and biological (including human) environment.

Each vegetative type is adapted to its particular fire regime (Agee 1981). The plants that existed in the Applegate watershed prior to Euro-American settlement were adapted to a different fire regime from the current one. Years of fire exclusion and climatic change have caused a shift in vegetation away from the more fire-adapted species that formerly predominated. Attempting to restore the vegetation associated with a past climate may not be appropriate.

Several classifications and descriptions of fire regimes have been developed. The one chosen for this document was based on national and regional scales (Heinselman 1981, Davis and Mutch 1994, Agee 1981) and developed by the Oregon BLM State Office and the Pacific Northwest Region of the Forest Service.

Natural areas within the Applegate watershed fit generally into three classes and one sub-classification of the seven categories of fire regimes. The following is an identification of each of these fire regimes in the Applegate along with a general discussion of the plant community, fire type, and *fire severity* of each. As you read, keep in mind these two important considerations:

- (1) Categorization produces simplification, exceptions abound, and combinations of fire regimes are likely to apply to single ecosystems. For example, the Quartz Fire area, at the high elevations, contains regimes 6 and 1.
- (2) Almost all fires have various proportions of severity and intensity. Thus, underburning and crown fires might occur in the same event.

Fire Regime #1: 0-35 years between fires, which are of low severity. Typical climax plant communities of this regime include ponderosa pine, eastside and dry Douglas-fir, pine-oak woodlands, Jeffery pine on serpentine soils, oak woodlands, and very dry white fir. Large stand-replacement fires can occur under certain weather conditions but are rare events (i.e. every 200 years or more). It is more probable that fire will occur frequently and be of low intensity, and most of the dominant trees are adapted to resist such fires. One such adaptation is the development of thick bark at a young age. This adaptation means that a fire will affect mostly small trees in the understory, limiting overstory mortality. Fires in a low-severity regime are associated with ecosystem stability, as the system is more stable in the presence of fire than in its absence (Agee 1990). Frequent, low-intensity fires keep sites open, which are then less likely to burn intensely even under weather conditions conducive to severe fire.

Fire Regime #2: 0-35 years between fires, which are usually stand-replacing. This category includes true grasslands (Columbia basin, Palouse, etc.) and savannas, where fire typically returns every ten years or less. It also includes mountain shrub communities (bitterbrush, snowberry, ninebark, ceanothus, Oregon chaparral, etc.) where fire returns every 10-25 years. Fire severity is generally high to moderate. Grasslands and mountain shrub communities are not completely killed in a fire but are usually only top-killed, and they usually re-sprout without difficulty.

Fire Regime #3: 35-100 or more years between fires, which are of mixed severity. This regime typically results in heterogeneous landscapes. Large, stand-replacement fires may occur, but rarely. Such fires may destroy large areas of vegetation (10,000-100,000 acres), but subsequent

mixed-intensity fires are important for creating heterogeneity in the landscape. Within these landscapes a mix of ages and sizes is important; generally the landscape is not dominated by one or two age classes.

Fire regime subcategory of #3: Fires occur every 50 years or less and are of mixed severity. Typical plant communities include mixed conifer, very dry westside Douglas-fir, and dry grand fir. Lower severity fire tends to predominate.

Certain species of plants and animals in southwestern Oregon have been able to exist here for millennia because of their adaptations for fire survival – adaptations to a particular ecosystem and its specific fire regime (Kauffman 1990). If the regime is altered, the capacity for that species to survive in the environment may be greatly changed. Hence, if an area has a fire regime of frequent fire and if, through suppression, that regime has been altered, then the hazard of catastrophic fire has been increased and such a fire poses a greater risk to adjacent land and to the inherent value of the land itself.

Prolonged fire exclusion in ecosystems of the Pacific Northwest ended the pattern of frequent, low-intensity fires which used to keep the forest free of dead limbs, downed trees, and over-abundant understory vegetation. Years of fire suppression have created a trend towards increasing amounts of fuel in the forests and higher intensity, stand-destroying fires rather than the historic low-intensity, stand-maintenance fires.

Condition Classes

Historically, wildland fire frequently burned in most areas of the Applegate watershed. In recent decades, however, the nature of fire on these lands has changed, and, due to fire exclusion and other human activities such as grazing and timber harvest (Kaufmann et. al., 1994), the ecosystems have also changed dramatically. The extent and impact of this change can often be correlated to the fire regime itself. Thus, fire exclusion would have less impact on the ecology of an area characterized by a combination of infrequent crown fires and severe surface fires than on an area that typically experienced light surface fires every one to twenty-five years. An aggressive fire suppression program that has been in place for approximately sixty years would have more impact on an area where fire historically occurred at low intervals than on an area that historically hosted fire every 100 to 300 years.

The detrimental effects of fire suppression in these latter regimes will take longer to appear. Old, dense stands, covering a large portion of the landscape in these higher frequency regimes, can dramatically increase the size and severity of wildfires (Barrett et al. 1991) and insect epidemics (Mutch 1994).

A series of Condition Classes has been developed to describe the extent the current fire regime has deviated from "normal" (Hardy et al, 2000). These are based on changes in the species composition, structure, age, and density of a stand and are used to quantify the condition of the land resulting from fire exclusion and other influences (timber harvesting, grazing, insects, disease, and the introduction and establishment of non-native plant species). This analysis attempts to quantify the extent of the fire management problem and the degree of required restoration and maintenance treatments.

Below is a summary of the three condition classes, the attributes of each class, and general management options.

In Condition Class 1, fire regimes are within or near the historical range; fire frequencies differ from historical rates by no more than one return interval, and the vegetation's species composition and structure are intact and functioning within the historical range. The risk of losing key ecosystem components is low. Where appropriate, these areas can be maintained within the historical fire regime by treatments such as fire use.

In Condition Class 2, fire regimes have been moderately altered from their historical range; the frequency of fire differs from historical rates by more than one return interval. This change results in moderate changes to landscape patterns and/or to fire size, frequency, intensity, and severity. Vegetation has been moderately altered from its historic state. The risk of losing key ecosystem components has increased to moderate. Where appropriate, these areas may need moderate levels of restoration treatments, such as fire use and hand or mechanical treatments, to be restored to the historical fire regime.

In Condition Class 3, fire regimes have been significantly altered from their historical range; fire frequency is greatly different from its historical pattern. This change results in dramatic changes to landscape patterns and/or to fire size, frequency, intensity, and severity. Vegetation has been significantly altered from its historic state, and the risk of losing key ecosystem components is high. Where appropriate, these areas need high levels of restoration treatments. Hand or mechanical treatments may be necessary before fire is used to restore the historical fire regime.

Roughly 30% of the Applegate watershed currently fits into Condition Class 3, mostly due to fire exclusion. Fire exclusion has created vegetation and fuel conditions for large and catastrophic fires that are more difficult to suppress than smaller fires. Throughout the watershed, our forests present a continuous fuel supply both vertically, in small, thin trees and dead branches (*ladder fuels*), and horizontally, in an abundance of dead and down material. When a fire gets started in such a forest, the dead branches, sticks, twigs, and other material increase fire intensity and, with ladder fuels present, provide great opportunity for the fire to reach the forest canopy, resulting in a stand-killing crown fire. These conditions also affect the means in which prescribed fire and fuels treatment are applied to the landscape.

Fire Hazard

Why do some fires spread faster than others? A number of factors important to a fire's ability to spread determine the "fire hazard" of an area and also affect the difficulty or ease we have in suppressing the fire. Various schemes for rating fire hazard have been developed; the one used in this analysis is based on five elements chosen by all agencies: vegetation, canopy cover, slope, aspect, and elevation.

Vegetation directly influences rate of spread, flame length, fireline intensity, heat per unit area, and other elements of concern in the suppression of wildland fire. A hillside with lots of highly volatile ceanothus, for instance, has a higher hazard rating for vegetation than one with more fire-resilient species such as madrone or Douglas-fir.

Canopy cover and ladder fuels are closely related when it comes to hazard rating. A greater percentage of ladder fuels means a greater likelihood of a surface fire moving into the crown

canopy, increasing the difficulty of suppressing the fire. An area with a thick shrub cover has a higher hazard rating than a grassy area, which has neither canopy cover nor ladder fuels. A conifer or conifer/hardwood mixed forest has a higher hazard rating than a hardwood forest if both have the same amount of ladder fuels. If there are no ladder fuels present, a closed canopy will not, by itself, cause a crown fire.

Gravity dictates that many if not most things travel downhill faster than uphill. Not so with fire, which defies gravity in obedience to other laws of physics (warmer air rises). Thus, slope is a factor in the rate of fire spread. As the slope becomes steeper, fire increases in speed. On flat terrain, the spread of fire relies more on wind.

Aspect affects fire spread in that southern aspects are drier and warmer, promoting a more active fire, whereas the typically cooler and damper northern aspects have a lower level of fire behavior.

The last element to consider in rating fire hazard is elevation. Lower elevations get a slightly higher rating than higher elevations because they receive less precipitation. A number of factors come into play with elevation such as length of fire season, variations in weather conditions (cool, damp, warm, wet), density of vegetation, etc.

Once all five elements have been determined for an area, it can be given a hazard rating: the higher the rating, the worse the hazard. Thus an area dominated by a thick canopy of shrub with a steep, south slope at a lower elevation would have a higher hazard rating than a grass meadow with a slight northerly slope at a high elevation. Hazard, combined with other considerations such as risk and value-at-risk, can be useful in understanding and planning for fire management problems, identifying opportunities, and prioritizing areas to meet goals, objectives, and desired future conditions for the watershed.

The map following page 22 shows fire hazard ratings for the Applegate watershed as computed by local agencies using the most recent data for vegetation and canopy closure. Each of the five elements is given point scales; ratings reflect the total points an area receives.

Fire Risk in the Applegate

Although we watch the skies anxiously when summer thunderstorms threaten to rain lightning into our dry forests, it seems it might be wiser to watch ourselves. When it comes to fire risk in the Applegate, human beings are more dangerous than lightning.

"Fire risk" is a self-explanatory term - how much chance is there that a fire will start? - but it also has a technical definition: the chance of fire starting as determined by the presence and activity of causative agents.

Human activity is certainly one of these causative agents, so human actions greatly influence the pattern of fire risk – as well as the number of fires – in the watershed. In fact, human activities are highest on the list of causative agents and include mowing, landscape maintenance, "backyard" burning, farming, ranching, timber management, light manufacturing, mining and quarry operations, recreation, tourist and travel activities, and electrical transmission. Typically, a human-caused fire in the watershed starts at low elevations along roads and in the wildland-urban *interface* and burns up to the ridge tops. When these fires occur under conditions of high and

I. Putting It in Its Place

The Applegate Fire Plan in Relation to Fire in the Applegate

WILDFIRE BURNING: MANAGED VERSUS UNMANAGED STANDS



The crowns of trees remain healthy after the passage of the Squire Fire. This stand of timber was commercially thinned, ladder fuels reduced and handpile burned prior to the passage of the wildfire. A vast difference from the stand shown below...

This untreated timber stand experienced a stand replacement fire during the Squire Fire. This timber is located on the same ridgeline as the timber shown above, but on the backside of the ridge. Due to the extreme fire behavior in this stand, (fire) spotting occurred over one half mile in front of the main fire.



photos by Brian Keating, BLM, July, '02

WILDFIRE BURNING: ON THE GROUND VERSUS IN THE CROWN



The Squire Fire stays on the ground in an area that was previously managed with a commercial thinning, followed with a prescribed underburn.

The Squire Fire crowns in an unmanaged stand. High tree density and the presence of ladder fuels make it easy for the fire to climb up the trees. Crown fires denote tree mortality.



photo by Brian Keating, BLM, July, '02

extreme fire danger, they are often costly, difficult to suppress, and highly damaging. Because of the frequent threat to life, property, and other resources of high value, they require a large and complex response to suppress them.

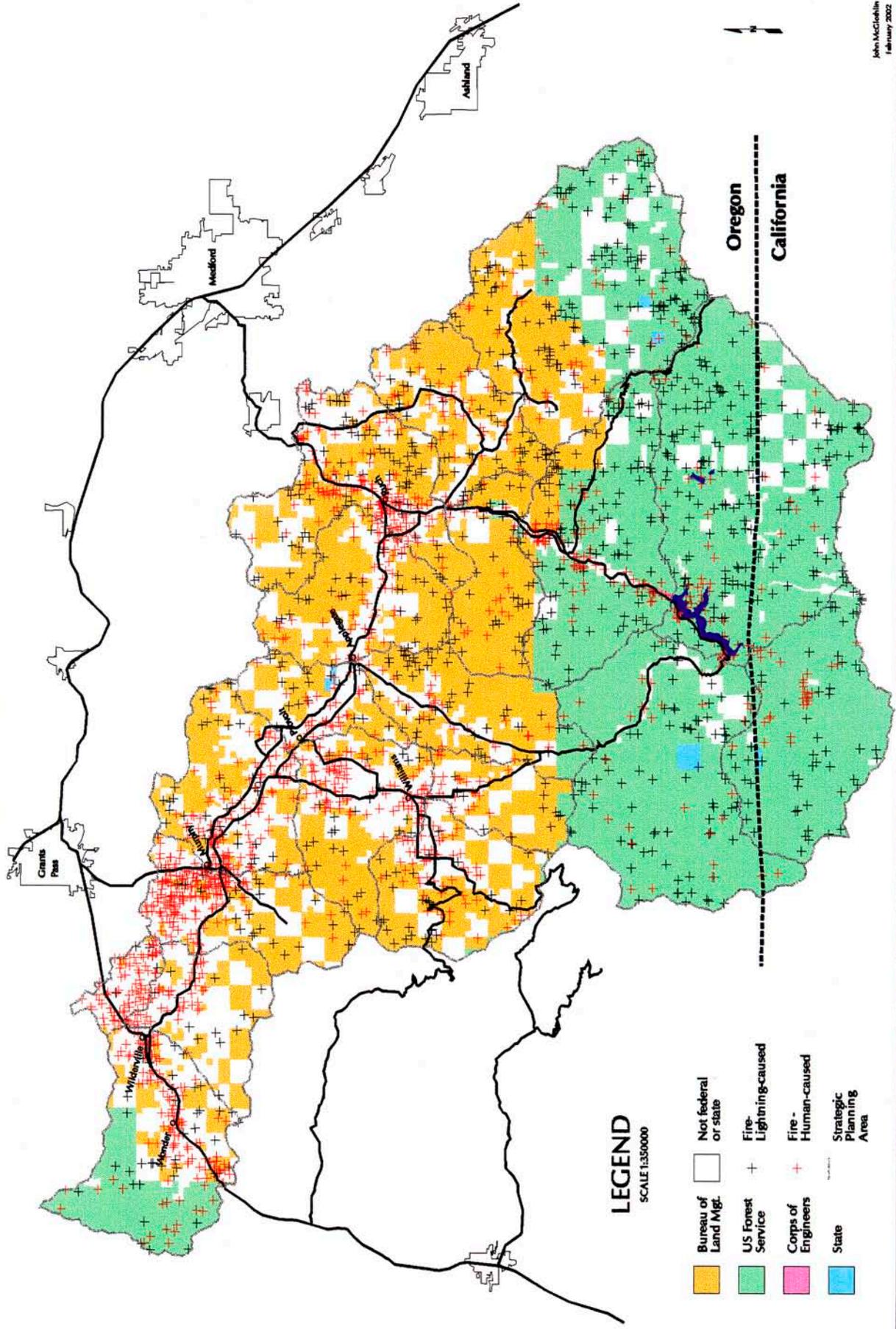
Lightning occurs in the watershed on a moderate to high frequency with, typically, at least two or three lightning storms every summer. Typically, but not exclusively, lightning-caused fires occur in the ridge-top areas and on the upper portions of the slopes.

Fire Occurrence

Fire occurrence (or fire incidence) is also self-explanatory – and also has a technical definition: the average number of fires in a specified area during a specified time. In the Applegate between 1970 and 1999, a specified time period with available data, fire occurrence averaged about 78 fires per year. 56% of the 2,257 fires in the Applegate watershed during those 29 years were human caused. The remaining 44% were started by lightning. (See map following page 22.)

In assessing an area's complete fire situation, all the factors discussed above need to be considered: the historical fire regime, the area's history of fire occurrence, the area's current condition class and fire hazard rating, and the area's fire risk. Some of these we can affect and change if we so choose.

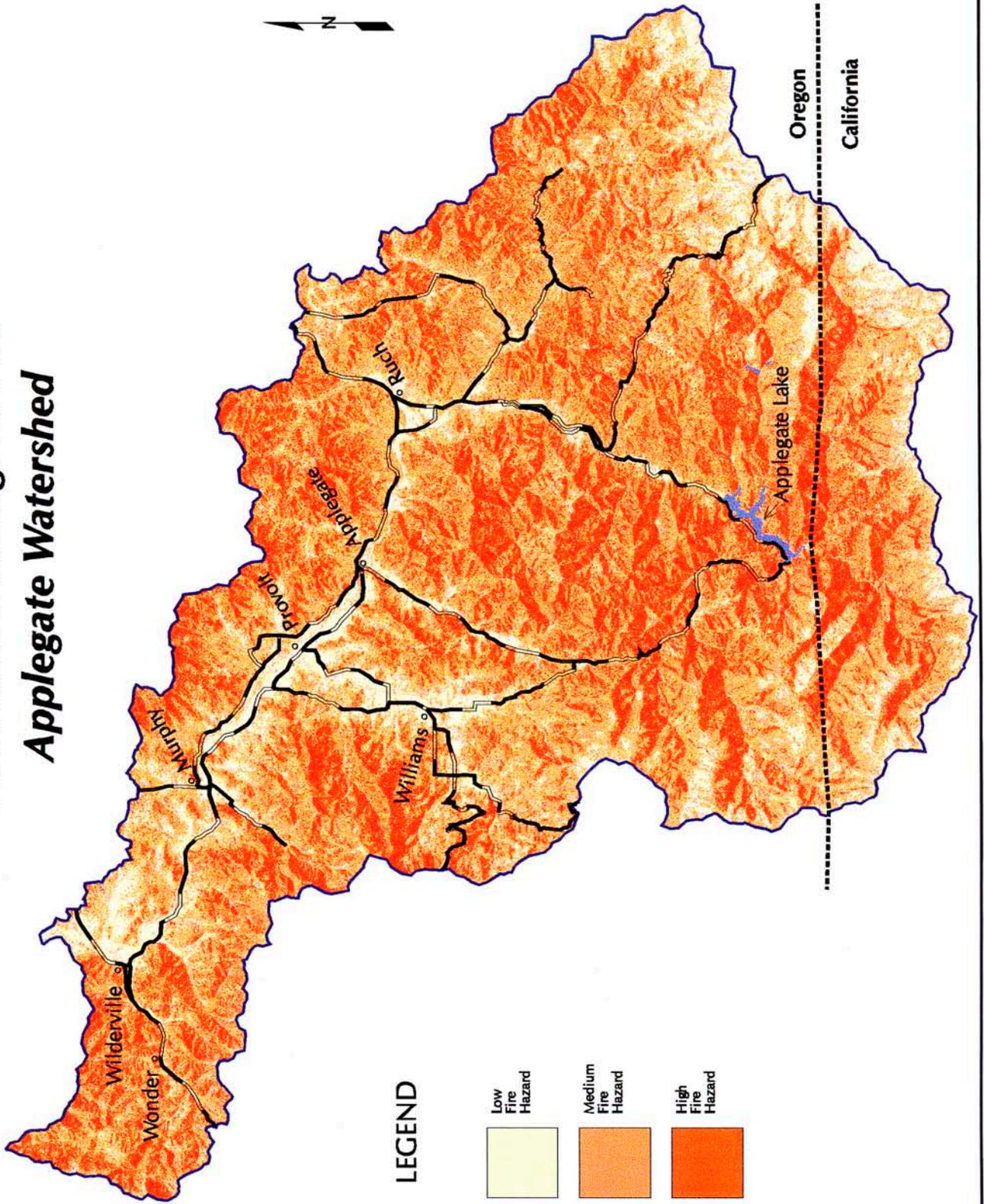
Fire Starts - 1970 to 1999



LEGEND
SCALE 1:350000

- Bureau of Land Mgt.
- US Forest Service
- Corps of Engineers
- State
- Not federal or state
- Fire - Lightning-caused
- Fire - Human-caused
- Strategic Planning Area

Fire Hazard Ratings In The Applegate Watershed



LEGEND

- Low Fire Hazard
- Medium Fire Hazard
- High Fire Hazard

Finding Our Place Strategic Planning Areas

The Applegate Fire Plan addresses the entire 500,000 acres of the Applegate watershed, with its more than 12,000 residents, two counties, and two states, an area with great variation in landscapes and differing degrees of fire hazard and population density. All these factors brought up a problem as we began formulating this plan: what scale to use, both for overall analysis and for local fuel strategies or emergency communications.

Although we sometimes refer to a map of the whole Applegate watershed to help show its variations, the Interdisciplinary (ID) Team for the fire plan found it needed smaller areas to more effectively analyze current conditions. The Emergency Communications component also needed smaller neighborhood-sized areas for devising telephone trees, and fuel reduction strategies needed to be developed on a local level, for social as well as ecological reasons.

Therefore, we broke the so-called "4th field" Applegate River watershed into nineteen areas using both "5th field" and smaller "6th field" watershed lines. (Think of these areas as the Applegate River basin with its subbasins and their sub-subbasins.) These lines follow drainage contours and so make biological sense for analysis. They also work fairly well for fuel reduction strategies, since fire most often travels up a valley or gulch. Examples of this size watershed would be Thompson Creek, Yale Creek, and Cheney Creek.

There are actually thirty-eight "6th field" watersheds within the Applegate River's drainage, and we combined a few, especially where there were either not enough residents (as in the Carberry /Steve/Sturgis/O'Brien areas of the upper drainage) or if a drainage line split a community (as in Ruch).

The map on the next page shows these 19 areas that we are calling Strategic Planning Areas (SPAs). These SPAs will be used throughout most of our Applegate Fire Plan for the fuels reduction, fire suppression, and emergency communications sections. This will be an easy reference for you to find your neighborhood – your "place."

II. Getting the Picture

Current Conditions in the Applegate

From Then till Now

Historical Influences on the Behavior of Fire in the Applegate

Fire is as old as the hills. The cornerstones of hell are fire and brimstone; after the flood, it is said, will come the fire, and when we envision catastrophe in the Applegate, we think of fire. We live uneasily with fire here in the Applegate, and for good reason. As we try to right the balance between fire and ourselves, which has been so out of kilter for so many decades, we would do well to look to the past and learn what we can, not only about the character of fire but about our relationship to it as well – then and now.

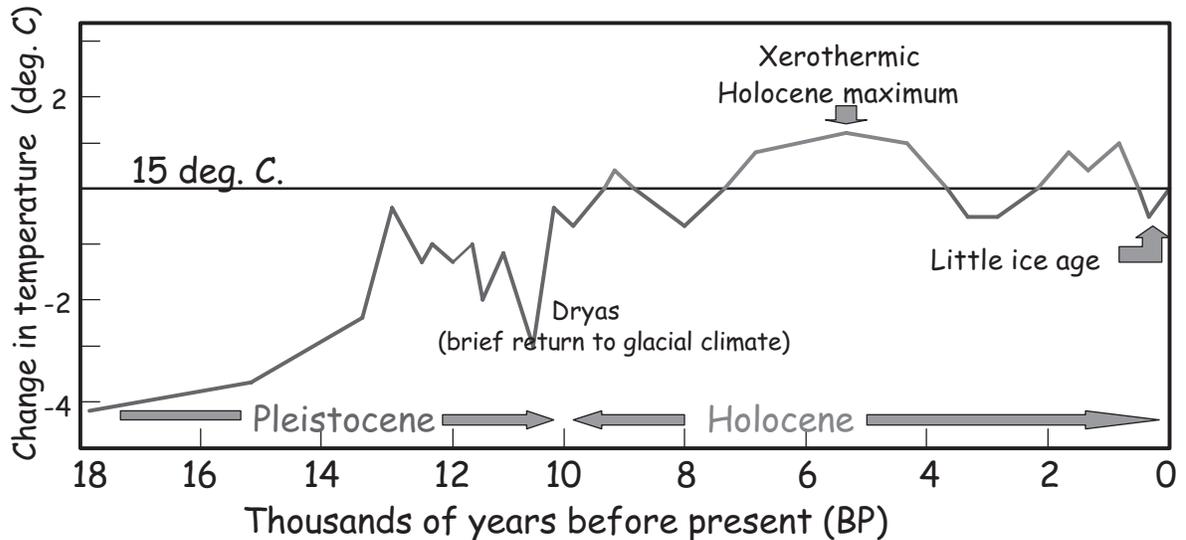
The geology of our area gives us the longest view into the past and tells us something about the way fire behaves even today. Our mountains started forming by shifting continental plates over 250 million years ago. Gradually, granite and serpentine rocks forced their way into the common volcanic and sedimentary rocks, and everything (except for the serpentines) weathered into the productive soils of our valleys and mountains. In Grants Pass and in scattered patches northwest of Dutchman Peak, are small intrusions of granite and diorite. Each parent rock produced a variety of soils, habitats, and plant communities – and a different response to fire. The islands of serpentine, for instance, produce less vegetation over time and, therefore, have fewer fires than other geologic situations.

Current climate conditions, as seems obvious, especially in the drought years, influence the frequency, intensity, duration and extent of fire (four qualities that are called, collectively, a). Our summers are dry and lightning-prone because a Pacific coast high-pressure system typically blocks precipitation for much of the season. In the upper elevations, where temperatures are low and rainfall is high, fires are less frequent than in the valleys. Larger climatic factors such as long-term, global variations related to El Niño or to sun spot cycles also influence fire regimes, but this influence is confounded by local climatic variations, recent land management activities, and burns. Generally, we should be aware of climatic cycles, though they are weakly related to the probability of fire and its likely intensity.

Past climatic changes also have left a lasting influence. Since the glacial recession over 10,000 years ago, the climate has been relatively warm and dry. The most notable era with this climate was the Xerothermic period (Hansen, 1955), which lasted approximately four thousand years and "ended" about four thousand years ago. (See chart on next page.) Our ecosystem adapted to its climatic influence by hosting plants that resist, avoid, or thrive in a regime of frequent, low-intensity fire. Manzanita, canyon live oak, California black oak, Oregon white oak, ceanothus, madrone, ponderosa pine, sugar pine, and Douglas-fir are examples of our most common fire-adapted species that migrated north from California.

The human influence, too, has not been insignificant to the behavior of fire. The Native Americans of this area were not passive residents in a landscape; they managed the ecosystem by planting crops; stimulating root and berry crops; culturing materials for tools, ceremonies, and lodging; and burning to maintain habitat for game. Though then, as now, lightning set many fires, the human inhabitants, then as now, also set fires, with the difference that the Native Americans set

Since the recession of the ice at the end of the Pleistocene, climatic change has continued to drive ecosystems and species to adapt to change or die. Some became extinct with help from early hunters.



their fires deliberately in an effective strategy to manage species composition and forest structure. (Though we sometimes also deliberately set fires as a management strategy, most wildfires in the Applegate today are human-caused.) Controlling the frequency and timing of their fires, the native inhabitants were able to create and maintain entirely different vegetation *mosaics* and plant communities. Because forests were repeatedly and consistently burned, they were kept thinned, shrub cover was kept low, and herb and grass vegetation was constantly recycled. The Native Americans seemed to live safely with fire.

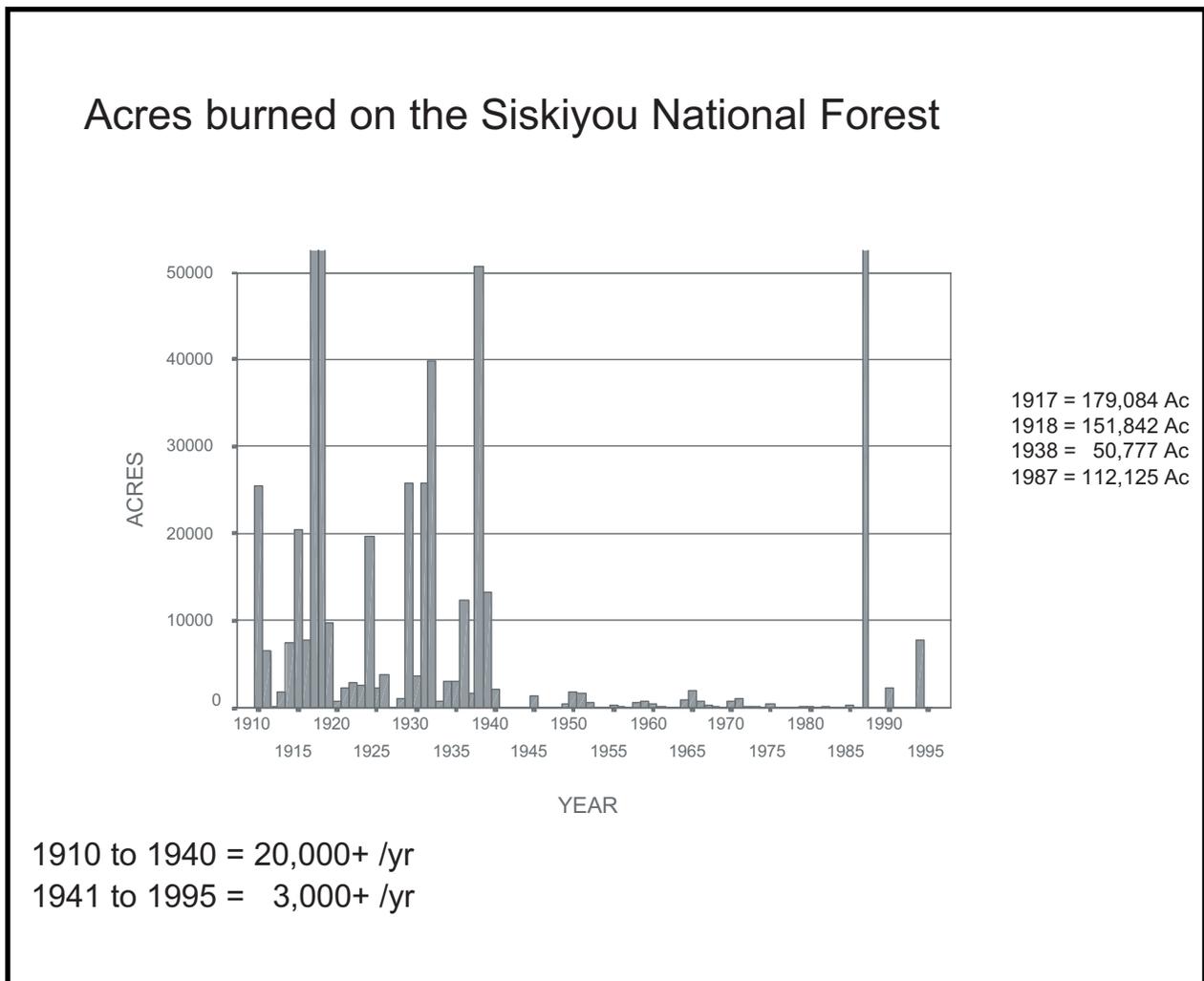
With the arrival of European settlers, adventurers, and fortune-seekers, the human use of fire changed. In the first half of the 1800s the Hudson Bay trappers burned as they depleted beaver populations. Their intent was to corner the market and destroy the source habitat. Conflicts with the Native Americans over "management strategies" were common.

A few years after the California gold rush in 1849, gold was discovered in Oregon. The consequent influx of miners and settlers intensified the existing patterns of fire ignition and burning. By the mid 1800s miners and trappers were the dominant ignition source. Miners burned to expose rock outcrops, and ranchers and settlers burned to clear the forests and eliminate rodent and insect pests. According to Lieberg (1900) and Haefner (1912) the settlers started 95% of the fires; native inhabitants and lightning were responsible for the remainder.

The lethal and destructive fires of the late nineteenth and early twentieth centuries fueled the public to push for fire suppression. Fires were believed to be wasteful and ruinous. Initial assignments for the early Rogue River and Siskiyou National Forests were to curb the indiscriminate use of fire and to suppress fires that had started. Without trails or mechanized equipment and with poor detection techniques, the suppression effort was ineffective and controversial with local residents who felt fire was beneficial, particularly for ranching. During World War II, fire suppression became a patriotic issue. At that time, too, access was improved; pumps, chain saws and doz-

ers became more portable, and a lookout system was established. A smoke jumper base was installed in 1940 at Cave Junction as part of the aggressive attempt to eliminate fire within national forest boundaries. After 1940 fire control became much more effective, and forests were allowed to grow. (See chart below.) Fire's natural influence was ignored as the pendulum swung toward full suppression.

Today we are paying for the mistakes of the past. As we see with alarm the widespread build-up of fuels in the Applegate, as we see (in the Quartz Fire of 2001, for instance) the vehemence of fire that feeds on these fuels, as we develop plans and strategies to welcome fire back to the Applegate “just a little bit at a time, please,” we naturally bemoan the ignorance of those whose misguided policies led us to today’s plight. But as we come to understand – or think we understand – fire in the Applegate, we should perhaps keep in mind that the greatest lesson of the past is always to pay attention to the past, substituting humility for hubris.



Take a Deep Breath Fire and Air in the Applegate

To breathe is to live. Furthermore, we like to enjoy clear views of the mountains or the rising sun as we arise from our beds each morning and look out the window. As we head into town, we expect an open, safe view of the road and traffic ahead. Air is not simply the empty space through which we see what's around us but that which connects us to life. To keep this vital, invisible substance clean is to care not only for our own health but for the health of every other part of the ecosystem as well. We all depend on air.

Clean air in a fire ecosystem is a complex issue, especially in a fire ecosystem in which wildland fire has been suppressed for decades and prescribed burning is used as a management technique. But air in a fire ecosystem, like air everywhere in the country, is subject to national laws created to keep our air as healthy as possible.

The Clean Air Act requires the Environmental Protection Agency (EPA) to create air pollution standards to protect not only human health and welfare but also the environment. These standards were designed to protect the most sensitive members of the public including the very young, the very old, and those with heart and lung problems. National ambient air quality standards (NAAQS) have been established for carbon monoxide, particulate matter, ozone, lead, and sulfur dioxide.

The primary smoke product from wildland fire that presents major public concern is particulate matter. About ten percent of the particulate matter from wildfires is greater than ten microns (about the size of beach sand). Most particular matter of this size is intercepted in a person's nose and mouth while breathing. About twenty percent is ten microns and less (PM10), about the size of flour. Because these particles can enter the airway and lungs, they are of greater concern. However, most particulate matter in the smoke of a wildland fire – about seventy percent – is 2.5 microns and less (PM2.5). These particles can lodge themselves deep into the lungs and are of greatest concern to human health.

Smoke from wildland fire can also create a problem with visibility. Much of the particulate matter produced by smoke is close to the size of the wavelength of visible light (0.4 to 0.7 micrometers). This makes the particles excellent scatterers of light and, therefore, excellent reducers of visibility. This affects distant visibility of the mountains or, in higher concentrations, can cause hazardous driving conditions on the roads.

Prior to 1997, air quality standards for particulate matter only rated to PM10. To better address human health concerns, the EPA, in 1997, issued standards down to PM2.5. The EPA is currently monitoring PM2.5 levels throughout the nation and by 2005 will be designating those areas that don't meet minimum standards. After the designations, each state will have until 2008 to establish a plan to comply with the standards, after which it will have until 2017 to 2019 to meet the standards.

There are two PM2.5 monitors maintained by the Department of Environmental Quality, the Forest Service, and the Bureau of Land Management within the Applegate Valley. One is located at

the Fire District #9 Headquarters, south of Ruch, and the other is located at the BLM Provolt Seed Orchard outside of Provolt. These monitors were installed to help quantify the background PM2.5 levels and the increased levels expected from the Forest Service and BLM's intensified prescribed fire program.

Although any fire produces smoke, wildland fire and prescribed fire differ in their effects on air quality in the watershed for a number of reasons. Typically, wildfires burn during the driest times of the year, when large amounts of available fuel increase the amount of smoke. Wildfires are typically random, unplanned events, too, which means the weather conditions at the time of the fire may or may not be favorable for smoke dispersion. Smoke from wildland fires can affect a large area around and downwind of the fire. On the other hand, a well planned and implemented prescribed fire can have significantly fewer emissions than a wildfire in the same area. The “burn boss” chooses a weather window that will optimize smoke dispersion and minimize smoke flow into populated areas. In addition, prescribed fires are set at a time of year when fuels typically have a higher moisture level than they have in July through September (wildfire season), so not as much fuel is burned and less smoke is produced.

Burning is regulated in the Applegate by several state and county agencies. Josephine and Jackson counties regulate wood stove burning and open or backyard burning. The Oregon Department of Agriculture regulates agricultural burning, and the Oregon Department of Forestry regulates prescribed burning of slash produced by forest management activities or the burning of natural wildland fuels. The Oregon Department of Environmental Quality is the umbrella agency that oversees the above agencies through approval of submitted plans. Because of the differing characteristics of the types of burning, it is possible for one type of burning to be allowed while other types are prohibited. For instance, slash burning might be conducted when open burning is prohibited.

Whenever prescribed burning is occurring, it is important to remember these two points: (1) various regulations cover various types of burning, and (2) there is an emissions trade-off: fewer emissions now during a prescribed burn versus more emissions later during a wildfire.

The Ground We Walk On Soils of the Applegate

Just as water supports plankton, which is the important underpinning of aquatic life, so does soil support a myriad of minute creatures essential to the web of terrestrial life. All life above ground depends on these tiny earth dwellers, including, of course, the first sprouts on a burned area. The new forest begins in the soil.

Any area will revegetate itself if left alone after a fire, although severely burned sites will take longer, since few plant species regrow easily on such land. If we want to minimize erosion in critical areas, however, we will want to revegetate them as soon as possible after a fire has swept through. This job is most efficiently done when we have a good understanding of the soil we are planting.

How much vegetation we can plant and encourage after a fire and how quickly it will grow are affected by the depth of the soil, the steepness and aspect of the slope, the soil's parent material, its drainage and moisture-retaining capacity, and its permeability. Because shallow soils hold less water, are more likely to limit roots, and often have fewer nutrients than other soils, they are not as productive for plant growth, and revegetation is slower. The steeper slopes, which are more susceptible to surface erosion and tend to lose moisture quickly, may also inhibit revegetation. A third complicating factor, parent material, has helped determine how nutritious and wet the soil is and how susceptible it is to slumping and sliding. Soil is the most important aspect in defining plant communities and therefore affects not only the severity of a fire, as discussed below, but also the type and amount of revegetation.

For the purposes of this fire plan, we have identified four categories of parent material:

- (1) *Alluvial*. These are soils that have been deposited by streams. They are usually found on gentle slopes or areas where earth has accumulated abundantly, and they typically contain soils of various origins.
- (2) *Ultramafic*. These soils were derived from serpentine or peridotite rocks and are resultingly high in magnesium, iron, and other heavy metals and low in calcium. These nutrient imbalances and deficiencies lead to low productivity in these soils, which are consequently sparsely vegetated. A paucity of organic matter in ultramafic soils further impedes revegetation after a fire.
- (3) *Granitic*. Granitic soils tend to be highly erodible because they are dry, droughty soils that lack cohesion. Soil particles are easily detached and transported by gravity, water, and wind.
- (4) Other and mixed. In the "other soils" category we put soils whose parent materials have similar productivity and similar properties concerning moisture and erosion. Parent material of these soils is most commonly sedimentary, volcanic, or metamorphic (any of those types altered partially by heat and/or pressure). These soils are typically more productive and less susceptible to the impacts of fire than either granitic or ultramafic soils. Mixed soils, as one would suppose, are combinations of ultramafics, granitics, or "other" soils.

Soils classified as "other and mixed" are by far the most widely distributed throughout the watershed. Granitics are the next most common, and ultramafics are the third.

Erosion and run-off during storms can increase dramatically on a particular site after a severe wildfire for a number of reasons: loss of ground cover, inhibited regrowth of vegetation, fire-induced water repellancy, and a decrease in the soil's structural stability that makes it less able to resist detachment by wind or water. During particularly intense storms, these factors can cause heavy flooding, sedimentation, mud flows, and the associated threats to lives and property including homes, roads, bridges, reservoirs, ponds, water quality, etc.

Some soil types are more susceptible to damage from fire than others. Of the soil types in the Applegate, granitic and ultramafic soils are the most prone to erosion after a fire (or at any other time). Sandy soils derived from granitic rock tend to lack stickiness and are thus more easily detached by wind and water. This makes them highly sensitive to any reduction in ground cover.

However, it is primarily the severity of the burn rather than the soil type that determines how much erosion or runoff will occur after a fire. Ground cover is the key. Given equal slope, areas where all ground cover (organic matter, leaf litter, and duff) has been consumed by the fire are most susceptible to post-fire erosion and runoff. Burns have the most severe effect on soil in areas with the heaviest fuel build-up, since heat from the fire is in contact with the soil longer. It is this heating of the soil that can cause physical and chemical changes in it, which, coupled with the loss of soil cover, can lead to increased erosion and runoff as well as inhibited natural revegetation. Shallow or rocky soils which support sparse vegetation are not at great risk from fire damage simply because of the relatively short time the soils are in contact with heat or fire. There are, therefore, no significant changes due to fire on these soils.

Steepness, or slope, also affects post-fire erosion: the steeper the slope, the greater the erosion hazard, especially when fire has consumed soil cover.

Once a fire has gone through an area, we often want to conduct some emergency stabilization and rehabilitation. Any site where a fire has consumed the leaf litter and duff layer will benefit from mulching, at the very least, such as with a light application of weed-free straw. Mulching is the single most effective treatment that can be applied after a severe fire to reduce erosion and increase infiltration (and thus reduce runoff). If time and money permit and weather conditions are conducive, seeding with native grass species can hasten recovery of vegetative cover. These treatments must be in place before the first damaging storms following the fire in order to minimize erosion and flooding.

Hotter Here than There

The Behavior of Fire in Different Plant Series

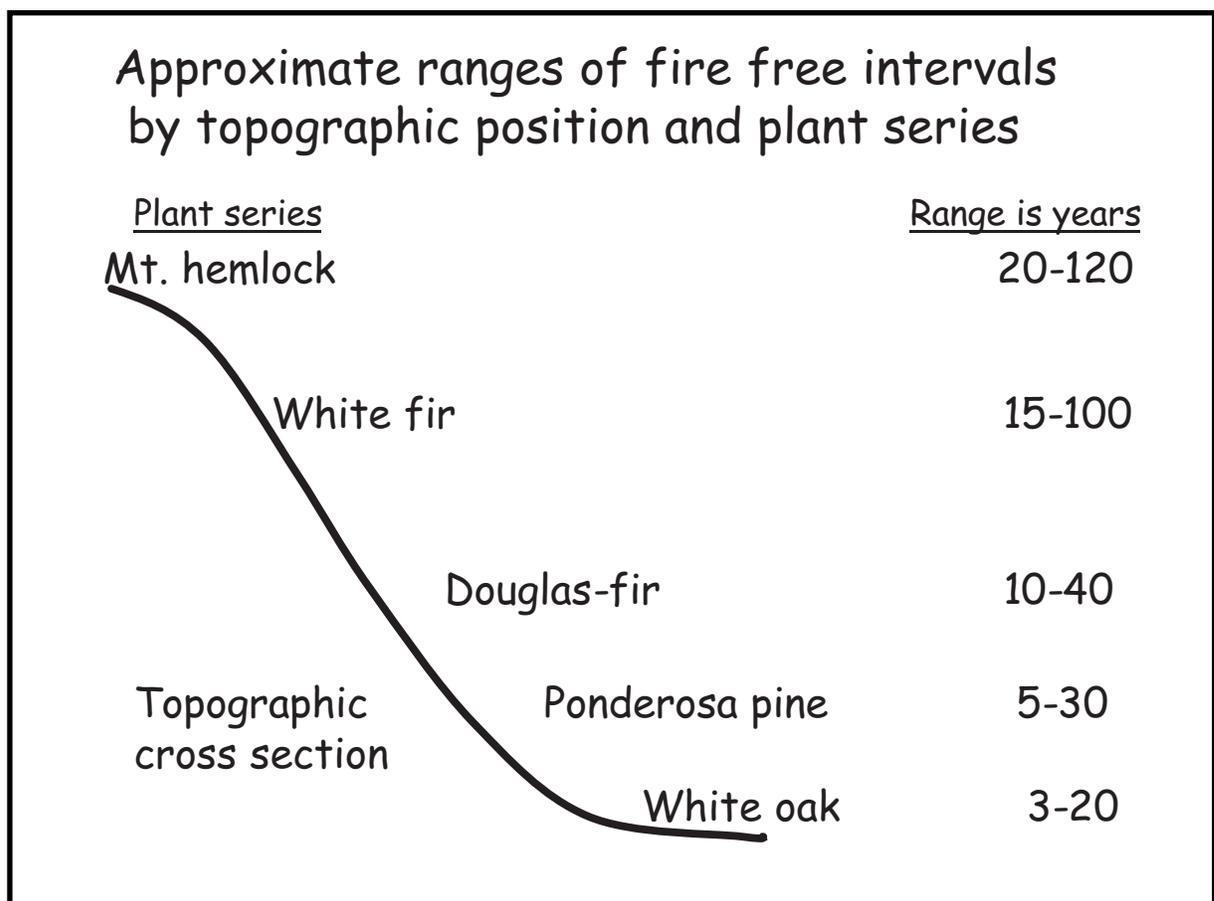
A fire burns; it climbs, it grows, it diminishes, it swells again. Many factors discussed in this plan affect the behavior of fire – weather, location, soil, fuels build-up, etc. Here we look at the influence of the plant *series*, a category based on the species that will dominate the site if it is left undisturbed and unburned for centuries.

The current conditions for fire differ greatly throughout the Applegate based on its plant series, since *fire regimes* are unique for each "series." The most common series in the Applegate watershed are Douglas-fir and white fir. Over time it has been found that high-elevation, wet series (such as mountain hemlock and Shasta red fir) burn at a frequency of about 35 years; mid-elevation, moderate series (white fir and moist Douglas-fir) at about 10 years, and low-elevation, dry series at less than 5 years.

The behavior of fire differs significantly between series. In general, fire occurs less frequently with increasing elevation, with decreasing vegetation, with decreasing accumulation of dead material, and on north-facing slopes. What follows is a description of each series in terms of its relationship with fire.

- (1) Mountain hemlock is a climax species dominant on north-facing glaciated sites and on extremely cold, high elevation sites (6,500 feet or more) with a short growing season. *Biomass* production is low, and species associated with this series do not produce much litter. Fire-free intervals range from 20-120 years. When fire does occur, it is frequently of high severity.
- (2) The Shasta red fir series occupies an elevational zone slightly lower than the mountain hemlock series. Not being confined to unique topographic positions, it is also a more extensive series. Shasta red fir commonly sheds needles and naturally prunes branches, creating a lot of fuel for a potential fire. The Shasta red fir series also produces more biomass than the mountain hemlock series and suffers a higher mortality rate, so trees fall more often, ending up sooner – and in greater tonnage – on the forest floor as fuel. In addition, the fuel cures faster in the drier habitat. Fire-free intervals are slightly shorter than for mountain hemlock. Shasta red fir can tolerate occasional light fire, but effective fire suppression is causing it to lose dominance to both mountain hemlock at higher elevations and white fir at lower elevations.
- (3) The white fir series occupies a belt between 3,000 and 6,000 feet, fingering into the Shasta red fir series above and mixing with the Douglas-fir series below. Biomass and litter production are high. Fire-free intervals range from 15-100 years.
- (4) The Douglas-fir series occurs at elevations of 1,000 to 4,000 feet. A prolific producer of biomass and litter, Douglas-fir nurtures conditions that favor fire. However, unlike white fir and mountain hemlock, it is resistant to frequent, low-intensity fire.

- (5) A belt of the white oak series exists in and immediately above the interior valley floor of the Applegate (Detling, 1961; Hickman, 1972). White oak (*Quercus garryana*) dominates the tree layer, under which thrive shrubs, grass, and forbs. Several manzanitas are common in this series. All species will return after a disturbance. Some sprout from the root, but hoary and whiteleaf manzanitas (*Arctostaphylos canescens* and *A. viscida*, respectively) do not sprout from the crown after fire. Greenleaf manzanita (*A. patula*), usually found on the better sites, has a basal burl and will sprout (Munz and Keck, 1959). Fuel production is low but what exists dries and burns quickly. Fire-free intervals range from 3-20 years.
- (6) Driest of the conifer-dominated series, the ponderosa pine series occupies the lower slopes of the inland valleys, where it integrates with white oak on the driest sites and Douglas-fir where soils are generally deeper and more productive. Black oak and poison oak are common associates that are stimulated by fire. Ponderosa pine is productive and fire resistant. Fire intervals for this series are estimated at less than ten years and have a very wide range.



A Special Case Port-Orford Cedar and Its Root Disease

PLANT COMMUNITIES WITH PORT-ORFORD CEDAR

Port-Orford cedar (*Chamaecyparis lawsoniana*) is a unique tree species that occurs in a limited range in Southwest Oregon and Northwest California. In the Applegate basin, Port-Orford cedar is found primarily in the Williams Creek watershed and is also widely distributed but not abundant in the upper reaches of Slate Creek above the confluence with Ramsey Creek. Of particular interest in the Slate Creek drainage is the Cedar Log Flat Research Natural Area, where one of the plant communities is made up of Port-Orford cedar, hairy honeysuckle, and fescue on ultramafic soils.

Plant communities containing Port-Orford cedar should be divided into serpentine (Jeffrey pine series) and non-serpentine (all other series). While the overall effects of fire exclusion are generally the same (more stems, greater chance for a stand destroying fire), there are distinct differences in how fire exclusion changes the vegetation component in each plant community.

The Port-Orford cedar series has a mean fire return interval of about 50 years with a range between 23 and 80 years. Douglas-fir, tan oak, and other tree form vegetation could thrive in this series.

The Jeffrey pine series has a mean fire return interval of 25 years with a range from 10 to 50 years. Vegetation in these serpentine plant communities has responded somewhat differently to fire exclusion than that on non-serpentine soils, where the soil chemistry allows Port-Orford cedar a competitive advantage if adequate water is present. Port-Orford cedar may be the only tree present in these wet areas. With fire exclusion, Port-Orford cedar has increased disproportionately to tree form vegetation seen on non-serpentine sites. In fact, this increase in Port-Orford cedar reached such levels that the Forest Service specifically proposed prescribed burning in the Cedar Log Flat Research Natural Area to reduce the amount of Port-Orford cedar encroaching on Darlingtonia fens. Here, high tree and shrub densities seemed to be reducing available water in the fen, drying the fen through higher transpiration rates, and increasing light competition for growing forbs.

Re-introduction of fire into both of these plant communities (Port-Orford cedar and Jeffrey pine series) would reduce the overall amounts of vegetation, including Port-Orford cedar.

PORT-ORFORD CEDAR ROOT DISEASE

One of the major concerns about Port-Orford cedar is *Phytophthora lateralis*, the pathogen that causes Port-Orford cedar root disease. *Phytophthora lateralis* currently infests approximately 18% (1,294 out of 7,275) of the BLM acres with Port-Orford cedar in the Williams watershed, mostly within the East and West Forks of Williams Creek. Smaller infested areas occur in the southern portion of the Munger's Creek drainage, and one small infection center is located in the Powell Creek drainage. The number of infected acres under other ownerships in the Williams watershed and the number of infected acres in the Slate Creek drainage are unknown.

Phytophthora lateralis is spread over long distances when infested soil or water is brought into previously disease-free sites. Road construction, road maintenance, mining, logging, and traffic on forest roads have been the main means of moving earth from infected areas into the forests (Kliejunas 1994; Roth, et.al., 1957; Roth, et.al., 1972). Soil clinging to the feet of elk, cattle, and humans can also carry the pathogen, but infection through these means occurs on a much more localized basis than that associated with vehicles (Harvey, et.al, 1985; Kliejunas and Adams 1980; Roth, et al, 1972). Spread of *Phytophthora lateralis* occurs primarily in the late fall, winter, and early spring when the cool, moist environmental conditions favorable for the pathogen prevail. Except in unusually wet conditions, little or no spread occurs in the hot, dry summer months.

Phytophthora lateralis can also be transported in water. Once the pathogen has been introduced into a stream or body of water, there is always a possibility that propagules of the pathogen can be transferred with water from that source. Propagules are especially likely to be numerous if cedars that are in decline due to the disease or that have recently died of it are adjacent to water, but they may be present even in areas where all mortality appears to have occurred years previously. The probability of spreading propagules of the pathogen in water used for fire or land management activities is low if water is taken only from sources without evidence of root disease. Using water from uninfested sources for forest use has been recommended as part of a management strategy for Port-Orford cedar root disease (Roth, et.al., 1987).

Water sources within the Applegate basin should be inventoried in order to identify those that are infested by *Phytophthora lateralis*. Subsequently, when water is needed for fire fighting or dust abatement, only uninfested water should be used if possible. Where no clean water sources exist and water must be taken from a probably infested source, the water should be treated with Clorox before use (1 gallon of Clorox to each 1,000 gallons of water). In areas where water sources have not been inventoried, Clorox should be used as a matter of course. Adding chlorine bleach to *Phytophthora lateralis*-infested water will kill many propagules of the pathogen. Complete mortality of *P. lateralis* zoospores occurs after 60 minutes in 100 ppm chlorine bleach. Clorox has recently been registered for use in treating water for firefighting or dust abatement to decrease the probability of *Phytophthora lateralis* spread.

Using prescribed fire as a strategy to help prevent the spread of Port-Orford cedar root disease or to kill the pathogen itself has been discussed, but not thoroughly investigated. In theory, fire could decrease or even eliminate *Phytophthora lateralis* on a site by killing hosts or by reducing or eliminating inoculum in the soil. *Phytophthora lateralis* itself is very sensitive to heat; its survival is minimal in soil exposed to temperatures of 40° C (104° F) or greater, especially if conditions are dry (Hansen and Hamm 1996). If prescribed fires can generate temperatures in this range at sufficient depths in the soil to reach roots and organic material that are harboring the pathogen, it could significantly reduce or eliminate *Phytophthora lateralis* inoculum. In one trial (DeNitto unpublished), soil baiting was used to evaluate the effects of fire on the presence of *Phytophthora lateralis* in soil. In this case, the fire was of fairly low intensity with temperatures at or below 38° C (100° F) at a depth of 10 cm (4 inches). The fire did not seem to have any effect on the pathogen. Effects of higher intensity fires have not yet been evaluated.

The Applegate Quilt

Patterns of Vegetation in the Landscape

It is easy enough to look at the landscape of the Applegate and see patches of vegetation and land forms – pines or grasses or streams. It is this quilt, this design of the landscape, that natural resource managers are studying as they search for the best management decisions. They see landscapes as an aggregate of areas of vegetation and land forms that are similar to each other because of their origins from climate, geology, natural disturbances, human activities, and plant *succession* (Forman and Godron 1986). They describe landscapes as having three elements: *matrix-es*, *patches*, and *corridors* (Diaz and Apostol, 1992). The terms have technical meanings similar to their everyday meanings: matrix is the most contiguous vegetation type; patches are areas of vegetation that are similar internally but that differ from the vegetation surrounding them, and corridors connect similar patches.

Eighty-three percent of the Applegate watershed has a forest matrix. As a general rule, the largest trees grow on north-to-east aspects, at higher elevations, and in inaccessible areas. With an increase in elevation the forests change from a hardwood-conifer mix to mixed conifer, then to true firs and mountain hemlock at the highest elevations. The different species of trees and tree sizes vary greatly because of the differences in topography, *aspect*, soil, and plant succession and because of the edge effect between the different vegetation types. Natural disturbances such as fire, windthrow, insects, and disease, along with human activities, have also contributed to the variability of the forests. The result of these factors is the great diversity of forest landscapes that we enjoy in the Applegate.

Patches of grassland and shrubs are scattered throughout the forests. Along the south aspects, the patches of shrublands increase in size, though the high elevations on the southern boundary of the watershed are more moist on the northerly slopes. The patches of grasslands and shrublands indicate hot, dry areas with perhaps shallow soils that are not conducive for growing trees. These patches are most often found on south-facing slopes and ridgetops. The western, southwestern, and southeastern portions of the watershed also sport patches of serpentine.

In the lower-elevation valley bottoms along the Applegate River and its tributaries, the matrix is white oak/grasslands or urban/agriculture areas with very small patches of hardwood and mixed hardwood-coniferous forest. The valley bottoms can also be viewed as a corridor. Adjacent to and up slope from the bottom lands on north slopes are more hardwood and mixed hardwood-coniferous forests in the earlier *seral stages*, a reflection of historical timber harvesting and human use on public and private lands. South slopes are generally naturally open.

The vegetation pattern becomes more complex when more structural components are included, such as vegetation diameters, the number of *canopy layers* or height classes, topoedaphic (soil and land form) influences and disturbances.

Natural change in the vegetation pattern of a landscape is inherent. Natural succession is continuously changing the vegetation, and there is no single seral stage and species mix that can be considered the only natural stage. Disturbances to vegetation life cycles come from insects, pathogens, wind, fire, fire suppression, fire exclusion, and other human actions. Along with soil composition, fire exclusion may be the most important process responsible for vegetation patterns, species composition, and crowded conditions of the plants in today's forests. As a result of fire exclusion, these forests are densely crowded, tree growth rates have declined, shade-tolerant tree species are more abundant, forest stands are more homogeneous, and most shrublands are in a late seral stage. Fire exclusion has also decreased the size and number of native grasslands. Without

fire, shrub and tree species have encroached upon the grass ecosystems. Due to livestock grazing, road building, and other activities, predominant plant species have shifted from native perennials to non-native annuals.

The relationship between shrublands and woodlands is similar to that between grasslands and woodlands. Trees are growing more densely along the edges of shrublands. Mortality is common among conifers in these areas, especially during periods of drought. Among the shrubs, the lack of frequent underburning has resulted in crowded plants and a build-up of fuel materials. In neighboring woodlands, trees are more numerous and, as a result, smaller in diameter and less vigorous (in diameter growth and regeneration capabilities). In oak woodlands acorn mast production (the accumulation of nuts on the forest floor) has decreased, and young Douglas-firs are growing in the shade of white oak trees.

Fire exclusion has allowed forest stands to become overstocked with trees and has caused a gradual change in tree species composition. Pine species are not regenerating because of the absence of wide openings in the forest canopy. True fir species are growing at lower elevations and beneath Douglas-firs and pines. Douglas-fir has invaded pine sites and is responsible for a decrease in ponderosa and sugar pines. Douglas-fir is also out-competing knobcone pine, the main fire-dependent species. Large diameter oak trees, now dead, are common in the understory of Douglas-fir forests and tell a similar story: the Douglas-firs grew over the oaks, and the oaks could not get enough light to survive. Shade tolerant tan oak is dominating the understory of conifer forests. In general, shade tolerant, fire intolerant species are increasing in abundance, while shade intolerant and fire tolerant species are decreasing.

Some land managers see the abundance of conifer regeneration as responsible for the demise of old-growth trees scattered across the landscape. Other land managers point to crowded conditions of old-growth trees on certain sites (too much competition within that age structure) or to drought, regional warming, insects and disease, timber harvest, simple old age, etc. The young trees, often thousands of stems per acre, are out-competing the physiologically weakened older trees for limited water and nutrients. These overstocked conditions result in lethargic trees that grow poorly. When conifers gain less than 1.5 inches in girth over ten years, they are deemed to have "low physiological *vigor*" – they grow slowly, catch diseases more easily, and show other signs of stress – and are more susceptible to bark beetle attack (Hall 1995).

Foresters recommend a certain optimum distance between trees (the *basal area stocking*) based on the series' relative susceptibility to insects and disease. Usually the greater the density at which these trees grow, the greater their susceptibility. At the time measurements were taken in the Applegate (for the 1994 Applegate Ecosystem Health Assessment), the forests in all series proved to be overcrowded. The more productive series (white fir and Douglas-fir) showed the greatest difference between the recommended stocking and the forest as we see it.

Foresters use an "average relative density" index to help them understand the state of health of a particular stand of trees (Drew and Flewelling 1979). If a stand has an average relative density of 0.55 or more, the trees are considered to be so competitive that mortality is imminent. At this point, trees have a greater probability of dying from biotic factors, mainly bark beetles. For the majority of unthinned Douglas-fir stands in the analysis area, the average relative density index is approximately 0.70.

The overcrowded condition of our forests, the reduced number of shade intolerant and fire tolerant trees, the decreased area of native grasslands – these and other results of fire exclusion in the Applegate watershed have changed the patterns of vegetation on the landscape. As we struggle with management decisions in regards to fire, we need to continue to study the matrixes, patches, and corridors that build the quilt patterns we see in the Applegate.

Looking Low

Landscape Patterns of Native and Rare Plants

From forest trees to tiniest *forbs*, the flora of the Applegate is not only a part of the broad landscape but also a focus of its intimate moments: shooting stars, mariposa lilies, fawn lilies, ox-eyed daisies, Indian paintbrush – beautiful wildflowers are strewn all over the Applegate. In addition to the familiar forbs and flowers, the Applegate is also botanically blessed with a large number of catalogued, classified, and protected rare plants. The Applegate watershed is in the Siskiyou portion of the Klamath-Siskiyou Mountains, which is known as one of the most botanically diverse areas in the United States. It also stands out among other places in the United States for its many excellent examples of intact native plant communities.

The Applegate has a large number of rare plants because of its diverse array of habitats, created by natural evolution, fire, flood, volcanoes, geologic layers, the east-west position of the mountains (contrasting with the north-south slopes), and (especially in the past 150 years) human activities. With lands wet and dry, wooded and open, rocky and rock-free, the Applegate offers many kinds of environments as niches for plants. Botanically the Rogue River Sub-basin of the Klamath Mountains shares plant species (many of them rare) that are found south into northern California, north and east into the Cascades, west into the Coast Range, and east into the western edge of the great basin of southern and eastern Oregon. Many plants found here are indigenous to the Klamath region of southwest Oregon and adjacent northern California, and a few are *endemic* strictly to the Rogue River valley. We know of no plant species strictly endemic to the Applegate.

STATUS OF THE APPLLEGATE'S RARE PLANTS

The Applegate watershed contains over 72 species that are tracked as "rare" on the U.S. Forest Service's "Sensitive Species" list and the Bureau of Land Management's "Special Status Species" list. The different agencies have subtly different classification schemes for rare plants, but all are loosely based on the Natural Heritage Program's global and state ranking system adopted nationwide for classifying rare species. In general, species that are federally or state listed as "endangered" or "threatened" are the rarest and have laws like the Endangered Species Act requiring protection and management. (This law does not apply to private lands.) Species classified as "sensitive" by the agencies are those that potentially could be listed in the future, and policy and internal regulations require protection and management on public lands. Species listed as "tracking" or "watch" plants are ones that can be relatively common locally, but perhaps are rare within the state – or are uncommon locally though they are more abundant elsewhere. Tracking or watch species are often ones that were once "sensitive" but have been found to be more secure than once thought. These tracking or watch species generally are not protected by law, regulations, or policy but are documented when found and protected when possible. Some species have so little known about them that they are classified as "assessment" or "review" species until their status can be ascertained. These species are generally protected like "sensitive" species. The Northwest Forest

Plan (1994), as amended, also identifies fungi and plant species that were thought to be associated with late successional forests. These "survey and manage" species also have their own classification based on these criteria. Many of these species have been found to be more common than once thought, and, interestingly enough, only a few species are on both the "survey and manage" lists and the agencies' "sensitive" lists.

In relation to fire, it is important to understand the patterns of rarity. Rarity can be expressed as the interaction of three factors: geographic range, local population sizes, and habitat specificity. The rarest species are those that have small geographic ranges, small populations, and unique or specific habitat requirements. No doubt some rare plants have always been rare, even prior to settlement, often because they were adapted to rare habitats (serpentine outcrops, fens, etc.). Other plants have become rare because of the impact of humans (anthropogenic factors); many human activities have modified or eliminated suitable habitat or have directly threatened plants by decreasing their range, reducing their populations, etc.

Endangerment is not synonymous with rarity. Endangerment refers to the factors, or threats, that affect a species. The most endangered species are ones that are very rare (those with small ranges and populations and high habitat specificity) and have serious factors that threaten them. Grazing, mining, agriculture, logging, settlement, road building, prescribed fire, wildfires, and fire exclusion within the Applegate valley undoubtedly affected rare plants and communities historically. Habitat modification or entire habitat loss (e.g. conversion to agriculture or rural and urban development) continues to be the primary factor adversely affecting rare plant species in the U.S. and worldwide (although noxious weeds are becoming an increasingly large factor) (Precious Heritage 2000). This is likely still occurring, especially on private lands where rare plant species are not protected by law. As the development of private lands in the Applegate watershed continues, the native habitat will continue to be modified, and remaining suitable habitat for species adapted to those communities will in many cases be diminished. Rare plants are afforded protection on state and federal public lands, as policies and laws require the land management agencies to manage these species.

RELATIONSHIP WITH FIRE

Wildfires had an important role in the Applegate watershed for maintaining grasslands, shrublands, oak woodlands, and ponderosa pine, mixed conifer, and true fir forests. Knobcone pine also needs fire to be able to reproduce. The rare species associated with these communities were likewise affected by fire. Fire exclusion over the last 100 years has undoubtedly affected plant communities; it has changed the species composition and resulted in a build-up of fuel throughout large areas of the landscape. The risk of catastrophic, high intensity wildfire has increased. Shrubs have colonized into areas that were once grasslands. Hardwood trees and conifers have colonized areas that were dominated by shrubs. Shade tolerant species (especially true firs) have colonized areas that once were more open and dominated by shade intolerant species. The overall density of trees and shrubs has increased, and the abundance of native herbaceous species in the understory has likely decreased. These trends are apparent, and effects to rare species associated with these communities are likely.

The role of fire for all the rare plants found in the Applegate watershed is not well understood. Very little scientific research has been done concerning these species' dependence on or tolerance of fire or concerning the way fire affects them. Much of what is known, or believed to be true, is anecdotal, derived from studies on related species, or assumed from what is known about the response of the habitats that these rare species occur in. Often, land managers, botanists, and ecologists have to make decisions regarding the effects of actions on these rare species with very little information. In the past, the procedure for protecting these rare plants has been to prevent an

activity from affecting them by avoidance or buffering, thereby keeping small islands of occupied habitat in their current successional state, essentially "not affecting" the small populations. This has had great short-term success in "keeping the pieces" on the landscape. Recently, however, agency botanists and ecologists have come to understand that many of these species likely need some level of disturbance to continue to persist or reproduce, especially species that are not associated with later successional communities. At least half of the rare plants known in the Applegate are associated with either early to mid-successional communities and are not associated with or dependent upon late successional communities, including a few species identified as "survey and manage" under the Northwest Forest Plan. Utilizing fire or some means that emulates fire, such as thinning, is likely to be a critical tool in managing many of these species for the long term.

All the rare species known for the Applegate have been aggregated into one or more of the vegetation groups listed below. Some species occupy more than one group, especially species that occupy the ecotones between the groups (edge or transitional habitats). Following are the eight general vegetation types of the Applegate that are associated with its rare plants.

Barren Areas (BA): These areas support little vegetation. They include serpentine soils, ridgeline rocky outcrops, and high elevation, subalpine balds. Often, plant species associated with Barren Areas have adapted to harsh environmental conditions and grow sparsely.

Conifer/Hardwood Forests (CH): In this mixture of conifer and hardwood trees, between 30-70% of the overstory is evergreen or deciduous hardwoods. These types generally have an important and diverse shrub and herbaceous component due to somewhat open light conditions.

Hardwood Forests (HD): Here, over 70% of the overstory is dominated by evergreen or deciduous hardwoods. These types often have an important shrub, herbaceous, and grassland component in the understory due to partially open light conditions. These can include narrow riparian hardwood forests comprised of maples, cottonwoods, and alders along major creeks and drainages.

Grass and Forb Communities (GF): Generally over 60% of the area is dominated by native (or non-native) grass and herbaceous vegetation, often on southerly slopes or ridgelines and on shallow soils. Shrubs and trees can be scattered and make up less than 40% of the cover. These types generally grade into shrublands or hardwood types.

Mixed Conifer Forests (MC): Here, conifers exceed 70% of the overstory, and forests are most often dominated by Douglas-fir and ponderosa pine or Douglas-fir and white fir. While an important shrub and herbaceous component can occur, the herbaceous layer is often more scarce in abundance and richness due to dimmer light through a more closed canopy.

Shrubland (SC): In these areas shrubs dominate by at least 40% of the canopy. These include pure manzanita and chaparral stands that can be classified as climax communities. These types can grade into hardwood and conifer types, as well as grasslands.

True Fir Forests (TF): When true fir trees (*Abies* species) dominate over 70% of coniferous vegetation, we have a plant community called True Fir Forest. As in the Mixed Conifer Forests, an important shrub and herbaceous component can occur; however, the herbaceous layer can often be scarce in abundance and diversity because of how little light falls through the dense overstory.

Wetlands and Water (WA): This group includes ponds, pools, herbaceous wetlands, wet meadows, and shrub-dominated wetlands.

RELATIONSHIP WITH NON-NATIVE PLANTS

The protection given to rare plants in the Applegate watershed addresses many of the concerns mentioned above, but one threat in particular is difficult to combat: the dominance of non-native plants. During the same time period over the last century that fire exclusion was the norm,

old world herbaceous and grass species were introduced to the Applegate. With the synergistic effects of ground disturbance coupled with fire exclusion, activities like livestock grazing, mining, and settlement led to colonization of non-native plants in many areas, especially in low elevation oak woodland savannas and grasslands. These non-native species, some of which are classified as noxious weeds, have continued to expand, and new species have been introduced into new areas, especially along roads or where heavy equipment is used. Many of these species can out-compete native species, including rare plants, for resources and space.

The presence of these non-natives has also changed the pattern of vegetation response following a fire. Wildfire historically helped perpetuate the native herbaceous component of grasslands, and fire exclusion has allowed this component to decrease and the grasses to increase. The composition of the grasslands also shifted over the last century from native perennial bunch grasses to non-native perennials and annuals. Many grasslands once dominated by native herbaceous forbs and perennial grasses are now dominated by annual grasses and weedy non-natives like star thistle (*Centaurea solstitialis*). Fire (prescribed or natural) can perpetuate these native/non-native communities and increase the amount of weeds following a wildfire. Ground-disturbing activities will increase weed populations if sources exist close by or are unintentionally introduced. Most extensive weed populations exist along roads and in areas that experience heavy or repeated disturbance – roads, home sites, agriculture fields, timber landings, etc. Once established, many of these species have the ability to colonize adjacent areas, even with little or no disturbance. There is also a concern, in relation to changing fire regimes, that some non-native plants, especially cheat grass and medusahead, burn differently from native plants, faster, with more flash. Areas with these plants could pose greater fire hazard than areas with predominantly native plants.

Fire at the Water's Edge Streams and Riparian Areas

Water gives life, so it's not surprising to find that the most dynamic areas in our ecosystem are along the streams, on river banks, in the floodplains, and in other riparian areas. To understand the influence of fire in these places today, it is helpful to imagine them as they were in the past.

Significantly wetter than adjacent uplands, these riparian areas may not have sustained low-intensity underburns quite as frequently as their upper neighbors. Occasionally stand-replacement fires probably killed the above-ground portions of cottonwoods, bigleaf maples, and other sprouting species, which would have quickly resprouted following the fire. In the meantime, streams would have been left unshaded, and a lot of trees would have been in the channel, creating pools. In the larger channels, periodic flooding removed areas of large trees in some locations and deposited fresh ground for new trees in others. Deep deposits of rock and gravel may have created some natural fire breaks, especially for ground fires. Faced with this kind of variation in vegetation and land forms, stand-replacing fire was probably limited in its range.

Along many streams on the valley bottom, in the more open, well-drained, floodplain areas with deep alluvial soils, large scattered trees such as ponderosa pine, madrone, oak, and Douglas-fir would likely have been present. Here, cottonwood in particular but also Oregon ash and maple often grew to 24 inches or more in diameter and provided some large wood in the stream channels.

Riparian vegetation in these valley bottom areas today tends to be very dense and is often confined to a narrow, straight strip along rivers. Large floods still remove this vegetation from time to time, as fires also used to do. In many areas, agricultural lands and roads now act as buffers to low-intensity fire that in the past would have occasionally moved down from the surrounding uplands. Development in some areas has led to the removal of all riparian vegetation except for a few hardy species. The primary risk of ignition has shifted in many places to vehicle- and utility-related sources, such as off-highway and other types of vehicles, arson, improper cigarette disposal, and power line corridors. In many streams and riparian areas, the invasion of non-native species such as Himalayan blackberry has destabilized banks, decreased habitat, and contributed to fire hazard. Non-native species often outcompete native species in establishing themselves after a fire.

Another difference between Applegate streams today and the same streams historically is that today in many valley bottom streams the water is warmer. This is mostly because we have removed large riparian vegetation, decreased stream channel sinuosity ("curviness"), and eliminated side channels. The result has been shallower, wider streams and rivers without floodplains. Many streams are on the State of Oregon 303d list for limited water quality because of high stream temperatures, which can harm anadromous fish.

Historically, along tributary perennial streams in the Applegate, fires would have periodically and sporadically reduced vegetation density. The highest density would probably have occurred

in the canyon bottoms, where low-intensity fire did not enter as often – just "backing" into the canyons from upslope. No doubt canopy fires happened infrequently, since periodic low-intensity fire in the surrounding uplands greatly reduced the risk of intense fire sweeping into the riparian areas from higher ground.

In some areas along tributary perennial or seasonal intermittent streams, historic mining or riparian logging combined with fire exclusion has created riparian areas dominated by dense stands of young conifers lacking in large overstory structure. In some cases, clearcut riparian areas now have dense stands of hardwoods and shrubs. These areas typically lack age and species diversity and cannot contribute a sufficient amount of coarse woody material to the aquatic system. Except for the lack of large wood available from fire-killed snags, this may not vary greatly, on a site-specific basis, from what was present in these draws following the infrequent stand-replacement fires of yore. However, across the landscape, these types of degraded riparian conditions are more present than they were in the recent past.

Ephemeral streams are those that flow only in response to large storm events, typically being very small and flowing less than 30 consecutive days. These streams are usually completely dry from late spring until late fall and tend to have no true riparian vegetation. Prehistorically, forests, woodlands, and grasslands along ephemeral streams in the lower elevations (under 3500 feet) of the Applegate Subbasin were probably very open, being maintained by periodic low-intensity ground fire. This is especially true of the more southerly facing slopes and low elevation areas with pine-oak stands. Trees along these streams would probably have been large and well spaced, interspersed with occasional brushy patches of shrubs. The stand structure would have been well adapted to and maintained by low-intensity fire. In some places fire would have swept through these areas often enough that understory vegetation would not have grown dense enough and big enough to produce a fire intense enough to kill the large trees over a large area.

Vegetation along ephemeral and intermittent streams presents us with the most dramatic difference between yesterday's picture and today's, especially in the lower elevations of the Applegate Subbasin. In many places open stands with large, well spaced trees and patchy areas of brush have been replaced with an almost unbroken dense stand of small diameter trees and brush. Examples of the large trees that once existed on these sites are still scattered through the area, although many have been removed through harvest or have died due to competition from the surrounding dense vegetation. It is unlikely these large trees will again become dominant along ephemeral streams unless action is taken to undo our years of fire exclusion. Where stands were once adapted to frequent low-intensity fire, they are now so dense that any fire occurring during periods of extreme fire danger could kill the existing trees. Many if not most of the hardwoods will resprout after such events. Much of this area has had fire excluded for so long that these hardwoods grow much more densely than they would if they had existed with frequent low-intensity fire. The net result is that vegetation could reach extremely dense levels following a major fire today much more quickly than in the past.

Loss of riparian habitat due to high-intensity fire is a part of the natural cycle in southwestern Oregon. However, due to fire exclusion and to an increase in human population and recreation in the Applegate Subbasin, there is a high potential that these fires will be more intense and will affect more acres of riparian habitat than in the past.

Fish on the Hook

Current Conditions of Fisheries in the Applegate

Applegaters who like to fish are well tuned to the rhythms of the fish runs, by season and by time of day, but even those who don't fish can know when the fish are running by the number of parked cars suddenly appearing along the Applegate River. If fish don't crowd the rivers and streams as they once did, nevertheless, schoolchildren, biologists, groups of tourists with their guides, and streamside homeowners still thrill to the spectacle of spawning salmon in the Applegate watershed.

The Applegate River basin is home to a variety of native species of fish, including coho and fall Chinook salmon, summer and winter steelhead, and rainbow and cutthroat trout, which are limited to streams and lakes or reservoirs. Non-native fish include Pacific brook lamprey, Pacific lamprey, Klamath small scale sucker, and reticulate sculpin.

One of the concerns of the land management agencies in the Applegate is the future health and survival of the anadromous fish within the basin: the salmon and steelhead which spawn in the freshwater streams and rivers of the Applegate basin and migrate to the ocean for their primary growth. The Applegate River Sub-basin represents twelve percent of the total acreage in the Rogue River Basin yet provides one-third of all coho spawning in the Rogue Basin. On May 6, 1997, coho salmon was listed as a federally threatened species in the Rogue River Basin.

Many factors in the Applegate watershed currently work to limit the numbers of salmon, steelhead, and trout in our rivers and streams. There is a general lack of water, and when there is water, it is likely to be too warm. Erosion from stream banks, roads, and hillsides leads to an influx of sediment that smothers fish eggs. A lack of large wood in the streams and riparian areas limits fish numbers because large wood attracts more wood, which is necessary for cover for the fish and for the production of insects that fish eat. There is a lack of rearing pools for juveniles and holding pools for adults. Migration corridors are being blocked by gravel push-up dams, concrete dams, and culverts. Finally, channelization of streams in the lowlands is an important limiting factor. When the meanders of streams are straightened out, for agriculture or other reasons, the land loses flood-plain activities, important fish habitat, and surface area of streams. Channelization also disrupts the seasonal fertilization of riparian areas by river sediments.

The Applegate Dam has reduced peak flows of the river; as a result riparian vegetation has encroached the river channel, which, in turn, has led to fewer stream meanders and less fish habitat. On the other hand, the Applegate River is augmented by the dam, an effect that has significantly improved the numbers of fall Chinook. The dam has had a trade-off effect for fish: the number of coho and steelhead is down because they can no longer get above the dam to spawn, but the cooler water provided by the dam is good for the fall Chinook.

High water temperatures and excessive erosion of sediment can have an adverse effect on fish. The Oregon Department of Environmental Quality sets the optimum stream temperature at 64 degrees; at warmer temperatures fish are susceptible to diseases and parasites. The Applegate Dam

releases water during the summer to cool the mainstem river, but this effect rapidly disappears downstream, and in major tributaries, low, warm flows continue to impair steelhead and coho production. Sediment and frequent high levels of turbidity are also continuous problems to egg, fry, and aquatic insects.

The Applegate River has some productive riparian and instream areas, but because riparian habitats, streams, and wetlands connect through privately and publicly owned lands in the Applegate watershed, management is difficult. Most streams in the Applegate River watershed have been altered. Agriculture uses large amounts of water especially for livestock pasture and crops. Consequently, there is less water for the fish. Mining, timber harvest, road construction, the withdrawal of water for agriculture, and the increased density of vegetation due to fire management have all left their effects on fisheries.

The overall decline in habitat conditions for fish populations is a concern in the Applegate. Forest health, especially along streams, influences stream habitat conditions. The cornerstone for restoring streams on public and private lands is protection for and enhancement of the vegetation along stream banks and in floodplains. Coho salmon, in particular, require low-gradient, alluvial valley streams and wetlands containing sediment deposited by flowing water. These habitats are mostly on private lands.

Based on the Northwest Forest Plan, key watersheds in the Applegate have been established for protection of salmon and steelhead: Beaver Creek, Palmer Creek, Yale Creek, and upper portions of the Little Applegate River watershed. Other critical areas for salmon and steelhead protection and enhancement are Williams Creek, Thompson Creek, Slate Creek, and Cheney Creek.

Silvicultural practices in the 1990s have begun to encourage the enhancement of riparian reserves for fish habitat. Fish habitat is enhanced by the presence of young trees that will eventually keep the water cool with their shade and by the reduction of brush, which helps young trees compete for sunlight. As trees get older and fall into the stream, they produce cover for fish and provide a food source of insects. Additionally, trees which fall into the stream hold back spawning gravels for eggs and produce pools below the logs for fish to live in. Thinning and burning understory levels has enhanced tree growth, which will increase the riparian tree populations suitable for habitat. With renewed efforts to encourage fire-adaptive vegetative species in the ecosystems, fish habitat may be enhanced. Since catastrophic fire further decimates declining stream health, strategies to reduce this risk that are carried out with sensitivity for the ecosystem as a whole will benefit the fish.

Foxes and Frogs and Siskiyou Salamanders Wildlife in the Applegate Watershed

“For in the end,” says monk, scholar, and writer Thomas Berry in *The Dream of the Earth*, “the human community will flourish or decline as the earth and the community of living species flourishes or declines.” Our attention to the wildlife in the Applegate is essential as we develop a fire management strategy.

Since the arrival of humans in the Applegate watershed, people have had an impact on the ability of the habitat to function as home range, dispersal zones, and migration pathways for native wildlife species. The Native Americans used plants and wildlife for products they needed, and they manipulated the land by using natural processes such as fire, which probably benefited their preferred game species on the valley floor and in low-elevation oak woodlands and conifer forests. Euro/Asian settlers, on the other hand, burned to expose land for its mineral potential or to increase grazing for sheep and cattle. Game animals and fur-bearers were hunted and trapped as marketable products to be exported outside the watershed. Large predators such as grizzly bears, wolves, and mountain lions were extensively hunted because they conflicted with human endeavors. Hydraulic mining changed soil composition and land forms and, therefore, habitat capabilities. Placer mining in creeks altered channels and riparian vegetation, disrupting habitat connectivity.

Before fire suppression, occasional intense fires and frequent small fires left many *canopy gaps*, and *understory habitat* was generally more open. A *mosaic* of habitats was likely the rule. Species that did well in this regime included northern spotted owl, American marten, and red tree vole. Species that have benefited from the denser stands caused by fire exclusion include California quail, black-capped chickadee, and mountain beaver.

By the 1920s fire suppression was public policy. By then, too, many private lands had already been logged to some degree. Shortly thereafter many of the federal lands began providing lumber to local mills. The larger numbers of acres harvested, the location of harvest units on north and east slopes, and the intensity of the harvest (clear cut vs. select cut), especially in the 1950s, began fragmenting late successional forest vegetation and influencing dispersal and migration of many species. Roads were built into forested lands to access timber harvest areas and to facilitate fire suppression.

More recently, human habitation in valley bottom lands and low-elevation oak woodlands and conifer forests has eliminated or substantially altered much of the habitat used for home territories, wintering grounds, and avenues for dispersal and migration by wildlife species such as elk, river otter, and red-legged frogs.

Riparian areas provide habitat for many of the watershed’s *indigenous* species such as the fisher, western pond turtle, and bald eagle, and they provide *dispersal and migration pathways* for other wildlife. But human activity, especially in the valley bottoms, has had a deleterious effect on

these environments. The clearing of land, the introduction of non-native species such as the Himalayan blackberry, and human development have all interrupted natural processes and changed river and stream flows and channels. Snag removal, fire exclusion, residents' water needs, and the addition of domestic animals have also taken their toll. Many riparian areas that have been managed for timber production no longer provide the structures and canopies necessary for species such as the tailed frog or hermit warbler. In some of these areas grazing, inadequate culverts at stream crossings, and roads that parallel streams have had additional negative impacts on riparian habitat.

In low-elevation woodlands, many of the large, open-grown oak trees are being replaced by oaks in more crowded conditions with sparse upper reaches and smaller limbs. The loss of "savanna" type oaks contributes to the decline of many species that need cavities of a sufficient size in living and dead oaks for nests, dens, and roosts. Stands of ponderosa pine and sugar pine were, in their natural condition, relatively open with a variety of grasses and forbs available as wildlife forage; living, large pine trees provided food and shelter, and large pine snags provided maternity and roost sites for bats and nest sites for *cavity dependent species*. However, these pine species are being lost in the watershed at an alarming rate due to bark beetle infestation, selective logging, and the encroachment of shrubs and other conifer species as a result of fire exclusion. Loss of pine stands, lack of replacement stands, and the logging of dying trees (*mortality salvage*) threaten existing and future supplies of high quality snag habitat. In the short term the abundance of snags resulting from the current high levels of pine mortality will benefit wildlife species dependent on them. In the longer term, habitat may be diminished.

Douglas-fir and white fir forests have also been altered by fire exclusion: dense stands of these species now occur over a greater number of acres, and young and mature forests in this condition will take longer to attain the structure and composition of late successional forests. The wildlife species that prefer Douglas-fir and white fir forests have likewise been affected. However, these stands do provide habitat for a wide variety of species. In 1994 Dr. Stuart Janes of SOU began looking at trunk diameters to determine the conditions of habitat used by *neotropical migrants* in the Williams Creek subwatershed. His initial data found that stands on north-facing slopes with *basal areas* of 190 to 220 square feet per acre were similar to late-successional forests in terms of providing habitat suitable for some breeding birds. On the other hand, stands in the same area and with similar basal areas but on south-facing slopes contained bird populations at 55% less than on the north-facing slopes. This initial work suggests the variation within the watershed.

Snags and down logs provide essential habitat for many special status species within the watershed and contribute to the viability of many other species. Most of the bird and all of the bat species utilizing snags are insectivorous and help regulate insect populations. The number of snags and down logs, the extent of their decay, and their distribution in the watershed are important contributors to ecosystem health. More research needs to be done for us to understand the requirements of snag-dependent and -using species, the interaction of these species as a community, the impact of human activities on snags and down logs, and the results of an increase in forage for insects coupled with a loss of nesting and roosting habitat for birds and bats.

Areas suitable for deer winter range are also a valuable part of the landscape. Most of these areas occur below 3,000 feet in brush fields that are most often south-facing and, throughout southwest Oregon, are often in a decadent state inadequate to provide the nutritional level needed by the resident deer population, especially pregnant does. Although decadent and thick brush stands provide deer with hiding cover for escape from predators, hunters, and poachers, the deer's primary need is for adequate nutrition. Historically, these winter range areas would have been revitalized by periodic fire, which kept some portions producing high quality forage while other patches gained

decadency until fire burned through them. When such winter ranges are not managed, they can increase the spread of fire to other upland habitats or nearby homes, as was seen in the Quartz Fire of 2001, which started in the lower brush fields. These areas were in dire need of revitalization or thinning; hence, the wildfire quickly spread to the uplands and adjacent habitat of the northern spotted owl. In the future it will be desirable to see patches being managed by fire and/or mechanical techniques annually to have the desired mixture on the landscape, taking into account deer winter range, the habitat needs of various species of concern, and the location of threatened and endangered species and of Late Seral Reserve (LSR) boundaries.

These Late Seral Reserves were established in the Northwest Forest Plan to address concern over the connectivity and fragmentation of late-successional forests within the watersheds. By designating LSRs, the writers of the plan hoped to insure management activities that would promote and maintain the late successional characteristics of the forest. Goals for wildlife included that 15% of each watershed would remain in late successional forest, that riparian zones would have buffers, and that 100-acre reserves would be established around known spotted owl sites. The intent of the first two goals was to allow dispersal and migration of less mobile species within and between watersheds.

Planning to meet the needs of all of the above species and their habitats could take years. However, meeting the needs of some of the species that have political, economic, or legal significance will help to guide planning efforts for fuels modifications across the watershed. It is desirable to get fire back into these areas as a tool to maintain these habitats and reduce the chances of large-scale conflagrations that remove some or many components of the habitat from the land.

Ruminating on Ruminants

Rangeland Management in the Applegate Watershed

Grazing is one of many uses of public lands, and although the impact of wildfire on rangelands in the Applegate watershed is generally minimal, it is important to consider this use of the land if we are to have a complete picture of the area. The BLM and Forest Service Rangeland Management Programs administer eighteen grazing leases to nine operators within the Applegate Watershed. In addition, private timber companies lease several thousand acres to these agencies for grazing. Many acres of private land in the Applegate are used for grazing.

The primary goal of the grazing programs is to provide livestock forage while at the same time maintaining – or improving – upland range conditions and riparian areas. The BLM keeps track of how well it is meeting this goal with the use of monitoring studies. In 1995 BLM revised its grazing regulations through Rangeland Reform. BLM's standards for rangeland health now address the function of the land (grazing) in terms of the biological health of the land according to laws regulating water quality and plant and animal populations and communities. BLM will be assessing rangeland health on grazing allotments over the next ten years.

The Forest Service works under a slightly different bureaucratic system. Annual operating plans are made each year for each allotment. Environmental Assessments are done periodically. The Wagner and Glade allotments have recently had EAs completed; all the other allotments on the Applegate Ranger District are due for updated EAs.

Key Forage Areas, which are used to determine livestock moves between areas of the allotment, are important to rangeland management. They serve as indicators of proper livestock and forage management. They are evaluated, as often as necessary, for ecological conditions and to ensure that riparian conditions and salmonid habitat are in keeping with the standards set by the Aquatic Conservation Strategy (ACS).

Money for rangeland improvement comes from grazing fees and agency budgets. Rangeland improvements are designed to benefit wildlife, fisheries, and watershed resources and to improve conditions for livestock grazing. Prescribed fire and fire prevention strategies should take into account these goals of rangeland improvements. (See page 76 for a more complete discussion of this point. See page 81 for information on grazing with goats as a fuel reduction tool.)

Take a Left at the Stop Sign How Roads Influence Fire

Roads are a mixed blessing. They take us to work and to our friends' homes; they give us the means to explore new places and, therefore, to expand our spirits, and they allow access to fires. Although in the Applegate, roads on federal lands were primarily constructed for logging, these roads are also used for fire suppression and, as commercial logging activities continue to decline in southern Oregon, more and more for access to recreation sites.

But roads can also be the source of vehicle-carried garbage, noxious weeds, and dust problems along creeks or home sites, and the more we use the roads, the more we increase the chance of fires starting from vehicles, campsites, and general public use. The introduction of human-caused fires is related not only to people on the roads but also to remote campsites of hunters, OHV users, people in the woods for special forest products, etc., all of whom use roads to get to their remote campsites.

On the other hand, the more drivers there are on the roads, the more chance that these fires will be spotted and reported and therefore the more chance they will be put out efficiently and quickly.

Roads have also been an environmental concern. As road construction equipment improved between the 1950s and the 1980s (from mechanical to hydraulic), road construction techniques also improved, thereby allowing more conservation-minded approaches to constructing roads. For example, now, in steep terrain, road workers use excavators to remove earth, which is hauled to designated waste sites or dumped in places that need fill material. This contrasts with the earlier style of road building that simply used a dozer to push the dirt out of the way, casting the extra down the hill. Using more skilled road designers and road locators, newly constructed road systems will function more in balance with adjacent resources and project objectives.

Poorly designed roads are like poorly designed houses or cars: they do not function as intended or desired. Roads can be a source for erosion, but a road that has been properly designed and constructed and conscientiously located will have less of an impact on resources than other roads. However, it does take a few years for grass and other vegetation to grow on roadway cuts and filled slopes. Putting gates on roads to discourage unauthorized access also mitigates environmental impacts.

Agencies in the Applegate are currently taking a good look at road networks on public lands and balancing the need for access with environmental concerns. As they consider the role of roads in the development of a fire plan, they weigh ecosystem health needs with administrative needs in caring for the land and human needs for access to future home sites and to recreational areas. Federal agencies are nearly at the end of constructing new roads for timber removal and are more in the business of land and road stewardship. Although certainly roads in the Applegate (or most roads in the Applegate) need to be monitored and maintained for current and future users, the agencies are presently studying those roads that might cause heavy resource damage and are not needed

for access. Some of these roads are being removed. Because roads on private lands represent a substantial percentage of overall road density, all landowners in the valley should manage their land for road stewardship. This is not solely a federal agency issue.

On public lands and for private landowners, access or lack of access for fire suppression teams can mean the difference between preservation and loss of property or of life. Good road access directly affects fire suppression by reducing fire response time, allowing quicker fire containment in some instances, reducing fire size by allowing more suppression equipment to be applied directly to the fires, etc. Besides providing access for fire suppression equipment and personnel, roads can serve as barriers to overland and creeping fires. In some cases, this could be the difference between a few acres being burned or hundreds of acres.

For all of the reasons given in the previous paragraph (faster response, quicker containment, etc.), good road access will have a positive impact on total fire suppression costs, including post fire rehabilitation efforts and costs. In addition, because fire suppression costs more where access is poor, land resource managers and the public as a whole should consider the economic consequences of poor roads – including the environmental costs when funds to fight fires are taken away from other needed programs.

Applegaters at Play Recreation on Public Lands in the Applegate

The Applegate brims with opportunities for outdoor recreation, many of which are on public lands. When Applegaters ride horses, mountain bikes, or off-highway vehicles in the Applegate, when they fish, hunt, camp, and hike, when they go birding, rock climbing, or hang gliding, when they visit natural and cultural heritage sites in the Applegate, when they enjoy picnicking, swimming, rafting, and kayaking in the summer or snowmobiling, Nordic and telemark skiing, and back-country snowboarding in the winter, when they are in the outdoors to photograph and view scenery and wildlife, they are often on BLM or U.S. Forest Service public lands.

BLM manages three exclusive-use areas: the Sterling Mine Ditch Trail for hiking and equestrian use, Kenny Meadows as a day use/picnic facility, and Woodrat Mountain launch area for hang gliding. Within these sites and elsewhere, recreation activities might occur as described above. The U.S. Forest Service maintains three developed recreation sites – the Upper Applegate River Corridor, the Applegate Lake Recreation Area, and the Squaw Lakes Recreation Area. It also oversees four main undeveloped areas for recreation: the Red Buttes Wilderness, the Siskiyou Crest Zone, the Middle Fork of the Upper Applegate River, and the Boundary/Craggy Crest Zone.

Like hikers and horseback-riders, off-highway vehicle (OHV) enthusiasts use public land throughout the Applegate all year long, though they enjoy their activities in the greatest numbers in the spring and summer. All these recreationists tend to stay home more as the average daily temperatures rise to summer highs. The agencies predict that OHV use will be the fastest-growing category of recreation on public lands in the Applegate within the time span of this plan. This recreation causes some conflict with other users in some areas, for instance in the Boundary/Craggy Crest Zone, which extends from Grayback Mountain to the Red Buttes Wilderness Area and includes the Oliver Matthews Research Natural Area and Miller Lake. Demand for maintaining OHV trails is increasing in the Boundary/Craggy Crest Zone, leading to the potential for system roads to be converted to trails.

Many campers in the Applegate, including those who are there to hunt and fish, use "dispersed camping areas" (undesignated campgrounds) on public lands. The Middle Fork of the Applegate River, with its large plunge pools for swimming and fishing, is a favorite spot and has over twenty sites within a four-mile section of this corridor. Almost every dispersed campsite is inhabited on weekends throughout the summer. Unfortunately, because group sizes have increased and because vehicles are encroaching on vegetation, the campsites are enlarging. Also, because of an increased demand for dispersed camping, some areas above Forest Service Road 1040 have been turned into campsites, increasing the potential for human-caused fires to escape up the hillside. Fire in the Middle Fork corridor would have a serious impact on its recreation values. Increased camping on road landings, quarry sites, and other undesignated areas during deer hunting season is also a concern because it coincides with the peak of fire season, and, therefore, the risk of wildfires increases. Yearly fire prevention patrols are conducted during the peak use weekends to advise hunters and campers of current fire restrictions and proper public land use ethics.

Another concern for fire on recreation sites is at the Applegate Lake, where lake debris has been a problem, particularly after the 1997 flood. This is a year-round issue for boaters, and the debris has an impact on the available facilities; in addition, an accumulation of debris on the lake shore during the summer is a fire hazard. There is high potential for human-caused fires around recreation sites and at the lake when the water level drops low enough for fires to occur below the full pool line. There is also potential for lost revenue to concessionaires during fire emergencies.

Set in a beautiful context of woods and mountains, Squaw Lakes offers a unique "semi-primitive, non-motorized" recreation experience that is in high demand. All campsites within the recreation area are only available through a reservation system, and camping gear must be carried in on foot. The potential for an escaped campfire at Squaw Lakes is not much different than that at most recreation sites; however, because of the high degree of geologic instability from black schist soil types, an escaped campfire could pose especially serious problems to the soil stability and character of Squaw Lakes.

One of the main concerns at developed recreation sites along the Upper Applegate is the mortality of large conifers within the recreation sites and throughout the riparian area. Over the last ten years the loss of drought-stricken ponderosa pines and Douglas-firs has meant fewer large trees and less shade on the sites. Large trees and shade are both key factors in maintaining the long-term character and attractiveness of these places. Smoke inversions and traffic are other issues of concern relating to fires in and around the river corridor.

The Red Buttes Wilderness is a popular backwoods destination for many Applegaters. Some of the 2000-3000 visitors a year may notice some short- and long-term effects of fire activity that has occurred over the years. Short-term effects include reduction of water level in wilderness lakes by helicopter use, fire line construction, and barren areas created by crew camps. Long-term effects of fire suppression are evident in the Lower Butte Fork Canyon with its heavy fuels build up and high fuels hazard. The Rattlesnake Fire of 1987 left stark examples of both short- and long-term effects of fire suppression in wilderness areas. Ultimately the goal for wilderness managers will be to allow natural occurrences to take place without human intervention, a challenge undertaken in some wilderness areas with mixed results.

There is comparatively moderate visitor use on trails on public lands within the Applegate watershed, and the trails are in generally good condition. Trail experiences are of high quality with good opportunities for solitude and interaction with the natural environment. Several interpretive opportunities exist as well as opportunities for people interested in mechanized and motorized trail experiences. Most lands used for recreation in the Applegate watershed are easily accessible by vehicle. People can travel to the most popular recreation areas during the summer in ordinary passenger vehicles such as sedans with standard ground clearance.

Recreation opportunities are often filled with expectations for solitude, challenge, and interaction with the environment. Views can be spectacular and inspiring. However, summertime pleasures and expectations are more and more likely to be temporarily disrupted due to wildfires and fire suppression efforts in southern Oregon. Campgrounds and trails might be temporarily closed for the safety of users and to allow for unhindered fire suppression access. Lines of vehicles carrying fire fighters and supplies on forest roads, the assorted staging areas for people and supplies, and the flight of aircrafts could all be daunting to those unfamiliar with fire and fire suppression. To recreationists it is not always obvious why a helicopter is disrupting a campsite near a lake, but opportunities exist to educate forest visitors regarding fire.

Applegaters are fortunate to live in such a beautiful area with so many recreation opportunities, and they need to keep in mind that landscape management and the effects of fire will inevitably have an impact on recreation opportunities.

What a Beautiful Place the Applegate Is Scenic Values in the Applegate

"What a beautiful place you live in," visitors say again and again to their hosts in the Applegate. "Yes," the hosts answer, "isn't it?" because they know it's beautiful. They know it's beautiful because they see grand vistas of mountains and forests from their kitchen windows, because they drive to work along a proposed "discovery loop" (Highway 238), because they take in gorgeous views on little-used back roads that weave through the valleys and mountains, because they hike or ride horses among the big trees and take their cameras to wildflower meadows and have picnics at rivers and lakes with a background of mountains.

Viewsheds abound. For pastoral views, Applegate residents might drive their visitors along Upper Applegate Road, where Grayback Mountain rises dramatically above the distant ridges, green with forests, that form the backdrop for farmhouses and barns, hayfields and grazing cattle, and where the Applegate River threads through the scene silver and sinuous like a holiday ribbon. For mountain views they might hike up Grayback itself to show their visitors a hawk's-eye view of farms and homes in the Williams and Thompson Creek valleys, of deeply forested hills and ridges, of dramatically snow-capped mountains: Mt. Shasta, Mt. McLoughlin, the mountains of the Crater Lake rim. For waterfalls, they could take visitors to the gorge way up the Applegate River; for big trees they could go up the Middle Fork of the Applegate into old-growth Douglas-fir, white fir, sugar pine, and ponderosa pine forests; for wildflowers they could go up the Middle Fork for the calypso orchid or into the Red Buttes for masses of meadow flowers or up Steve's Fork for wild lilac or along East Fork Road in Williams for bachelor buttons and poppies or in their own back woods for wild roses, wild iris, phlox, trillium, columbine, and on and on. And if they really want to impress their visitors with the beauty of the Applegate, they'll take them to Whisky Peak for a sunset over the Red Buttes, and then they'll linger into the night for a star show beautiful enough to make city folks weep.

Though no survey has been taken, it may be that the scenic or aesthetic value is at the top of the list of values held dear by Applegate residents.

In management policies, the agencies responsible for federally managed land in the Applegate also concern themselves with the scenic quality of the watershed. They inventory, evaluate, and manage lands for their scenic value, designating, describing, and protecting valued viewpoints and viewsheds. Here is a sample of some of these viewpoints along with their agency descriptions:

- (1) Along the Upper Applegate Road: "Highly photographed is the view of the Red Buttes with Applegate Lake in the foreground, primarily the Butte Fork and Middle Fork Watersheds."
- (2) From the Pacific Crest National Scenic Trail: "Nearly 360-degree views of several peaks in the Cascade and Siskiyou Mountains, highlighted by views of Mt. Shasta, Preston Peak, and Mt. McLoughlin. Geologic color contrasts are impressive with marble, peridotite, and granite outcroppings."

- (3) From the Whisky Ridge Viewpoint and Whisky Peak: “Highlight of Whisky Ridge Viewpoint is the engraved rocks locating each peak on the crest of the Red Buttes Wilderness. Whisky Peak is a former lookout site with 360-degree views of the western portion of the [Applegate watershed], including Whisky Creek, Steve Fork, and Upper Middle Fork Watersheds.”

Management goals for these and many other Applegate viewsheds are "preservation" and "retention"; their quality is marked "very high" and "high." (Such charts of federally managed lands are like official documentation of scenic beauty that Applegate residents know, anyway.)

These and other viewscapes generally appear unaltered since the 1970s and '80s, as the amount of logging has decreased since then. Logging on the most recent timber sales (Little Applegate, Beaver/Palmer, Lower Summit, and Squaw/Elliott) has appeared to slightly alter landscapes, but units are anticipated to blend well with the surrounding environment over the long term. Nonetheless, naturally occurring fires and floods have affected views within the Applegate watershed. For example, the Sheep Creek Landslide on Wagner Butte is a landmark that can be seen in background views from the western edge of the Applegate Management Area. Two major fires, the Rattlesnake Fire (1987) and the Quartz Fire (2001), although heavily altering the color and texture of the landscape, have a mosaic effect, which may be considered natural, depending on the values one attaches to the area.

In considering scenic values, a major controversial issue is that of post-fire salvage activities. To some eyes, fire creates a change in texture, color, and scale of a viewshed which is (and looks) natural, whereas *salvage logging* after fires creates an unnatural effect and seems to be much more destructive to the scenic value than the fire itself. Other people, recognizing the possible waste of a resource, disagree with this point of view, confirming the cliché that beauty is in the eyes of the beholder.

Nonetheless, Applegaters firmly believe that the eye of any beholder will find beauty in the Applegate, and they value that beauty highly.

III. How To If You Want To Strategies and Methods for Fuel Reduction

From Philosophy to Action How We Arrived at Fuel Reduction Strategies

We started with philosophy.

Most of us in the Applegate agree that our valley is in desperate need of fuel reduction work, but because the Applegate watershed encompasses almost half a million acres, how do we go about this? Do we treat every area in the valley in the same manner? The problem of overstocked forests is obvious, but what are our objectives? What are we attempting to do by reducing fuels? Certainly we want to reduce fire hazards so that we eventually reduce the risk of catastrophic fire, but aren't we also attempting to restore the ecological integrity and health of our forests and woodlands after so many decades of fire suppression?

As we grappled with these questions in looking at how to develop a fuel reduction plan for the Applegate, other questions became pertinent: What is at risk in the event of a wildfire? How do we identify what things we most want to protect from destruction during a wildfire?

That last question has an answer, at least from the agencies in Oregon that fight wildfires. For them, protection priorities are pre-mandated, in effect prioritizing the values-at-risk that they would protect. In the following comparative chart, "life" refers to human beings (residents and fire fighters); "property" refers to those things that humans construct or own, and "resources" refers to the natural environment (trees, air, water, soils, wildlife, scenic vistas, etc.).

<u>First priority</u>	<u>Second priority</u>	<u>Third priority</u>
ODF - life	ODF - resources	ODF - property
BLM - life	BLM - property	BLM - resources
Forest Service - life	Forest Service - property and resources	

Interestingly enough, a dozen or so comment forms from Applegate residents embarking on fuel reduction work indicated their main goals in thinning their forests were to care for the forests first and protect homes second. Are these, then, their top values to protect?

From philosophy we went to data. To help us translate these priorities, these "things we value most," into strategies of where to go first and what to do in developing a fuels reduction plan, we formed a committee of representatives from the fire districts, ODF, BLM, Forest Service, and the community. This committee looked at maps of the watershed that contained layers of information about historical fire starts, communities at risk (those areas where there is a high density of homes per square mile), and *fire hazard* ratings (an analysis of fire's ability to spread based upon vegetation, *canopy* cover, slope, *aspect* and elevation). We found that over 29% of the watershed is rated at high hazard, 54% at moderate, and only 16% at low fire hazard. We found areas with a long history of lightning strikes and areas with an equally high incident of human-caused fires. We identified areas of high hazard directly surrounding some communities or neighborhoods and other

areas in uninhabited parts of the watershed that typically received a lot of lightning strikes each year and that were adjacent to highly populated areas or areas with a high degree of endangered species habitat.

We added layers to our map to provide more information: a layer of roads (which both help and hinder fire) and a layer of topography or contour lines so we could look at steepness and elevation. During this process we were looking at maps that did not show land ownership. This is a unique planning concept, but we felt we needed to look at the whole picture. As we really got into identifying critical areas at risk, one agency member of our team suddenly said, "Hazard reduction without borders! Wow!!" It was a novel and exciting concept to him, someone who's been in the business for 22 years.

It was a lot of information. Where to start in developing fuel reduction strategies for the whole watershed was a tough question.

Our maps and layers suggested we begin at the wildland-urban *interface*, where the physical aspects of the lands, the numerous human-caused fire starts, and the vegetation buildups presented the highest threats. In general, areas around homes seemed to be the single most essential point to address throughout the watershed. After that came lands near residences and roads, especially those where aspect, vegetation, slope, and elevation combined to increase the hazard ratings. Even as we decided to concentrate efforts in these high-risk areas, we emphasized the importance of not losing track of the overall picture of watershed-wide healthy forests – that is, forests with biodiversity, beauty, and resources that can provide us with cool, clear water; fish; a sustainable timber supply; and peace of mind.

Our analysis areas became the nineteen Strategic Planning Areas, or SPAs, that we have used throughout this Fire Plan. We found that specific strategies for fuel reduction varied as we looked at each SPA, and that matters were further complicated because SPA boundaries were most likely ridgetops, so in many cases strategies in one SPA became linked to strategies for neighboring SPAs.

We then added to our map a layer of places where fuel reduction treatments have already been completed, to show some of the defenses that have already been built. With this information, it was possible to get strategic, tactical, and calculated in our ideas. An existing shaded fuel break here, a cluster of brush fields thinned by homeowners over there, a river and a couple of wide driveways – we could see where all of these were working together to more effectively protect a small community from a nearby wildfire. We could see how fuel thinning along roads in highly hazardous areas might reduce the number of human-caused fires that start small but wind up raging out of control. We could see how individual fuel breaks could be connected to protect a small watershed from a neighboring high-hazard area. By adding another map layer that showed us the location of threatened wildlife, we were also able to consider the protection of endangered species habitat in our fuel reduction strategies.

We stayed borderless as we looked for strategies within each SPA. We looked for areas of high risk and high hazard; we looked at what had already been treated there and considered what we might suggest to reduce risk. Some SPAs had high risks (i.e. lots of homes) and very high hazards or fuels buildup. Another had a high population but relatively flat land that was mainly adjacent to rivers and kept green with irrigation. Still another had virtually no homes, but its forests were rated very high hazard with lots of lightning fire starts.

Finally we were ready to move from information to strategy. To do this, we had two requirements: first, to incorporate the goals, objectives, values, and concerns of those community members who had given us feedback regarding fuel reduction strategies, and, second, to see if it was possible to prioritize or rate the suggestions. In discussing the first requirement, we answered

the second. Community members had told us that they were concerned about fuels buildup because of fire safety and forest health issues. They continually mentioned areas directly around their homes, including federally-managed lands adjacent to their own property, that they considered safety liabilities. We decided our only two priorities would be private and federally-managed land around the communities-at-risk. Strategies would develop from these.

On the following pages is a list of the SPAs and recommendations for action in each. We've tried to explain some of the reasoning behind the ideas. As you can see, to talk about a certain road or hillside is as site-specific as our Applegate Fire Plan will get. We are a strategic plan only.

With this list, we – you, all of us – can move from strategy to action. Lots of things can be done with the list, or maybe nothing, depending upon the degree of continued community involvement. Some items may be organized into a grant request from resources like the National Fire Plan or maybe our counties' Title III funding. One example is to reduce fuels along some of our more over-grown roadways. Some of these recommended projects can be defined and developed by neighborhoods with help from their local fire department. (We will continue to request funding for work around residences in the valley.) Some of the items on this list will be completed by the federal land management agencies as they implement approved forest health projects. Recommendations for reaching out to and interfacing with neighboring private landowners will play a big role in the development of actual on-the-ground work for the agencies. Future federal projects will most likely be determined, to some degree, by the level of public interest in working alongside the agencies toward borderless fuel reductions. I.e., if the agencies knows that you, as their neighbor, are interested in combining fuel reduction efforts, they will be more than willing to work together.

Finally, keep in mind that everything in this plan is voluntary. It is your plan, and we welcome your participation.

Hazard Reduction without Borders

Recommendations by Strategic Planning Areas

GLOSSARY:

SPA: Strategic Planning Area

CAR: Communities-at-Risk

LSR: Late Seral Reserve

T & E: Threatened & Endangered (species)

WUI: Wildland-Urban Interface

***** #1 PRIORITY FOR ALL SPAs WITH CARs: TO DO WORK AROUND HOMES *****

1. Middle/Butte

- a. Almost all is wilderness area; therefore fuel reduction is mostly from natural fire starts and control. Recommendation: Develop a fire management plan for the wilderness area.
- b. Additional lands are in Late Successional Reserves with some of the best and oldest examples of old growth. Recommendation: Develop and follow fuel reduction strategies to protect old growth.

2. Carberry (Steve/Sturgis/Obrien)

- a. Roadless and recreation areas at the west end: Are there any fuel reduction projects available? The Forest Service should analyze this.
- b. Recommendation: Complete planned fuel reduction work by the agencies in areas around the CARs, out to 300 feet. Consider planning fuel reduction work in the Brush and Trail Creek areas, to help buffer the CARs and the Thompson Creek area.
- c. FS Road 10 / County road 777: This is an evacuation loop road for Carberry and Thompson Creek residents. Recommendation: Look at hazards along this road and plan fuel reduction work here soon.

3. Squaw/Elliot/Lake

- a. Recreation activities around the lake cause many fires that can spread to populated and private lands. Recommendation: Assess hazards around recreation areas and design fuel reduction work, especially on the northwest side of the lake, to provide protection for the Carberry area.
- b. Elliot ridge: South slope is particularly high hazard. Recommendation: Because of poor access and the amount of acreage, plan prescribed burns to reduce fuel buildup.

- c. Squaw south slopes are high hazard. Recommendation: Overlay USFS NEPA approved projects that include prescribed burns but haven't been completed. Add more strategic fuel reduction work to this area to effect a buffer zone that would stop a large event that could go into the communities-at-risk areas of Upper Applegate Road.

4. Beaver/Palmer

- a. Palmer & Kinney Creeks. Recommendation: Fuel reduction is needed in these locations to protect CARs along Upper Applegate Road from fires spread by afternoon winds. Complete the two prescribed burn projects already planned.
- b. Beaver Creek Road. Recommendation: Continue Forest Service work for good fuel breaks and tie in with existing Charley Buck ridge fuel breaks.
- c. Complete the collaborative China Gulch project; review existing Forest Service fuels management plan adjacent to Upper Applegate Road.
- d. Continue the fuel break along Humpty/9-mile/Thompson Creek SPA ridge to the south and west to protect Thompson Creek area. This work has been discussed, but this is a possible T&E area. Also, continue the ridge fuel break to the east.
- e. CARs in this area are extremely high hazard. Recommendation: Do fuel reduction work on private lands and assess agency lands along Upper Applegate Road for complementary work.

5. Star

- a. Recommendation: Assess agency lands along Upper Applegate Road for possible fuel reduction work to complement that on private lands.
- b. Humpty/9-mile/Thompson Creek (SPA): Recommendation: Continue fuel break south and west along ridges to protect Thompson Creek (planned, T&E area); also continue ridge break east (Star/Chapman/Keeler).
- c. Recommendation: Complete and implement fuel reduction portions of BLM's Bobar project.

6. Upper Little Applegate

- a. Recommendation: Increase the scope of and complete fuel reduction projects in the Yale Creek/Dog Fork neighborhood. Reduce fuels along Yale Creek Road for an escape route.
- b. Little Applegate Road: Recommendation: Construct buffers along roads on federally-managed land – 300 feet wherever possible.
- c. Recommendation: Complete planning and implement of fuel reduction portions of BLM's Prince Castor, Bald Lick, and Bobar projects.
- d. North/East borders: Recommendation: Include fuel reduction work here in future BLM project planning.

7. Lower Little Applegate

- a. Recommendation: Complete planning of and implement fuel reduction portions of BLM's Bobar project.
- b. CARs are dense and high hazard. Recommendation: Promote fuel reduction work on private lands, private timber land, and adjacent federally managed lands as collaborative projects.
- c. Recommendation: Complete planning of and implement fuel reduction portions of BLM's Bald Lick and Prince Beaver projects.

8. Spencer/Forest

- a. West side of Sterling Creek Road in the Cady Road through to the Poorman Creek Road area, 38S. Recommendation: Because of high hazard, promote private fuel reduction work.
- b. All CARs with smaller roads. Recommendation: Do fuel reduction around homes and create buffers on roads.
- c. Forest Creek Road. Recommendation: Because private lands are high risk, promote fuel reduction work around homes.
- d. Area between Forest Creek and Humbug drainages. Recommendation: Complement the good fuel break in this area by continuing into 38S3W and in the area between Star and Chapman/Keeler.
- e. Cantrall Buckley Park side of river, Lomas and Dunlap area. Recommendation: Do fuel reduction work on private and park lands.

9. Humbug

- a. CARs are very high risk. Recommendation: Do fuel reduction work around homes and on private property, checking road access and driveways.
- b. Cantrall Buckley Park side of river, Lomas and Dunlap area. Recommendation: Do fuel reduction work on private and park lands.
- c. Recommendation: Complete fuel reduction portions of BLM's Ferris Bugman and Keeler Crick projects; include private land owner collaboration with BLM for fuels treatments.
- d. Recommendation: Continue the fuel break between Humbug and Forest Creeks.
- e. Recommendation: Construct a fuel break along the ridge between Thompson Creek east to the Chapman/Keeler area.
- f. Recommendation: Continue the fuel break between the Star SPA and the Chapman/Keeler area.

10. Thompson

- a. Recommendation: Create a fuel break along the ridge between Thompson Creek east to Chapman/Keeler.
- b. FS Road 10 or County Road 777. Recommendation: look at fuel hazards along this evacuation loop road for Carberry Creek and Thompson Creek, and work here soon.
- c. Recommendation: Work on the fuel break between the Star SPA and Thompson Creek area.
- d. CARs are high risk: Do fuel reduction work on private lands.
- e. Recommendation: The Forest Service should do fuel reduction work in the SE corner of drainage to complement BLM's work.

11. East Williams

- a. Recommendation: Complete fuel reduction portions of BLM's Scattered Apples project, incorporating collaborative work on adjacent private lands.
- b. CARs are high hazard. Recommendation: Do fuel reduction work around homes and on private properties.
- c. LSRs: Recommendation: Remove ladder fuels in strategic places near CARs, possibly as a demonstration project. (Make sure to address species habitat.)

- d. Recommendation: Investigate continuing the fuel break at the SE border with Thompson Creek drainage on Forest Service land.
- e. Port-Orford cedar root disease: address mitigation work in all projects in this area.

12. West Williams

- a. LSRs: Recommendation: Remove ladder fuels in strategic places near CARs, possibly as a demonstration project. (Make sure to address species habitat.)
- b. Port-Orford cedar root disease: Address mitigation work in all projects in this area.
- c. CARs are high hazard. Recommendation: Do fuel reduction work around homes and on private property to protect LSRs (possibly as an incentive program).
- d. Recommendation: Complete any ladder fuel work on private industry lands in west corners of this SPA to reduce risk to the LSRs.

13. Lower Williams

- a. Ridge between Murphy and Lower Williams. Recommendation: Recognize as a strategic point for fuel break, but protect as an LSR.
- b. CARs are high risk. Recommendation: Buffer up to 300 feet on federally managed lands next to the LSRs.
- c. Port-Orford cedar root disease: Address mitigation work in all projects in this area.
- d. Recommendation: Complete any ladder fuel work on private industry lands in the west corners of this SPA near the LSRs to reduce risk to LSRs.
- e. Recommendation: Complete the fuel reduction portion of BLM's Scattered Apples project, incorporating collaborative work on adjacent private lands.

14. Slagle

- a. Recommendation: Complete the fuel reduction portion of BLM's Ferris Bugman project, collaborating with adjacent private landowners on fuel reduction work whenever possible.
- b. Recommendation: Close fuel break between Slagle Creek SPA and Savage Creek drainage wherever possible.
- c. CARs: Recommendation: Do fuel reduction work along roads and around homes because of numerous dead-end roads.

15. Murphy

- a. All CARs: Do fuel reduction work around homes and on private property.
- b. Board Shanty and Grays Creek Roads are high risk due to dead-end roadways. Recommendation: Do fuel reduction work along roads and around homes.
- c. Ridge between Murphy and Murphy Creek is a strategic point but is private land. Recommendation: Treat fuels under power lines, at a minimum.
- d. Recommendation: Complete the fuel break between the Murphy SPA and the Savage Creek drainage wherever possible.
- e. Ridge between Murphy and Lower Williams is a strategic point for fuel break, but it is an LSR. Recommendation: Protect with fuel reduction work.
- f. Recommendation: Complete BLM's North Murphy project.

16. Murphy Creek

- a. All CARs: Do fuel reduction work around homes and on private property.
- b. Up Murphy Creek Road, along the south border of the CAR, is high hazard and risk (high school located here). Recommendation: Buffer the LSRs with a special fuel reduction project in conjunction with Hidden Valley High School students.
- c. LSRs: Recommendation: Remove ladder fuels in strategic places near CARs, possibly as a special demo project. (Make sure to address species habitat.)
- d. Ridge between Murphy and Murphy Creek is a strategic point but is private land. Recommendation: Treat fuels under power lines, at a minimum.

17. Cheney

- a. Identified as probable owl corridor. Recommendation: Watch canopy closure, maintain at greater than 40%.
- b. CARs, especially at the base of Cheney Creek and off Fish Hatchery Road. Recommendation: Do fuel reduction work around homes.
- c. Recommendation: Create a buffer on NW edge of CAR near ridge between Cheney and Slate SPAs.
- d. Recommendation: Create a fuel break on the south border of the CAR to protect LSRs.

18. Lower Applegate

- a. Recommendation for all CARs: Do fuel reduction work around homes and on private property, due to density and fire start history.

19. Slate

- a. CARs and Highway 199 are very high risk. Recommendation: do fuel reduction work around homes, along roads (possibly Title III projects).
- b. Recommendation: Complete fuel reduction portions of planned USFS Waters Thin and other federal projects, incorporating CAR/WUI collaborative work on adjacent private lands at the same time.
- c. Identified as probable owl corridor. Recommendation: Watch canopy closure, maintain at greater than 40%.
- d. Recommendation: Complete Josephine County's proposed fuel reduction project.
- e. Port-Orford cedar root disease: Address mitigation work in all projects in this area.

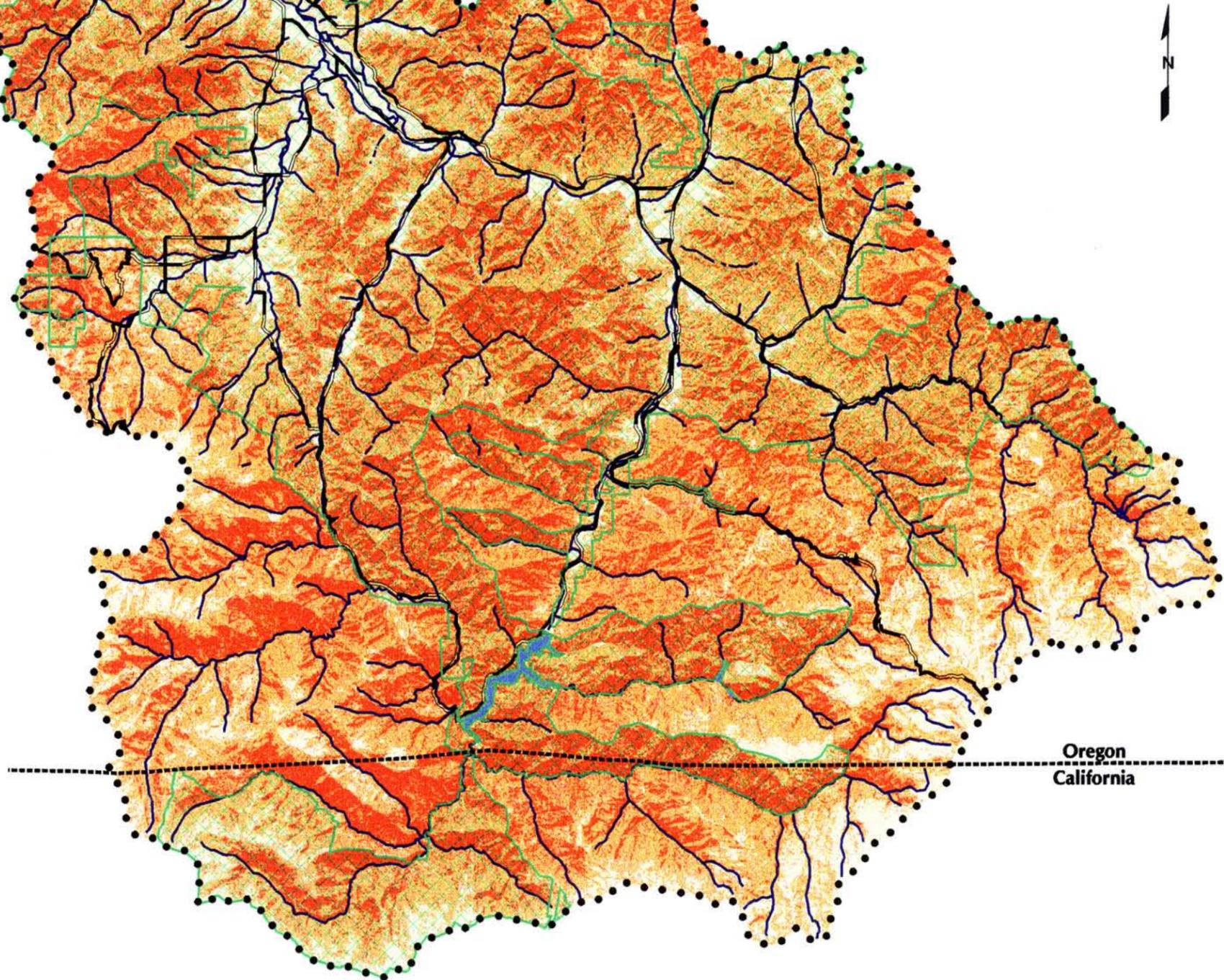
Fire Hazard Ratings and Strategic Treatment Areas In The Applegate Watershed

PERCENT OF WATERSHED BY HAZARD RATING

29% in High Hazard Rating
54% in Medium Hazard Rating
16% in Low Hazard Rating

LEGEND

- | | | | |
|---|--------------------|---|--------------------------|
|  | Low Fire Hazard |  | Strategic Treatment Area |
|  | Medium Fire Hazard |  | Watershed Boundary |
|  | High Fire Hazard |  | Major Road |
| | |  | Major Stream |



Living in a Biocracy

Paying Attention to Soil, Plants, and Animals in Relation to Fire Prevention

In *The Dream of the Earth*, writer Thomas Berry suggests that it isn't enough, as we move into the Ecological Age, to live in a democracy but that we must live in a biocracy, an earthly home where all creatures have a voice. "As humans," he says, "we need to recognize the limitations in our capacity to deal with these comprehensive issues of the earth's functioning. So long as we are under the illusion that we know best what is good for the earth and for ourselves, then we will continue our present course, with its devastating consequences on the entire earth community....We need only listen to what the earth is telling us."

What this means in relation to this document is that in our efforts to right the wrongs from years of fire exclusion, we don't want to, well, jump out of the frying pan into the fire. We don't want to make worse the land; we want to listen to its needs for healing. The following items dealing with various elements of our ecosystem should help us do what's right in our attempt to develop a fuel reduction strategy for our lands.

A PRELIMINARY CAUTION TO THE STEWARD OF THE LAND

It's true that most of the Applegate Watershed has a problem of fuels build-up due to 100 years of fire exclusion that makes it a high hazard for catastrophic wildfire. However, you don't have to go overboard in thinning your land to reduce the *fire hazard* around your home.

Do you still want to have songbirds around? Do you like seeing deer and smaller wildlife on your property? Do you want the stream that runs through your property to be a healthy home to fish and other aquatic life? Well, put down your loppers and chain saw for a moment and consider a lighter touch in making a fuels reduction plan for your property.

You've probably heard that thinning *ladder fuels* from your woodlands will prevent a ground fire from climbing into the *canopy* and becoming a crown fire and that providing a fuel break where trees are thinned so that canopies don't touch will cause an intense crown fire to stop spreading and drop down to become a low intensity ground fire that won't harm large trees. It is important to do these things, particularly at the perimeter of your property, around your structures, and along the roadways leading into your property so that fire crews will not be afraid to drive their trucks in and protect your house.

However, you can still leave islands of dense foliage for wildlife habitat. Critters need places to hide where they don't feel exposed to predators. The key is to provide fire breaks around these denser clumps of habitat so that if they begin to burn, the fire won't spread. Also, you don't want the denser places to be close to your house or the property line where fire may spread to (or from) your neighbors.

A ceanothus brush field can be a tremendous fire hazard. Some species of ceanothus contain volatile oils that make them burn like roman candles on the 4th of July! However, instead of clearing your whole brush field and turning it into a barren emptiness, leave some bushes here and there scattered in clumps. Little birds love this kind of habitat and won't stick around if you don't provide it. Deer also will eat ceanothus and similar shrubs if they can find the tender new shoots. A 30-year-old ceanothus bush consists mostly of dried up dead branches that deer don't like. Prune it down so that new shoots grow all around the outside. Your added bonus – it won't burn as well now.

A riparian zone (or the area of dense foliage that naturally exists alongside streams) can be a natural fire break. (However, if you have created a “fire safe” landscape everywhere except in a narrow riparian area, a fire will still burn most intensely there, where the most fuel lies.) Streams occupy the lowest places in the landscape, and groundwater comes to the surface there. The bushes and trees that live there have their feet wet, so to speak, and stay moister (even when streams are dried up in the summer) than upland foliage. These wetter plants provide important shade and a moister microclimate that keep the stream cool for fish and other aquatic creatures. You don't need to thin riparian foliage at all, but you can provide a fire break to prevent fire in the uplands from reaching the riparian areas (and vice versa). Typically, fires go out when they reach riparian zones (particularly if there's water in the stream). Also, please don't use herbicides or other chemicals anywhere near streams or ditches. Aquatic life is much more sensitive to chemical pollutants than is terrestrial life.

Many people like to have hedges and trees around their homes for privacy. As long as you provide some kind of fire break or thinned area between the outlying forest or shrub lands and your hedge or vegetative screen, it probably won't be a problem as far as fire goes. But don't forget to do this between your vegetative screen and your house, too!

Finally, another way to look at whether or not you've done too severe a thinning job for fire hazard reduction as far as wildlife is concerned is this: suppose a dozen kids are playing hide and seek in the lands around your home. If there are lots of kids who can't find hiding places behind bushes, logs, or clumps of trees, then you've probably gone too far (and wildlife won't like it either)!

One good way to get an idea of what to do on your land is to visit well-treated areas similar to yours to see what they're like. If you like how they look, you can mimic that work; if some things don't appeal to you, you can make adjustments as you reduce the build-up of fuels on your own land.

SOILS

There are no obvious adverse effects on soil for most of the fire reduction treatments suggested in this paper, although the following exceptions should be carefully noted:

To avoid erosion, construct firelines across the slope (contoured), not up and down the hill. If firelines must be constructed up the hill, install water bars at adequate intervals, and mulch the firelines with weed-free straw and seed them with native grass species.

Always be careful of harming the soil when using fuel reduction treatments by mechanical means. Heavy equipment used on wet or moist soils with a significant clay component can compact

the soil, which could then impede vegetative growth by inhibiting root growth and water retention. Because compacted soils have a reduced capacity for infiltration and permeability, they also increase runoff and the potential for flooding. Therefore, heavy equipment should be avoided on clay soils and used on other soil types only when they are dry (late spring through early fall, typically).

Mechanical treatments with heavy equipment can also result in bare, exposed soils susceptible to erosion, so such treatments should be used minimally on ultramafic and granitic soils and on all steep slopes no matter what soil type.

Burning piled slash will create localized areas of severely burned conditions, which cause slower revegetation and, consequently, an increased risk of erosion in the area directly under the burn piles. Generally, these areas are small and localized, but in heavy fuels they can comprise a significant percentage of the area. On steep slopes where fuels are heavy, pile burning should be minimized. Follow-up mulching and seeding may be considered to assist in revegetation.

Agencies should keep in mind that broadcast burning may result in severely burned soils in areas with a high fuel load.

To mitigate surface erosion after broadcast burning, insure that soils are protected before the wet season begins with either an established vegetative cover or mulch (weed-free straw, erosion control mats, etc.).

PORT-ORFORD CEDAR

The following points should guide land owners or managers performing forest operations where Port-Orford cedar root disease is a concern:

- (1) Separate operations in disease-free locations from those in diseased stands both in space and in time.
- (2) Perform forest management projects in stands with Port-Orford cedar, especially in uninfested areas, when conditions are unfavorable for pathogen spread. Work between June 1 and October 1 in order to complete the operations in the warm, dry months. Discontinue operations when wet conditions develop, even if that happens prior to the end of the season. Likewise, operations may be allowed outside of the normal season if especially dry conditions prevail, though such exceptions should be carefully regulated.
- (3) Avoid repeated entries onto vulnerable microsites.
- (4) Schedule work to proceed from healthy to infested sites, not visa versa.
- (5) Do not move equipment from a contaminated area into a clean one or from a clean area into a contaminated area and back again.
- (6) Wash equipment (or vehicles) operating in a diseased area prior to leaving the area. (Washing is complete only when all soil and organic matter is removed from the equipment.) Wash equipment in areas designated solely for that purpose. Do not allow wash water to drain into ditches or stream channels.
- (7) Whenever possible, plan access to project areas along routes with the least occurrence of infested sites.
- (8) Where possible, coordinate all root disease prevention and management activities with adjacent landowners.

RARE PLANTS

Seek out and take advantage of opportunities to treat mixed conifer, hardwood, and chaparral stands containing rare plants both to improve habitat for the species and to reduce fuels and the risk of catastrophic wildfire. Some species closely associated with more closed *canopy* and late *successional* conditions may need to be buffered from activities. The kind of fuel treatment used (e.g., how much if any of the canopy cover is removed) and the methods used (manual thinning vs. mechanical thinning) may need to be modified in some areas containing rare plants, depending on the species and habitat conditions present.

Since spring burns can kill emerging rare plants, it's best to treat stands containing rare plants in the late summer through late winter, during the dormant season. However, it is difficult even for professional land managers to burn safely at this time of year, and such activity is not advocated for non-professionals.

Minimize soil disturbance in areas containing rare plants to prevent damage to underground roots and bulbs.

Before treating areas, evaluate them for listed noxious weeds such as yellow star thistle, Canada thistle, etc. In doing any work in areas in close proximity to or containing such weeds, you might need to use manual, cultural, chemical, or biological controls to prevent an invasion of the noxious weeds prior to the action. You'll probably have to do follow-up treatment for a few years, too, especially if a noxious weed seed bank is present. Always use noxious weed prevention techniques: wash all equipment and vehicles before entering a weed-free area and wash all equipment and vehicles when moving from a weedy area to another area.

Sow native grasses in disturbed areas where appropriate, especially in oak woodlands and open mixed conifer communities that historically had open understories dominated by grass and herbaceous species. If non-native grasses are used on private lands, use short-lived, non-persistent species (e.g. cereal rye, annual rye, etc.). Avoid the introduction of persistent non-native grass or herbaceous species whenever possible.

Although surveys for rare plants are not required on private lands, as they are prior to "disturbance-causing" activities on federal lands, they are recommended. If you are a private land owner, you are encouraged to coordinate with the US Fish and Wildlife Service for populations of any federally listed plants (e.g., Gentner's fritillary) and to develop conservation strategies or habitat conservation plans prior to beginning serious fuel reduction work. Even though the Endangered Species Act does not prohibit "take" of federally listed plant species on private land (no private landowner needs to worry about losing discretion of use of his or her land if a listed plant is found), private landowners are encouraged to voluntarily participate in conservation of listed plants, especially since avoiding impacts to rare plants can be as easy as buffering known locations from ground disturbing activities or doing treatments when the plant is not in bloom.

FOREST CANOPY

When deciding on strategies for reducing *fire hazard*, the land manager sometimes faces contradictions, which can often be resolved by defining personal objectives before proceeding. One example of this dilemma is found in the land manager's decision concerning the forest *canopy*, the amount of "greenery" overhead that blocks out the sky and that controls one of the many facets of a forest's health.

One important concept to keep in mind is that different plant series need different degrees of canopy closure. One size or "prescription" doesn't fit all. When in doubt about the needs of a plant series on your land, ask an expert for advice.

Full or nearly full canopy closure provides shade, good animal habitat, and moister grounds for some types of wildflowers, ferns, and tan oak. Thinning a stand's canopy means thinning the stand, creating more growing space and promoting stand *vigor* and growth. It also lets more sunlight reach the ground, allowing trees, shrubs, and *forbs* to regenerate and grasses and weeds to grow. Too much thinning exposes the soils below to the elements and if done improperly can lead to erosion problems. It's important to maintain a diversity of canopy closures – some small shady areas and some more open ones – to help maintain a natural forest habitat for all species. It's all about balance.

Regarding wildfire and its spread, it is generally felt that by pruning *ladder fuels* and opening a stand's canopy so that the crowns of trees don't touch, one can more effectively reduce the intensity of a fire. The elimination of ladder fuels can keep a ground fire on the ground (and not in the crown of the trees, which is deadly). Opening the canopy can help prevent a crown fire from spreading even further.

In some situations where a mature stand has a uniformly closed canopy with no ladder fuels, it is possible that a ground fire could burn with less intensity. However, a really hot, intense wildfire would most likely not stay on the ground but travel through the crown of the stand instead. It is not likely that a closed canopy would be the primary factor controlling a fire's intensity.

The best way to make a decision about how much to open the forest canopy on your land is to consider the canopy in its site-specific place, with its unique characteristics, and in relation to your personal objectives for the future.

RIPARIAN AREAS

Perennial or intermittent streams that currently have adequate numbers of large trees and good canopy generally need very little if any treatment. Vegetation management is also generally not necessary at such streams, where the wet soil, combined with increased sunlight when trees are cut, will usually lead to an explosion of new growth, which is counterproductive for fire management. Mature hardwoods and conifers are preferable in these environments, so try to increase the abundance of large-diameter conifers and important hardwoods like black cottonwood, Oregon ash, and big-leaf maple. Manage for larger individual alders while reducing alder stand density, allowing colonization by other tree species. On drier sites, you may have to settle for madrones and oaks in addition to the large conifers. It is important to maintain a no-cut buffer zone for the riparian areas with 50 feet a suggested zone for most perennial streams, depending upon the plant community present.

Beyond 50 feet from the stream, you face a trade-off situation. If you reduce ladder and ground fuels but leave a dense canopy, you are taking the chance of a crown fire. If you reduce the density of the canopy, you risk damage to the riparian zone. Where dense brush or small-diameter trees predominate, thin to produce large, fire-resistant trees as quickly as possible. On sprouting hardwoods such as maples, oaks, and madrones, thin new growth to favor the three largest sprouts per plant. Cutting these species to the ground will cause them to sprout again, often with many individual stems on one plant, and the plant will remain in an extremely bushy condition for many years, rather than reaching a size that is more likely to be able to withstand a ground fire.

Eliminate noxious weeds using methods that will not degrade water quality. Pay particular attention to get rid of the obnoxious Himalayan blackberry.

Riparian areas need large down wood, which is generally not a primary carrier of a fire. (However, if it ignites and is low in moisture, this material will burn intensely and for a long time, frequently burning so hot that underlying soil is damaged.) Although woody material of all sizes is critical for maintaining surface stability in riparian areas, the largest wood will stay wetter, even in drought years, than smaller materials. It also slows flood waters and provides important habitat. Mimic nature, and leave large down wood in streams and riparian areas.

The best fire safety plan for these areas where moisture produces vigorous vegetation is to make sure the surrounding uplands are not overloaded with dense vegetation, especially ground and ladder fuels. At the edges of riparian areas where dense vegetation gives way to more open conditions, pay particular attention to brush and other ladder fuels that could carry a ground fire into the crowns of the larger trees in the riparian area. These "edges" may be a priority for treatment of ladder fuels.

Some cautions:

- ◆ Be careful not to concentrate or channelize the water, which leads to erosion and gullies.
- ◆ Be aware of the value of vegetation in these streams in preventing channelization and sedimentation.
- ◆ Remember that some soils erode easily if exposed and that removing forest litter by burning or other forest management practices can accelerate the erosion of soil and rock particles

Ephemeral and intermittent streams and draws that are usually dry from spring through fall need a different kind of attention. A primary objective for these areas is to have large, well-spaced trees along the stream with little ladder fuel to allow a ground fire into the canopy. Avoid removal of plants and trees with roots that help to stabilize stream banks and channels. Remove brush and thin vegetation as you do in the surrounding uplands, and eliminate noxious weeds without degrading water quality (e.g., don't use chemicals).

Swales and draws that show no evidence of recent flow (no scour marks or deposits from water) or that do not have a definable channel should be treated like the surrounding uplands, though special care should be taken not to cause erosion and gullies through ground disturbance.

Three points from the perennial streams also apply to these lesser streams:

- ◆ Vegetation in the streams prevents damaging channelization and downstream sedimentation
- ◆ Large down wood is important
- ◆ Burning and other forest management practices to remove litter from the forest floor can accelerate the erosion of soil and rock particles.

It is strongly recommended not to use earth-moving equipment to establish fire lines within riparian zones as part of emergency fire suppression activities. Construction of fire lines should be accomplished outside of the area, preferably on ridgetops or other natural control points, rather than in draw bottoms or parallel to streams. If it is absolutely necessary to construct a fire line within a riparian zone, it should be constructed perpendicular to the stream, to result in the lowest level of disturbance possible, though it is preferable to have the riparian area burn because the line was placed beyond it rather than have the soil disturbance associated with line construction within the riparian zone itself. On the Quartz Fire of 2001, both the U.S. Forest Service and the Bureau of Land Management reported that the damage to riparian and aquatic resources resulting from operation of heavy equipment in riparian areas was far greater than any damage caused by the fire itself.

FISHERIES

The fish would prefer that you not use mechanisms that increase sediment within 100 feet of any stream. That way you will prevent channels, furrows, trails or any other way for dirt to reach the stream. Coho salmon would also appreciate a no-cut buffer within the first 25 feet of a stream to allow brush stems or trunks to cover the edges of the stream for spawning. Not only will this maintain shade to keep the water cool; it will also allow young conifers, maples, and alders to grow so they can replace older trees. If there is any understory burning on the land above a stream, you should allow grasses to filter out any sediment. Between 25 and 50 feet from the stream's edge, use a "lop and scatter" strategy for thinning; outside the 50-foot distance, use hand piling to allow for the release of conifers, maples, and alders.

Finally, the fish need small and large logs in the riparian area and streams for cover and nutrients, so don't take out the woody material.

WILDLIFE

If you are broadcast burning in riparian areas, minimize the number of acres to minimize the impact to *neotropical migrants* and other species that may be reproducing. If fuel reduction is carried out in riparian areas, hand piles would be favored over broadcast burning for spring burns.

Use hand piles for fuel reduction in late successional habitat to minimize the impact to smaller late successional species. Do not allow piles to remain in position more than one year prior to burning. This will help minimize species' moving in and utilizing piles as woody habitat.

For fire suppression, locate potential drafting sites for engines away from known turtle populations, osprey nest sites, bald eagle nest sites, and heron rookeries. Identify late successional vegetation and when possible use "minimum impact" suppression tactics or "light hand" tactics for fires in these areas.

For pre-September fires avoid helicopter operations directly over known nest sites for bald eagles, osprey, herons, etc.

DEER WINTER RANGE

Unmanaged winter ranges, which are often decadent brush fields, help fire to spread to other upland habitats or nearby homes. To mitigate this danger and to take care of both security and nutritional needs of deer during the winter months, forests should be managed for a mosaic of stand ages. Because black tail deer generally live within a mile of where they were fawned, it is logical to manage winter range within square mile blocks or, practically speaking, within a section.

The Oregon Department of Fish and Wildlife, which has become increasingly concerned with maintaining high quality forage in this area, suggests a 30-year turn-around time on brush fields to maintain *vigor* and nutritional value for black-tail deer (Thiebes 1996). With the winter ranges mapped on a GIS layer, it is easy to see where prescribed fire or fuels modification can benefit winter range strategies. ODFW suggests that 3-4% (or a maximum of 19-25 acres) of the win-

ter range within any given section would need to be managed annually to maintain winter ranges in high vigor for deer herds. This formula or strategy might not be feasible on your own property, but the basic concept is something to keep in mind. Local Forest Service, BLM, or ODFW personnel can help answer your questions.

RANGELAND

If you are planning fuel reduction work on rangeland, one of your most important considerations should be the spread of noxious weeds via machinery. It's a good idea to reduce or eliminate any activities, such as mechanical treatments, that disturb the ground and open new sites for noxious weeds. If you must use heavy machinery, wash it thoroughly before and after entry. Reseed disturbed sites.

When using prescribed burns and mechanical treatments for fire management, be sure to avoid damage to fences, springs, ponds, and other rangeland improvements. When using livestock grazing to reduce fine fuels and the risk of fire, remember that passive and continuous season-long grazing rarely improves or maintains uplands and riparian systems. Consider livestock distribution, water availability, and the timing, duration and frequency of grazing treatments in selecting grazing management strategies.

Provide sufficient rest to the land to encourage plant vigor, regrowth, and storage of energy. Avoid grazing during the wet season to prevent compaction of soils.

Finally, in treating wet areas, be sure to retain sufficient vegetation to protect stream banks, to dissipate energy, and to trap sediment during periods of high stream flows (winter season).

DRIVEWAYS ARE “DEFENSIBLE SPACE”



This narrow driveway presents a tunnel-like approach that firefighters would probably not want to enter if wildfire threatened. It's overgrown to the extent that it does not appear safe. The houses beyond could be completely defensible, but it's irrelevant if this driveway stops crews from going any further.

This driveway appears much wider and more open than the one above. Firefighters would be more likely to travel to the houses ahead.

However, the vegetation along this driveway presents plenty of ladder fuels, which would aid in spreading a wildfire. More thinning and limbing up needs to occur to rate this driveway safe.



photos by Sandy Shaffer, 2001

SLOPES, DRIVEWAYS & THINNING



This driveway is built on a 14% grade, which is within county standards. However, it is narrow and the hillside is well over 40% slope, so an increased defensible space is needed. Local fire districts request thinning a distance of at least 30 feet on either side of a driveway such as this. They would prefer up to 50 feet!

This narrow driveway needs a lot of work in order to get firefighters to drive up to the house at the end. Both sides should be thinned back at least 30 feet and preferably 50 feet, to create a wider fire break. In the top picture, the upper slope is thinned enough that fire behavior would most likely drop to the ground, making it more defensible.



photos by Sandy Shaffer, 2001

The Nitty-gritty How-to Methods To Reduce Fire Hazard

INTRODUCTION

Fire cannot burn without fuel. Anything that burns is potentially fuel, including our homes. There's a lot we can do when selecting a home site and building structures to "fire proof" these places: using fire resistant roofing and other appropriate materials, landscaping with fire-adapted native plants and avoiding highly volatile species, building on comparatively "fire safe" sites, separating our buildings from other available fuels, and so forth. There is also a lot we can do to reduce the fuel surrounding our homes and in our forests. What and how much to do is up to the individual concerned with any particular site.

Landscaping and building codes pertaining to fire are covered later in this Fire Plan; here we suggest methods for reducing the bulk and spread of fuel by using (1) mechanical and manual treatments suitable for homeowners as well as agencies, (2) prescribed burns, (3) grazing with goats, and (4) Lomakatsi's "Ecological Principles."

The chart following page 84 puts the information about hand and mechanical treatments, prescribed burns, and grazing in an easy, read-at-a-glance form. The methods described apply to both surface fuels (those on the ground or close to the ground) and aerial fuels (tree crowns), and they address the type, amount, size, and distribution of fuel, the height of a tree from its bottom to its crown, and the amount of crown fuel within a given area. Depending upon the site, only a few methods might be considered complete treatments in that they can be used to treat most (if not all) of a site's hazardous fuels. Most are partial treatments that must be used with other treatments to effectively reduce fuel hazard.

Prior to deciding to use any particular treatment, the landowner should understand clearly his or her objectives for the land and consider many other aspects of land management. **It would be a good idea to consult with a professional in fire prevention and vegetation treatment before designing any hazardous fuel reduction project.**

Following are some issues - not all, but the major ones - that a landowner might wish to consider when deciding on a treatment strategy:

- ❖ Treatment objectives (the overall objective and any site-specific objectives)
- ❖ Site conditions (access; topography; type, amount and distribution of fuel or vegetation; soils; existing site development; etc.)
- ❖ Cost of treatment
- ❖ Source and amount of available funds
- ❖ Time available to complete the project

- ❖ Size of area to be treated
- ❖ Concerns about resources and values (For example: How much damage to residual trees, lawns, soils is acceptable? What consideration do I need to give animal habitat?)
- ❖ Acceptability of risk to landowner (How much risk am I willing to accept if something goes wrong: damage to residual trees, escaped fire, etc.?)
- ❖ Availability of liability insurance, etc.
- ❖ Personal interest, experience, and physical capability and skill in use of the equipment (How much, if any, of the work do I want to do myself?)

METHODS OF FUEL REDUCTION YOU CAN CHOOSE FROM

1. Mechanical and Manual Treatments

These treatments use hand tools, such as axes and chain saws, or heavy equipment, such as bulldozers and backhoes. Several mechanical treatments may be used on the same unit.

THINNING

The purpose of thinning is twofold: (1) to increase the distance between the tree crowns, thereby strengthening the *vigor* of the forest and lessening the probability that a fire will spread through the crowns, and (2) to reduce *ladder fuels* to prevent surface fires from turning into crown fires. Thinning is done with hand tools or with heavy equipment. The cost for thinning non-commercial-size material with hand tools depends on site access and the size and amount of material to be thinned. Prices range from \$230 to \$850 an acre. The higher costs are associated with thinning in oak woodlands and brush fields.

PRUNING

Pruning, the removal of lower branches to a specified height, is usually limited to hand tools. For safety, pruning is usually done up to ten feet, or not more than one-third of the tree's height. Pruning increases the distance between the surface fuels and the tree crown, decreasing the likelihood of a crown fire and increasing tree height. The resulting fuel is usually piled and burned. Pruning costs depend on pruning height and the number of trees per acre to be pruned. Prices range from \$50 to \$250 an acre.

SLASHING

Slashing is the manual or mechanical severing of one particular type of unwanted or surplus vegetation. This could include live and dead conifers, hardwood trees, and shrubs not selected as leave vegetation or designated as reserved vegetation. Care must be taken not to get carried away with this technique and create an undesired clear cut. Costs range from \$200 to \$850 an acre.

LOPPING AND SCATTERING

Lopping and scattering is a method in which the worker cuts unwanted vegetation and scatters it around the land. This method is gentle on the land and costs little, but it is time-consuming and labor intensive. Also, it may not remove all the fuel, so it is usually used in combination with other methods.

FUEL PULLBACK

This is a method of fuel reduction that pulls fuel back from items to be protected such as houses, specimen or seed trees, or planned burns.

CRUSHING

This fuel treatment uses a piece of heavy equipment to "walk" across the fuel to pack it so densely the fire can't burn well. Crushing is most effective on dead and down woody material but can be used on some live fuels. The fuel should be so brittle it snaps and breaks into smaller pieces when the machine walks over it. These pieces then nestle closer to each other in the fuel bed. Crushing is mostly used on brush and is usually done with tracked equipment such as a bulldozer. To be effective the equipment must cross all the fuel, often more than once.

GRINDING

The primary target of grinding, as opposed to crushing, is live fuels, such as brush and small trees. Grinders usually consist of a rotating head attached to an articulated arm on a tracked vehicle or a vehicle with self-leveling cabs. The teeth on the rotating head bite into the fuel, breaking it into smaller pieces and leaving a chewed-up fuel bed less than six inches in depth, which can be burned later. The cost of grinding ranges from \$200 to \$480 an acre depending on accessibility to the site, on the amount, type and size of material targeted for grinding, and on the slope of the area being treated.

If you are using a Slashbuster for slashing, it is important to remember that Slashbusters and other heavy equipment can promote the spread of invasive weeds such as star thistle unless the equipment is washed between treated areas.

CHIPPING

Chipping uses a stationary device to grind thinned or pruned material into small pieces. The chipped material is often used as mulch or as *biomass*. The largest chippers can handle material up to seventeen inches in diameter. Chips may be blown into a dump truck and hauled away or blown back onto the land. This type of operation is generally limited to gentle slopes and areas that have good access; it costs between \$575 to \$1,600 an acre.

PILING AND PILE BURNING

Piling is done by hand or by machine, usually in places where the size of the trees and their species make broadcast burning undesirable. Hand piling generally removes smaller material than machine piling, since it is hard to pile large, down wood by hand, especially material greater than eight inches in diameter.

Grapple piles are constructed with a variety of devices designed to grab bundles of fuel and stack them using an articulated arm, usually bulldozers or grapple pilers attached to backhoes or excavators. Because the grapple piler lifts the fuel to pile it, piles are virtually dirt-free, and the operator can be very selective about the material he grapples with. Grapple pilers can operate on a skid-trail system.

Piling specifications, whether for piles built by hand or by machine, deal with the size of the material to be piled, the size of the piles, and the minimum distance of piles from each other and from tree *boles*. Piles are covered so they can be burned in wet or snowy weather. Most hand piles burn within a few hours. Handpiling alone could cost anywhere from \$250 to \$1,300 an acre, depending on site accessibility and the amount of material to be piled. The cost of pile burning depends on the ease or difficulty of access and the number of piles per acre to be burned. Prices range from \$26 to \$140 an acre. Pile burning often requires a future entry, so this work is not usually included in hand piling costs.

RAKING

Raking is a limited type of treatment that uses hand tools to reduce the fuel around the base of trees remaining in a unit that will be underburned. The area may or may not be raked down to mineral soil, but material is generally reduced to at least two inches or less. The accumulated material is raked away from the tree bole. Raking is gentle on the land; it reduces the potential heat load to fine roots on the residual trees and protects surface roots on pines. If fewer than twenty trees are raked, the cost can be as low as \$40 an acre; three times this number of trees will cost twice as much.

2. Prescribed Fire

In addition to the methods described above, prescribed fire can be used to reduce fuel loads, either by broadcast burning or by pile burning. In broadcast or jackpot burning scattered surface fuels or concentrations of fuels are set on fire. Broadcast burning (also called underburning) is used when fuels are more or less evenly distributed across the project area. It is called broadcast burning when there is no overstory, as in meadow burning or clearcut burning, and underburning when it is done with an overstory present. Jackpot burning is the term used when fuels are not evenly distributed.

Using fire to reduce fuel build-up is always potentially dangerous, especially without proper training. Private landowners most frequently burn hand piles of slash because this is easier to control than a broadcast burn. Please refer to “First Read This” on page 97 and “State Fire Prevention Regulations” on page 99 to more fully understand your liabilities before considering burning slash.

BROADCAST BURNING

Because broadcast burning requires extensive planning, personnel, and equipment, it is seldom used by the private landowner. Potential liability is also a factor. Most broadcast burning requires some sort of control line, or fireline, around the burn block. Roads, major streams, rocky areas, and other natural or human-made barriers serve as control lines when they are available. Otherwise, a barrier must be constructed. Following is a list of various types of barriers and their means of construction.

- **Handline** – The most common barrier is handline, a fireline constructed with chain saws, pulaskis, shovels and other hand tools that pare the ground down to mineral soil for a width of one to three feet. In light fuels such as grass or duff the line is more narrow; in heavier fuels such as large amounts of down woody material and brush, the line is wider. The topography and the position of the fire on the slope also determine the size of the handline.
- **Dozer line** – The next most common barrier is the dozer line, a fireline constructed with a bulldozer or sometimes with a blade on a skidder. Usually the smaller bulldozers are used. The width of the line is usually equal to the width of the blade mounted on the dozer or skidder. The dozer line is restricted by slope.
- **Wetline** – Another type of fireline is a wetline. No lines are built down to mineral soil in this technique. Instead, fuels are wetted slightly in advance of the actual ignition, using either water or, more often, foam, since foam penetrates deeper and lasts longer. In order to construct a wetline, vehicles need access along the edge of the burn block, such as flat ground with light fuels. A wetline is sometimes used in conjunction with other barriers, such as a narrow road, to increase the effectiveness of the barrier.

The time of year is important to the cost of broadcast burning because it determines the amount of mop-up needed. Other factors that influence cost are difficulty of access to the site, the size of the unit, the type and size of material to be burned, the type of equipment needed, and the proximity of private property. Prices range from \$60 to \$400 an acre.

3. Grazing with Goats

When it comes to reducing fuel, nothing is so efficient and lovable (some say) as goats. Probably one of the first domesticated livestock animals in the world, goats have been used to clear brush and weeds on a farm scale for centuries. In recent decades they have helped create fire breaks in California and Utah and also to kill noxious weeds in the Dakotas, Montana, Wyoming, and Idaho. Goats as land management tools are touted to be ecologically sound, gentle on the land, and cost effective.

Like any fuel reduction method, they need special considerations. You can't just set the goats loose and see what they can do; you must take care of them and of the lands you are targeting for fuel reduction. Some situations require electric fencing, although most, according to Nanny&Billy's Vegetative Management, are better done with open range grazing by the goats, in which case they need to be properly managed to insure maximum damage to the target species and minimum damage to desirable species. In some cases, small trees and sensitive native plants must be protected from the goats, who do their job voraciously, consuming low branches and foliage, stripping bark from Scotch broom and other shrubs, and chomping grass to lawn level. Goats must have water. In some situations goad herders (perhaps with dogs) are necessary.

Goats can be especially helpful in the Applegate to reduce or eliminate sprouting madrones, which are often a fuel hazard in recently harvested forests.

The advantages over other methods of fuel reduction are noteworthy. Goats are quieter than brush-clearing machinery and can handle terrain too rugged for mechanized equipment. They don't present the danger of prescribed burns, which can all too quickly get out of hand, and they are safer and more gentle on the land than chemicals. Since they prefer brush to grass, they put their appetites where the greatest fire danger is.

Nanny&Billy's Vegetative Management, based in Lakeview, Oregon, submitted a proposal to the Medford District of the BLM to use goats for fuel reduction in the Medford District in 2002. This project proposal has been accepted and funded through Jackson County Title II. After the first season of managed goat grazing, workshops and seminars to disseminate the results of the project will be offered. For contact information see Nanny&Billy's listing under "Southern Oregon Laborers for Reforestation, Thinning, Etc." in Chapter VII.

4. Lomakatsi's "Ecological Principles"

Lomakatsi is a Hopi word that means "Life in Balance" and is the concept behind Lomakatsi Restoration Project, a grass-roots 501(3)c non-profit organization dedicated to organizing and empowering communities to participate in the rehabilitation and regeneration of the forests and watersheds within the greater Klamath/Siskiyou bioregion of southwestern Oregon. If you are interested in restoration forestry that is proactive, ecologically based, kind to damaged ecosystems, and based on the philosophy that the work you do is only to aid the real restoration work that nature does, you might want to look at Lomakatsi's "Ecological Principles for Fuel Load Reduction and Tree Planting" outlined below. If you're interested in the organization, see "Southern Oregon Laborers for Reforestation, Thinning, Etc." in Chapter VI for contact information.

LOMAKATSI'S "ECOLOGICAL PRINCIPLES FOR FUEL LOAD REDUCTION AND TREE PLANTING"

- 1) Act conservatively. Don't change things too much at once.
- 2) Respect what is already on site.
 - a) Maintain shaded areas and 70–80% overstory canopy coverage in mixed conifer forests. (Adjust for differences in regional biodiversity, as in pine-oak savannas.)
 - b) Retain large trees.
 - c) Leave a diversity of tree and plant species, and maintain uneven-aged stands.
 - d) In restoration work, plant only native species on site.
 - e) Include indigenous traditional ecological knowledge as a reference point in ecosystem restoration.
- 3) Remember the wildlife
 - a) Leave some places undisturbed for the birds and wildlife currently using the area.
 - b) Leave some small piles of cut material unburned, as habitat for wildlife.
 - c) Leave buffers of undisturbed vegetation in streamside riparian areas.
 - d) Retain snags for wildlife habitat. Chart their locations for monitoring and fire safety precautions.
- 4) Remember the soil: leave some of the cut materials on the ground, perpendicular to the slope, to catch upslope erosion and contribute to future soil.
- 5) Remember people
 - a) Listen to residents and neighbors. They know the ways in which each site is unique.
 - b) Match site diversity with worker diversity. Hispanic, Native American, and current youth cultures each have their own ways of understanding the complex diversity of nature.
 - c) Train workers about ecological principles and how to see the special characteristics of each place.

- d) Pay workers according to their training, experience, and quality of work.
 - e) Pay workers well, and listen to them. Happy, respected people do the best work.
 - f) Look for usable material to carry from the site for poles, furniture, spoons, fuels, etc.
- 6) Learn
- a) Keep complete records of prior conditions, work accomplished, and the time, money, and people that it took.
 - b) Review information about similar sites before deciding how to treat new ones.

FUEL REDUCTION METHODS: A TABLE OF TOOLS AND RECOMMENDATIONS

METHODS	OBJECTIVE	SLOPE	RIPARIAN	NEAR HOME	OTHER TREATMT	CONTRACT	PROS	PROS	CONS	CONS	CONS
			ZONE*		REQUIRED?	COST/ACRE					
MANUAL/MECHANICAL											
Thinning	vertical or horizontal fuel separation	all	maybe*	OK	usually	\$230-850	attractive-park-like	low risk	labor intensive	small diameter only	slash left to treat
Slashbuster: Thinning	vertical or horizontal fuel separation	<35%*	no**	no**	maybe	\$200-500	cost-effective	perform multiple tasks at one time-no slash	for use on gentle slopes only	can disturb soils	can damage leave trees/spread noxious weeds
Pruning	limb up trees to reduce ladder fuels	all	yes	OK	usually	\$50-250	attractive landscape	effective	very labor intensive	creates slash	
Slashing	remove a veg type or size	all	maybe*	yes	usually	\$230-850	easy to describe		labor intensive	could end up a clearcut	
Slashbuster: Slashing	remove one veg type or size	<35%*	no**	no**	maybe	\$200-500	cost-effective	perform multiple tasks at one time-no slash	for use on gentle slopes only	can disturb soils; spread noxious weeds	can damage leave trees
Lopping & Scattering	modify downed wood concentration	all	OK	yes	maybe	\$25-45	low cost	few impacts on lands	labor intensive	not all fuel removed	small diameter only
Fuel Pullback	reduce fuel around protected items	all	yes	OK	usually	\$1.50-2.00/tree	low cost	effective	labor intensive	larger slash = many cuts	
Crushing - dozer	reduce depth of fuel bed to slow fire behavior	<35%	no	no	usually	\$50-68/hr	easy & inexpensive	possibly reduces fire's intensity	does not prevent fires	possible soil compaction	not for use on large or green material
Slashbuster: Chipping	reduce amount of downed wood	<35%*	no**	no**	maybe	\$575-1600	cost-effective	perform multiple tasks at one time-no slash	for use on gentle slopes only	can disturb soils; spread noxious weeds	can damage leave trees
Hand Piling	pile dead and small material	all	maybe*	no	usually	\$250-1300	easy to do	few impacts on lands	slow work	time consuming	
Burn Handpiles	consume piled slash	all	no**	yes	usually	\$25-140	easy to implement		labor intensive	leaves big black spots on the ground	
Machine Piling	pile small fuel to reduce spread of fire	<35%	no	no	usually	\$200-400	fast	inexpensive	possible soil compaction	topsoil can be moved; spread noxious weeds	not attractive
Machine Pile/Burn	consume piled slash	all	no**	yes	usually	\$25-140	easy to implement		labor intensive	leaves big black spots on the ground	
Raking	reduce material under protected items	all	yes	OK	usually	\$40-120	can significantly protect large trees		very labor intensive		
PRESCRIBED FIRE											
Underburn/Broadcast burn	reduce/kill small diameter & ground vegetation	all	no**	no	usually	\$60-400	accomplishes multiple tasks	can mimic a natural regime	risks if fire gets away from operator	requires experienced personnel	leave trees can be damaged
Fireline Construction	create 1-3' ground fuel break	all*	no**	OK	usually	\$50/hr	provides a ground barrier to fire		labor intensive	requires maintenance	not completely effective
OTHER											
Grazing	reduce small ground fuel by grazing animals	<60%	no	yes	usually	varies by job: fencing, water, access, etc.	can be low-cost	minimal labor if water & fencing in place	may compact soils	affects small diameter material only <3"	fencing & water needed
Lomakatsi Natural Treatments	analysis of area prior to treatment, considering all of the ecosystem before and after treatments	all	yes	yes	no	\$500-1600	attractive-park like	site-specific consultations prior to treatments; protects resources	labor-intensive	can be a slow process	
* beyond the first 50', either side of a stream or river											
**See "Living in a Biocracy" guidelines of the Fire Plan on this - there is not a simple yes or no.											

Defending Your Space against Fire A Six-step Guide

Are you worried about the wildfire threat to your home but aren't sure how to get started in making your home defensible? Follow these six steps to an effective defensible space.

STEP ONE: Determining the Size of Your Defensible Space

The size of the defensible space area is usually expressed as a distance extending outward from the sides of the house. This distance varies by the type of wildland vegetation growing near the house and the steepness of the terrain.

On the "Recommended Defensible Space Distance" chart, find the vegetation type and percent slope (see "Homeowner's Guide to Calculating Percent Slope" following page 86) which best describes the area where your house is located. Then find the recommended "defensible space" distance for your situation.

For example, if your property is surrounded by wildland grasses such as cheatgrass and is located on flat land, the distance of your recommended defensible space would extend 30 feet from the sides of the house. If your house is on a 25% slope and the adjacent wild-land vegetation is dense, tall brush, the distance would be 200 feet.

If the recommended distance goes beyond your property boundaries, contact the adjacent property owner and work cooperatively on creating a defensible space. The effectiveness of defensible space increases when multiple property owners work together. The local assessor's office can provide assistance if the owners of adjacent properties are unknown. Do not work on other people's property without their permission.

Temporarily mark the recommended distance with flagging or strips of cloth tied to shrubs, trees, or stakes around your home. This will be your defensible space area.

STEP TWO: Remove Any Dead Vegetation within the Recommended Defensible Space

Dead vegetation includes dead trees and shrubs, dead branches lying on the ground or still attached to living plants, dried grass, flowers and weeds, dropped leaves and needles, and firewood stacks. In most instances, dead vegetation should be removed from the recommended defensible space area. A description of the types of dead vegetation you're likely to encounter and the recommended actions are presented on the next page.

DEAD FUEL TYPE	RECOMMENDED PRACTICE
STANDING DEAD TREE	Remove all standing dead trees from within the defensible space area.
DOWN DEAD TREE	Remove all down dead trees within the defensible space area if they have recently fallen and are not yet embedded into the ground. Downed trees that are embedded into soil and which cannot be removed without soil disturbance should be left in place. Remove all exposed branches from an embedded downed dead tree.
DEAD SHRUBS	Remove all dead shrubs from within the defensible space area.
DRIED GRASSES AND WILDFLOWERS	Once grasses and wildflowers have dried out or "cured", cut down and remove from the defensible space area.
DEAD NEEDLES, LEAVES, BRANCHES, CONES (ON THE GROUND)	Remove thick layers of pine needles to a depth of two inches. Do not remove all needles. Take care not to disturb the "duff" layer (dark area at the ground surface where needles are decomposing) if present. Remove dead leaves, twigs, cones, and branches.
DEAD NEEDLES, LEAVES, BRANCHES AND TWIGS (OTHER THAN ON THE GROUND)	Remove all dead leaves, branches, twigs and needles still attached to living trees and shrubs to height of 15 feet above the ground. Remove all debris that accumulates on the roof and in rain gutters on a routine basis (at least once annually).
FIREWOOD AND OTHER COMBUSTIBLE DEBRIS	Locate firewood and other combustible debris (wood scraps, grass clippings, leaf piles, etc.) at least 30 feet uphill from the house.

Homeowner's Guide to Calculating Percent Slope

Hold this line parallel to the ground

Punch hole here

Thread string through the hole and tie a knot.

INSTRUCTIONS:

1. Enlarge this diagram using a photocopying machine.
2. Mount photocopy on a piece of cardboard.
3. Punch a hole through photocopy and cardboard at the designated spot.
4. Thread a 12 inch piece of string through the hole and tie a knot in the end of the string on the backside of the cardboard.
5. Tie a one inch or larger washer to weight the other end of the string.
6. Hold the designated line parallel to the ground, sighting up slope along the edge of the cardboard.
7. The weighted string will indicate the percent of slope steepness. For convenience, steepness of slope in degrees is presented in parenthesis.

Flat to Gently Sloping

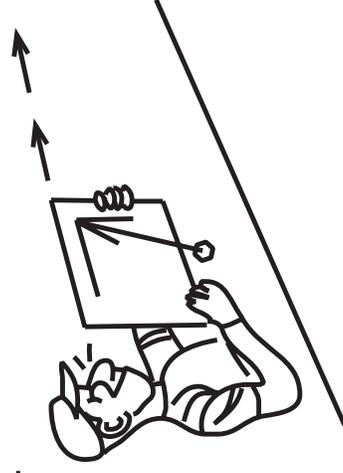
0% (0°)

Moderately Steep

20% (9°)

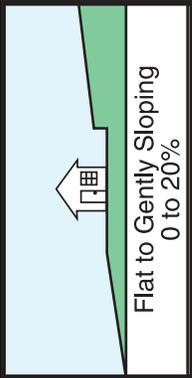
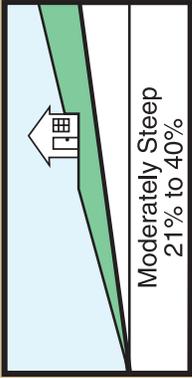
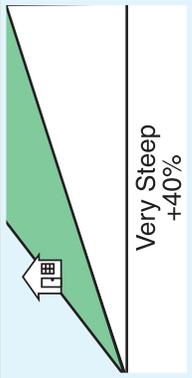
Very Steep

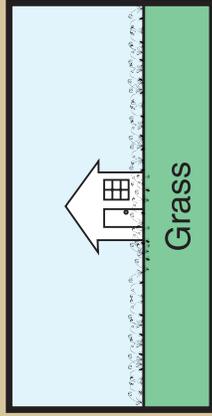
40% (18°)



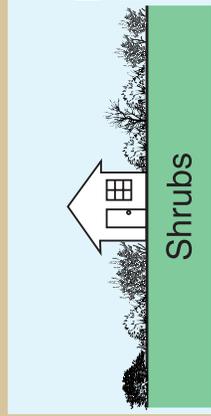
DEFENSIBLE SPACE

RECOMMENDED DISTANCES – STEEPNESS OF SLOPES

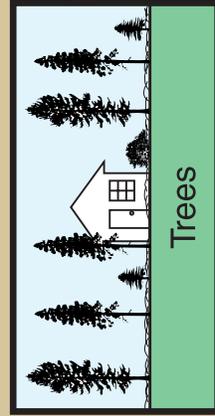
	 <p>Flat to Gently Sloping 0 to 20%</p>	 <p>Moderately Steep 21% to 40%</p>	 <p>Very Steep +40%</p>
30* Feet	100 Feet	100 Feet	100 Feet
100 Feet	200 Feet	200 Feet	200 Feet
30* Feet	100 Feet	100 Feet	200 Feet



Wildland grasses (such as cheatgrass), weeds and widely scattered shrubs with grass understorey.



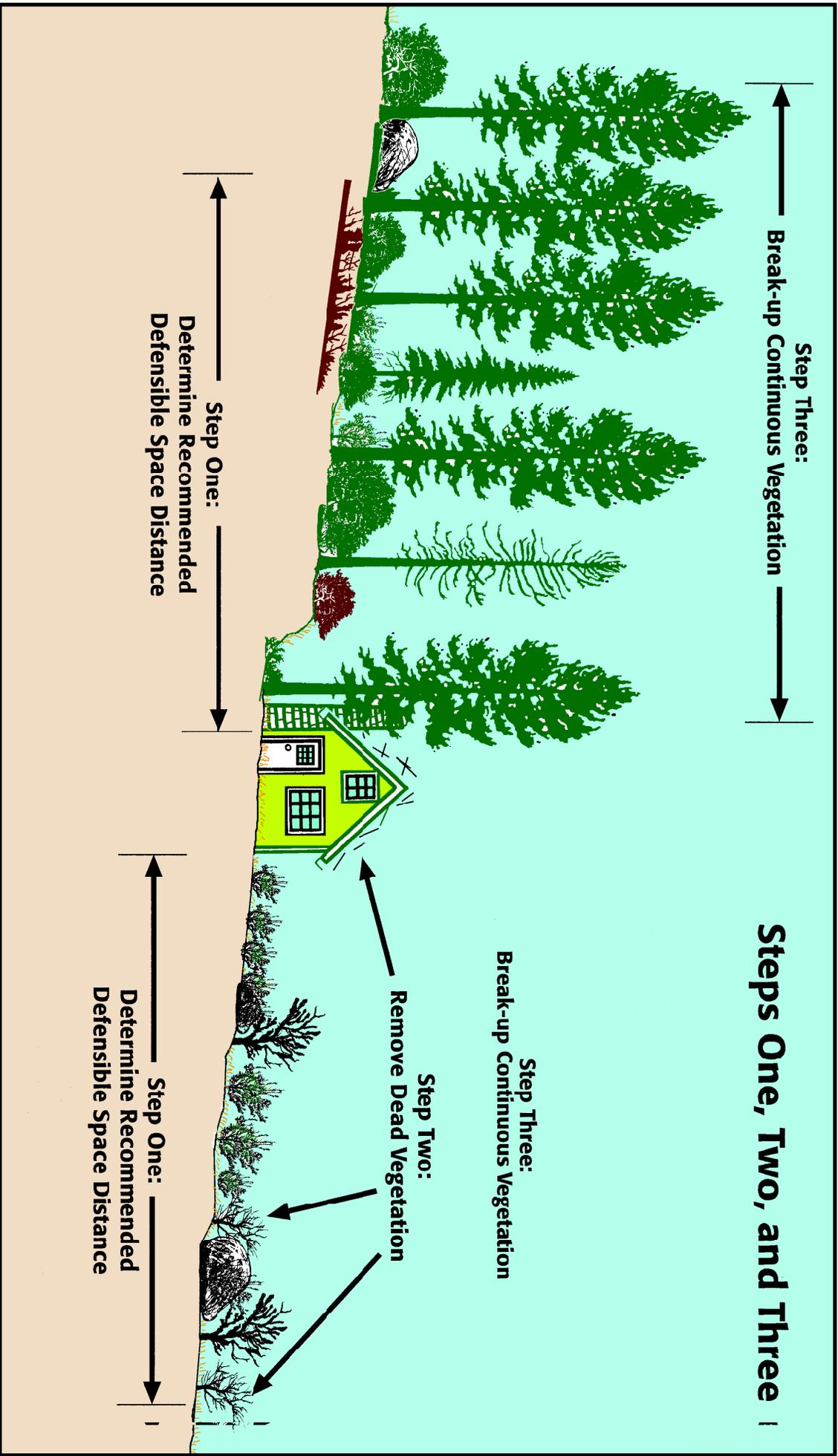
Includes shrubs dominant areas.



Includes forested areas. If substantial grass or shrub understorey is present, use those values shown above.

VEGETATION TYPE

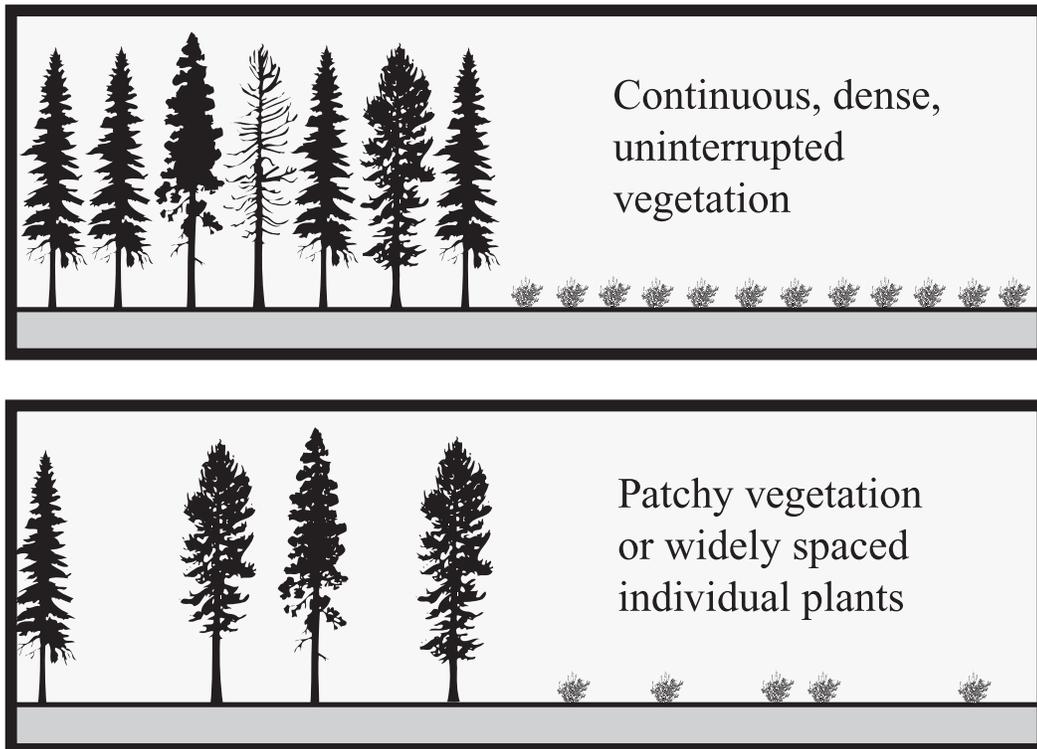
* Always refer to your county's building codes first.



STEP THREE: Breaking up Any Continuous Dense Covers of Shrubs or Trees within the Recommended Defensible Space

Sometimes wildland plants can occur as an uninterrupted layer of vegetation as opposed to being patchy or widely spaced individual plants. The more continuous and dense the vegetation, the greater the wildfire threat. If this situation is present within your defensible space area, you should "break it up" by providing a separation between plants or small groups of plants.

Not only are steep slopes often considered high wildfire areas; they are also highly erodible. When removing shrubs and trees from steep slopes, keep soil disturbance to a minimum. Also, it may be necessary to replace flammable vegetation with other plant materials to prevent excessive soil erosion.



STEP FOUR: Taking Care of Ladder Fuels within the Recommended Defensible Space

Vegetation is often present at varying heights, similar to the rungs of a ladder. Under these conditions, flames from ground-level fuels, such as a thick layer of pine needles, can be carried to shrubs which can ignite still higher fuels like tree branches. Vegetation that allows a fire to move from lower growing plants to taller ones is referred to as "ladder fuel." The ladder fuel problem can be corrected by providing a separation between the vegetation layers.

Within the defensible space area, a vertical separation of three times the height of the lower fuel layer is recommended. For example, if a shrub growing adjacent to a large pine tree is three feet tall, the recommended separation distance would be nine feet. This could be accomplished by removing the lower tree branches, reducing the height of the shrub, or both. The shrub could also be removed.

STEP FIVE: Keeping it Lean, Clean, and Green within the Recommended Defensible Space

The area immediately adjacent to your house is particularly important in terms of an effective defensible space. It is also the area that is usually landscaped. Within an area extending at least 30 feet from the house, the vegetation should be kept:

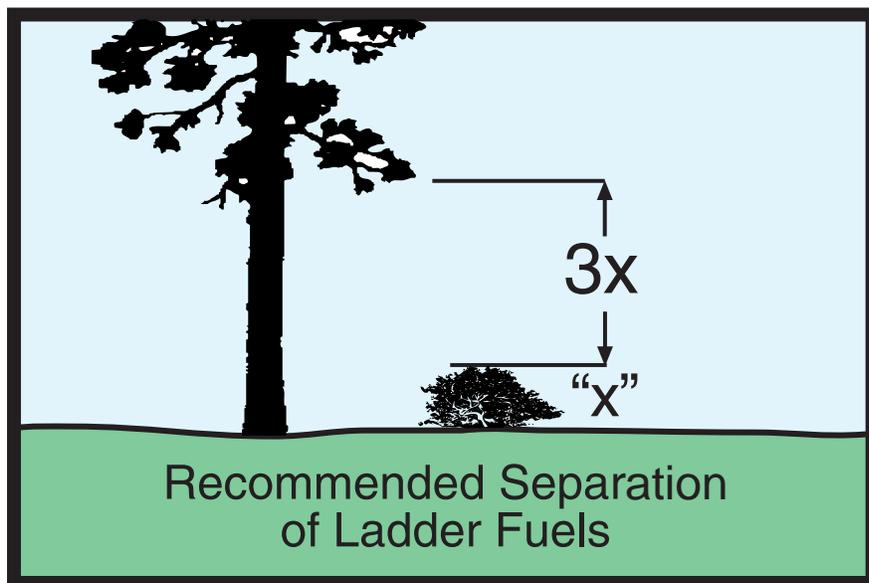
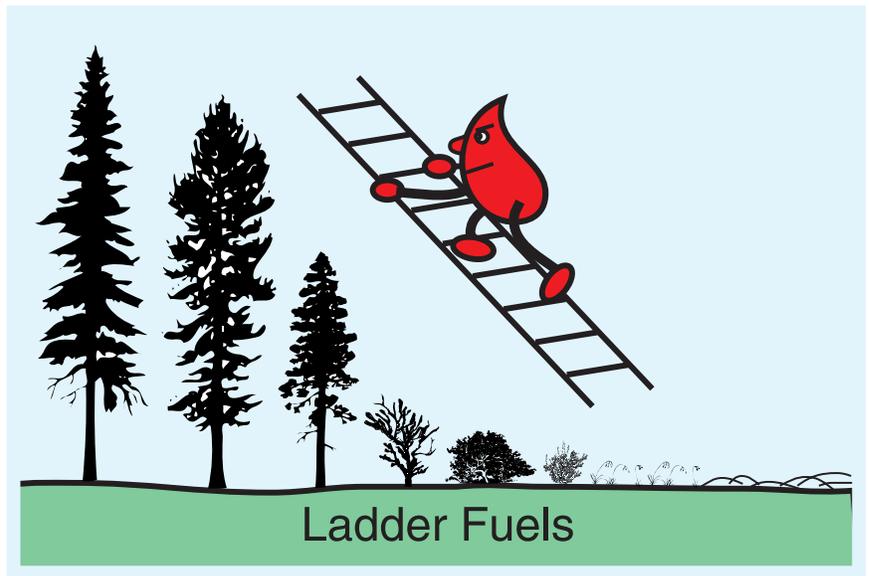
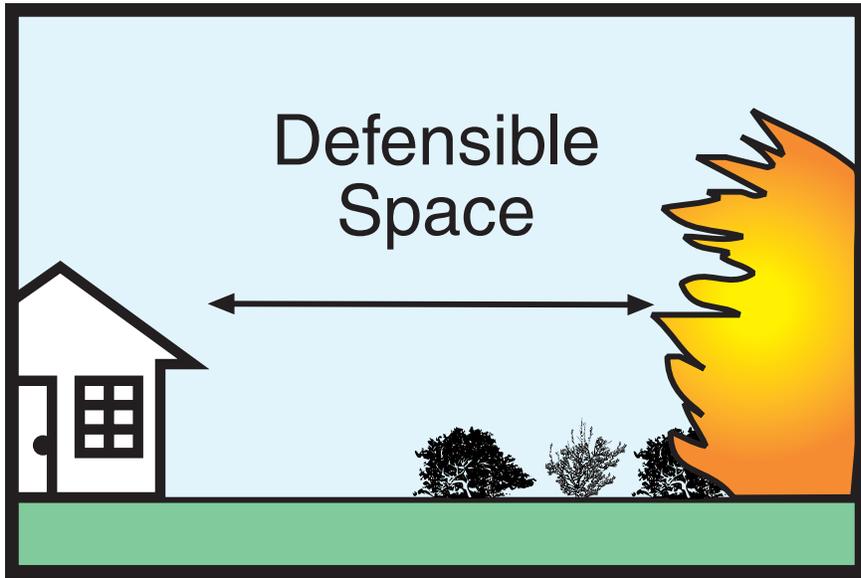
- * Lean – having small amounts of flammable vegetation
- * Clean – allowing no accumulation of dead vegetation or other flammable debris
- * Green – keeping plants healthy and green during the fire season.

THE LEAN, CLEAN AND GREEN ZONE CHECKLIST

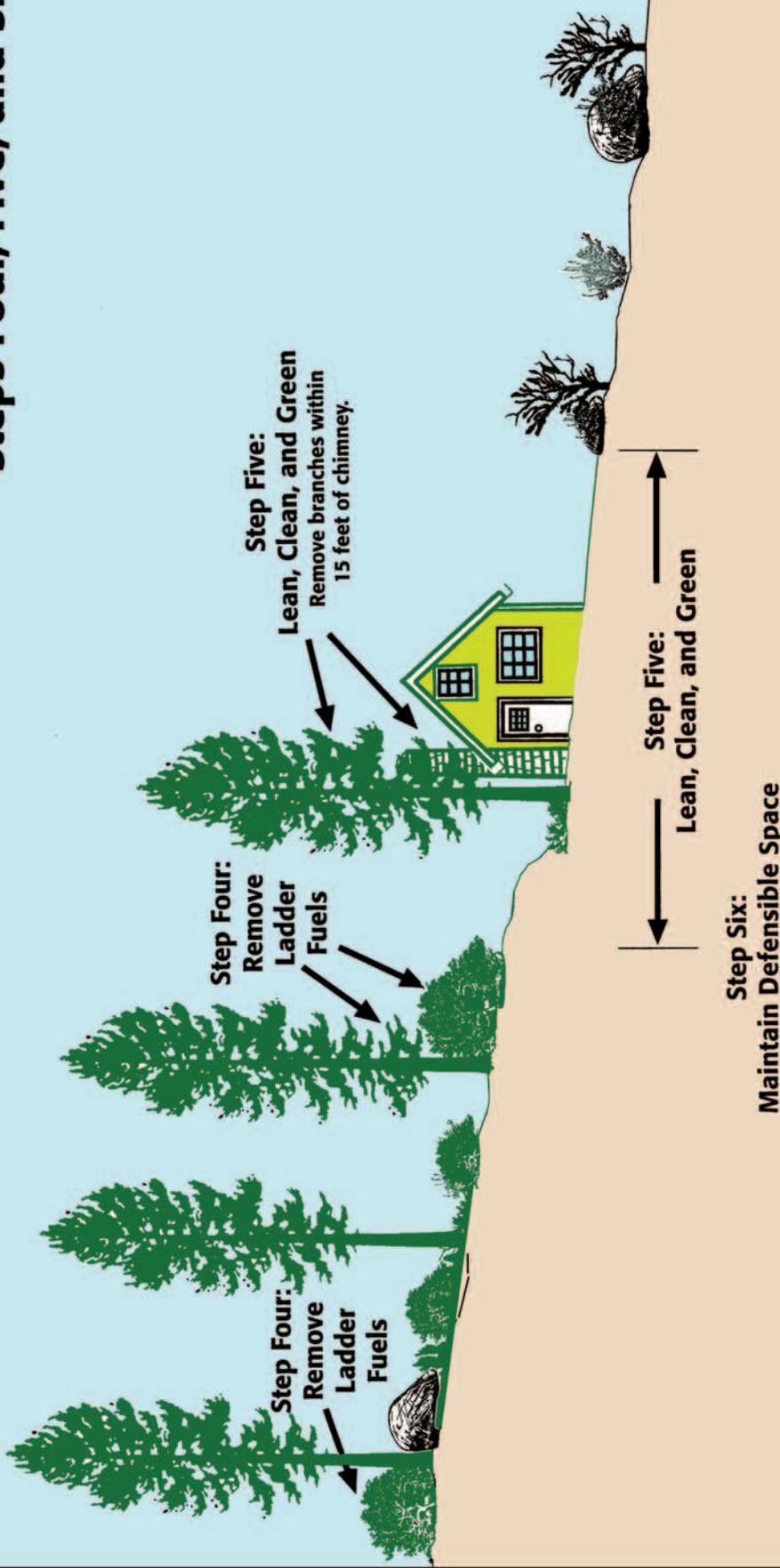
- Emphasize** the use of low growing herbaceous (non-woody) plants that are kept green during the fire season through irrigation if necessary. Herbaceous plants include lawn, clover, a variety of ground covers, bedding plants, bulbs, perennial flowers, and conservation grasses.
- Emphasize** use of mulches, rock, and non-combustible hard surfaces (concrete sidewalks, brick patios, and asphalt driveways).
- Deciduous ornamental trees and shrubs are acceptable if they are kept green and free of dead plant material, ladder fuels are removed, and individual plants or groups of plants are arranged so that adjacent wildland vegetation cannot convey a fire through them to the structure. Shorter deciduous shrubs are preferred.
- Minimize** the use of ornamental coniferous shrubs and trees (such as juniper, arborvitae and mugo pine) and tall exotic grasses (such as pampas grass).
- Where permitted, most wildland shrubs and trees should be removed from this zone and replaced with more desirable alternatives (see Fire-Wise Plants list). Individual specimens or small groups of wildland shrubs and trees can be retained so long as they are kept healthy and free of dead wood, are pruned to reduce the amount of fuel and height, and do not contain ladder fuels.
- For some areas, substantial removal of wildland vegetation may not be allowed. In these circumstances, wildland vegetation should conform to the recommendations presented in steps 2 through 4. Please become familiar with local requirements before removal of wildland vegetation.
- Tree limbs within 15 feet of a chimney, encroaching on powerlines, or touching the house should be removed.

STEP SIX: Maintaining the Vegetation within the Recommended Defensible Space on a Regular Basis

Keeping your defensible space effective is a continual process. Review these defensible space steps annually, at least, and take action accordingly. The effectiveness of your work to create a defensible space can be quickly diminished through neglect.



Steps Four, Five, and Six



Step Four:
Remove
Ladder
Fuels

Step Five:
Lean, Clean, and Green
Remove branches within
15 feet of chimney.

Step Five:
Lean, Clean, and Green

Step Six:
Maintain Defensible Space

Turning the Landscape into a Safe Firescape Fire Safe Landscape Design

Firescaping is a type of landscape design that reduces a home's vulnerability to wildfire. The goal is to surround the home with things that are less likely to burn, developing and designing a landscape with plants that offer fire protection and enhance the property. Proper plant selection, placement, and maintenance can diminish the possibility of ignition, lower fire intensity, and slow the speed of a fire's spread.

The traditional foundation planting of junipers is not a wise choice in a firescape design. Because junipers and other conifers and broadleaf evergreens contain oils, resins, and waxes that make these plants burn with great intensity, use of these plants should be minimized within 30 feet of a structure. A firescape landscape lets plants and garden elements reveal their innate beauty by leaving space between plants and groups of plants.

Firewise plants are those that have:

- ◆ Little seasonal accumulation of dead vegetation
- ◆ Open, loose branching habits
- ◆ Non-resinous woody material
- ◆ Low volume of total vegetation
- ◆ High moisture content in leaves
- ◆ Slow growth (requiring less frequent pruning)

Choose low-growing, "firewise" plants that resist catching fire and provide little fuel. Lawns, ground covers, perennials, and annuals form a greenbelt that is regularly watered and maintained to eliminate dry plant litter. Rock mulches, patios, masonry and rock planters are excellent fuel breaks. Be creative with boulders, riprap, and dry stream-beds. Occasional individual shrubs and trees can be used but should be located at least 10 feet from the house.

Slow growing, drought tolerant shrubs and ground covers keep fire near ground level. Native vegetation can be retained if it is low growing and does not accumulate dry, flammable material.

Fire intensity is reduced where there is less fuel. Remove dry debris on the ground, and thin native trees. Prune tree branches to 10 feet or more above ground to reduce the possibility of surface fires spreading into tree crowns. Remove overgrowth and prune every three to five years.

Experience and research have shown that a distance of 100-150 feet around your home needs this comprehensive landscaping. Greater distances are necessary on steep slopes or windswept exposures. Most plants accumulate excess woody material and all shed seasonal foliage. Branches spread, often touching other vegetation. Weeds grow between landscape plants. You must actively reduce this accumulation of potential fuel by regular pruning, mowing, and raking, followed by proper disposal. The less the accumulation of plant debris, the slower a fire will spread.

Fire-Wise Plant Material for the Pacific Northwest

Although there are no fire-proof plant materials, the following is a list of some firewise plants that can be used in landscaping for fire prevention. Landscape maintenance is far more important to fire prevention than the selection of plant materials. When planning your landscape, use the characteristics of firewise plants along with site characteristics such as slope, aspect, hardiness zone, and amount of precipitation to choose plant material suitable for your site. Additional information on fire resistant plants is available at the Oregon State University Extension's website: <http://osu.orst.edu/extension/deschutes/FireResPlants02.pdf>.

TREES	COMMON NAME
<u>Conifers:</u>	
<i>Calocedrus decurrens</i>	Incense cedar
<i>Thuja plicata</i>	Western red cedar
<u>Deciduous:</u>	
<i>Acer</i> spp.	Maple
<i>Alnus</i> spp.	Alder
<i>Betula</i>	Birch
<i>Catalpa speciosa</i>	Northern catalpa
<i>Celtis occidentalis</i>	Hackberry
<i>Cornus florida</i>	Flowering dogwood
<i>Fagus</i> spp.	Beech
<i>Fraxinus</i> spp.	Ash
<i>Gleditsia tricanthos</i>	Honey locust
<i>Liquidambar styraciflua</i>	Sweet gum
<i>Malus</i> spp.	Apple
<i>Populus</i> spp.	Aspen, cottonwood, poplar
<i>Prunus</i> spp.	Cherry
<i>Quercus</i> spp.	Oak (white, bur, or red)
<i>Robinia pseudoacacia</i>	Black locust
<i>Salix</i> spp.	Willow
SHRUBS	COMMON NAME
<i>Amelanchier</i> spp.	Serviceberry
<i>Atriplex canescens</i>	Four wing saltbrush
<i>Berberis</i> spp.	Oregon grape
<i>Buddleia davidi</i>	Butterfly bush
<i>Caryopteris x clandonensis</i>	Blue-mist spirea
<i>Cornus sericea</i>	Red osier dogwood
<i>Cotoneaster</i> spp.	Cotoneaster
<i>Gaultheria shallon</i>	Salal
<i>Holodiscus discolor</i>	Ocean spray
<i>Ligustrum</i> spp.	Privet
<i>Mahonia</i> spp.	Creeping grape holly
<i>Pachistima canbyi</i>	Dwarf mountain lover
<i>Philadelphus</i> spp.	Mock orange; syringa
<i>Rhamnus fragula</i>	Buckthorn
<i>Rhododendron</i> spp.	Azaleas, rhododendrons

Rhus spp.	Sumac
Ribes spp.	Currant
Sheperdia argentea	Silver buffalo berry
Symphoricarpos albus	Snowberry
Viburnum trilobum	Cranberry bush
Yucca spp.	Yucca

PERENNIALS

Achillea spp.	Yarrow
Allium schoenoprasum	Chives
Bergenia spp.	Bergenia
Brodiaea spp.	Lilies
Coreopsis spp.	Coreopsis
Erysimum linifolium	Wall flower
Eschscholzia spp.	California poppy
Fragaria spp.	Wild strawberries
Geranium spp.	Geranium
Hemerocallis hybrids	Day lilies
Heuchera spp.	Coral bells
Hosta spp.	Hosta
Iris spp.	Iris
Kniphofia uvaria	Red hot poker
Lupinus spp.	Lupine
Oenothera spp.	Evening primrose
Penstemon spp.	Bearded tongue
Solidago spp.	Goldenrod
Strachys byzantina	Lamb's ear

COMMON NAME

GROUND COVERS

Succulents:

Delosperma nubigenum	Hardest ice plant
Echeveria spp.	Hens and chicks
Sedum spp.	Stone crops

Non-succulents:

Achillea tomentosa	Woolly yarrow
Ajuga reptans	Carpet bugle
Arctostaphylos uva-ursi	Kinnikinnick
Armeria maritima	Sea pink; thrift
Cerastium tomentosa	Snow in summer
Cotoneaster dammeri	Bearberry cotoneaster
Euonymus fortunei	Winter creeper
Hypericum calycinum	St. John's wort
Potentilla tabernaemontani	Spring cinquefoil
Senecio cineraria	Dusty miller
Thymus praecox arcticus	Mother of thyme
Verbenia bipinnatifida	Verbenia
Vinca minor	Periwinkle

COMMON NAME

IV. Following the Law

Rules and Regulations Pertaining to Fire

Fitting In

The Relationship of the Applegate Fire Plan to Existing Laws

The Applegate Fire Plan is not a legal document. Nothing in here has to be done – it is all suggestion. Actions on public lands still need to involve the public, and private landowners are still free to do as little or as much towards fire safety as they see fit, within the parameters of the law. This plan does not change any of the existing plans, strategies, mandates, and laws already in place, including numerous land management plans for federally managed lands (and a few that also place restrictions on privately owned land in Oregon), county zoning and land use laws, and several federally-mandated laws such as the Endangered Species Act which also affect land management in Oregon. Some of the more important examples of these existing plans, strategies, mandates, and laws include:

- ❖ **Northwest Forest Plan.** Enacted in 1994, this federal management plan for sustainable forest management in the Pacific Northwest also helps provide for endangered species such as the spotted owl. This plan applies to lands managed by the BLM and US Forest Service.
- ❖ **BLM's Resource Management Plan.** The record of decision in 1995 provides multiple-use management for the Medford District to enhance and maintain the ecological health of the environment and the social well-being of the human population.
- ❖ **Rogue River & Siskiyou National Forest Management Plans.** Written in 1990, these plans direct multiple-use management of national forest lands. The Northwest Forest Plan amended and updated these management plans in 1994.
- ❖ **The O & C Act of 1937.** This law, the McNary Oregon & California Act, directed that revested Oregon and California Railroad lands be managed for sustainable timber management. No subsequent laws, regulations, and management plans have superceded the O & C Act, including the Northwest Forest Plan.
- ❖ **NEPA.** The National Environmental Policy Act, approved by Congress in 1969, was written as a mechanism to disclose and evaluate the consequences of actions proposed in the management of federal lands, facilities or resources and to help safeguard the environment and allow people and nature to coexist in productive harmony.
- ❖ **Endangered Species Act.** This act was passed into law in 1973 to conserve ecosystems upon which threatened or endangered species depend.
- ❖ **Clean Water Act.** This law was enacted in 1982 by Congress to restore and maintain the integrity of our nation's waterways.
- ❖ **Clean Air Act.** The federal Environmental Protection Agency (EPA) and the state Department of Environmental Quality (DEQ) have established these guidelines by which agencies monitor air pollutant levels to insure clean air in urban areas.
- ❖ **State Senate Bill #360.** Enacted in 1997 by the Oregon legislature and expected to take effect in 2004, this bill sets standards for *interface* landowners to create a defensible, fire-safe space around their homes and along their driveways.

- ❖ **State fire prevention laws.** Around since 1911, these laws affect both commercial and private activities such as burning, logging, use of power equipment, etc., near flammable vegetation, primarily during fire season.
- ❖ **Oregon Forest Practices Act.** The first such act in the nation in, this 1971 law regulates harvesting, road building, reforestation, chemical use, and other activities related to commercial forestry to protect soil, water, fish, wildlife, and some scenic resources on all non-federal lands.
- ❖ **County Zoning laws.** These laws designate the types of uses for parcels of land throughout the Jackson and Josephine counties in an attempt to balance growth and the retention of our natural resources.
- ❖ **County Building codes.** These regulations provide safety measures during the building process in order to make our homesites open and accessible for emergency vehicular use.
- ❖ **National Fire Plan.** The grandfather of our Applegate Fire Plan, this national mandate funds local efforts in the western states to help communities-at-risk make emergency plans and prepare for, protect against, and fight wildland fires.

The Applegate Fire Plan adheres to the management concepts of each of the above. Many representatives of agencies affected by these laws, regulations, and plans participated in planning and writing our fire plan. Through public outreach and the many chapters of this fire plan, we will, to the best of our ability, promote the concepts of all of the above guiding mandates.

First Read This

What You Should Know before Burning Debris or Slash

That little August thunderstorm last night brought a brief shower of rain with it, and you woke up this morning thinking now would be a good day to burn that slash you've piled in your back woods. Wait! Don't do it! Such showers of the summer and fall give a false sense of security about fire danger. Forest vegetation can dry quickly and return to its previous state of flammability. And if a fire should start from your slash burn, you would have not only the burned forest to contend with but also the costs for suppression.

Burning is always prohibited in the Applegate until a significantly wet weather pattern is established and the end of fire season has been declared. As you work on your land during the summer and collect debris that you want to burn, pile it and cover the piles with plastic until continuous fire-safe weather conditions are present and declared. Several smaller piles instead of one large pile add to the margin of safety. Check with your local fire district before starting to burn, since some areas require permits even outside of fire season.

You could be held liable for an escaped fire at any time during the year, and it's important to understand that an escaped debris or slash burn could be *very* expensive, even if you are not found to be negligent. Oregon state law requires the Oregon Department of Forestry to collect certain suppression costs from individuals when a wildfire results from their burning activities – for whatever reason.

The exposure to this liability varies, depending upon the person's level of negligence. When individuals willfully, maliciously, or negligently allow their burn to escape, they are responsible to repay *all* of ODF's suppression costs. The most common examples of negligence that result in escaped burns are: leaving the burn unattended before it is completely out, burning during dry or windy conditions, not having an adequate fire break, and having insufficient fire tools or water available.

Even if a person is not found negligent, the law requires ODF to collect fire suppression costs from any person who has caused, or allowed any burning that results in, a fire, whether or not a permit was obtained. In this situation, however, the liability is limited to reimbursement only of ODF's "extraordinary" costs, not to exceed \$300,000. Extraordinary costs include payments for suppression forces that are not part of the regular district force, such as hired crews, dozers, air tankers, and helicopters.

Careless burning is the cause of many wildfires and nuisance smoke problems each year in the Applegate Valley. Outdoor debris and slash burning is subject to state and local fire safety laws and to air quality regulations.

TIPS FOR BURNING WOODY MATERIAL SAFELY:

- Consider “no burn” options such as chipping or disposing of woody debris at such sites as Jo Gro in Merlin or the transfer station in White City.
- Understand permit requirements. Open and barrel burning is prohibited during fire season. Outside of fire season, the Williams Fire Department requires a burn permit for any piles over three feet by three feet. A burn permit is required from the ODF when disposing of slash that is associated with commercial forestry activities.
- Check local air quality regulations. Open and barrel burning is prohibited throughout the Applegate when the Ventilation Index (VI) is below 400. Check daily by calling 776-7007 or 474-BURN. You can also check www.grayback.com.
- Burn one pile at a time, preferably hand feeding it to minimize escape.
- Burn only natural vegetation.
- Keep burn piles at least 50 feet from structures and 500 feet from any forest slash.
- Clear the area around the burn pile of any flammable material.
- Burn when the winds are calm or light. It is too windy if trees sway, flags are extended, or waves appear on open water (3 and above on the Beaufort scale).
- Maintain a connected water hose or at least five gallons of water and a shovel nearby. Large or multiple piles may need more resources.
- Attend the fire until it is completely extinguished.

State Fire Prevention Regulations

Most wildfires that occur on private lands in the Applegate are human caused. From late spring through fall each year, conditions reach the stage where regulatory fire prevention measures are necessary to reduce the potential of human caused fires. The Oregon Department of Forestry regulates and determines limitations on certain activities as fire danger increases throughout the Applegate. Implementation of these annual fire restrictions and promotion of public awareness about fire prevention and about changing local conditions help keep low the number of human caused fires and the damages resulting from them. These closures pertain to all lands, public and private, except for National Forests. Persons who violate these rules are subject to both a citation and liability for fire suppression costs should a fire result. (See page 97, "First Read This.")

FIRE SEASON

The first level of restriction that occurs each year is the declaration of Fire Season by ODF. Fire Season is traditionally declared between mid-May and mid-June and usually lasts until the fall rains in October.

Open burning is prohibited at the declaration of fire season, and permits are required for burn barrels. Burn barrel use is prohibited after June 30th of each year.

REGULATED USE CLOSURE

As the fire danger increases from moderate to high and extreme, ODF may further restrict certain activities through the use of Regulated Use Closures. The specific restrictions change throughout the summer, based upon fire danger and fire occurrence. They apply to areas on or near flammable vegetation on both private and public lands, except National Forests.

The following activities are generally prohibited when a Regulated Use Closure is in effect:

Open Fires. Open fires, including campfires, charcoal fires, cooking fires and warming fires, are prohibited except at approved campgrounds, such as county and state parks. Portable cooking stoves using liquefied or bottled fuels are allowed.

Off Highway Vehicle Use. Use of motorized vehicles, including motorcycles and ATVs, is prohibited except on improved roads. "Improved road" means a road which is maintained for the use of passenger cars and is free of flammable vegetation and debris.

Smoking. Smoking is prohibited while traveling, except in enclosed vehicles on improved roads.

Fireworks. Use of fireworks is prohibited.

The following activities are generally prohibited during times of the day when there is risk of wildfire. At the beginning of fire season, this prohibition may be between 1:00 and 8:00 p.m., but it could increase to a total prohibition. Be sure and check with your local ODF office for current time restrictions. (Medford: 664-3328; Grants Pass: 474-3152).

Public Use of Chain saws. The operating hours for the non-commercial use of chain saws are regulated by the severity of fire conditions. These hours do not necessarily coincide with commercial requirements. All operators of chain saws are required by law to have the following equipment on site while operating chain saws: an 8oz. or larger fire extinguisher, a round pointed shovel which has a face not less than 10 inches wide and a handle not less than 26 inches long, and an approved spark arrester screen on the exhaust system of the saw. The chain saw must be moved 20 feet away from the point where the saw is fueled before being started.

Mowing Dry Grass. The operating hours for the non-agricultural mowing of dry grass, including use of gas-powered string trimmers, are regulated in the same manner as those for chain saws. Green irrigated lawns do not fall under these regulations. “Agricultural use” pertains to the commercial growing and harvesting of crops on lands zoned as agricultural. Electrically powered string trimmers do not fall under these restrictions; however, power cords should be in good condition.

Metal Working. Cutting, welding, and grinding metal is prohibited through the same process as chain saw use, based on time of day and vegetation conditions.

Other Power Driven Machinery. The non-agricultural, non-commercial use of power driven equipment may be restricted during regulated closures.

REQUIREMENTS FOR COMMERCIAL ACTIVITIES

There are also closures that pertain to commercial activities on privately-owned lands which require permits and inspections. The Industrial Fire Precaution Level (IFPL) is broken into levels 1 to 4. These levels pertain only to commercial operators. The commercial operators are required by law to have fire suppression equipment and training in order to operate during the fire season. Additional information is available at your local ODF office.

Jackson County Fire Safety Requirements and Guidelines

Jackson County Land Development Ordinance

280.100 FIRE SAFETY REQUIREMENTS AND GUIDELINES:

1) Definitions:

A) **AFFECTED PROPERTY LINE:** The property line within 100 feet of a proposed structure or addition to an existing structure.

B) **FUEL BREAK:** A fuel break is an area of reduced and/or managed vegetation designed to slow and minimize fire intensity.

C) **HAZARDOUS WILDFIRE AREA:** A hazardous wildfire area is the area mapped by the Oregon Department of Forestry and adopted by the Jackson County Board of Commissioners which has special hazards caused by a combination of combustible fuels, topography, and climatic conditions that result in a significant hazard of catastrophic fire over relatively long periods each year.

D) **IMPROVED PUBLIC ROAD:** A constructed and maintained state, County, or city public road.

E) **OTHER SIGNIFICANT BUILDING:** A structure of inherent value, or a structure that if it was to catch on fire would threaten the main structure on the property.

F) **RESOURCE AND RURAL ZONED DISTRICTS:** Resource zoned districts include Forest Resource (FR), Woodland Resource (WR), Open Space Reserve (OSR), Exclusive Farm Use (EFU), Aggregate Resource (AR), and Rural Residential (RR-5, RR-10, RR-00) districts.

G) **TURNOUT:** A wide section of road which allows for vehicles to pull off to allow other vehicles to pass.

2) Fire Safety Requirements:

The following are mandatory standards for all new construction, or other significant out-buildings, as defined above, in the Hazardous Wildfire Area, resource and rural zoning districts. Properties zoned Rural Residential (RR-5, RR-10, RR-00) and which are located within an urban growth boundary (UGB) or an urban containment boundary (UCB), are not subject to the 100-foot fuel break requirements, but are subject to all other fire safety standards. Conditional uses in the resource and rural residential zoning districts shall meet these requirements unless an alternate fire prevention and suppression strategy is approved.

A) **Fuel breaks:** A 100-foot fuel break shall be developed and maintained around all new construction. A fuel break may be extended onto an adjoining property with a recorded fuel break easement. When a fuel break area includes an improved public road right-of-way, a fuel break reduction application will not be required for the side of the property facing the road, but a 100-foot fuel break shall still be required on the other sides. All proposed structures shall meet the mini-

imum structural setback requirements. A fuel break is measured from a structure's outermost projections including eaves overhangs, combustible decks, or other combustible attachments. Fuel breaks shall meet the following standards:

- i)** Trees interfaced with brush and natural vegetation shall be trimmed to 15 feet spacing between trunks, and a 10-foot clearance shall be maintained between ground and tree branches, where the growth presents a fire hazard. This excludes ornamental and fruit trees, provided they do not provide a means to rapidly transmit fire.
- ii)** There shall be a 10-foot clearance between branches and stovepipes or chimney outlets. No branches shall overhang a roofline.
- iii)** Underbrush, dry leaves and twigs shall be removed, and grass shall be kept less than six inches in height, limiting combustible materials.
- iv)** Landscaped areas, widely spaced shrubbery, and ornamental trees are encouraged, provided they do not provide a means to rapidly transmit fire. Highly combustible shrubbery, such as juniper, is prohibited.
- v)** Firewood piles or woodsheds shall be placed at least 30 feet from all other structures.

B) Roof Coverings: All structures shall have Class A or B roofing according to Section 1504 of the State of Oregon Structural Specialty Code. This prohibits wood roofing of any type, including pressure treated wood shingle or shakes.

C) Emergency Vehicle Access: For the purposes of public safety, the following emergency vehicle access standards are required when new construction or other significant buildings are proposed. The County may impose additional standards, conditions, or require technical information as needed to assure compliance.

- i)** Driveways shall be constructed to within 50 feet of all habitable structures and other significant buildings.
- ii)** In accordance with Section 05.070, driveways shall be constructed to the following standards:
 - a)** Minimum surface width shall not be less than 12 feet. Width shall be increased to a minimum of 14 feet in curves with a centerline radius of less than 150 feet to ensure emergency vehicles remain on an all weather surface.
 - b)** A minimum clear height of at least 13½ shall be maintained for the entire width of the driveway.
 - c)** Driveways shall be designed and constructed to maintain a minimum 50,000 pound load-carrying capacity or if not designed by an engineer, the driveway shall be constructed of a minimum of 6 inches of base rock or equivalent.
 - d)** Maximum finished grade shall be no greater than 15 percent; however, the grade may increase to 18 percent for intervals of 100 feet as long as there are no more than three 100-foot sections of over 15 percent grade per 1,000 feet. The finished grade shall not exceed 15 percent on curves with a centerline radius of less than 150 feet. The approach from a public road or private road shall not exceed 10 percent grade for a distance of 40 feet.
 - e)** Driveways shall be designed such that the curves have a minimum center line radius of 55 feet. This includes driveway approaches of public roads for both directions.
 - f)** Driveways shall terminate in an approved cul-de-sac or other turnaround arrangement. Turn-arounds shall be provided every one-half mile. Such turn-

around area shall meet the same load requirements as the driveway. The grade shall not exceed 4% in turn-arounds or cul-de-sacs.

g) Turnouts shall be required at 800 feet maximum spacing, or at distances which ensure continuous visual contact between turnouts, and constructed to the following dimensional standards: 50 feet in length and seven feet in width, with 25 foot tapers on each end.

h) Gate widths shall be a minimum of 14 feet; on a curve where the minimum driveway width is 14 feet, then the gate shall be a minimum of 16 feet.

i) Bridge driving surfaces shall be a minimum of 8½ feet in width. In addition, a clear minimum width of 14 feet shall be maintained above the surface of the bridge. Culverts shall be a minimum of 18 feet wide and shall be wide enough to extend beyond the toe of the fill. All bridges and culverts shall have a 50,000 pound load-carrying capacity. Non-combustible construction is preferred.

D) Slope: All new dwellings shall be sited on a slope less than 40 percent.

E) Chimneys: All chimneys for new dwellings, or other significant outbuildings, shall have a spark arrester.

F) Rural Fire Protection: Dwellings on farm or forest lands, or on rural residentially zoned lands which are not within an urban growth boundary (UGB) or an urban containment boundary (UCB), shall be located within a rural fire protection district or contract with a rural fire protection district for residential fire protection. If the dwelling is not within a rural fire protection district and contracting is not possible, evidence must be provided to show that the applicant has asked to be included in the nearest such district, and that said district cannot or has refused to provide protection.

G) Address Signs: Address signs shall be posted at the driveway entrance from the public right-of-way in such a manner as to be visible from the roadway providing the access and directional address signs shall be posted at all driveway forks.

3) Fire Safety Guidelines:

The following fire safety guidelines are suggested in all rural areas, and may be required by the County when necessary to protect public safety.

A) Automatic fire sprinkler systems for the roof and/or interior of structures.

B) Bridges constructed of noncombustible materials.

C) Lakes, ponds, streams, and swimming pools should be installed with a minimum 2 inch diameter dry standpipe assembly equipped with fittings to enable fire equipment to draught water for fire fighting, if the equipment cannot easily move within ten feet of the water source.

D) Water storage shall be a swimming pool, pond, lake or similar body of water that at all times contains at least 4,000 gallons or a stream that has a minimum flow of at least one cubic foot per second. Road access shall be provided to within 15 feet of the water's edge for fire fighting pumping units, and the road access shall accommodate a turnaround for fire fighting equipment.

E) Public use areas such as parks, recreation sites, and picnic grounds should be designed to prevent fires which may start in them from spreading to adjacent or nearby wildlands or developments.

Josephine County Rural Development Code – 2001

ARTICLE 76 - RURAL/WILDLAND FIRE SAFETY STANDARDS

76.010 - PURPOSE

The purpose of this Article is to establish standards for the placement of structures, and access to properties in areas where wildfires pose a risk to property and human lives.

76.020 – APPLICATION OF STANDARDS

- A. The provisions of this Article shall apply to all lands zoned Forest Commercial and Woodlot Resource in Josephine County.
- B. Replacement or substantial improvement of legally pre-existing dwellings requires compliance with the development standards set out in Sections 76.030(C), (D), (E), (I), (J) and (L).
- C. Other mandatory fire safety provisions of this code will not be required for replacement or substantial improvements unless the structure has not been habitable for more than one year, or the building is not being replaced at its pre-existing location.
- D. The provisions of Section 76.050 shall apply to any fireworks operation in the Rural Industrial zone.

76.030 – DEVELOPMENT STANDARDS

All site development will meet or exceed all of the following standards:

- A. A plot plan shall be submitted to the review body in conformance with the standards of this Section
- B. No dwelling shall be sited on slopes greater than 40%
- C. All structures shall be placed or constructed with a minimum separation as described in the adopted building codes to reduce the risk of fire spreading from one structure to another
- D. All dwellings shall have a fire retardant roof and each chimney must have a spark arrestor;
- E. Adequate access for fire-fighting vehicles shall be provided to within 50 feet of all habitable structures including manufactured dwellings and other significant buildings constructed or placed, after the effective date of this code:
 - 1. A structure or fill and culvert shall be provided to cross a live stream, ravine, irrigation ditch, or similar topographic feature in order to provide access for emergency vehicles
 - 2. While the responsibility to provide adequate access rests with the property owner, the review body may require certification from an engineer registered in the state of

Oregon that the structure or fill and culvert has been constructed to support emergency vehicles grossing a minimum of 50,000 lbs

3. Any structure or fill and culvert shall be maintained to the design capacity by the owner of the property

F. Adequate horizontal and vertical clearance shall be created and maintained on driveways to permit emergency vehicles access to the dwelling

1. Minimum surface width shall not be less than 12 feet. Width shall be increased to a minimum of 14 feet in curves with a centerline radius of less than 150 feet to ensure emergency vehicles remain on an all-weather surface

2. An all-weather surface does not require paving

3. As a rule, shrubbery and brush should be cleared from each side of the right-of-way, and tree branches should be trimmed to 14 feet above the road

G. Grades on driveways shall not exceed 18% as described in Josephine County Land Development Code. In addition:

1. An unsurfaced driveway shall not exceed a grade of 12%, or a driveway surfaced with asphaltic concrete or Portland Cement shall not exceed a maximum grade of 18%

2. Grade transitions shall not exceed 1% in 3 feet, on driveways in excess of 100 feet

3. There shall be a turnout for every 400 feet of driveway length

4. Driveways shall be extended to within 50 feet of habitable structures, including manufactured dwellings and other significant buildings, and shall terminate in an approved cul-de-sac, clear area, or other turnaround arrangement

5. Gate widths shall be a minimum of 14 feet unless on a curve where minimum driveway width is 14 feet; then the gate shall be a minimum of 16 feet

SLOPE	SAFETY ZONE IN FEET	SAFETY ZONE DOWN SLOPE IN FEET
0%	100	0
10%	100	50
20%	100	75
25%	100	100
49%	100	150

H. Subdivisions shall not be permitted in box canyons using one-way access roads;

I. The dwelling must be located as follows:

1. In a fire protection district protecting structures; otherwise, the applicant must provide evidence of a contract providing residential fire protection for the dwelling, or

2. If the dwelling is not located in a fire protection district protecting structures, the applicant must provide evidence of a request to be included in the district, or

3. If subsections 1 and 2 are not practical, an alternative may be developed utilizing a fire sprinkling system, on-site equipment and water storage, or other methods that are reasonable given site conditions

J. The applicant must provide evidence of a domestic water supply from a source authorized in accordance with the Water Resources Department's administrative rules for the appropriation of groundwater or surface water and not from a class II stream as designated

by the Oregon Department of Forestry. For the purpose of this subsection, evidence of a domestic water supply means:

1. Verification from a water purveyor that the use described in the application will be served by the purveyor under the purveyor's rights to appropriate water, or
2. A water use permit issued by the Water Resources Department for the use described in the application, or
3. Verification from the Water Resources Department that a water use permit is not required for the use described in the application
4. If the proposed water supply is from a well and is exempt from permit requirements under ORS 537.545, the applicant shall submit the well constructor's report to the county upon completion of the well

K. If a water supply is required for fire protection, it shall be a pond, swimming pool, lake, or similar body of water containing at least 4000 gallons or a stream having a continuous year-round flow of at least 1 cubic foot per second. The applicant shall provide verification from the Water Resources Department that any permits or registrations required for water diversion or storage have been obtained or that permits or registrations are not required for the use. Road access to within 15 feet of the water's edge shall be provided for pumping units:

1. The road access shall accommodate the turnaround of fire fighting equipment during the fire season
2. Permanent signs shall be posted along the access route to indicate the location of the emergency water source, as required by OAR 660-06-035.1, as adopted March 1, 1990

L. The primary safety zone shall be delineated in Section 76.030.L.6 around structures, and shall be maintained as follows:

1. Use of landscape plants within the primary safety zone shall be of a low fuel and low growing variety.
2. Trees should be pruned to remove dead and low (less than 8 feet) branches and any limbs that are touching any structure.
3. Trees should be pruned to provide an 8 foot clearance between branches and chimneys and stovepipes. No branches may overhang a roofline.
4. Trees shall be thinned to 15 feet spacing between trunks.
5. Underbrush, dry leaves, twigs, weeds, and debris shall be removed, and combustible materials limited.
6. The goal within the primary zone should be to exclude fuels that will produce flame lengths in excess of one foot.

SIZE OF THE PRIMARY SAFETY ZONE

76.040 – IDENTIFICATION NUMBERS

House numbers shall be posted on lots in a manner to clearly direct emergency equipment to the location of the dwelling. Numbers shall be at least 3" high, light reflective, and posted at driveway entrance and all intersections thereafter.

76.050 – FIREWORKS

The assembly, manufacturing, or preparation of products included in the definition of fireworks as provided in ORS 480.110.1 shall be conditioned upon the following in addition to all other requirements of this code:

- A.** At no time shall more than five pounds of any active ingredient of the products be compounded or present on the premises in an unpackaged form.
- B.** Fire flow capability, shall be provided for the use at a rate of 500 gallons per minute and that water shall be provided from a municipal source or on-site storage with a minimum capacity as determined by the fire protection agency or company providing fire protection.
- C.** A fuel break shall be provided around the facility for a distance of at least 100 feet in all directions. The fuel break shall be maintained at all times.
- D.** The fuel break shall be wholly on the subject property or easements and shall be secured to provide for the maintenance of the fuel break.
- E.** All license and permit requirements from state and federal agencies shall be obtained prior to the commencement of operation of the facility.
- F.** The operation shall be conducted in accordance with the most current edition of the National Fire Protection Association Standards 1124 as adopted in 1984.
- G.** The facility shall be built to the standards required for any facility using Class "A" explosives as set forth in the most current edition of the National Fire Protection Association Standards 1124 as adopted in 1984.
- H.** A direct alarm system to emergency services shall be installed and maintained at all times.
- I.** There shall not be on-site testing of the products being assembled, manufactured, or prepared.
- J.** A binding contract with a fire protection service shall be in effect at all times for any facility located outside of a fire protection district.

Oregon Forest Practices Rules

Forestry practices (the way forest operations are conducted on forest land) are regulated by the Oregon Department of Forestry (ODF) whether such practices take place on private or on state lands. Harvesting and salvaging trees, site preparation and reforestation, road construction and improvements, precommercial thinning, application of chemicals, slash disposal, and clearing forest land for non-forest uses are all subject to the Oregon Forest Practices Act (FPA). The goal of the FPA is to assure the continuous growing and harvesting of forest tree species while protecting soil, air, water, fish, and wildlife as well as scenic resources within visually sensitive corridors such as Highway 238.

While ODF has no authority to force landowners to remove or treat slash, it does administer rules that encourage forest operators to dispose of slash. Operators that have created a significant slash hazard may be required to reduce that hazard or be subject to the costs of fire suppression if a fire should occur.

More information on the FPA and industrial fire requirements is available at any ODF office or on the web at www.odf.state.or.us.

U. In Case of Fire

Emergency Communications Procedures and Other Good Advice

When an Emergency Arises

The Basic Concepts of Our Emergency Communications Strategy

In rural Southern Oregon, every emergency preparedness program emphasizes the same thing: You must be prepared to be on your own for at least 72 hours in case of a local disaster such as a flood, fire, or earthquake. That's not to say help may not arrive sooner, but if a disaster is widespread, it may take that long for sufficient resources to arrive. (Be sure to obtain a copy of your county's emergency preparedness manual for general planning.)

You and your neighbors need to know how to respond to an emergency and how to get information. If you know these things before an emergency strikes, you'll be better prepared to protect your life and property. To the greatest extent possible, every resident of the Applegate should know what will happen in an emergency, which agencies will be responding and when, which neighbors to contact, who can provide help and who needs help, how to get and how to give out information. One goal of Emergency Communications is to help you know these answers. Having a neighborhood plan that can identify, for example, ailing neighbors, small children, valuable livestock, water sources, folks with medical training, or even a bad bridge could greatly assist resource agencies, fire departments, the Red Cross – and you and your neighbors. The “Community Information Sheet” on page 117 was developed by a team of local emergency preparedness specialists to assist neighborhoods in developing a consistent list of resources (and potential problems).

This Emergency Communications Strategy will be your plan, for your use in an emergency. It can be tailored to the desires of each neighborhood. Some people will want to organize and plot and plan, cataloguing everything they can think of that might be needed in an emergency situation, while others may not want to share even their own telephone numbers. This Emergency Communications chapter can help organize neighborhood groups by providing personal information sheets, guidelines for designing a telephone tree, sample telephone trees, county emergency pamphlets, guidance from local emergency personnel, and local maps showing structures, roads and topography. The three-ring-binder format allows you to easily add or subtract items to suit you or your neighborhood, fill in the names and telephone numbers that will be important in an emergency, and update these plans every year at our annual "Update Day" in May (before folks start leaving on vacation and before the summer fire season begins).

Another goal of an Emergency Communications Strategy is to make it easier for emergency personnel to communicate with you and your neighbors. When wildfire (or any disaster) occurs in populated areas, getting accurate information to those who need it most, when they need it most, has always been a great challenge. Recognizing this challenge, all of us on the fire plan project teams have been working toward an emergency communications system since last fall. We've enlisted your help and input during neighborhood meetings when we talked about telephone trees, local resource lists, and other ideas. We've put together a draft proposal of what we'd like to see, and we've shared this draft with the agencies. We've found that initiating changes in emergency procedures for two different counties is no easy task!

Below you'll find some of the points we have agreed upon in concept. As of our final printing, we have no agreements with local emergency agencies to implement these ideas. We'll continue to keep you abreast of what develops.

OBJECTIVES AND OUTCOME

- ⇒ To give affected residents more information. Knowing they will have advance warnings and time for preparation provides residents with some peace of mind amid the anxiety.
- ⇒ To provide emergency personnel with local resource information if needed
- ⇒ To reduce the number of outside contacts and calls to fire command during an incident and to help keep "lookie-Lous" out of the emergency area

TELEPHONE TREES

- ⇒ Telephone trees will be set up for 20-30 homes each, for maximum efficiency and safety.
- ⇒ Leads for telephone trees (1-2 names for each tree) will be designated by the neighbors as those who are most likely to be at home and, therefore, most reliable.
- ⇒ The community will update telephone trees every spring. These updates will promptly be given to the county.

EMERGENCY COMMUNITY CONTACTS (ECCs):

- ⇒ Five or six Emergency Community Contacts will be recruited from around the Applegate valley to represent their local communities, their resources and their needs in the event of a local emergency.
- ⇒ Emergency Community Contacts will be knowledgeable of the local area: roads, terrain, housing, etc. They will possess a general knowledge of fire fighting, emergency management systems, and overall disaster procedures. They will have the ability to devote time away from their home during an incident.
- ⇒ Emergency Community Contacts will be available to provide community resource information as needed and to relay clear, concise, and accurate reports of the incident back to the neighborhood telephone trees.

Reporting a Fire

★★★ All fires should be reported to 911. ★★★

This interagency dispatch center is trained to determine whose jurisdiction the fire lies in and therefore who should be called for the first attack. When a fire is reported that lies within a given jurisdiction or poses a potential threat to a jurisdiction, the 911 centers notify the appropriate agencies immediately – and the agencies respond immediately. There is a great deal of jurisdictional and mutual aid overlap within the Applegate watershed, especially in populated areas, so it is important not to try to second guess which agency to call.

It is important to give complete and accurate information when calling in a fire (or any emergency). There are many types of specialized equipment for fighting specific types of fires, and sending out the wrong equipment could be costly. For instance, don't just say, "It's a vehicle fire"; let the dispatcher know if the vehicle is, for example, still in the garage, in which case it would be considered a structure fire. Providing detailed information can greatly assist fire fighters in developing a plan of attack prior to arrival. You will be asked to stay on the line until the dispatcher needs no more information. Some basic, helpful pieces of information are: 1) the nature of the call, 2) location of incident, including addresses, cross streets, and/or directions, if available, 3) your name, location, and a phone number a dispatcher can call to get additional information.

In addition, of course, anyone reporting a fire should also start the telephone tree to activate the Emergency Communications system. See the following pages.

Using the Telephone Tree

When increasing public safety is the goal, a plan to open lines of communication between emergency service providers and those we serve isn't just an opportunity; it becomes a necessary objective. Relaying emergency information in a timely manner can be crucial to public safety. When wildfires occur in populated areas, getting accurate information to those who need it most when they need it has been and remains a great challenge. It can be extremely difficult and at times impossible. Life-threatening wildfires move quickly and behave unpredictably – the Oakland Hills disaster serves as an excellent example. But not all fires pose an immediate threat to area residents. When timely notifications are possible, an emergency communications system for the community (an ECC system) can dramatically increase the effectiveness of fire-fighting agencies.

Once established, an emergency notification system could be used in both emergency and non-emergency capacities to notify residents of:

- * Threatening emergencies such as wildfires and floods
- * Safe escape routes and safety zones to retreat to
- * Places to transport livestock in an emergency
- * Phone numbers and web sites to call or access for specific assistance-related information
- * Notification of changes in regulations designed to prevent fire starts
- * Notification of arson (or theft or missing child or cougar attack) in a given area

The system wouldn't be activated every time a fire occurred, and not everyone in the system would need to be immediately notified. It wouldn't be an informational cure-all but a cheap and easy way to possibly increase public safety immediately and dramatically. In time it could be improved and refined.

TELEPHONE TREE PROTOCOL

Identify yourself (name & phone number) as calling as part of the local neighborhood phone tree. Clearly state the purpose of the call – to inform the party of the emergency – and have that person write down the following information:

1. The type and nature of the incident (e.g. fire, flood, or storm conditions, traffic disaster, blocked road, etc.).
2. The location of incident. Provide a good description of the location, being as specific as possible (e.g., Jones property on the west side along the road).

3. Assessment of the incident, based on information from neighborhood liaison. For example:

- * Grass fire discovered in last 1-8 hours. Fire crews are on site (if true).
- * Flood has taken bridge out. Traffic being re-routed via “XXX” road.
- * Gas Tanker leaking at “X” mile marker of Hwy 238. Traffic blocked and being turned around.

4. Actions to consider (Note that no one has authority to order an evacuation.)

- * Begin initial stage of preparedness for fire protection: hoses out, animals secured.
- * Keep phone tree available for communication.
- * Notify family members not on property of potential hazard conditions.

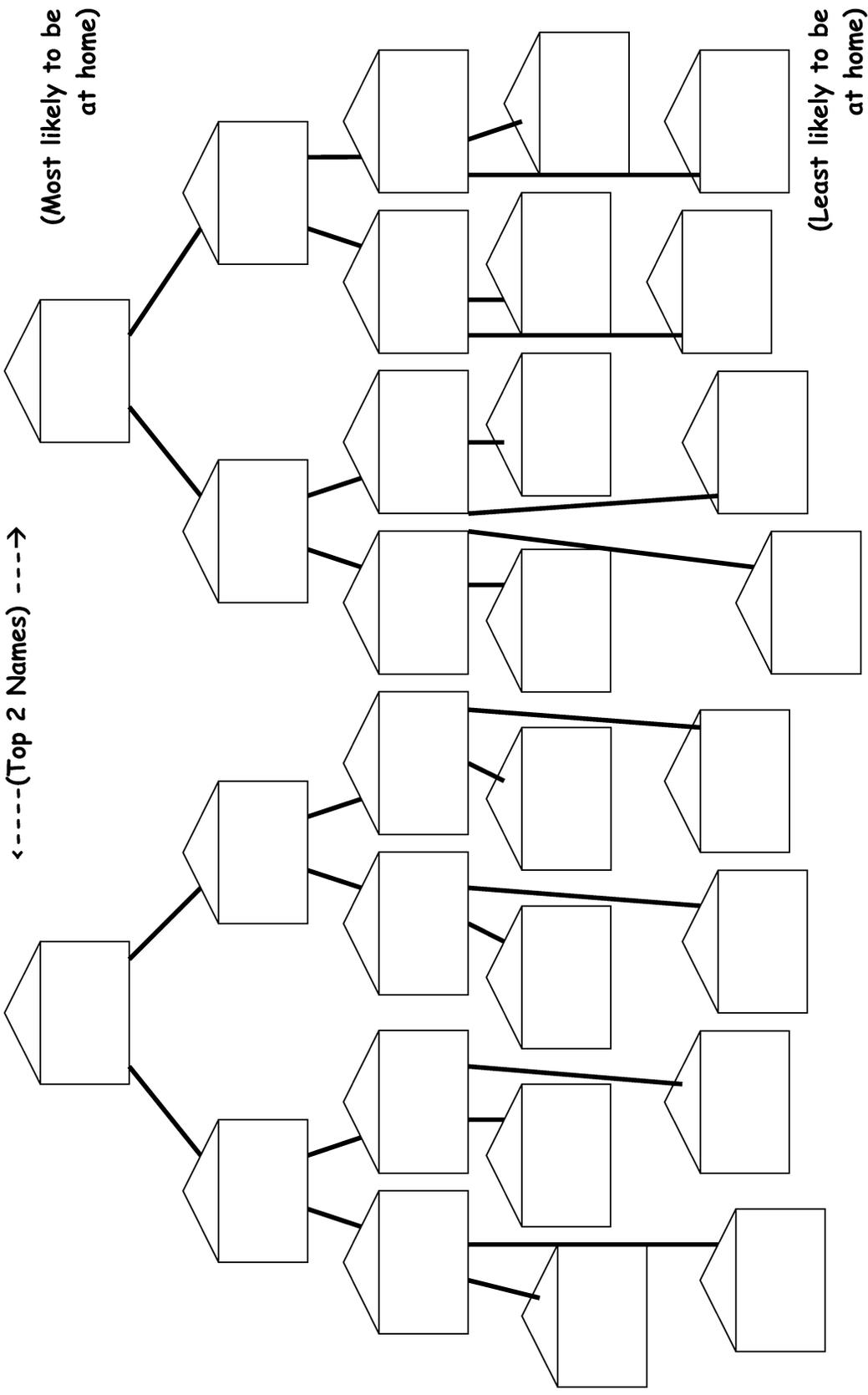
5. Communication contact information

- * Advise party of phone number of local emergency contact for further information.
- * Advise that a “close out” phone call will be made when the situation is controlled or over.

6. In the event that an answering machine is reached

- * Leave a brief but complete message regarding the situation. Give the time, and announce that you will complete this person’s telephone tree obligations.
- * Make the two calls that would be the answering machine person’s responsibility.
- * Do not stop making calls until you have reached live persons with the message.

SAMPLE TELEPHONE TREE



Everyone calls only 2 other Homes

(unless an answering machine is reached)

APPLEGATE FIRE PLAN COMMUNITY INFORMATION SHEET

This information will be used to assist you and your community in case of an emergency. It will only be given to emergency responders and agencies as needed.

Completion is voluntary. We suggest you duplicate and give it to your neighbors.

ADDRESS: _____ PHONE: _____

DIRECTIONS/HAZARDS (locked gate, light load bridge, steep road, propane or fuel tanks):

NAMES OF ADULTS LIVING AT LOCATION: _____

(Optional) HOW TO CONTACT ADULTS DURING BUSINESS HOURS (work phone, cell phone, email)

NUMBER OF CHILDREN AND AGES: _____

IN CASE OF EMERGENCY NOTIFY: NAME: _____

PHONE: _____ ADDRESS: _____

MEDICAL OR HEALTH PROBLEMS OF PEOPLE LIVING AT THIS ADDRESS:

MEDICAL TRAINING OR SKILLS OF RESIDENTS:

TYPES AND NUMBERS OF ANIMALS: _____

LIST ALL EQUIPMENT THAT WOULD BE AVAILABLE IN CASE OF A COMMUNITY EMERGENCY (trucks, trailers, backhoes, water tanks, ponds, pumps, generators, any type of heavy equipment):

LIST SPECIAL SKILLS YOU OR OTHERS AT YOUR RESIDENCE CAN PROVIDE (Heavy equipment operator, mechanic, tree faller, welder, etc.): _____

OTHER INFORMATION: (water sources, irrigated pastures, animal storage areas, staging areas):

I hereby release the above information as needed only for emergency purposes to emergency responders.

SIGNATURE _____

DATE: _____

How Fire Suppression Works in the Applegate

AGENCY RESPONSE

Currently, all fires in southern Oregon are suppressed as rapidly as possible, no matter how they start or whose land they are burning on. However, since Congress has required that specially designated wilderness areas must have their own fire management plans, the fire plan for the Red Buttes Wilderness Area could soon contain different fire suppression objectives. At this point, protection of life is the #1 priority in fire suppression for all agencies, with protection of resources #2 for ODF and protection of property #2 for BLM. (See page 61.)

Response to a fire in the Applegate does not depend upon whose land the fire started on, but rather on which agency's jurisdiction it lies within. In most of the populated areas, several or all agencies will respond initially and determine jurisdiction later. They don't wait to be asked to respond or to see if one agency is going to turn a fire over to another. All agencies are ready to respond to an emergency call when it comes in, and they all have a set of situational responses which are similar in strategy but may differ according to the type of fire and to jurisdictional boundaries.

Which agency or agencies respond to a fire depends partly upon the time of year. For example, ODF is on full alert during fire season, and though it does not do initial attack in winter, it does respond if there is a genuine threat to wildland resources. The geography where the fire is reported, the fire's behavior, and the current degree of fire danger also influence which agency will respond. In general, wildland fires are answered by ODF or the USFS, whereas Rural/Metro and Applegate Rural Fire District #9 cover first attack and structural calls. During fire season, though, ODF does respond to all reported fires in the watershed, including structural fires. The USFS may respond as well if a fire in a populated area also threatens National Forest lands. The same responses apply in unpopulated areas except that structural fire departments may not respond to fires in remote, unpopulated areas if there is no threat to life or property within their areas of responsibility.

Although ODF and USFS personnel are not trained, equipped, or authorized to enter burning structures, they can take action on the exterior of a structure and will assist structural fire departments in protecting exposures and surrounding vegetation by clearing around houses, setting up pumps and hoses, putting in fire lines, etc.

Under ODF and Forest Service response plans, all lands have been divided into dispatch blocks or compartments based on access, vegetation type, and base locations of initial attack resources. Fire fighting units have been pre-assigned to each block according to the forecast degree of fire danger. When a call is received, the appropriate types of vehicles and crews are dispatched depending on the type of fire danger. The first unit on the scene assesses the situation, then adds or subtracts from the other responding units based on the fire size-up. Each fire has an Incident Commander who is basically in charge. It does not matter which agency the Incident Commander works for; what is important is that this person has the experience and training to manage that particular fire.

instance, Rural/Metro might call on the Williams Volunteer Fire Department's truck if it is not already in use, so that the crew can get more experience).

As much as our emergency services cooperate, there are sometimes limitations. For example, if fire district resources are committed outside their districts to the point that they're unable to respond to emergencies within their districts, they may be held liable for not protecting those who pay for their services. Therefore, the above coordinated efforts help everyone involved.

One other note: all fire fighting equipment in the Applegate is currently compatible – it all connects together, no matter who owns it. This is rare but obviously vital. (Non-compatible equipment proved to be a huge issue in the Oakland Hills Fire of 1991.)

If you would like to take suppression action on fires, you can become a volunteer fire fighter. You can receive the required OR-OSHA training and arrange for equipment required for 1) your personal safety, 2) safety of other fire fighters working in close proximity to you, 3) safety of the general public in close proximity to your actions, 4) coordination with the incident command organization, and 5) overall effectiveness of the suppression effort. If, however, you are physically unable to work in a suppression capacity but would like to help in some other way, you should look into involvement with a fire department auxiliary organization.

The many collaborative agreements described above make the fire services in Jackson and Josephine Counties among the most advanced, coordinated, pre-planned, and cooperative public safety systems in the country.

The first few hours of a fire, especially in populated areas where lives may be in danger, may be chaotic, as crews try to accurately assess the situation (lives at risk, cause, terrain, access, fuel loads, fire behavior, values-at-risk, other hazards present, weather, safety concerns, etc.). It is important that residents stay away during any fire event, but especially during this initial time! Problems can arise at any time, but particularly when: a) a fire threatens human life or safety; b) the fire grows or changes behavior faster than the crews can get deployed; c) residents refuse to leave areas when there are threats to human life and safety; d) there are multiple lightning strikes in an area; e) there are large-scale catastrophes such as floods that would restrict emergency vehicle access; f) there is a pre-existing condition such as a wildfire and a second condition arises, such as a fire fighter's death or a second wildfire; g) there are large fires throughout the West, so that equipment and personnel resources are low when a new fire starts.

INTERAGENCY AGREEMENTS

The “Mutual Assistance Agreement” between fire-fighting agencies in Josephine and Jackson Counties that was set up over twenty years ago is well over and above the state’s requirement that agencies within one county all have mutual aid agreements. This reciprocal agreement allows agencies to immediately help each other, thereby reducing the chances of going beyond their individual resources or capabilities. With this agreement, the fire services don’t wait for a jurisdictional agency to go beyond its resources before assisting.

Through the Rogue Valley Fire Chief’s Association, a 10-year-old task-force-like agreement exists wherein unit and equipment resources are catalogued. Situations are preprogrammed by the number of alarms, the location, and the number of other concurrent incidents, so that the dispatch center knows automatically which unit next responds to a fire call. For instance, Rural/Metro responds to a call that quickly moves to a third alarm, so R/M asks for outside help via the task force so that their local resources are not depleted. The dispatch center then sends out the best-matched unit for the situation. All local agencies are aware of this request or assignment. If additional help is needed and the request exceeds local capabilities, the request goes through the State Fire Marshall’s office for more state aid. This agreement allows all partners in the valley to develop the best response to a wildfire and thereby meet the public’s expectations.

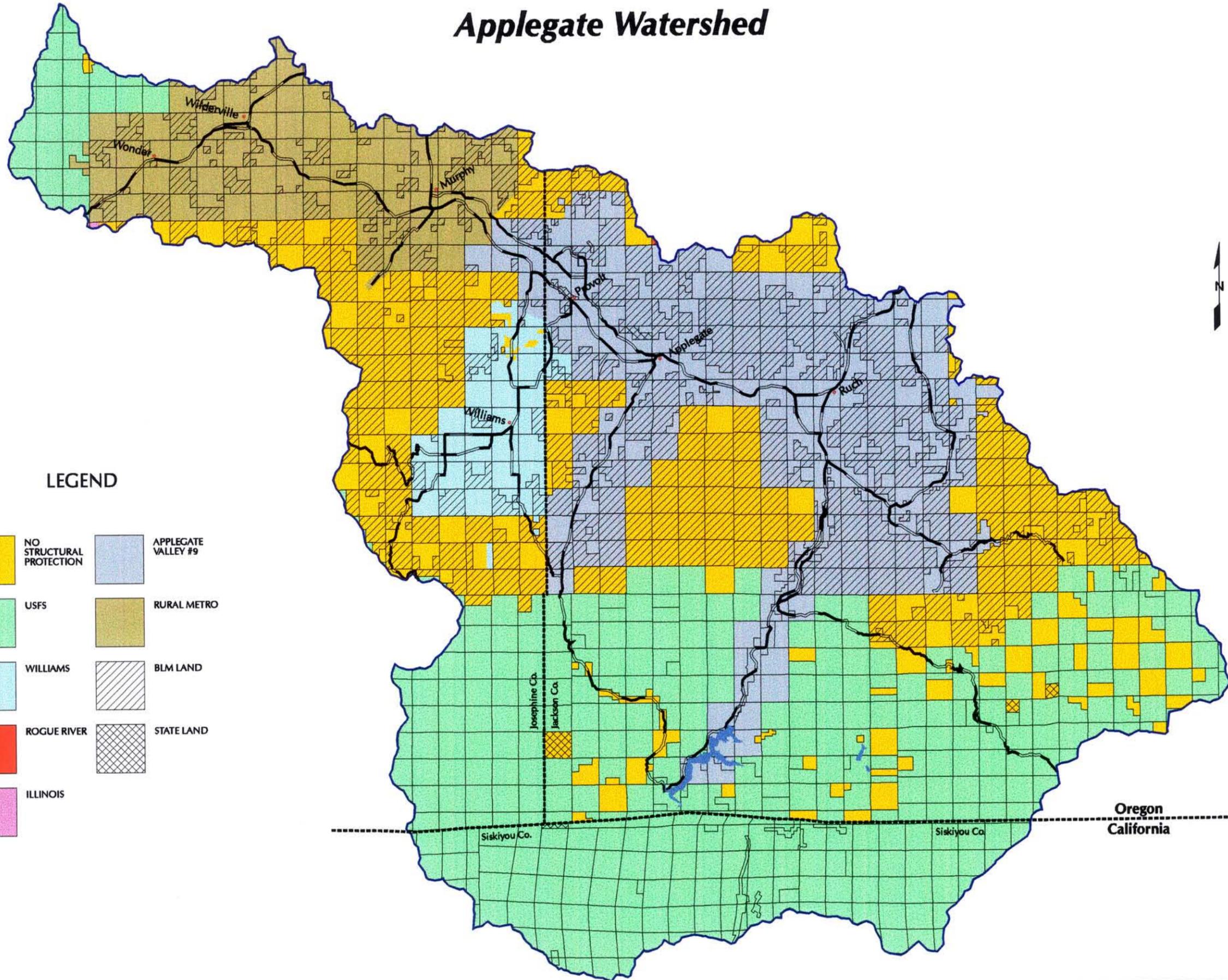
For fifty years now BLM has contracted with ODF to suppress fires on BLM-managed lands in Western Oregon. ODF is in charge but utilizes BLM local resources for technical information. BLM reimburses ODF for the costs of fire suppression efforts.

A group of representatives from USFS, BLM, and ODF, called the Southwest Oregon Coordinating Group (SWOC-G), meets monthly to discuss fire issues concerning the Rogue Valley. The representatives also meet with agency administrators during fire season when there are, for example, multiple ignitions or a large fire, to set priorities for the best use of all firefighting resources.

The “Overhead Resource Pool” has been set up within our two counties on a volunteer basis. Members wear special pagers and have specialized job duties. If an agency chief needs a certain resource, such as a dozen EMTs for a large traffic accident, this need is typed into the pagers, and folks just show up to help! This arrangement is not known to exist elsewhere in the state.

Cross-training of fire fighting personnel is common in southern Oregon, with many folks having worked for more than one agency in the past and being familiar with how things are done in several agencies. An effort is made to help maintain the skills of volunteer fire fighters (for

Fire Protection Districts In The Applegate Watershed



LEGEND

	NO STRUCTURAL PROTECTION		APPLEGATE VALLEY #9
	USFS		RURAL METRO
	WILLIAMS		BLM LAND
	ROGUE RIVER		STATE LAND
	ILLINOIS		

During a Fire Event

Escape Routes, Safety Zones, and Evacuation

Residents living in any urban *interface* need to know that, in a worst-case wildfire scenario (such as this Applegate Fire Plan is trying to prevent), there are no guarantees that humans or structures will survive. It is important to become educated on ways to improve your chances of survival, especially if you wait too long to evacuate or if you become trapped. Please discuss this information with every member of your family.

❑ **FIRST, have a plan.** Have the escape route for your household well drawn up in advance of any emergency. Consider the situation of your home site and the likelihood of fire approaching it from any direction. Work out the best routes for escape no matter where the fire approaches. Know where you will go. Have already prioritized the precious items you would take with you and which you would, regrettably, leave behind. Have an emergency plan prepared for your animals. Know your place in the emergency communications system; keep the emergency phone numbers beside your telephone. Knowing what you would do in an emergency prevents the suffocating panic that could waste important minutes or cause you to act counter to your own safety.

❑ **SECOND, understand how the fire fighting agencies work.** During fire season, the Interagency Dispatch centers of ODF, BLM, and USFS compare situations and update each other every morning. Local agencies call in with changes in their situations only.

The USFS and ODF have daily weather (and safety) briefings during fire season, at both local and regional levels. (This also happens during non-fire periods.)

During a large fire event, a larger, dedicated dispatch center for that fire is often set up, allowing the regular dispatchers to go back to their normal duties. Dispatch operations may expand to meet the needs of a situation that is increasing in severity. This enables the regular dispatchers to more effectively prepare for and deal with new emergencies.

Dispatch centers are not a place for obtaining public information. The first few hours of a wildfire event are not the time to be trying to get information. Over 90% of all fires in this area are contained to less than 10 acres and are out within the first two hours. (So, let the fire fighters go after them!) Scanners are a good way to obtain information on where a fire is and who's on it.

All agencies and communities work together during a wildfire event trying to balance the amount of resources needed to suppress the fire while maintaining some protection for new starts, but without overspending. Fire suppression is never free; we all pay for it the following year through our tax dollars.

❑ **THIRD, understand the meaning of an evacuation order.** The decision to recommend an evacuation is made by the fire's Incident Commander and may be enforced by local law enforcement. It is always a hard call to balance the liability of possible loss of life or property with a desire to warn but not unnecessarily displace residents. Once an area is evacuated, road blocks will be maintained to prevent people from entering. If an evacuation center is established, it is important to check in there, so you can be accounted for. Should power and phones be disrupted, this check-in list becomes an official record for friends and family to confirm your safety. If residents follow a contingency plan of going to a neighbor's house, they should still check in at the evacuation center so they can be accounted for and not considered MIA. If the evacuation will be for a substantial period of time, the agency ordering the evacuation will often contact the Red Cross, who will make shelter arrangements for displaced residents until the danger passes.

❑ **FINALLY,** take a look at the following checklist, "When Wildfire Approaches." Prepare your household accordingly.

When Wildfire Approaches A Checklist for Action at Home

Should homes be threatened by wildfire, occupants may be advised to evacuate to protect them from life-threatening situations. Homeowners, however, do have the right to stay on their properties if they so desire and so long as their activities do not hinder firefighting efforts. If occupants are not contacted in time to evacuate or if owners decide to stay with their homes, these suggestions will help them protect their properties and families.

- Evacuate, if possible, all family members not essential to protecting the house. Evacuate pets.
- Contact a friend or relative and relay your plans.
- Make sure family members are aware of a prearranged meeting place.
- Tune in to a local radio station and listen for instructions.
- Place vehicles in the garage, pointing out, and roll up windows.
- Place valuable papers and mementoes in the car.
- Close the garage door, but leave it unlocked. If applicable, disconnect the electric garage door opener so that the door can be opened manually.
- Place combustible patio furniture in the house or garage.
- Shut off propane at the tank or natural gas at the meter.
- Wear only cotton or wool clothes. Proper attire includes long pants, long sleeved shirt or jacket, boots. Carry gloves, a handkerchief to cover face, water to drink, and goggles.
- Close all exterior vents.
- Prop a ladder against the house so fire fighters have easy access to the roof.
- Make sure that all garden hoses are connected to faucets and attach a nozzle set on "spray."
- Soak rags, towels, or small rugs with water to use in beating out embers or small fires.
- Inside, fill bathtubs, sinks, and other containers with water. Outside, do the same with garbage cans and buckets. Remember that the water heater and toilet tank are sources of water.
- Close all exterior doors and windows.
- Close all interior doors.
- Open the fireplace damper, but place the screen over the hearth to prevent sparks and embers from entering the house.
- Leave a light on in each room.
- Remove lightweight and/or non-fire-resistant curtains and other combustible materials from around windows.
- If available, close fire-resistant drapes, shutters, or venetian blinds. Attach pre-cut plywood panels to the exterior of windows and glass doors.
- Turn off all pilot lights.
- Move overstuffed furniture (e.g. couches, easy chairs, etc.) to the center of the room.
- Keep wood shake or shingle roofs moist by spraying water. Do not waste water. Consider placing a lawn sprinkler on the roof if water pressure is adequate. Do not turn on until burning embers begin to fall on the roof.
- Continually check the roof and attic for embers, smoke, or fire.

If a fire should occur within the house, contact the fire department immediately. Continue to inspect your house and property for embers and smoke.

Most importantly, STAY CALM!

VI. Getting the Help You Need – for Fuel Reduction and Other Questions

Telephone Numbers and Contacts

Common Questions You Might Ask Federal Land Managers (and Where To Get the Answers)

BURNING

1. How do I find out if it's okay to burn or what the current fire regulations are?

Oregon Department of Forestry handles fire regulations and burn permits on private lands. Up-to-date information is posted on the Southern Oregon ODF website at <http://www.odf.state.or.us/swo/>.

You may also contact the local ODF office by phone between 8:00 and 4:30 Monday - Friday.

Please contact:

Oregon Dept. of Forestry 5286 Table Rock Rd. Central Point, OR 97502 (541) 664-3328 fax:(541) 776-6260	Oregon Dept. of Forestry 5375 Monument Drive Grants Pass, OR 97526 (541) 474-3152 fax:(541) 474-3158
--	--

2. Is someone doing prescribed burning on federally-managed land?

The Rogue River National Forest and the Medford District of Bureau of Land Management maintain a recorded announcement of prescribed burn information at 1-800-267-3126.

A web site at <http://www.grayback.com/> is attempting to keep a current list of prescribed burns and fire information for the Applegate, also.

3. What if I'm concerned about a "prescribed burn" being out of control?

Call 1-800-267-3126 to see if it is a prescribed burn. If you really feel that there is some danger or the burn is out of control, you should call 911.

4. I'm going camping. Can I have a campfire?

Campfire regulations are specific to the area you are visiting. Find out who owns the campsite, as various parks and campgrounds may have specific restrictions. Be responsible and review the restrictions posted at campgrounds and trailheads. On Forest Service lands, campfires are allowed and no permit is required in Oregon and Washington. However, a permit is required in California and can be obtained at the Applegate Ranger District during the fire season (from approximately May through October).

EMERGENCY

1. I want to report a fire on federal (BLM or USFS) land. Whom do I call?

All emergencies including fires are handled by **911**.

During regular business hours: **911**

After hours: **911**

2. I want to report illegal activity taking place on federal (BLM or USFS) land (hunting out of season, OHV during fire season, etc.).

During regular business hours: **911**

After hours: **911**

3. I want to report a fire or illegal burning on private land. Whom do I call?

During regular business hours: **911**

After hours: **911**

4. I want to find out the status of a wildfire that's already burning, but I don't know who's in charge of it.

Call your local fire department (*not* 911) and ask whom to call for a report.

5. I want to report a lightning-strike fire. Whom do I call?

During regular business hours: **911**

After hours: **911**

(It's helpful if you know your exact legal location when you call in a possible fire.)

6. I want to report someone illegally fishing. (See answer to #7.)

7. Where do I report hurt or sick wild animals?

The answer to both questions is Oregon Department of Fish and Wildlife (ODFW), which handles hunting and fishing issues, as well as wildlife problems, even on federally-managed lands.

ODFW - Southwest Region
4192 N. Umpqua Highway
Roseburg, OR 97470
(541) 440-3353
<http://www.dfw.state.or.us/>

RECREATION AND OTHER ACTIVITIES

1. How do I find out about federal campgrounds in the area?

2. How do I make reservations?

Contact the Rogue River or Siskiyou National Forest office in Medford:

Telephone: (541) 858-2200.

Websites: <http://www.fs.fed.us/r6/rogue/> or <http://www.fs.fed.us/r6/siskiyou/>

3. How can I get a rafting permit for the Wild and Scenic Rogue River?

The Bureau of Land Management, Grants Pass Resource Area, furnishes these permits. Call the Medford District office, 618-2200, or the Grants Pass office, 471-6500, and ask for River Programs. Or call the Rand Visitors Center directly at (541) 479-3735.

The next six questions can best be answered by calling the office of the agency that manages the land you are visiting:

4. Where can I find out about and get a Christmas tree permit?

The Rogue River and Siskiyou National Forests and BLM issue permits for Christmas tree harvesting. Call the front desk at any of these offices for more information:

Rogue River and Siskiyou National Forests: 858-2200
BLM – Medford District: 618-2200

5. Do the agencies have any firewood available?

Rogue River National Forest: Star Ranger Station (899-3800)
Siskiyou National Forest: Galice Ranger District: (541) 471-6500
BLM – Medford District: 618-2200, front desk or Special Forest Products Department

6. What do I need to do to collect mushrooms or materials for wreaths?

Rogue River and Siskiyou National Forests:
Non-commercial: 858-2200, front desk
Commercial: contact the specific Ranger District, as listed above (#5)
BLM – Medford District: 618-2200, front desk or Special Forest Products Department

7. What are the regulations for use of bicycle, horse, or OHV trails?

Rogue River and Siskiyou National Forests: 858-2200, front desk or Recreation Department
BLM – Medford District: 618-2200, front desk

8. How do I find out about federal mining claims?

Rogue River & Siskiyou National Forests: 858-2200, ask for Recreation, Lands & Minerals Department
BLM – Medford District: 618-2200, front desk or Mining Specialists

9. How do I find out about grazing on federal lands?

Rogue River & Siskiyou National Forests: 858-2200, Natural Resources Department
BLM – Medford District: 618-2200, Range Department

FEDERAL PLANNING/WORK

Most of these questions are best answered by calling the local office of the agency that is most likely to be managing the land.

- 1. My land is adjacent to BLM/USFS land. How do I find out about coordinating work efforts (fuel reduction, etc.) with these neighbors?**
- 2. How do I find out about a planned project (BLM/USFS)?**
- 3. How do I comment on a land management project (BLM/USFS)?**
- 4. The work BLM/USFS just did looks great! Or awful! Whom do I call?**

Rogue River & Siskiyou National Forests: 858-2200, Planning Department
BLM – Medford District: 618-2200. Request a Resource Specialist for either the Ashland or Grants Pass resource area, where the project is located.

- 4. Colored flags just appeared on my property, next to some federal land. Whom do I call?**

Rogue River and Siskiyou National Forests: 858-2200, front desk or Surveying Department
BLM – Medford District: 618-2200, front desk.

- 5. Some people just came to my house and asked if they could get access to federal land to survey some plant species. Whom do I call?**

Rogue River and Siskiyou National Forests: 858-2200, front desk
BLM – Medford District: 618-2200. Request a Resource Specialist for either the Ashland or Grants Pass resource area, where the project is located, or the Contracting Department

- 6. Where do I direct comments or complaints about loggers or contractors who are doing work right now on federal land next to my property (BLM/USFS)?**

Rogue River and Siskiyou National Forests: 858-2200, ask for Timber/Silviculture shop
BLM – Medford District: 618-2200. Request a Resource Specialist for either the Ashland or Grants Pass resource area, where the project is located, or a forestry technician.

- 7. Where do I direct comments or complaints about logging trucks going too fast or making too much noise or dust on the roads?**

Call the individual company that owns the trucks (look at the company name on the truck door). Or, if the operation is on federally managed lands, you can contact the local office of Forest Service or BLM:

Rogue River and Siskiyou National Forests: 858-2200, ask for Timber/Silviculture shop

BLM – Medford District: 618-2200, request a Resource Specialist for either the Ashland or Grants Pass resource area, where the project is located, or a forestry technician.

Local Resources for Information and Technical Assistance

EDUCATIONAL ASSISTANCE

OSU Extension Service

- ♦ Educational programs & tours
- ♦ Publications
- ♦ Clearinghouse for woodland management questions

Jackson County
569 Hanley Road
Central Point, OR 97502
(541) 776-7371
(541) 776-7373

Josephine County
215 Ringuette St.
Grants Pass, OR 97527
(541) 476-6613
(541) 955-9118

Max Bennett, Area Extension Forester (housed in Jackson County, covers both counties)
max.bennett@orst.edu

Local Watershed Councils

- ♦ Educational information on the watershed & forest stewardship
- ♦ Local riparian studies and facts
- ♦ Erosion control, re-vegetation, and fish & wildlife habitat restoration

Applegate River Watershed Council
6941 Upper Applegate Road
Jacksonville, OR 97530
(541) 899-9982

Williams Creek Watershed Council
P.O. Box 94
Williams, OR 97544
(541) 846-9175

TECHNICAL AND FINANCIAL ASSISTANCE

Oregon Department of Forestry

- ◆ Forest practices rules administration
- ◆ The place to file notifications of operation
- ◆ The place to ask about reforestation requirements
- ◆ Service forestry program (on-site assistance for woodland owners; administration of cost-share programs)

Jackson County
5286 Table Rock Rd.

Central Point, OR 97502
(541) 664-3328

Josephine County
5375 Monument Drive

Merlin, OR 97526
(541) 474-3152

Chuck Miller, Service Forester (based in Central Point Office, covers both counties)

Applegate Valley Rural Fire District #9

- ◆ Information on regulations regarding fuel hazard reduction around residences
- ◆ Incentive programs available – FY 2002-03

Headquarters, Rural #9
1095 Upper Applegate Rd.
Jacksonville (Ruch), OR 97530
(541) 899-1050
contact: Brett Fillis

Josephine County Department of Forestry

500 N.W. 6th Street
Grants Pass, OR 97526
(541) 474-5291
contact: Virgel Witcher

Natural Resources Conservation Service/Farm Service Agency/Soil & Water Conservation Districts

- ◆ Clearinghouse for information on federal cost-share programs
- ◆ Potential financial assistance for tree planting and wildlife habitat improvement
- ◆ Conservation planning

Jackson County 776-4270
Josephine County 476-5856

Oregon Department of Fish and Wildlife

- ◆ Information and technical assistance for wildlife enhancement

Medford 826-8774

Oregon Department of Revenue

- ◆ Timber taxation

Salem (503) 378-4988

Oregon Small Woodlands Association

Salem (503) 588-1813

Local (c/o OSU Extension) 776-7371

Oregon Tree Farm System

Salem (800) 603-0865

OTHER TELEPHONE NUMBERS: IN CASE OF AN EMERGENCY, CALL 9-1-1

NON-EMERGENCY CONTACTS

Applegate Valley Rural Fire District #9

899-1050

1095 Upper Applegate Rd.

Jacksonville, OR 97530

Rural/Metro Fire Department

474-1218

806 NE 6th St.

Grants Pass, OR 97526

Williams Fire District (business only)

846-7644

215 East Fork Rd.

Williams, OR 97544

County Offices

County Assessor

Jackson 774-6059

Josephine 474-5260

County Land Use/Planning (See Chapter V, sections 4 and 5 for regulations about building, etc.)

Jackson 774-6900

Josephine 474-5421

Burning information (See Chapter V, sections 2 and 3 for more details.)

Jackson County: 776-7007

Josephine County: 476-9663

BLM Prescription Burn Info: 618-2354

Applegate Burn Info: <http://grayback.com>

Other Useful Numbers

Bureau of Land Management: Medford District

Jackson County: Ashland Resource Area: 618-2200

3040 Biddle Rd. Medford, OR 97504

Josephine County: Grants Pass Resource Area: 479-7244

3040 Biddle Rd. Medford, OR 97504

National Forests

Rogue River National Forest (Medford) 858-2200

333 W. 8th St., Box 520

Medford, OR 97501

Star Ranger Station (Applegate) 899-3800

6941 Upper Applegate Rd.

Jacksonville, OR 97530

Siskiyou National Forest (Grants Pass) 471-6500

200 NE Greenfield Rd.

Grants Pass, OR 97526

FIRE SAFETY RELATED WEBSITES

Applegate Fire Plan:

<http://grayback.com>

National Fire Plan:

www.fireplan.gov

USDA Forest Service/Fire & Aviation Management:

www.fs.fed.us/fire/fire_new

BLM Office of Fire & Aviation:

www.fire.blm.gov/index.htm

National Fire Plan/Oregon State Summary:

www.fireplan.gov/statebystate/Oregon1.cfm

National Interagency Fire Center:

www.nifc.gov

National Interagency Coordination Center:

www.or.blm.gov/nwcc

Multi-Agency National Fire Plan Implementation (USDA):

www.fs.fed.us/r6/coop/nfp

FIREWISE National Wildland/Urban Interface Program:

www.firewise.org

Oregon Department of Forestry (ODF) Fire Program:

www.odf.state.or.us/fireprot.htm

ODF Southwestern Oregon Region Wildland Fire Information:

www.odf.state.or.us/swo

OSU Extension Firewise Plants:

<http://osu.orst.edu/extension/Deschutes/FireResPlants02.pdf>

OSU Extension – Fire Information for Woodland & Rural Landowners:

<http://osu.orst.edu/extension/Josephine/forestry/fireweb/>

National Weather Service/Fire Weather Program:

www.nimbo.wrh.noaa.gov/Portland/fwv.htm

Jackson County Air Quality/Open Burning Ordinance:

www.co.jackson.or.us/OpenBurn.asp

Applegate Rural Fire District #9:

www.applegatefd.com/sta1.html

Defensible Space Site:

www.ci.shrewsbury.ma.us/fire/defensible.htm

Sharing the Costs Funding Sources

Do you want to do some fuel reduction work on your property or maybe improve management on your woodland property, but your funds are limited? Don't despair! Right now there are several cost-share programs available to help pay for this work.

Cost-share programs are one way to accomplish expensive projects for minimal out-of-pocket costs – and, yes, treating excess vegetation growth can be expensive. A number of government cost-share programs can partially reimburse qualifying landowners for hazardous fuel treatments such as brush and slash disposal, stand thinning, rehabilitation of brushlands, habitat improvement, and stewardship planning. Costs for landowner labor and use of personal equipment can also be included.

Funding this year for fuel hazard reduction is much better than in recent years due to the high profile of both the National Fire Plan and our own Applegate Fire Plan, which has been receiving national attention. Basically, the more we do, the more money the folks from Washington will offer – they like success stories! Now may be the best time to accomplish some of those woodland projects you've been putting off.

The spreadsheet following this description describes some of the major cost-share programs, their eligibility requirements, and qualifying practices. Some funding programs are designed for folks who have over 10 acres, whose property is zoned Small Woodlot, and who are interested in managing their land for some timber harvest. But there are plenty for those who just want to get the forests more healthy and fire safe, so read the text below and take a look at the table following to see what fits your needs. Then pick up the phone! After that, check yearly for updated programs and opportunities, as these can change annually.

Other programs of interest to woodland owners include the Forest Resources Trust (FRT) and the Wildlife Habitat Incentives Program (WHIP). The FRT provides a low interest loan for rehabilitation of brushlands and other under-producing forestlands. The loan is payable over 25 years or as revenue sharing, payable at the time of harvest. WHIP provides cost-share funds (up to 75%) for habitat enhancement.

To apply for any of the cost-share programs, or for more information, contact one of the following agencies:

Oregon Department of Forestry
5286 Table Rock Road
Central Point, OR 97502
541-664-3328

Oregon Department of Forestry
5375 Monument Drive
Grants Pass, OR 97526
541-474-3152

Applegate Valley Rural Fire District #9
1095 Upper Applegate Road
Jacksonville, OR 97530
541-899-1050
(for Home Defensible Space grant funding
within their jurisdiction)

USDA Farm Services Administration
Natural Resources Conservation Service
573 Parsons Drive, Suite 101
Medford, OR 97501
541-776-4270, x-104

SPRING, 2002: OREGON DEPARTMENT OF FORESTRY / USDA-FOREST SERVICE GRANTS available in the Applegate Watershed

Grant Fund	-----Eligibility Requirements-----							-----Qualifying Practices-----									Other Comments
	Ownership Size (acres)	Project Size (acres)	Target Project Type	Stewardship Plan Required?	Land Use Type	Cost-share Rate	Maximum Allotment	Writing of Stew. Plan	Forest Establishment	Precommercial Thinning	Pruning	Erosion Control	F & W Habitat Enhancement	Fencing	Riparian Restoration		
Home Defensible Space	No Limit	0-1 acre	Fire-related projects: -Thinning of trees/brush -Slash reduction	No	N/A	Rebate	1-acre	N/A	No	Yes	Yes	No	No	No	No	Activities must be directly related to hazardous fuels reduction within 100' of residence/drive	
Regular Stewardship Plans	West 5 - 5,000 ¹ East 10 - 5,000 ¹	West 5 - 5,000 ¹ East 10 - 5,000 ¹	Planning for forestland or potential forestland	No	Forest, ag	Up to 75%	\$10,000 per year	Yes	No	No	No	No	No	No	No	For consultant-generated plans.	
National Fire Plan Stewardship Plans	West 5 - 5,000 ¹ East 10 - 5,000 ¹	West 5 - 5,000 ¹ East 10 - 5,000 ¹	Planning for forestland or potential forestland	No	Forest, ag	Up to 75%	\$10,000 per year	Yes	No	No	No	No	No	No	No	Use only for consultant-generated plans related to hazardous fuel reduction to complement WUI projects or in counties where WUI funds are being spent.	
National Fire Plan Multi-Resource Stewardship	West 5 - 5,000 ¹ East 10 - 5,000 ¹	West 5 - 5,000 ¹ East 10 - 5,000 ¹	Fire-related projects: -Pre-commercial thinning -Slash reduction -Reforestation of burned areas -Repair of roads damaged by fire-related erosion	Yes	Forest, ag	Up to 75%	\$10,000 per year	N/A	Yes ²	Yes ²	Yes ²	Yes ²	Yes ²	No	Yes ²	Activities must be directly related to hazardous fuel reduction that complement WUI projects or in counties where WUI funds are being spent.	
Hazard Mitigation Title IV	1.5 acre minimum (no upper limit)	1.5 acre minimum (no upper limit)	Fire-related projects: -Pre-commercial thinning -Slash reduction -Reforestation of burned areas -Repair of roads damaged by fire-related erosion	No	Forest, ag	Up to 75%	No limit	N/A	Yes ²	Yes ²	Yes ²	Yes ²	Yes ²	No	Yes ²	Activities must be directly related to hazardous fuel reduction that complement WUI projects or in counties where WUI funds are being spent.	
Applegate NFP Fuels Reduction	1.5 acre minimum	1.5 acre minimum	Fire-related projects: -Pre-commercial thinning -Slash reduction	No	Forest, ag	Up to 75%	No limit, but will likely fund in 5-acre allotments	N/A	No	Yes ²	Yes ²	No	No	No	No	Activities must be directly related to enhancing home defensible space hazardous fuel reduction. Priority will be giving to groups of two or more neighbors.	
2002 "New" SIP (Stewardship Incentive Program)	West 5 - 5,000 ¹ East 10 - 5,000 ¹	West 5 - 5,000 ¹ East 10 - 5,000 ¹	Primarily for fire and forest health-related projects and some invasive species work. Details to be announced.	Yes	Forest, ag	Up to 75%	\$10,000 per year	N/A	Yes	Yes	Yes	Yes	Yes	No	Yes		

¹Waivers required for ownerships over 1,000 acres (see Service Forester for instructions).

²Activities must be directly related to hazardous fuel reduction that complement WUI projects **or** located in counties where WUI funds are being spent.

Stewardship Planning and Land Stewardship Plan

A stewardship plan is a blueprint for management of all the resources on your property, an invaluable tool that tells you what you have, what you want to do, and how to do it. Currently, there are two sources of funds for stewardship planning, one for regular plans and one for plans related to hazardous fuels reduction. You must own at least five acres to be eligible. Stewardship plans are required in order to receive cost-share funding under the Multi-Resource Stewardship Program. Most grants require you to hire a forestry consultant to write a stewardship plan for your property, but many times funding is available to reimburse up to 75% of these costs.

A treatment prescription is a more simple statement of what fuel reduction activities you are planning to do on a specific part of your property for specific reasons. We've included a sample prescription in this chapter for your information.

Following you will find a very simple treatment prescription for a small parcel. As you can see, it doesn't have to be complicated, but it does cover many aspects besides fuel reduction methods.

SAMPLE: John Doe Property: Silvicultural Prescription: May, 2002

GENERAL DESCRIPTION

The property consists of a twenty-acre parcel zoned Forest Land. The legal description is T01S, R2W, section 25, tax lot 100. Approximately one acre of meadow/grassland is currently used for a house site and vegetable garden. Approximately 19 acres are in forested condition. The parcel faces north to northwest and has a slope of 5-30 percent for most of the land with the upper portion becoming steeper up to 50 percent. There is a small draw on the eastern side of the property which runs water every few years only in extreme peak rain events.

A fire occurred in 1969 and burned very hot through some of the white oak stand causing many 4-10 inch DBH trees to die. These trees were removed for firewood in the 1970s. Large living madrones also have scarring on the uphill side. Douglas-fir salvage logging also occurred in the 1970s. The lower portion of the woodland has white oak and scattered ponderosa pine on it. Some manzanita and ceanothus have become established in the understory. The major portion of the acreage has a mixed conifer type forest with Douglas-fir dominating with considerable large madrones in places. Occasional large ponderosa pines are present.

OAK/PINE WOODLAND PRESCRIPTION, PRIMARY OBJECTIVE

Accelerate development of large white oak and ponderosa pine. Leave some communities of shrub species present on site to serve as refuge for wildlife. Remove 40-70% of understory shrub species, manzanita, and ceanothus to release pine and white oak trees. Reduce ground and ladder fuel.

Ponderosa pine should be saved whenever possible. Radially thin to 20 feet around all ponderosa pines greater than 10 inch DBH. Remove all woody plant material competing with pine.

Vigorous open-grown pines under six inches DBH should be thinned to approximately 8-12 feet apart. If pines are in clumps, leave individual trees approximately 2-4 feet apart if adequate spacing exists on all other sides. When many-stemmed clumps exist, choose the dominant, straightest, healthiest trees to leave. Sever all trees within a 4-6 foot diameter of this leave tree. When the diameter-to-height ratio of pine trees is low, leave more trees in a clump to help them withstand winter weather conditions. Maintain group until individual trees achieve greater diameter-to-height ratio. Follow up with periodic thinning over the next ten years to reduce density of remaining trees.

Where young white oaks exist in clumps, thin out to 1-3 stems per clump, keeping individual trees a minimum of one foot apart with a preferred spacing of 2-3 feet.

Leave manzanita and ceanothus clumps wherever they are beyond 10 feet of white oak or pine trees.

Use "swamper" burning to build small fires far enough away from any leave trees that they won't harm the leave trees. Cut and burn in one operation each day to keep fires small and heat intensity low. Conduct thinning and burning in oaks and pines from mid-November through March with standard precautions for unseasonable weather or winds.

DOUGLAS-FIR DOMINATED STAND, PRIMARY OBJECTIVE:

Thin out Douglas-fir and madrone to a total stand density of 120-160 basal area. Maintain existing large, healthy ponderosa pines where present. Maintain existing healthy black oaks when possible. Choose cut trees with consideration to cutting and falling without damage to other hardwood and Douglas-fir leave trees.

Radial thin around existing large ponderosa pines (greater than 10 inch DBH) by removing competing conifers and hardwoods within 20 feet. If healthy Douglas-fir trees over 10 inches exist within 20 feet of a pine, leave the Douglas-fir, also.

Select the largest, healthiest, individual Douglas-fir trees to leave. First thin out suppressed and intermediate trees. The crowns of leave trees should not be touching and should have 1/4 to 1/2 a crown's width spacing. Trees designated as leave trees should have a minimum of thirty percent live crown ratio. Remove madrone trees between 4-12 inch DBH where falling will not damage any leave trees. Maintain large old madrone trees over 12 inch DBH. Create a final conifer and madrone basal area between 120 and 160 square feet. Douglas-fir and madrone activities should occur June through August to protect soil values by keeping equipment off the site when soils are wet. Observe all state fire safety precautions. Make sure chain saws and tractors have spark arresters. Keep a shovel and fire extinguisher on site during fire season. Maintain fire watch after using any motorized equipment.

Remove all thinned Douglas-fir and madrone trees for poles, small saw logs, and firewood. Lop and scatter slash, and hand pile larger concentrations of slash to be burned during winter months.

Land Stewardship Plan

Why develop a land stewardship plan?

Land stewardship or conservation plans allow you to consider your property as a whole, look at all the factors, and develop a comprehensive, integrated approach to managing your property. The template on page 187 guides you through the development of a management plan that is based on your management priorities and founded on an understanding of the natural resources available. Such plans can provide the basis and context for developing economically and ecologically sound strategies for managing your land. Writing a land stewardship plan is voluntary.

Benefits of Developing a Land Stewardship Plan

- ◆ Helps you focus on what you want from your land and achieve your management goals
- ◆ Reduces the probability of regulatory controls or restrictions
- ◆ Helps you qualify for technical or financial assistance programs
- ◆ Sustains the natural resources that we all depend on
- ◆ Saves money over the long term as your land becomes more productive

Steps in Developing the Plan

- ◆ Identify your family's values
- ◆ Identify your objectives for your land
- ◆ Inventory resources
- ◆ Analyze resource inventory
- ◆ Identify resource concerns or problems
- ◆ Develop alternative solutions
- ◆ Evaluate alternative solutions
- ◆ Make your decisions
- ◆ Implement plan
- ◆ Evaluate plan success and adjust as necessary

A Guide to Completing Your Plan

Completing the plan takes several steps, but the most important step is often a step backward to when you first bought your property. Ask yourself:

- Why did you purchase the property?
- What attracted you most to this property?
- What were you hoping to get from your property once you purchased it?

Answering these questions can provide the background information you need to formulate your objectives and guide their implementation.

Stating your values can improve the implementation of your plan. For example, many forest plans contain an objective of reforesting certain areas that do not have enough trees. So, do all reforestation plans look the same when done? No. Some landowners may choose to plant one or two types of conifers for their economic value, while others may value a more diverse native forest that provides quality wildlife habitat.

Values act like the rudder on a ship that is carrying your objectives. They will steer the objectives to make the plan more consistent with why you value your property. Having them in your plan will also help natural resource professionals assist you in designing a plan that will more closely meet your expectations.

See page 187 for a blank stewardship plan for you to complete for your own land.

Finding Someone I Trust to Do a Good Job on My Land Choosing a Contractor

Determining what should be accomplished on your property to achieve both greater fire safety and healthier forests is not an easy or a quick task. If it seems overwhelming, consider talking to a forestry consultant or someone from your local watershed council or extension service. Some forestry consultants might even be able to help administer labor contracts for you to get the job done correctly. Below are a few simple steps that will help you locate and retain a quality woodland management contractor.

Step 1: Obtain a list of contractors specializing in the work you require.

Check with:

- ◆ OSU Extension Foresters
- ◆ State Service Foresters
- ◆ Society of American Foresters (SAF) Consultant Directory
- ◆ Association of Consulting Foresters (ACF) Directory
- ◆ Other family forestland owners
- ◆ Other agencies (ODF&W, NRCS, FSA, BLM, etc.)

Step 2: Identify three or four contractors who appear able to meet your needs. Know or at least have a good idea of what you want done prior to meeting with anyone.

Step 3: Contact contractors and ask questions:

- ◆ Ask if they are specifically trained for the work you need done. (Consider college education, professional training, continuing education, etc.)
- ◆ Ask if their primary business is delivering the specific service you require.
- ◆ Obtain a copy of their code of ethics.
- ◆ Ask if they wash their equipment prior to moving it from job to job (noxious weed spread).
- ◆ Ask for references.
- ◆ Ask to view their work.
- ◆ Ask if they hold active membership in professional associations.
- ◆ Ask if they have liability insurance.

Step 4: Follow up on references. View the contractor's work. Ask other landowners if they are familiar with the contractor.

Step 5: Invite the contractor that appears to best meet your needs to visit your property and discuss your specific needs. Most will make an initial visit without charge, but don't expect them to spend more than a couple of hours or to begin the actual work for free.

- ◆ Review your specific goals, objectives & constraints.
- ◆ Have the contractor indicate how he can assist you.
- ◆ Agree upon what needs to be done.
- ◆ Determine fees & working arrangements.

Step 6: Choose your contractor.

Step 7: Develop a written contract. This should include dates the work will begin and end, exactly what work will be done (for example: "prune all dead, dying, diseased, and weak branches 1½ inches and greater in diameter"), what cleanup will be done and when, and the total dollar amount you will be charged (never pay in advance). Both you and the contractor should keep signed copies of the contract.

Southern Oregon Consultants and Surveyors

(Jackson & Josephine Counties – from the local area)

DISCLAIMER: These lists are provided as an informational resource only. No endorsements are implied. No effort was made to verify the qualifications or capabilities of any individual or firm listed below.

BERNSTEIN, Art

PO Box 1113
Grants Pass, OR 97526
(541) 474-0139

BROCK, Richard

881 East Main St.
Ashland, OR 97520
(541) 482-4111

CYPHERS, Dave

1072 Anderson Creek Rd.
Talent, OR 97540
(541) 535-3062
(not a surveyor)

FOELLER, Norman F.

2610 Dellwood
Medford, OR 97504
(541) 772-2679

FOREST & RESOURCE CONSULTANT

GASOW, Bill
PO Box 1692
Grants Pass, OR 97526
(541) 471-3372

GREENSPRINGS FORESTRY

BRIDGES, Steve
14800 Hwy 66
Ashland, OR 97520
(541) 482-0111

GREENUP, Mel

PO Box 157
Wolf Creek, OR 97497
(541) 821-1861

INTEGRATED RESOURCE MGMT, INC.

BARNES, Marc
P.O. Box 571
Medford, OR 97501
(800) 447-8695
E-mail: marc@irmforestry.com

KENDRICK FOREST FARM

KENDRICK, Alexander R.
1450 Round Prairie Crk Rd
Wilderville, OR 97543
(541) 474-0217 ark@cdsnet.net

KNIGHT FOREST MGMT & LGN

KNIGHT, John
1394 #A Dowell Rd.
Grants Pass, OR 97527
(541) 471-1266

LARRY BROWN & ASSOCIATES

777 NE 7th
Grants Pass, OR 97526
(541) 479-5078

LOMAKATSI RESTORATION PROJECT

BEY, Marko
PO Box 3084
Ashland, OR 97520
(541) 488-0208

NW FOREST RESOURCES MANAGEMENT

KANGAS, Paul
1421 Ramada Ave
Medford, OR 97504
(541) 821-5315
(541) 773-8845 Home

OLSON, Dick
4574 Grant Rd.
Central Point, OR 97502
(541) 664-3000

ORGANIC FORESTRY SERVICES
MAAS, Michael
102 Slate Creek Rd.
Wilderville, OR 97543
(541) 476-0737 hsapiens@budget.net

ROGER HANSEN LOGGING
HANSEN, Roger
1560 SE M Street
Grants Pass, OR 97526
(541) 479-6326

ROGUE ASSOCIATES
BIOLOGICAL CONSULTANTS
McLEOD, Jerry, HORTON, Bob
2054 Amy
Medford, OR 97504
(541) 770-6746 macfish@ccountry.net

SMALL WOODLAND SERVICES
MAIN, Marty
1305 Butte Falls Hwy.
Eagle Point, OR 97524
(541) 826-5306

TALL TIMBER MGMT SERVICES
SHAW, "Buck"/ HAUSER, Roy
PO Box 187
Wilderville, OR 97543
(541) 955-7066

THOMPSON, Robert
1140 Acacia Lane
Grants Pass, OR 97527
(541) 476-3269

YOCUM, Bill
1788 N. Valley View
Ashland, OR 97520
(541) 482-8775

ZIEGLER, Steven
4622 Eagle Trace Drive
Medford, OR 97504
(541) 857-8984
(541) 857-8984 (FAX)
sjziogs@integrityonline.com

Southern Oregon Consultants and Surveyors

(Beyond Jackson & Josephine Counties)

DISCLAIMER: These lists are provided as an informational resource only. No endorsements are implied. No effort was made to verify the qualifications or capabilities of any individual or firm listed below.

GENETECHS
COURTER, Richard W.
1600 Northwest Skyline Blvd.
Portland, OR 97229
(503) 297-1660

HATCH, John S.
1360 Howell Prairie Rd. SE
Salem, OR 97301
(503) 364-2082

PERRY, John I.
24706 Butler Rd,
Junction City, OR 97448
(541) 998-5944
(541) 998-0857 (FAX)

SPITZ, Jim
60045 River Bluff Trail
Bend, OR 97702
(541) 389-5978
(541) 389-9173 (FAX)

STUNZER, Ron
PO Box 118
Coos Bay, OR 97420
(541) 267-2872

W.R. WEATHERS & ASSOCIATES
PO Box 39
29 South Alder Street
Lowell, OR 97452
(541) 937-3738
(541) 937-2518 (FAX)

WOODLAND MANAGEMENT INC.
Kruse Woods One Bldg.
Suite # 282
5285 SW Meadows
Lake Oswego, OR 97035
(503) 684-4004
(503) 684-4005 (FAX)

SPECIALIST: GROWING SOILS
KITZROW, Gary A.
244 Apple Blossom Lane
Roseburg, OR 97470
(541) 673-4846
(541) 673-0373 (FAX)
soileye@mci.net
Wetland Delineations, Surface Erosion &
Landslide Consultation, Certified Soil
Scientist/Soil Classifier

Southern Oregon Laborers for Reforestation, Thinning, Etc.

DISCLAIMER: These lists are provided as an informational resource only. No endorsements are implied. No effort was made to verify the qualifications or capabilities of any individual or firm listed below.

2-B FORESTS
BARCLAY, Rick
PO Box 3397
Applegate, OR 97530
(541) 899-1757

BRIDGES, Steve
14800 Hwy 66
Ashland, OR 97520
(541) 482-0111
Small woodlands

3 Bs FORESTRY
(541) 770-5210
Cell (541) 840-3689

BRUSH BUSTER
GARLOFF, John L.F.
248 2nd Street
Ashland, OR 97520
(541) 552-1083/858-4320

ALL ASPECTS TREE SERVICE
GILLOTT, David
3003 Lake Shore Dr.
Selma, OR 97538
(541) 597-2349/288-5850

BULL DOG DOZER
GRISSOM, Guy
726 Royal Ave. Apt. 59
Medford, OR 97504
(541) 245-6875 Home
(541) 944-4797 Cell

ALPINE WEST ENTERPRISES, INC.
HENNINGS, Clint
Rouge River, OR 97537
(541) 582-0270

BUSY BEAVER TREE SERVICE
& STUMP REMOVAL
MURRAY, Nancy
9650 W Evans Creek Rd.
(541) 582-6278
1-888-677-9199

ASHLAND TREE SERVICE
HUGO, Larry
(541) 899-3925
(541) 482-6303

BACK NINE FORESTRY & EXCAVATION
SCHULTZ, Tyson
10163 E. Evans Creek Rd.
Rogue River, OR 97537
(541) 660-3989/582-4282
Thinning, Logging, Excavation

C & O REFORESTATION
(541) 779-9697

BILLINGS, Don
P O Box 334
Wolf Creek, OR 97497
(541) 479-1938

CAVEMAN GENERAL MAINTENANCE
Kevin, Dave or Jason
(541) 479-6305
(541) 659-4234
Fire breaks, brush removal

CLEVELAND, Allan
P.O. Box 1883
Cave Junction, OR 97523
(541) 597-2076
(541) 660-3459
E-Mail allanc@cavenet.com
Thinning Fuel Breaks/Stand Improvement

CRUZ FOREST, WILDLIFE & LAND
ENHANCEMENT
CRUZ, Michael
6542 New Hope Rd.
Grants Pass, OR 97427
(541) 476-9817

EAGLE PASS REFORESTATION
MENA, Tony/ RAMBO, Ira
(541) 899-1227

EVERGREEN LAWN & MAINTENANCE
BOWERS, Josh
24542 Redwood Hwy
Kerby, OR 97531
(541) 592-6172
Yard maint, small fuel reduction jobs

FINCH FORESTRY
Finch, Phil
345 E Hawksdale Dr
Grants Pass, OR 97526
(541) 476-9732
E-mail finchforestry@hotmail.com

GRAYBACK FORESTRY
P O Box 838
537 Merlin, OR 97532
(541) 476-0033

GREAT TREE TENDERS
Alfonso Gallegos
9551 N. State St.
Redwood Valley, CA 95470
(707) 485-2248
fax (707) 485-7572

HARRIS, Mark
6396 Downing Rd.
Central Point, OR 97502
(541) 826-3658

HERNANDEZ REFORESTATION
(541) 858-3380

HIGH COUNTRY REFORESTATION, LLC
HOLMES, Chris
832 Sykes Creek Rd.
Rogue River, OR 97537
(541) 582-0965
(541) 472-8356

INTEGRATED RESOURCE MGMT, INC.
BARNES, Marc
P.O. Box 571
Medford, OR 97501
(800) 447-8695
E-mail: marc@irmforestry.com
Small skid steer machines for fuels
reduction; certified foresters

IRVING, George
624 Royal Ave S
Eagle Point, OR 97524
(541) 826-3652

JACKSON COUNTY COMMUNITY
JUSTICE WORKS CENTER
DONAGHY, Jeanine
5505 S Pacific Hwy
Phoenix, OR 97535
(541) 774-4965 or 774-4911

KENDRICK FOREST FARM
KENDRICK, Alexander R
1450 Round Prairie Crk Rd.
Wilderville, OR 97543
(541) 474-0217
ark@cadsnet.net

KNIGHT FOREST MGMT & LGN
KNIGHT, John
1394 # A Dowell Rd.
Grants Pass, OR 97527
(541) 471-1266

L & M
ACRE, Mike
2713 Biddle Rd.
Medford, OR 97504
(541) 772-5073

LANE BROWN CONSTRUCTION
BROWN, Lane
4118 Grant Road
Central Point, OR 97502
(541) 840-0109/664-3483

LARRY BROWN & ASSOC.
BROWN, Larry
777 NE 7th
Grants Pass, OR 97526
(541) 479-5078

M & M SERVICE LLC
MARTHOSKY, Todd
(541) 245-5552

M & N REFORESTATION
(541) 776-5796
(541) 773-2485

MARTY'S TREE SERVICE
HERTLER, Marty
PO Box 67
Selma, OR 97538
(541) 597-4610, 660-4417 Cell
Hazard Fuel Removal

MEGA STROBILI
MARR, Tom
955 No. Mountain Ave.
Ashland, OR 97520
(541) 488-8486

MEL'S REFORESTATION
VALDEZ, Mel
636 W. 4th St.
Medford, OR 97501
(541) 664-5584

MTN. BRANCH TREE SERVICE
BERQUIST, Jacob
35 SW Eastern
Grants Pass, OR 97527
(541) 955-7153

NANNY & BILLYS VEGETATIVE MGMT.
BENTON, Hugh & Sara
HC 64, Box 77
Lakeview, OR 97630-9601
(541) 947-2691

NATURAL LANDSCAPE
GADE, Eric
5950 River Banks Rd.
Grants Pass, OR 97527
(541) 479-0834
Fuels Reduction/Salvage

PACIFIC SLOPE TREE COMPANY
DAHL, Chuck
PO Box 353
Williams, OR 97544
(541) 846-9226
Contractor #106737

PAGE, Dennis
PO Box 1224
Cave Junction, OR 97523
(541) 592-4789
Insured, Fireline clearing, tree thinning,
brush clearing

RAINWATER FORESTRY & LOGGING
RAINWATER, James
9160 Monument Drive
Grants Pass, OR 97526
(541) 476-7282

RIPLEY, Dale
McALLISTER, Ryan
206 Lewis
Grants Pass, OR 97527
(541) 955-0512

ROGER HANSEN LOGGING
HANSEN, Roger
1560 SE M Street
Grants Pass, OR 97526
(541) 479-6326

RURAL METRO Fire Dept.
LAWLESS, Lloyd
(541) 474-1218/660-3518
Fuels management

S & K EXCAVATION
Nace, Kris
4847 Azalea Glen Rd.
Glendale, OR 97442
541) 832-2258

SMALL WOODLAND SERVICES
MAIN, Marty
1305 Butte Falls Hwy
Eagle Point, OR 97524
(541) 826-5306

STEVE STRAUBE
899-4114, 890-4114 (cell)
Hazardous fuel reduction; insured

SUMMIT FORESTS, INC.
(541) 535-8920

TED'S TREE SERVICE & LGN.
PECKHAM, Ted
P O Box 2103
Cave Junction, OR 97523
(541) 592-4789

THE ARBORIST
SEDA, Pete
1257 Siskiyou Blvd. #224
Ashland, OR 97520
(541) 482-8371/770-6789

THREE RIVERS TREE SERVICE
PORTER, Scott
(541) 471-7894

VEST, Guy
3255 Redwood Ave.
Grants Pass, OR 97527
(541) 956-6353/660-7867
Reforestation,
Thinning, logging

WENGERT ENTERPRISES INC.
WENGERT, Jack
610 Beaver Creek Rd.
Jacksonville, OR 97530
(541) 899-7138

WOLF CREEK WOODWORKS
160 Lower Wolf Creek Rd.
Wolf Creek, OR 97497
(541) 866-2545
Custom milling, chipping,
Small logging jobs

Small Logging, Horse Logging, and Salvage Operators in Southwest Oregon

DISCLAIMER: These lists are provided as an informational resource only. No endorsements are implied. No effort was made to verify the qualifications or capabilities of any individual or firm listed below.

ABC TREE SERVICE
PECKHAM, Mark
5465 New Hope Rd.
Grants Pass, OR 97527
(541) 479-3151

ATC LOGGING
HAUSE, Anthony
8444 Lower River Rd.
Grants Pass, OR 97526
(541) 479-5361

A TO Z STUMP REMOVAL
ZIEGLER, Bruce
310 Marion Lane
Grants Pass, OR 97527
(541) 476-5440

BACK NINE FORESTRY & EXCAVATION
SHULTZ, Tyson
10163 E. Evans Creek Rd.
Rogue River, OR 97537
(541) 660-3989
(541) 582-1613

BARTLETT, Mike
704 Favill Rd.
Grants Pass, OR 97526
(541) 476-9313
(Small jobs)

BILLINGS, Don
2021 Leland Rd.
Sunny Valley, OR 97497
(541) 479-1938

DON BLUMENFELD INDUSTRIES
Box 3230
Applegate, OR 97530
(541) 846-7355

J.W. BLUMENFELD LOGGING
PO Box 3350
Applegate, OR 97530
(541) 846-7580

BRUSH BUSTER
GARLOFF, John
248 2nd Street
Ashland, OR 97520
(541) 858-4320

BRUSH UNLIMITED
BEALL, Chuck
PO Box 1463
Merlin, OR 97532
(541) 476-2806

CLOUD, Eugene
633 Barton Rd.
Eagle Point, OR 97524
(541) 826-2996
(Dozer & Logging)

EQUINE ENERGY
WINES, Stan
2700 Bishop Creek Rd.
Jacksonville, OR 97530
(541) 899-7398
(Horse Logging)

HAMANN, Don
PO Box 198
Butte Falls, OR 97522
(541) 865-3310

HARMONY FORESTRY
BAKER, David
PO Box 1069
Cave Junction, OR 97523
(541) 592-4233

HENRY BLANK EXCAVATION

2748 Anderson Creek Rd.
Talent, OR 97540
(541) 535-7295

IRVING, George

624 Royal Ave. S.
Eagle Point, OR 97524
(541) 826-3652
(small operations, chipping, thinning, logging)

JANTZER LOGGING

PO Box 1586
Grants Pass, OR 97528
(541) 476-8311

JOHNSON BROTHERS LOGGING

PO Box 385
Talent, OR 97540
(541) 535-2248

JUDD, Don

233 Rogue River Hwy #273
Grants Pass, OR 97527
(541) 471-4724 (pager)
(Horse Logging)

CHRIS KENTRIS LGN

PO Box 2281
Cave Junction, OR 97523
(541) 592-2301
(Logging, Log buying, Forest Mgmt, Firewood)

KNIGHT FOREST MGMT & LGN

KNIGHT, John
1394 #A Dowell Rd.
Grants Pass, OR 97527
(541) 471-1266

LITTLEFIELD, Bill

PO Box 1125
Shady Cove, OR 97539
(541) 878-2860

MARTY'S TREE SERVICE

HERTLER, Marty
PO Box 67
Cave Junction, OR 97523
(541) 597-4610
(Small, difficult jobs)

MIRANDA, Richard D.

661 Soldier Creek Rd.
Grants Pass, OR 97526
(541) 479-6049

MUSICK ENTERPRISES

MUSICK Leroy
8130 E. Antelope Rd.
Eagle Point, OR 97524
(541) 826-9695

NEUENSCHWANDER, Terry

455 Tolman Creek Rd.
Ashland, OR 97520
(541) 482-2606
(Cable or Cat, small scale)

NORK, Steve

10222 Elk Lane
Trail, OR 97539
(541) 878-3998

PACIFIC SLOPE TREE CO

DAHL, Chuck
PO Box 353
Williams, OR 97544
(541) 846-9226
Contractor #106737

P.B. WICKHAM & ASSOCIATES

PO Box 564
451 NE 11th
Grants Pass, OR 97526
(541) 474-5550

PARIERA, Ed
& HANSCOM, Jamie
PO Box 2366
White City, OR 97503
(541) 826-4994
(541) 826-6694 Ed

PROMPT LOGGING
PONTE, Rick
6000 Abegg Rd.
Merlin, OR 97532
(541) 476-2946
(Professional Timber Mgmt)

RAINWATER FORESTRY & LOGGING
RAINWATER, James
4315 Azalea Dr.
Grants Pass, OR 97526
(541) 476-1287

ROBERTSON, Rick
1397 Dutcher Creek Rd.
Grants Pass, OR 97527
(541) 476-3435

ROGER HANSEN LOGGING
HANSEN, Roger
1560 SE M Street
Grants Pass, OR 97526
(541) 479-6326

STOCKEBRAND, Richard
PO Box 8
Prospect, OR 97536
(541) 560-3601

SUGAR KAT INC.
RAGSDALE, Steve
PO Box 394
Eagle Point, OR 97524
(541) 878-4328
(541) 878-2056

TED'S TREE SERVICE & LGN.
PECKHAM, Ted
PO Box 2103
Cave Junction, OR 97523
(541) 592-4789

3 RIVERS TREE SERVICE
PORTER, Scott
950 Jaynes Drive
Grants Pass, OR 97527
(541) 471-7894
(541) 772-7900
(541) 472-2818 (pager)

TIMBER CUTTING CORP.
WALKER, Don
3072 Old Military
Central Point, OR 97502
(541) 664-6429
(Environmentally sound logging, no job
to big or small)

VALDEZ, Charlie
8171 Deer Creek Rd.
Selma, OR 97538
(541) 597-4005
(Stand improvement)

Portable Sawmills

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ALL SEASONS PORTABLE
SAWMILLING
STEVENS, Trevor/STEPHENSON, Ted
106 NW Sinclair Drive
Grants Pass, OR 97526
(541) 474-1598 - Ted
(541) 471-0812 - Trevor
(Anything, Solar Kiln)

BTC MFG.
2360 Pine Grove Rd
Rogue River, OR 97537
(541) 582-4920
(Custom milling at your site)

CHRIS KENTRIS LOGGING
PO Box 2281
Cave Junction, OR 97523
(541) 592-2301

CRUTCHER, RON
283 Pickett Creek
Grants Pass, OR 97527
(541) 474-5519
(Can cut up to 21')
(Shares/hourly/MBF)

CUSTOM PORTABLE SAWMILLING
MOEHL, Brad
(541) 826-3749
Portable bandmilling, large or
Small quantities, from logs
Up to 36" dia. & 21" long

FREEDOM HORSE LOGGING
LONG, Jeff
4000 King Mtn Trail
Sunny Valley, OR 97497
(541) 660-0129/660-4000
(Per MBF, Shares/Hourly)

JERRY'S TRAVELING SAW MILL
ARMSTRONG, Jerry/ALLEN, Tim
1862 #A Foothill Blvd
Grants Pass, OR 97526
(541) 472-8676/479-9077
KENDRICK, ALEX
PO Box 508
Wilderville, OR 97543
(541) 474-0217
(Also small woodland cleanup)

MARTIN, Larry W.
300 Arrowhead Pass Drive
Jacksonville, OR 97530
(800) 866-7915
(541) 899-8689

OUT OF THE WOODS ECOFORESTRY
Schattler, Joe
1066 Yale Creek Rd.
Jacksonville, OR 97530
(541) 899-7836

PACIFIC SLOPE TREE CO
DAHL, Chuck
PO Box 353
Williams, OR 97544
(541) 846-9226
Contractor #106737

SAVAGE CREEK CUSTOM LGN
WICK, Joseph A
840 Savage Creek Rd
Grants Pass, OR 97527
(541) 582-2177
(541) 474-3663 (pager)
(Kiln, planer, hardwoods)

WOOD MIZER PORTABLE SAWMILL
Message center: (541) 474-1936
E-mail: latt58@internetcds.com

Tree Seedling Nurseries

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Oregon Association of Nurserymen (www.nurseryguide.com) is a good listing of Oregon nurseries that allows you to search by plant name.

ALTHOUSE NURSERY
5410 Dick George Rd.
Cave Junction, OR 97523
(541) 592-2395

ARBOR LANE NURSERY, INC.
81470 Davison Rd.
Creswell, OR 97426
(541) 895-3829

ARCATA REDWOOD COMPANY
8000 Hwy 101, North
Smith River, CA 95567
(707) 487-3775

D.L. PHIPPS NURSERY
2424 Wells Rd., Hwy 138
Elkton, OR 97436
(541) 584-2214
(State nursery, caters to small
woodland owners)

DEAN CREEK NURSERY, INC.
Route 4, Box 16F
Reedsport, OR 97467
(541) 271-5244

FERNWOOD NURSERY
6855 Tunnel Loop Road
Grants Pass, OR 97526
(541) 472-0669

FOREST FARM NURSERY
990 Tetherow Road
Williams, OR 97544
(541) 846-7269

GEORGIA-PACIFIC CORP.
76928 Mosby Creek Road
Cottage Grove, OR 97424
(503) 942-5516
Intl. Paper Co./Kellogg Forest Tree
1940 Madison Road
Oakland, OR 97462
(541) 459-5905

INDIAN HILL NURSERY
PO Box 748
Cave Junction, OR 97523
(541) 592-2781

KINTIGH'S MOUNTAIN HOME RANCH
38865 E Cedar Flat Road
Springfield, OR 97478
(541) 746-1842

LESTER STONER'S FARM
33450 Cherry Hill Lane
Eugene, OR 97405
(541) 747-0728

LITTLE RIVER NURSERY
1508 Crannell Road
Trinidad, CA 95570-9737
(707) 268-3069

LONE ROCK TIMBER COMPANY
PO Box 1127
Roseburg, OR 97470
(541) 673-0141

LYNN'S NURSERY
1591 Rogue River Hwy
Grants Pass, OR 97526
(541) 479-2448

MOORE MILL FOREST NURSERY
PO Box 277
Bandon, OR 97411-0277
(541) 347-2412

PLANT OREGON
8651 Wagner Creek Road
Talent, OR 97540
(541)535-3531

SMITH RIVER FOREST
NURSERY/SIMPSON
PO Box 250
Smith River, CA 95567
(707) 487-0728

SYLVAN OPTIONS
PO Box 506
Dillard, OR 97432
(541) 679-3161

TREE IMPROVEMENT ENTERPRISES, INC.
PO Box 630
Cottage Grove, OR 97424
(541) 942-4066

USDA FS: J. HERBERT STONE NURSERY
2606 Old Stage Road
Central Point, OR 97502
(541) 858-6100
(surplus trees only)

VALLEY VIEW NURSERY
1675 North Valley Road
Ashland, OR 97520
(541) 488-2450

VII. The Most Important Part Is the Follow-through

Where Do We Go from Here Plans for Monitoring the Plan

What happens once this fire plan is done, in writing? Applegaters will continue to do fuel reduction around their homes; many will get reimbursed for it; some will join in with neighbors and do a little more thinning, and some might organize a telephone tree in their neighborhood if there's a fire nearby this summer. Others will procrastinate, do nothing, and forget about it until another big fire occurs nearby.

Will anyone keep track of how many people actually do some fuel reduction work, how much the federal agencies accomplish, and whether we are actually beginning to see a difference in our fire hazard ratings in a few years? Will anyone take pictures of before and after work sites to see how fast brush grows back and needs thinning again? Will anyone remind us to update our telephone trees next year?

The answer is a big, resounding YES!

The Applegate Fire Plan project team has been meeting with monitoring experts from various agencies to devise a set of projects to track what happens after the fire plan is printed. We've come up with three major areas and four projects around which to request funds. We are looking at a five-to-ten year period of study for these projects, which are outlined below.

Data Gathering

To find out how many acres are being treated for fuel reduction in the watershed as a result of this community fire plan, we will track:

- 1) the number of owners doing work on private property
- 2) the number of private acres treated
- 3) the number of federally-managed acres treated for fuel reduction
- 4) the areas of the watershed where more work is being done
- 5) methods being used to treat for fuel reduction.

Our procedure will be to gather data to answer the above and then to report both narratively and on a map every six months for five years. We will report to the community in the *Applegator* and to the agencies in periodic meetings.

Social component

To monitor the social aspects of the Applegate Fire Plan, we will endeavor to answer two questions: (1) How did this project affect residents' attitudes and behavior regarding fire danger and hazardous fuels? and (2) How did this collaborative fire plan affect the agencies' ways of working together and of working with private landowners?

To answer these questions we will survey, on an annual basis, a portion of the same group who received the fire plan mailings. By asking the same questions yearly, we will have a good basis of comparison.

The following questions will be asked of the community:

- (1) Are you familiar with or have you read the Applegate Fire Plan or any of the project newsletters?
- 2) Has reading any of these heightened your awareness of the degree of wildfire hazards in the Applegate?
- 3) Has exposure to the Applegate Fire Plan caused you to participate in any emergency communications activities, such as a telephone tree or a neighborhood meeting to discuss local resources, evacuation routes, etc.?
- 4) Did you do any fuel reduction work on your property after learning about the Applegate Fire Plan? If so, what motivated you to do this work? If not, why?

The following questions will be asked of the major agency personnel who participated in the Fire Plan and are still actively involved in land management:

- 1) Their attitudes regarding interagency projects
- 2) Their attitudes and interest in private landowner collaborative projects
- 3) The value of public outreach as a land management tool.

Studies will be taken, compiled and reported annually for 5 years.

Effectiveness

The objective here is to monitor the effectiveness of projects, on both federally managed and privately owned lands in the Applegate, that are designed to reduce fire hazard by managing fuels. This will be done with the following procedures:

- 1) Establish photo points and plots in each of the two main fuel categories: timber or woodlands and brush fields.
- 2) Take before and after measurements. Photos should be taken in spring and fall to document seasonal fuel conditions.
- 3) If prescribed fire is a treatment, use a weather/fuels/fire behavior form to record findings.
- 4) Some plots will monitor tree growth and survival, changes in canopy, plant community response after burning.
- 5) A basin-wide GIS overlay will provide an overall look at the effectiveness of reducing fuels buildup and fire hazard ratings.
- 6) Reporting will occur at 3-5 year intervals, through at least three treatment cycles.

Taken all together, these components will give us a better idea of how effective this fire plan has been in raising the awareness of fire issues in the Applegate, in raising the level of communications between stakeholders and land managers, and in decreasing overall fire hazard ratings.

What Difference Does It Make in the Agencies? How the Agencies Will Use This Plan

Besides being a guide for the reduction of fuel hazard, the Applegate Fire Plan is a record of coordination among agencies and the community. A common vision breeds coordinated efforts; through developing the Fire Plan, the various local, state, and federal agencies were able to agree upon fire-related strategies to protect the environment and private property in a coordinated fashion. This will result in fewer wasted tax dollars, increased community protection, and increased fire reduction efforts – a key factor when dollars are few and work is endless. Because the agencies helped coordinate an Emergency Communications plan, they will be able to more effectively get critical information to affected neighborhoods during an emergency. Finally, all involved with fire and fuels management will use this plan to educate and inform the community in years to come.

Oregon Department of Forestry

This fire plan, which motivates residents to help reduce fire hazard and encourages coordinated efforts among adjacent landowners, greatly helps the fire-related work of the Oregon Department of Forestry. Knowing that such actions of residents are not piecemeal, ODF, as the main disbursing of incentive programs in our area, can more easily prioritize and evaluate for rebate or assistance the risk reduction efforts on private lands. ODF locally tracks fire behavior and weather behavior statistics such as fire starts, lightning strikes, and fire causes. The coordinated informational resources developed from this plan allow them to use this information more effectively to analyze fire risk and mitigation methods. ODF, as one of the primary fire fighting agencies in southwestern Oregon, will also greatly benefit from the emergency communications system set up to link emergency personnel and residents. This fire plan is also important to the three fire districts in the Applegate – Applegate Valley Rural Fire District #9, which operates six fire stations throughout the Applegate Valley; the Rural Metro contract area in the north and west areas; and the Williams Fire District in the southwest. Most importantly, this fire plan is a strategy that will enable groups and agencies in the valley to solicit funding to help reduce hazardous fuels. Of equal importance is its function to enable neighbors, in the process of building a plan, to come together and build relationships with one another, achieving (perhaps) a common vision and shared understanding of the fire problem. During wildfire incidents, these relationships are useful in identifying neighborhood capabilities, resources, and communications. Increased community awareness makes a fire fighter's job a lot easier.

The Bureau of Land Management and the U.S. Forest Service

These two agencies, which together manage 350,000 acres in the Applegate watershed, will use this plan to help them implement the National Fire Plan. This plan is a cohesive national effort to address and reduce catastrophic wildfire across the nation's forests. Its primary effort is to ensure protection of human values and the sustainability of natural resources. Three of the National Fire Plan's key points being addressed by the Applegate Fire Plan are reduction of hazardous fuels, community assistance, and accountability.

(1) Reduction of Hazardous Fuels.

The National Fire Plan recognizes that if it is to be successful, communities must collaborate with agencies in the planning and implementation of fuels reduction work. This is exactly what happened with the Applegate Fire Plan. Neighborhood-scale meetings provided the project team with valuable insights and an understanding of human values important to specific areas of the valley. Such meetings provided suggestions and criteria for coordinating efforts, for potential strategies and methods, and for collaboration in design and implementation. They provided the agencies with people contacts and identified neighborhood "movers and shakers." Public land management is controversial, and perspectives on reducing the risk of catastrophic wildfire vary greatly. Nonetheless, as a result of this fire planning effort, neighborhoods have lent strong support to the agencies to begin fuel reduction efforts on the ground. The BLM and Forest Service will gear their future land management projects towards complementing on federal lands the enthusiasm and activity on private land. As citizens continue to identify problems to overcome in building a coordinated fuels reduction effort, discussions will continue to address these problems.

(2) Community Assistance.

The National Fire Plan was developed primarily to provide assistance to those identified Communities at Risk (one of which was the entire Applegate) in an effort to increase fire protection and to reduce fire hazard ratings. It is prudent to spend public money where substantial agreement on management activities exists. As a result of this fire planning effort, we have strong community support to begin fuel reduction efforts. We also have numerous suggestions for strategies to reduce fire danger to private lands and homes. The agencies as well as local groups can now use these coordinated strategies between public and private lands as a basis for funding requests, since cooperative ventures are always more successful in obtaining funding. The National Fire Plan recognizes that sustainability of forests lies at the heart of the "fire problem," especially in forests that are furthest removed from the "normal" cycle of fire. Planning in fire-adapted ecosystems requires an integration and understanding of fire history, fire behavior, past management actions, land uses, watershed conditions, species viability, and relative risk to communities. These are complex and perplexing relationships, but time is not on our side. This Applegate Fire Plan provides our community with many learning tools and opportunities to increase our public awareness of fire-related issues. Increased interest in our high fire hazards can lead to more funding opportunities for education, equipment, and ground work.

(3) Accountability.

Because the Applegate Fire Plan is a community-wide project, it is an open process, exposed to scrutiny and analysis. People know about this plan, and we can use this "notoriety" to our benefit. Requests for on-the-ground project funding tied to this plan stand a better chance of receiving support than other requests. The local land management agencies can parlay their own

projects into collaborative ventures and more easily demonstrate that National Fire Plan monies are being directed toward cost-effective and coordinated efforts to reduce fire risk. The Applegate Fire Plan has identified high-hazard areas and developed strategies for treating those areas. It also spells out several monitoring studies for following the results of this watershed-wide endeavor. Although we feel this complete Applegate Fire Plan is a 25-50-year project, our initial long-term goals are for five years of project tracking to see how things develop. Reporting will be either on a semi-annual or annual basis, depending upon the subject. The agencies involved in our project will use data from these studies to learn more about fire and our ecosystems. With the Applegate designated an Adaptive Management Area (AMA) in the Northwest Forest Plan of 1995, we are provided excellent opportunities to monitor, research, and adaptively manage uncertainties associated with fuels reduction projects. Thus, the implementation of the Fire Plan and its assessment will lead us in new directions as we all continue to learn more about our valley.

Domestic Animal Management:

Example: Is yours a co-calf or feeder operation? Do you prevent your dog from preying on ground-nesting birds?

Wildlife management:

Example: Have you left dead snags standing or down in streams for cover and pool habitat?

Human

Economic:

Example: Do you have money or time to invest in management? Is there income from forest, agricultural products?

Social:

Example: Do you work with your neighbors on joint projects?

Cultural:

Example: Are there sites, structures, &/or artifacts of historic value present?

Here's the Challenge Recommendations for Our Future

The following dozen or so items were created by or developed from ideas by community members and partners on the Fire Plan project team during the past ten months of work. Some are fun, some might mean change, some require diligence, and some demand just plain commitment to the long-term success of the Applegate Fire Plan. These ideas are for everyone in the Applegate – private citizens and agency folks alike.

1. Complete the identified fuel reduction work. All partners in the Fire Plan need to meet to develop plans and tactics to implement the 65 identified items of the fuel reduction strategies in the Applegate Fire Plan. How will items will be completed? In what order? By whom? Who helps get funding? Etc. An initial meeting with the two project coordinators, the core team, and agency planners will develop a first draft and then present this to agency line officers.

2. Monitor, document, and analyze what is being done. All agencies should require tracking of fuel reduction work on an interagency/private land level, using the hazard maps that the Fire Plan team used, on a watershed-wide level. They should participate in the collection of data to track total number of acres treated after the Fire Plan has been put into effect. At what point do we re-rate the fire hazard for the valley? (We want to make sure that our name comes off the "high-fire risk" lists as soon as we are eligible!)

3. Gather as much information during site visits as possible. While residents of the Applegate are requesting and receiving reimbursements for fuel reduction work, let's take advantage of site visits. We need to note the condition class of private property when going out to discuss work on private land. Do we need a new form? Are all agency definitions of condition class consistent? Also, land owners should be provided with photograph holders during site visits to encourage before and after shots. This helps in monitoring!

4. Monitor the results of our fuel reduction efforts. The local land management agencies should commit to supporting and funding the effectiveness monitoring project set up as a result of the Fire Plan. Their assistance in the reporting and recording of this data is vital. The Applegate Partnership has applied for funding for the monitoring projects; once funding seems likely, a meeting should be set to discuss actual sites, plots, and records before pictures – before fall work begins!

5. Monitor ALL results of our fuel reduction efforts. One concern of biologists is the enthusiasm to use machinery such as the Slashbuster "everywhere." We need to map winter deer range habitat changes as a result of the fuel reduction work being done on a watershed wide scale. Whose job is it to track this? Do we need a special grant-funded project by a local hunting group?

6. Everyone - spread the word to a neighbor. The objective of the Fire Plan is to raise awareness of fire issues as well as forest health issues throughout the watershed and to get residents thinking about what they want from their land. Neighbors working together are always more effective than one individual. Private landowners as well as our federal land managers should continue to work with their neighbors in this effort to reduce fire hazard in the Applegate. Seminars, field trips, and meetings can be organized and shared by all of the resources in the valley – garden and community clubs, schools, and watershed councils, to name a few.

7. Use local interest groups for emergency preparedness. We've learned from the many fires in our area that there is always a need for experienced people to help move cattle or other livestock or to corral horses. We challenge groups such as the Cattleman's Association, equestrian groups, 4-H, veterinary hospitals, or even garden clubs throughout the watershed to develop resource lists, maps, and communication plans for their specific areas of expertise, so that during a disaster, evacuation can go a lot smoother for everyone. Our local fire fighting agencies will willingly help provide parameters for these plans.

8. Make fire season/burning/county regulations more consistent. Presently, the various red, yellow, green sign colors, IFPL levels, fire season levels, and regulated use closures do not correspond to each other. We need to tie the four colors of fire danger signs to the levels of activities allowed before and during fire season. Presently this is too confusing and therefore meaningless to the public. ODF and rural fire districts should pursue this, asking help and support from the community if necessary.

9. Create new Applegate Valley fire signage. A possible fun new project – update and localize those "Fire Season" signs specifically for the Applegate so that more locals and visitors alike will pay heed. ODF will entertain this idea with the interested community.

10. Continue to work on interagency projects. We challenge all of the many governmental "partners" of the Fire Plan to continue to work together on future projects of any sort. It took some getting used to, but we observed agency folks looking at things with a new perspective, with efforts becoming a little more coordinated rather than duplicated.

11. Update things. All partners – community and agency alike – should commit to annual updates of data, contact information, and emergency procedures in order to keep this Fire Plan efficient and effective.

12. Get newcomers to the valley into the Fire Plan loop. Every neighborhood should welcome newcomers with a copy of the Fire Plan, a resource that will help them better understand and appreciate the area where they have chosen to make their home. Additionally, federal land managers should indoctrinate new employees to the degree of community collaboration achieved in the Applegate.

VIII. Glossary of Terms and Acronyms

alluvial – soil deposited by water

AMA – Adaptive Management Area, one of ten areas designated in the Northwest Forest Plan to test new strategies and ideas for forest management on federal lands

ACS – Aquatic Conservation Strategy, a centerpiece strategy within the Northwest Forest Plan designed to restore and maintain the ecological health of watersheds and aquatic ecosystems for salmon and steelhead on public lands

ARWC – Applegate River Watershed Council

aspect – the direction a slope faces (e.g., a slope that faces north has a northern aspect)

balds - areas without much vegetation that occur at high elevations below, at, or above timberline.

basal area – the cross-sectional area occupied by tree boles (q.v.) as measured at 4.5 feet, which is diameter at breast height or dbh.

biomass – total mass or weight of vegetation on a site

BLM – Bureau of Land Management

boles – tree stems or trunks

canopy gaps – vertical “holes” in forested areas where there are fewer trees and more sunlight

canopy layers – tree top vegetation that forms an aerial layer

CAR – Communities at Risk

cavity dependent species – wildlife species that live in or utilize hollow trees or logs

climax dominant – a species that maintains itself indefinitely on a site in the absence of disturbance

condition class – the degree of departure from historic fire regimes, resulting in changes in species composition, structure, age, and density of stands

corridors – long, narrow strips of land that connect similar patches (q.v.)

crown canopy – the top canopy layer

DBH – diameter at breast height, i.e., the diameter, including bark, of a standing tree at breast height (measured at 4.5 feet above the ground on the uphill side of the tree)

decadency – old vegetation that has stopped growing or has very little growth

DEQ – Oregon Department of Environmental Quality

dispersal and migration pathways – wildlife routes of expansion and travel

ECC – Emergency Community Contacts

endemic – restricted to a particular locality or region

EA – Environment Assessment, a document for federal actions (like timber sales, prescribed burns, etc.) required for land altering activities with potential environmental impacts

EPA– Environmental Protection Agency

fire hazard – the type, arrangement, volume, condition, and location of fuels

fire intensity – refers to the behavior of fire: flame length, rate of spread, heat generated, etc.

fire occurrence – the average number of fires in a specified area during a specified time

fire regimes – frequency, intensity, seasonality, duration, and extent of fires within a given area

fire risk – the chance of a fire starting as determined by the presence and activity of causative agents such as human activities or natural events

fire severity – refers to the degree of the effect of fire on the vegetation or soil

forbs – non-woody, broad-leaved plants and herbs that are not grasses

FPA – Forest Practices Act

fuel load – the amount, structure and type of vegetation that can feed a fire

granitic – soils derived from granite

IFPL – Industrial Fire Precaution Level

interface (rural/wildlands or urban/wildlands interface) – the common boundary between populated areas and wild lands.

ladder fuels – vegetation that allows a fire to move from lower growing plants to taller ones

LSR – Late Seral Reserve (sometimes referred to as Late Successional Reserve)

matrix – a Northwest Forest Plan allocation for areas on federally managed lands that contain the most contiguous vegetation type and on which the majority of silvicultural or other management activities occur

mortality salvage – harvesting dead trees that still have economic value

mosaic – patchwork of different vegetation types

NAAQS – National Ambient Air Quality Standards

natural succession – change in dominant plant species over time in the absence of disturbance

neotropical migrants – species that migrate between North America and Central or South America

NEPA – National Environmental Policy Act

NMFS – National Marine Fisheries Service

ODF – Oregon Department of Forestry

ODFW – Oregon Department of Fish and Wildlife

OHV – Off highway vehicle

OSU– Oregon State University

patches – irregularly shaped parcels that are vegetatively similar but that differ from the vegetation surrounding them.

salvage logging – cutting trees for value following a fire or other damaging disturbance

series – a name given to describe the commonly occurring plants on a site. The series is named for the most dominant tree species.

seral stage – a stage or recognizable condition of a plant community that occurs during its development from bare ground to climax

SOTIA – Southern Oregon Timber Industry Association

SOU – Southern Oregon University

SPA – Strategic Planning Areas

species composition – the way species are grouped in a given area

stocking levels – number of trees in a given area

succession – the gradual replacement of one community of plants by another; the sequence of communities being termed a sere and each community a seral (successional) stage. The endpoint of succession is a stable, climax community.

T&E – threatened and endangered species

tree vigor – a measure of health defined as the ratio of annual stemwood growth to the area of leaves present to capture sunlight

ultramafic – soils derived from serpentine or peridotite rock; characteristics include chemical imbalances, toxic levels of some heavy metals, low site productivity, and unique plant communities

understory habitat – vegetation below tree tops, including shrubs, grasses, forbs, logs, etc.

USFS – United States Forest Service

USFWS – United States Fish and Wildlife Service

vegetation mosaics – patterns of vegetation (size, age, species composition) across the landscape

vigor – see “tree vigor”

WCWC – Williams Creek Watershed Council

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REFERENCE NOTE FOR “FOXES AND FROGS AND SISKIYOU SALAMANDERS”: Many parts of this article were taken closely from Chapter VI of the Applegate River Watershed Assessment, 6/6/95.

“Turning the Landscape into a Safe Firescape” came from an article by the Pacific Northwest Wildlife Coordinating Group.

“When Wildfire Approaches” came from "Living With Fire," design and layout by the University of Nevada, Reno, originally produced by Creative Services.

“Land Stewardship Plan” was provided by the Applegate River Watershed Council’s "Stewardship Manual."

“Finding Someone I Trust To Do a Good Job on My Land” was compiled from tips from “Choosing a Consulting Forester” by Dick Courter and also from “The Defensible Space and Healthy Forest Handbook.”

SPA's #1, 2, 3: Upper Applegate – Middle, Butte, Carberry, Steve, Sturgis, Obrien, Squaw, Elliott, Lake Drainages

Vegetation Classification	Acres
Early Seral/Open Canopy	29,119
Young/Mid Seral Closed Canopy	45,699
Late Successional/Mature Closed Canopy	46,776
Hardwood Stands	0
Brush Fields	17,344
Grass/Meadows	732
Rock/Sparse Veg/Low Site	2,500
Total Acres Classified	142,170
Total Acres	142,171

SPAs # 4 & 5: Star & Beaver/Palmer Drainages

Vegetation Classification	Acres
Early Seral/Open Canopy	11,527
Young/Mid Seral Closed Canopy	14,871
Late Successional/Mature Closed Canopy	13,493
Hardwood Stands	71
Brush Fields	7,579
Grass/Meadows	1,694
Rock/Sparse Veg/Low Site	2,665
Total Acres Classified	51,899
Total Acres	52,244

SPAs # 6 & 7: Little Applegate River Drainage

Vegetation Classification	Acres
Early Seral/Open Canopy	14,164
Young/Mid Seral Closed Canopy	13,160
Late Successional/Mature Closed Canopy	19,486
Hardwood Stands	519
Brush Fields	6,808
Grass/Meadows	2,261
Rock/Sparse Veg/Low Site	6,880
Total Acres Classified	63,279
Total Acres	72,243

SPA # 8: Forest Creek Drainage

Vegetation Classification	Acres
Early Seral/Open Canopy	4,961
Young/Mid Seral Closed Canopy	209
Late Successional/Mature Closed Canopy	2,693
Hardwood Stands	371
Brush Fields	533
Grass/Meadows	532
Rock/Sparse Veg/Low Site	1,714
Total Acres Classified	11,012
Total Acres	22,529

SPAs # 8, 9: Middle Applegate – Spencer Gulch, Humbug Creek Drainages

Vegetation Classification	Acres
Early Seral/Open Canopy	7,475
Young/Mid Seral Closed Canopy	293
Late Successional/Mature Closed Canopy	6,695
Hardwood Stands	1,384
Brush Fields	2,088
Grass/Meadows	665
Rock/Sparse Veg/Low Site	5,099
Total Acres Classified	23,699
Total Acres	41,038

SPA # 10: Thompson Creek Drainage

Vegetation Classification	Acres
Early Seral/Open Canopy	3,970
Young/Mid Seral Closed Canopy	2,264
Late Successional/Mature Closed Canopy	7,256
Hardwood Stands	113
Brush Fields	368
Grass/Meadows	33
Rock/Sparse Veg/Low Site	1,521
Total Acres Classified	15,526
Total Acres	20,029

SPAs # 11, 12 & 13: Williams Creek Drainage

Vegetation Classification	Acres
Early Seral/Open Canopy	12,849
Young/Mid Seral Closed Canopy	809
Late Successional/Mature Closed Canopy	13,413
Hardwood Stands	174
Brush Fields	181
Grass/Meadows	440
Rock/Sparse Veg/Low Site	212
Total Acres Classified	28,077
Total Acres	51,914

SPAs # 14, 15, 16, 17, & 18: Lower Applegate – Slagle, Murphy, Cheney Creek Drainages

Vegetation Classification	Acres
Early Seral/Open Canopy	9,521
Young/Mid Seral Closed Canopy	65
Late Successional/Mature Closed Canopy	9,607
Hardwood Stands	192
Brush Fields	211
Grass/Meadows	1,534
Rock/Sparse Veg/Low Site	1,674
Total Acres Classified	22,805
Total Acres	62,162

SPA #19: Slate Creek Drainage

Vegetation Classification	Acres
Early Seral/Open Canopy	4,907
Young/Mid Seral Closed Canopy	7,597
Late Successional/Mature Closed Canopy	6,983
Hardwood Stands	0
Brush Fields	790
Grass/Meadows	108
Rock/Sparse Veg/Low Site	20
Total Acres Classified	20,404
Total Acres	28,399

LAND

STEWARDSHIP

PLAN

Name of Landowner

Address

OBJECTIVES

Objectives state what you want to happen on your land and where you want to be within a selected time frame. They provide you with a measurement tool to determine your progress. Set realistic objectives that are clearly defined and can be reached in small, achievable steps. Begin by asking yourself what you want your place to look like in five years.

Quality of Life Objectives

Short term:

Example: Within the next 2 years, I would like to supplement my family's diet with fresh vegetables from the garden.

Long term:

Example: Within the next 15-20 years, I would like to establish a woodland for firewood, lumber and wildlife habitat.

Natural Resource Objectives

Short term:

Example: Within the next 2-3 years, I would like to control star thistle in my pasture.

Long term:

Example: Within the next 20 years, I would like to reforest the eroding stream banks on my property.

Production and Economic Objectives

Short term:

Example: Within the next 2 years, I would like to improve forage production through the control of pasture weeds.

Long term:

Example: Within the next 21 years, I would like to diversify from vegetables to tree fruits and lumber production.

RESOURCE CONCERNS

To assist you in developing your plan, briefly describe any resource problems on your land. (You may not have any resource concerns in some of these areas. If this is the case just move to the next resource area).

Soil

Erosion:

Example: Are there gullies, outbanks, landslides? Are they continuing to erode? Do they deliver sediment to the stream?

Soil deposits:

Example: Has a recent flood dumped sand and cobbles on your fertile stream-side pasture?

Condition:

Example: Do you have shallow, low fertility soil on a south-facing hillslope? A rocky, droughty loam on the valley floor?

Water

Quantity:

Example: Do you have irrigation rights? Is soil moisture adequate over the growing season for your crops or forests?

Quality – Ground Water:

Example: Have you had your well tested? Over-irrigation can carry fertilizers and chemicals to water table.

Quality – Surface Water:

Example: Is runoff from rainstorms or irrigation carrying sediment from forest roads or farm chemicals from pastures?

Air

Conditions:

Example: How does air flow across your property? How does it affect your crops (water loss, frost) or home? Is it clean?

Management:

Example: Windbreaks and hedgerows can protect gardens and pastures from wind.

Plants

Suitability:

Example: Which plants do well and which do not on your property? What is the potential vegetation?

Condition:

Example: Are conifers growing vigorously? Are they subject to disease or insect attacks? Is the pasture weedy?

Management:

Example: Do you have a grazing system in place, and, if so, does it work well? How has your forest been managed?

Animals

Domestic animal habitat:

Example: How is forage quantity and quality? Water? Shade? Shelter?

Wildlife habitat:

Example: Do you have a diverse, multi-layered woodland with groundcovers, shrubs, both young and old trees?

RESOURCE INFORMATION

This information will help you develop a quality stewardship plan that will meet your objectives and resolve your resource concerns. The questions below are organized to guide you through a logical and methodical way of looking at your land and how you manage it. In this section you will map your property and review different management activities and concerns for the different areas within your property. This approach allows you to resolve specific problems while considering the whole area and to produce a more efficient and integrated land stewardship plan. For example, a landowner has a pasture with very little shade. Lack of cover will be hard on the livestock pastured there during cold nights and hot days, lowering production with increasing health risks. Creating a woodlot next to the pasture or planting hedgerows or windbreaks within the pasture can provide a tree canopy to shade animals during the day or keep the frost off them during the night. If the hedgerow extends from a wooded area to a vegetable garden or fruit tree orchard, it can provide a corridor along which beneficial insects – pollinators, for example – can access garden plants or fruit trees. Now, by considering the cover problem in the pasture in the context of the whole property, the landowner has found a solution that has multiple benefits.

Name of landowner(s)

Name of manager (if different from above)

Phone () _____

Address

City

Zip

_____,OR_____

Describe your land's climate (precipitation, temperature, growing season, etc.):

SKETCH MAP OF YOUR PROPERTY

(Please draw below or insert a map you already may have)

Field Inventory - Describe each management unit (pasture, woodlot, etc.) on the chart below.

Name ¹	Acres	Land Use ²	Field Characteristics ³

¹Name: river field, north woodland, etc.

²Land Use: crop, pasture, homestead, forest, wildlife habitat, etc.

³Field Characteristics: types of plants present, topography, aspect, slope, drainage characteristics, soil types, and weed problems.

Cropping Information - Describe the crops you grow.

Vegetation	Average Yield	Grazed - Yes or No

Crop Rotation Description

Field	Typical Cropping Sequence

Describe variations to Crop Sequence:

Comments:

Livestock - Describe any livestock that you keep on your land

Kind of Livestock	Class	Numbers	Average Weight	Number of Days Held Annually

Describe your livestock management - forages and roughages used, season of use, grazing system

Describe your manure storage/management and applications:

Soil Management

List soil amendments (organic or synthetic fertilizer additions, manure spreading, and mulching or tilling, harrowing, disking, plowing, etc.) applied to different fields. If manure is applied, indicate animal type and volume. If manure was analyzed, list values. Under the crop heading, list crop grown such as corn, pasture, grass hay, blueberries.

Fields	Crop	Acreage	Soil Amendments	Rate	Date & Method of Application

Pest Management

Describe pest management strategies.

Strategy	Methods	Crop(s)	Target Pest(s)	Number of Acres	Timing

Pesticides and Fertilizers (if used): storage method, location and disposal:

Most recent soil test results:

Test date: _____

Streams or Creeks and Other Water Considerations

List the streams or creeks running through or adjacent to your land (indicate whether they are intermittent or perennial):

Water Quality – Describe the water quality conditions of waterways or water bodies on your land:

Flood concerns:

EXISTING STREAM CONDITIONS:

Percent of streambank with groundcover: _____

Percent of stream surface shaded at noon in July: _____

Description of streambank or near stream erosion, weeds, habitat, problems, restoration, protection:

Describe wetland and riparian (streamside) areas:

DOMESTIC WATER SOURCE (well or public system): _____

Is your domestic water source adequate for your use? Yes/No

Results of last well water test: _____

Last date Septic System serviced: _____

Irrigation sources - Please list your irrigation sources

IRRIGATION WATER RIGHT INFORMATION

Rate of flow (cubic feet per second): _____ Point of diversion: _____

Application method: _____ flood _____ sprinkler _____ drip _____ other (please describe)

Water storage:

Describe your livestock watering system:

Wildlife

List the fish and wildlife on or near your land (game, seasonal wildlife, any rare, threatened or endangered species) and their activities (nesting or denning, foraging and food type, migrating through – is your land part of a wildlife corridor?):

Cultural

Describe any known archaeological, historical, or cultural features present on your land:

Legally Binding

List contracts, easements, and/or agreements entered into for technical or financial assistance which restrict land management options:

Off-site Factors

List factors that affect your land whose origins are off-site (what’s happening upstream or over the fence?):

Planning: Matching Resource Concerns and Management Goals with Stewardship Strategies and Practices

List the stewardship practices that may be appropriate for your management goals and resource concerns (cover-crop systems for building soil fertility, streamside revegetation for bank stabilization and wildlife habitat, thinning to reduce fire hazard, grazing systems to improve forage quantity and quality, road modifications to control erosion, etc.):

Planning: Putting it all together

Pencil in stewardship practices on your property map (outline the paddocks of a rotation grazing system for pasture areas or draw in hedgerows, orchards, or riparian plantings that connect existing woodlands to attract beneficial insects and provide wildlife corridors, etc.). Do the activities make sense where they are? Kitchen gardens, for example, are located in areas with good soils and access to irrigation, and are near the home where they will be easier to maintain, while woodland areas are further away where they will not endanger your house in the event of wildfire. Holding areas for livestock are located away from streams and wells. (Land management planning assistance is available from the Watershed Council, Oregon State University Extension Service, the Natural Resources Conservation Service, and private consultants. See pages 144-158.)

Putting the Plan on the Ground

Now you know what you want to do and where you want to do it. See Chapter IV, "How To If You Want To," for information on how to go about it and Chapter VII, "Getting the Help You Need," for information about where to find assistance to do it.

PHOTOS OF PROPERTY

Please insert any photos of your property in the following holder. You can use them as a "before and after" comparison once you begin to implement your plan and the better stewardship practices you have decided on.